

NetView Distribution Manager/6000 Release 1.2 Agents and Advanced Scenarios

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Before using this information and the product it supports, be sure to read the general information under "Special Notices" on page xvii.

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Abstract

This document describes most NetView Distribution Manager/6000 agents that are available on the different platforms and introduces specific features of NetView DM/6000. It provides explanations, guidelines and practical hints on how to customize these products in different LAN and host-based scenarios. These scenarios are presented in a cookbook fashion to guide the reader through the various configurations step by step.

This document was written for technical personnel and workstation specialists as well as administrators of LAN-based software distribution environments. Some knowledge of NetView DM/6000 and AIX as well as a basic understanding of the operating systems, including communication support, on the different platforms is expected from the reader.

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Special Notices

This publication is intended to help customer technical personnel and IBM system engineers to install and customize NetView Distribution Manager/6000 and its agents in different environments. The information in this publication is not intended as the specification of any programming interfaces that are provided by NetView Distribution Manager/6000 Release 1.2 and other products of the NetView Distribution Manager family. See the PUBLICATIONS section of the IBM Programming Announcement for NetView Distribution Manager/6000 Release 1.2 and the related products for more information about what publications are considered to be product documentation.

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Preface

This document is broadly divided into five sections, namely introduction, explanation of the different agents, integration of platforms, user exits and appendixes.

The first chapter deals with introductory and overview topics, helping to explain the structure of the book.

The first main part of the book is devoted to a set of scenarios that describe how to install and customize all available NetView DM/6000 agents on the different platforms. This also includes an example of typical change management activities, exploiting their specific means.

The second main part covers the integration of different NetView DM products like NetView DM/6000, NetView DM/2 and NetView DM/MVS and shows their interoperability. We will also introduce the new customization support to integrate NetView DM/6000 and NetView/6000 into a common management platform.

In the third section we will show working examples on how to write your own software and hardware discovery procedure as well as an example where you can use this information. In this context we will also introduce several user exits that are available on servers and agents. This is especially interesting for users who want to customize their system even more specifically than it can be done through ordinary means.

In the appendix we list fully all configuration files that are not shown in the text.

Intended Audience

This publication is intended for:

- Customer technical personnel who want to implement a software distribution environment based on NetView DM/6000.
- IBM SEs consulting and working with customers on change management solutions.
- Technical project leaders who want to get an overview of what can be implemented with NetView DM/6000 and its agents.

How This Document is Organized

The document is organized as follows:

- Chapter 1, "Introduction"

This chapter introduces the book and gives you a general overview of the different topics that are covered.

- Chapter 2, "NetView DM Agent/6000"

In this chapter we guide you through a pristine installation of an NetView DMA/6000 and show the different ways for the initial connection of the agent to its server.

- Chapter 3, “TCP/IP over X.25 between NetView Distribution Manager/6000 Server and Client”

This chapter provides detailed instructions on customizing and configuring an X.25 connection between a NetView DM/6000 change control server and its local NetView DMA/6000. Here, you will also find more details on how to manage the different resources.

- Chapter 4, “NetView DM Agent for HP-UX”

This chapter introduces the NetView DM Agent for HP-UX. You will see how this agent is installed and configured to accept change management requests. One of the change management scenarios covers the installation of an HP-UX system software package.

- Chapter 5, “NetView DM Agent for SunOS”

In this chapter we describe the installation and customization of the NetView DM Agent for SunOS and how to carry out specific change management activities.

- Chapter 6, “NetView DM Agent for Solaris”

This chapter introduces the new NetView DM Agent for Solaris and explains the basic setup for this environment. We will also demonstrate how you can install system specific software packages using a Sun Solaris utility.

- Chapter 7, “NetView DM Agent/2”

In this chapter we guide you in a step by step approach through the CID installation of a pristine machine using NetView DMA/2. We cover the setup of the code server as well as the installation and configuration of the following products: OS/2, LAPS, TCP/IP and NetView DMA/2.

- Chapter 8, “NetView DM Agent/DOS”

In this chapter we explain the CID installation of a pristine machine using NetView Distribution Management Agent/DOS. and cover the configuration of the following products: DOS, TCP/IP and NetView DMA/DOS. In this scenario we use the replication method for TCP/IP using DiskCamera.

- Chapter 9, “NetView DM Agent for Windows”

This chapter describes an application scenario using a DOS Windows workstation and integrate it into a change management environment controlled by NetView DM/6000. This chapter will show an example of a CID-enabled Windows application to be prepared and installed unattended.

- Chapter 10, “NetView DM/6000 Remote Administrator and NetView DM/2”

This chapter guides you through the setup of a cross platform scenario that includes the remote administrator on NetView DM/6000, a remote NetView DM/2 change control server and NetView DM/MVS as a focal point. We will execute change management requests and show reporting as well as history functions.

- Chapter 11, “Integrating NetView DM/6000 with NetView/6000”

This chapter describes how to configure NetView DM/6000 and NetView/6000 as a basis for a common management platform. This includes the customization of the graphical user interface as well as the messages that are converted into alerts.

- Chapter 12, “Writing Inventory Discovery Procedures for UNIX Based Agents”

In this chapter we will give you some examples on how to write your own hardware and software discovery routine in order to feed this information into NetView DM/6000. In this context we will show how you reference this information as prerequisites in a change file.

- Chapter 13, “Writing User Exits”

In this chapter we introduce the user exits that are available on servers and agents. We show an example and explain where these user exits can be used.

- Appendix A, “Sample Files for NetView DM Agent/2 Scenario”

This appendix lists all change file profiles and response files that were used to install and customize the NetView DMA/2.

- Appendix B, “Sample Files for NetView DM Agent/DOS Scenario”

In this appendix we list all response files, change file profiles and modification files that were needed to set up the NetView DMA/DOS.

This appendix includes the communication definitions for SNA Server/6000 and Communications Manager/2 as well as configuration and log files that are related to the cross platform environment.

Assumed Knowledge

If you are new to software distribution and in particular to NetView DM/6000, you should familiarize yourself with the basic concepts described in *NetView DM/6000 R1.2 Concepts and Overview*. For additional information on setting up a basic NetView DM/6000 environment you might also want to consult *The NetView Distribution Manager/6000 Cookbook, GG24-4246*.

Skills Required

In order to successfully install and configure NetView DM/6000 and the agents in the different environments you should be familiar with the handling of the appropriate operating and communication system, in particular AIX.

How to Use this Book

This book is not intended to be read from cover to cover. The book is written in a way that the user can select certain aspects that are important for his work. All chapters are independent from each other and can be read in any sequence you wish, assuming that the reader has already worked with NetView DM/6000. Consequently, you will find some information similarly in different chapters depending on the context.

Related Publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this book.

NetView Distribution Manager/6000 Release 1.2 Publications

- *NetView DM/6000 R1.2 Concepts and Overview*, GH19-5001
- *NetView DM/6000 R1.2 Installation and Customization Guide*, SH19-5002
- *NetView DM/6000 R1.2 User's Guide*, SH19-5003
- *NetView DM/6000 R1.2 Message and Error Recovery Guide*, SH19-5004

NetView Distribution Manager/6000 Agents' Publications

- *NetView DMA/6000 V1R1 User's Guide*, SH19-4071
- *NetView DMA/2 User's Guide*, SH19-4084
- *NetView DMA/DOS V1R1 User's Guide*, SH19-4031
- *NetView DMA for Solaris V1R1 User's Guide*, SH19-4072
- *NetView DMA for SunOS V1R1 User's Guide*, SH19-4033
- *NetView DMA for Windows V1.1 User's Guide*, SH19-4085

AIX Version 3 Publications

- *AIX Commands Reference, Volume 1*, GC23-2376
- *AIX Commands Reference, Volume 2*, GC23-2366
- *AIX Commands Reference, Volume 3*, GC23-2367
- *AIX Commands Reference, Volume 4*, GC23-2393
- *AIX Version 3.2 Editing Concepts and Procedures*, GC23-2212
- *AIX Communications Concepts and Procedures for IBM RISC System/6000*, GC23-2203

This publication contains the reference information for configuring SNA Server/6000 Version 2.1.

SNA Server/6000 Version 2.1 Publications

- *AIX SNA Server/6000 V2R1 User's Guide*, SC31-7002
- *AIX SNA Server/6000 V2R1 Configuration Reference*, SC31-7014
- *AIX SNA Server/6000 V2R1 Command Reference*, SC31-7100
- *AIX SNA Server/6000 V2R1 Diagnosis Guide and Messages*, SC31-7101

NetView Distribution Manager/MVS Release 5 Publications

- *NetView DM R5 General Information*, GH19-6792
- *NetView DM R5 Overview and Scenarios*, SH19-6797
- *NetView DM R6 Install and Custom*, SH19-6794
- *NetView DM R6 User's Guide*, SH19-6795
- *NetView DM R6 Messages and Codes*, SH19-6798

TCP/IP Publications

- *TCP/IP for OS/2 V2.0 Installation and Administration*, SC31-6075
- *TCP/IP for OS/2 V2.0 User's Guide*, SC31-6076
- *TCP/IP for DOS V2.1.1 User's Guide*, SC31-7045
- *TCP/IP for DOS V2.1.1 Command Reference*, SX75-0083
- *TCP/IP for DOS V2.1.1 Installation and Administration*, SC31-7047
- *Internetworking with TCP/IP*, Douglas Comer, published by Prentice Hall Inc., 1994 ISBN 0-13-470154-2

Sun Solaris and SunOS Publications

- *Maintenance Supplement 1 for Solaris 2.3*, SunSoft Part No. 801-7322-10, April 1994
- *Introduction to Solaris 2.3 for System Administrators*, SunSoft Part No. 801-5384-10, October 1993
- *Solaris 2.3 System Configuration and Installation Guide*, SunSoft Part No. 801-5277-10, October 1993
- *Solaris 2.3 System Administrator's Guide to Answer Book - Installation and Administration*, SunSoft Part No. 801-5273-10, October 1993

Some Useful UNIX Reference Texts

- *The UNIX Programming Environment*, Brian W. Kernighan and Rob Pike, published by Prentice-Hall, ISBN 0-13-937681-X.
- *The Kornshell: Command and Programming Language*, Morris I. Bolsky and David Korn, published by Prentice-Hall, ISBN 0-13-516972-X.
- *Learning the vi editor*, Linda Lamb, published by O'Reilly Associates (in the Nutshell Handbook series), ISBN 0-937175-17-X.
- *Solaris Advanced System Administrators*, Janice Winsor, published by ZIFF-DAVIS PRESS, 1993, ISBN 1-56276-131-5
- *Mastering Solaris 2*, Brent D. Heslop and David F. Angell, published by Sybex Inc., 1993, ISBN 0-7821-1072-X
- *The HP-UX System Administrator's "How to" book*, published by Prentice Hall Inc., 1994, ISBN 0-13-099821-4

Other Publications

- *Systems Network Architecture: A Tutorial*, Anton Meijer, published by Pitman/Wiley, ISBN 0-470-21015-X.

International Technical Support Organization Publications

ITSO publications referred to by name in this document are:

- *AIX/V3 X.25 Communication Cookbook, GG24-3692*
- *A Guided Tour of SNA Server/6000 Version 2.1, GG24-4189*
- *The NetView Distribution Manager/6000 Cookbook, GG24-4246*
- *The NetView Distribution Manager/2 V2.1 Remote Administrator and New Functions, GG24-4419*
- *Examples of Using Software Installer, GG24-2529* (will be available second quarter 1995)

A complete list of International Technical Support Organization publications, known as redbooks, with a brief description of each, may be found in:

International Technical Support Organization Bibliography of Redbooks, GG24-3070.

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Chapter 1. Introduction

In this book we introduce and explain:

- Most of the available agents that can be used with NetView Distribution Manager/6000
- The integration of NetView DM/6000 and NetView/6000
- NetView DM/6000 as a remote administrator for NetView Distribution Manager/2
- The usage of hardware and software discovery procedures
- Some examples of how to use the NetView DM/6000 user exits

The following section gives you an overview of what will be covered in which sequence:

- UNIX-based agents:

In the first few chapters we will concentrate on the UNIX-based agents and show functions they have in common as well as certain differences of these agents on the various operating systems. For the NetView DMA/6000 we will focus on pristine installation scenarios and the configuration of TCP/IP between servers and agents over X.25.

For the other UNIX-based agents like NetView DM Agent for HP-UX, NetView DM Agent for SunOS and NetView DM Agent for Solaris we explain the installation and configuration and show a typical example for each environment.

- OS/2 and DOS-based agents:

In the different scenarios with NetView DMA/2, NetView DMA/DOS and NetView DMA for Windows we will mainly demonstrate pristine installations that include a NFS server on the RS/6000 and that are controlled by NetView DM/6000. We cover the scenarios in a step-by-step approach so that you can easily follow them.

- Integration of NetView DM/6000 into NetView/6000:

One of the new functions of NetView DM/6000 Release 1.2 is the possibility to integrate NetView DM/6000 into NetView/6000. In this scenario we explain the basic configuration of traps in NetView/6000 as well as the configuration of the interface between NetView/6000 and NetView DM/6000. At the time the book was written NetView DM/6000 only supported NetView/6000 Version 2.

- NetView DM/6000 as a remote administrator for NetView Distribution Manager/2:

In this scenario we show some possibilities to control a NetView Distribution Manager/2 change management environment from a NetView DM/6000 remote administrator. We guide you through the NetView DM and communication-specific configuration steps that have to be executed. To test the environment we use file service and change management commands and examine the history of the change files and targets in order to show the new reporting functions.

- Hardware and software discovery procedures:

In this chapter we introduce some NetView DM/6000 specific functions and show examples on how to exploit them. The software and hardware discovery allow you to define, for example already installed software to NetView DM/6000. By using the hardware discovery feature you can define any, in general critical hardware to NetView DM/6000 and refer to it in change files as prerequisites.

- Examples of using the NetView DM/6000 user exits:

In some cases you might have the need to tailor your NetView DM/6000 system more specifically than it is possible with the standard means. One way to accomplish it is by using user exits. We give you some guidance on how to activate and compile them as well as an example for each on where to use them.

Chapter 2. NetView DM Agent/6000

In this chapter we will focus on the new installation of systems. They can be totally new or already configured but need to be installed again.

You will find more information about the general installation and configuration in the *NetView DM/6000 R1.2 Installation and Customization Guide* and *The NetView Distribution Manager/6000 Cookbook*, GG24-4246.

2.1 Pristine Installation

Normally you will use NetView DM/6000 to distribute software to clients which are already installed and running. For example you could distribute an additional software package to a RISC System/6000 workstation which already has a base operating system and the NetView Distribution Management Agent/6000 (NetView DMA/6000).

Sometimes you will need to install a machine "from scratch" which means you have to install everything there from a server including the base operating system.

NetView DM/6000 can help you perform this task by automatically installing all the software which is needed on your client workstation. Even more, you can create a NetView DM/6000 agent which will be configured automatically.

2.1.1 Overview and Objective

In this scenario we will install AIX and NetView DMA/6000 on a RISC System/6000 which does not have any software on it yet.

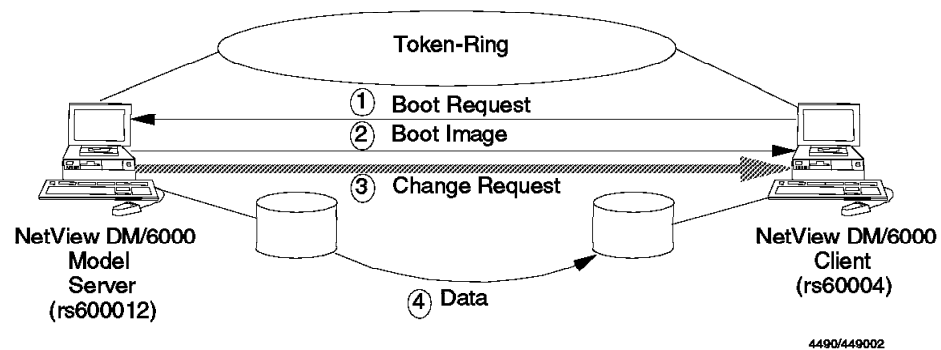


Figure 1. Pristine Installation Scenario

1. The client sends out a boot request which is a broadcast message.
2. The NetView DM/6000 CC server and the BOOTP server are configured on the same machine. The BOOTP server sends the boot image to the client if it finds the client's address in its configuration tables.
3. The NetView DM/6000 CC server executes the change request to install the client.
4. The data files are copied from the model to the installation target.

This part is intended for users who want to install software including the base operating system and NetView DMA/6000 on their workstations automatically, that is nearly without any user interaction required at the target workstation.

It is assumed that the reader is already familiar with the basic functions of NetView DM/6000 and with the AIX operating system. Also a basic knowledge of TCP/IP and NFS is recommended.

2.1.1.1 Scenario

In our scenario we will use two RISC System/6000 workstations to demonstrate a pristine installation. The workstation rs60004 will be our installation target. The workstation rs600012 will be our NetView DM/6000 server.

The two machines are interconnected using a 4 Mbps token-ring network and the TCP/IP communications protocol. The IP address assigned to rs600012 is 9.24.104.124 and the IP address assigned to rs60004 is 9.24.104.27.

The server is a RISC System/6000 Model 370 and the installation target is a RISC System/6000 Model 220.

In order to install the target workstation (rs60004) we will perform the following tasks using a step-by-step approach:

- Define a CC Client for the workstation to be installed.
- Configure TCP/IP at the model workstation. What the model workstation is used for will be described in 2.1.1.2, "The Model Workstation."
- Prepare the model workstation for distribution.
- Build a change file for the installation.
- Start up the target workstation.
- Submit the install request.
- Reboot the target workstation.
- Clean up the model workstation.

2.1.1.2 The Model Workstation

To do this kind of installation you will have to set up a workstation which is an exact copy of the workstations you want to install. This means it has all the software on it that is to be installed on the clients. During the initial installation this workstation is called the model workstation.

The process of copying file systems from this model to the clients is called *cloning*. The model workstation will also be the boot-server for the clients. How the boot-server is set up and works will be described in 2.1.11.1, "Determining if Client Workstation Supports RIPL" on page 17.

In our example the CC Server (rs600012) will also be the model workstation. You can, however, use any other workstation in your network as the model workstation as long as it meets the requirements specified in 2.1.3, "Prerequisites for Server and Model Workstation" on page 7.

If we did use a scenario similar to that described in Appendix A of the *NetView DM/6000 User's Guide* we would use a third workstation as the model. Our scenario then would look like the following:

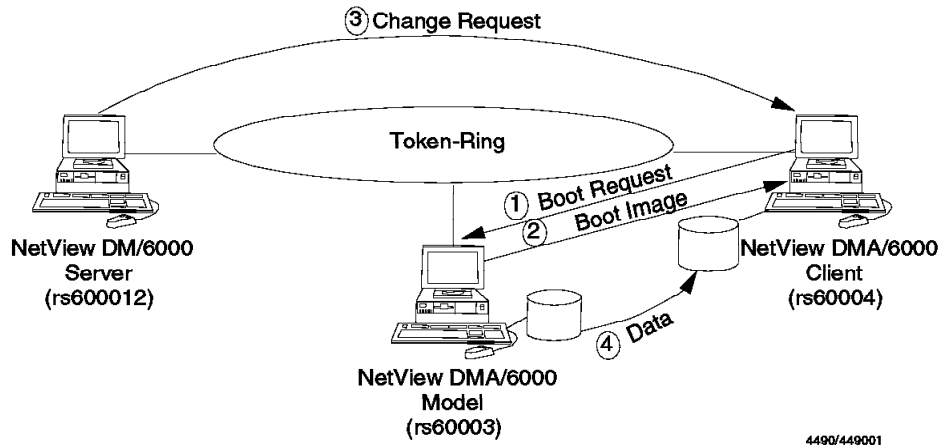


Figure 2. Pristine Installation Scenario II

1. The client sends out a boot request which is a broadcast message.
2. The model client and the BOOTP server are configured on the same machine. The BOOTP server sends the boot image to the client if it finds the client's address in its configuration tables.
3. The NetView DM/6000 CC server executes the change request to install the client.
4. The data files are copied from the model to the installation target.

2.1.1.3 Partial and Complete Cloning

The process of copying file systems from the model workstation to the client workstation is called *cloning*.

We differentiate between two types of cloning. The first one is called *partial cloning* and will only include the following file systems:

- /
- /usr
- /var
- /usr/lpp/netviewdm

The file system / (root) basically holds configuration data stored mainly in the /etc directory. The file system /var contains variable system data like the printer spooling queue. Software products for AIX are usually stored in the /usr file system, or more precisely in the the /usr/lpp directory. The NetView DM/6000 files are stored in the file system /usr/lpp/netviewdm. So even a partial cloning will normally copy all software products installed on the model to the client workstation.

The file systems /tmp and /home will be created on the target workstation when cloning is finished, so they will not contain any data.

The file system /tmp normally holds temporary work files. Information belonging to specific users is usually stored in the /home file system. So there will be no user-related information on the target system if you do a partial cloning.

The second type of cloning is called *complete cloning* and will copy all the file systems of the model to the target workstation.

Whether you decide to do partial or complete cloning depends on what you want to do with your target workstations. For example if you want to create 20 workstations which all have the same application and user structure you would do a complete cloning.

If you want to install some workstations with a different configuration you would do a partial cloning. This will put only the base operating system and NetView DMA/6000 on the clients. You can then distribute anything else needed using NetView DM/6000 functionality.

Using a partial cloning has the advantages of:

- Using less disk space than a complete cloning
- Providing more flexibility in the configuration of each target workstation

In contrast if you use a complete cloning you just need to perform the cloning to set up your target workstation completely. No additional action is required. The user and file system structure is exactly the same as on the model workstation. That means that besides the file systems you will have the same AIX users and AIX user groups as on the model workstation.

The problems with complete cloning are:

- You will need the same disk space on the target as on the model workstation.
- You cannot use a workstation as a model which has more disk capacity in rootvg than the target.
- The passwords for the users will be the same on all target systems.

2.1.1.4 Pristine and Non-Pristine Workstations

We call a workstation pristine if it does not have any software installed on it. In contrast a workstation is called non-pristine if it has software installed on its hard disk already.

Whether your workstation is pristine or non-pristine depends mostly on how you order your RISC System/6000. For example there are many workstations which come with pre-loaded software which means they are non-pristine.

If a machine is pristine or non-pristine doesn't really make a big difference because the software installed on a non-pristine machine will be replaced during the cloning process.

The real advantage of installing clients using NetView DM/6000 is that you can do everything you need automatically from the CC Server. If you have a machine which supports remote IPL you just have to attach your workstation to the network and switch it on. Everything else can be done from the server.

NetView DM/6000 will:

- Put the base operating system on the client, including TCP/IP.
- Install NetView DM/6000 or NetView DMA/6000 on the client.

Refer to 2.1.2, “Configuration of NetView DMA/6000 at the Target Workstation” on page 7 for information on how NetView DMA/6000 is configured on the target workstation.

2.1.2 Configuration of NetView DMA/6000 at the Target Workstation

The cloning process will configure NetView DMA/6000 automatically at your client workstation.

For that purpose the preparation script will create a customized version of `nvdn.cfg` for each client. Refer to 2.1.11, “Preparing the Model for Distribution” on page 17 for a description of the preparation script.

The customized `nvdn.cfg` will contain the following information:

- The name of the CC Server which you supply when calling the preparation script. This will be put in the `SERVER` field of `nvdn.cfg`.
- The name of the CC Client which you supply when calling the preparation script. This will be put in the `WORKSTATION NAME` field of `nvdn.cfg`.

Since NetView DMA/6000 is configured automatically at the client you can immediately start NetView DM/6000 software distribution after the cloning is finished.

However, you should consider the following when NetView DM/6000 is installed on your model workstation instead of NetView DMA/6000:

The cloning process will copy the entire NetView DM/6000 Licensed Program Product (LPP) to the client when copying the `/usr/lpp/netviewdm` file system from the model. Also the NetView DM/6000 LPP will be in your AIX software inventory because `/etc/objrepos` is copied to the target together with the `/` file system.

The cloning process will also copy the NetView DMA/6000 LPP from the model to the client workstation. If NetView DMA/6000 is not installed on your model workstation you have to supply the install image in the `/usr/sys/inst.images` directory on your model. How this is done will be described in 2.1.6, “Setting Up Software Packages at the Model Workstation” on page 10.

Even if NetView DM/6000 is installed on the client workstation only NetView DMA/6000 will be configured automatically. If you wish to configure NetView DM/6000 at the client you have to do this manually. Refer to *The NetView Distribution Manager/6000 Cookbook*, GG24-4246 on how to configure NetView DM/6000.

2.1.3 Prerequisites for Server and Model Workstation

On the CC Server the following software is required:

- AIX 3.2.5
- TCP/IP Version 2.1 or later
- NFS
- NetView DM/6000

On the model workstation the following software is required:

- AIX 3.2.5
- TCP/IP Version 2.1 or later
- NFS
- NetView DM/6000 or NetView DMA/6000

2.1.4 Considerations when Choosing the Model Workstation

When you select which workstation in your network should act as the model workstation you should consider the following things:

- How much disk space is required on the model workstation?
- How much disk space is available at the target workstation?
- What software is to be distributed?

For every client you wish to install there is disk space required on the model workstation. Refer to 2.1.5, “Space Requirements on the Model Workstation” for information on how much disk space is required. You must ensure that you have enough disk space left on the workstation which you choose to be the model.

The cloning script will copy the content of the file systems described in 2.1.1.3, “Partial and Complete Cloning” on page 5 to the model workstation. Before this is done the script creates the needed file systems at the target workstation. The file systems on the target workstation will be created exactly the same size as on the model workstation. Therefore you must ensure that there is enough disk space available at the target workstation.

For example if you wish to install a target workstation which has only one 1.0GB hard-disk you must not choose a workstation as the model whose /usr file system is already 900MB size. There will not be enough space on the target system because in addition to the 900 MB for /usr there is space needed for /, /var , /usr/lpp/netviewdm, paging space, dump space, etc.

If you wish to install software in addition to the base operating system and NetView DM/6000 you must provide this software on the model workstation. If this software resides entirely in the /usr file system it is enough to do a partial cloning. If this software resides in other file systems you will have to perform a complete cloning. Further you should only provide those software products in the /usr file system which are actually needed on the target workstation. If you have software products in your /usr file system which are not needed on the target and you distribute them this may also affect software license agreements.

Another way to distribute software products to your client is to hold only the base operating system in the /usr file system on your model. You then do a partial cloning and distribute the additional software as installp images using NetView DM/6000.

2.1.5 Space Requirements on the Model Workstation

The following amount of free disk space is required:

- At least 2MB in rootvg for each client which has to be installed and does not support RIPL

- At least 3MB in the root file system (/) and an additional 15MB in rootvg for the first client that supports RIPL
- At least 6MB in rootvg for each additional client that supports RIPL

You can check if there is enough space in the root file system by invoking the following command:

```
df
```

This command will produce an output similar to the following:

Filesystem	Total KB	free	%used	used	%used	Mounted on
/dev/hd4	12288	2104	82%	1100	26%	/
/dev/hd9var	28672	12480	56%	1507	18%	/var
/dev/hd2	647168	62724	90%	23699	14%	/usr
/dev/hd3	53248	1844	96%	318	2%	/tmp
/dev/hd1	4096	3724	9%	54	5%	/home
/dev/lv00	4096	3928	4%	18	1%	/inst.images

Figure 3. Output from df Command

Check if there is at least 3MB in the root file system (/) left. If - as in the above example - there is less than 3MB in the root file system do either of the following:

- Erase some unnecessary files from the root file system, *or*
- Enlarge the root file system using `smit chfs`

To check if there is enough space left in rootvg use:

```
lsvg rootvg
```

This will produce an output similar to the following:

VOLUME GROUP:	rootvg	VG IDENTIFIER:	00003930a8ebcaf0
VG STATE:	active	PP SIZE:	4 megabyte(s)
VG PERMISSION:	read/write	TOTAL PPs:	248 (992 megabytes)
MAX LVs:	256	FREE PPs:	5 (20 megabytes)
LVs:	11	USED PPs:	243 (972 megabytes)
OPEN LVs:	10	QUORUM:	2
TOTAL PVs:	1	VG DESCRIPTORS:	2
STALE PVs:	0	STALE PPs:	0
ACTIVE PVs:	1	AUTO ON:	yes

Figure 4. Output from lsvg Command

Check how much space is left in the volume group and whether this will fit your needs. If not do either of the following:

- Remove unnecessary file systems from rootvg using `smit rmfs`
- Put another disk into the rootvg if available using `smit extendvg`

2.1.6 Setting Up Software Packages at the Model Workstation

The model workstation needs to have the following software installed:

- AIX 3.2.5
- TCP/IP 2.1 or later
- NFS

In order for the client workstation to become a NetView DM/6000 agent you will also install the NetView DMA/6000 software on your model workstation. Refer to *AIX Version 3.2 for RISCSystem/6000 Installation Guide* on how to install the AIX base operating system and *NetView DM/6000 Installation and Customization Guide* on how to install NetView DM/6000 or NetView DMA/6000.

In our example we have NetView DM/6000 installed on our model workstation, so we have to provide an install image of NetView DMA/6000 in the `/usr/sys/inst.images` directory.

The model preparation script will look for the agent code in this directory where the agent must be the latest available version. At the moment this is the file:

```
netviewdm6000.1.0.1.0.U429963
```

The preparation script will look for a file with exactly that name.

To detect which filename is needed by the current version of the script you can enter the following commands at the model workstation:

```
cd /usr/lpp/netviewdm6000/script
grep "ls /usr/sys/inst.images/netviewdm6000" fndnpre1 fnd7013
```

This will produce an output similar to the following:

```
fndnpre1:ls /usr/sys/inst.images/netviewdm6000.1.0.1.0.U429963 > /dev/null 2>&1
fnd7013:ls /usr/sys/inst.images/netviewdm6000.1.0.1.0.U429963 > /dev/null 2>&1
```

The preparation script will use this file to restore the agent code into the `/export/nvdma` directory which will be created on your model.

Note

If your model does not have NetView DM/6000 installed you have to copy the cloning scripts from a NetView DM/6000 server first before invoking the above commands. Refer to 2.1.9, "Copying Necessary Script Files from CC Server to Model" on page 15 how to do this.

2.1.7 Configuring TCP/IP at the Model Workstation

To enable the model to act as a boot-server you have to configure the TCP/IP services `bootps` and `ftpd` on the model if they are not running already. To determine if the services are running enter the following:

```
smit lsinetdconf
```

This command will display a panel similar to the following:

```

                                COMMAND STATUS
Command: OK                      stdout: yes                      stderr: no
Before command completion, additional instructions may appear below.
[MORE...13]
time    stream tcp      nowait  root    internal
time    dgram  udp       wait    root    internal
bootps  dgram  udp       wait    root    /etc/bootpd bootpd
tftp    dgram  udp       wait    nobody  /etc/tftpd tftpd -n
rstatd  sunrpc_udp udp      wait    root    /usr/etc/rpc.rstatd rstatd 100001 1-3
rusersd sunrpc_udp udp      wait    root    /usr/etc/rpc.rusersd rusersd 100002 1-2
rwalld  sunrpc_udp udp      wait    root    /usr/etc/rpc.rwalld rwalld 100008 1
sprayd  sunrpc_udp udp      wait    root    /usr/etc/rpc.sprayd sprayd 100012 1
pcnfsd  sunrpc_udp udp      wait    root    /etc/rpc.pcnfsd pcnfsd 150001 1
exec    stream tcp      nowait  root    /etc/rexecd rexecd
login   stream tcp      nowait  root    /etc/rlogind rlogind
shell   stream tcp      nowait  root    /etc/rshd rshd
ntalk   dgram  udp       wait    root    /etc/talkd talkd
uucp    stream tcp      nowait  root    /etc/uucpd uucpd
[MORE...4]

F1=Help          F2=Refresh       F3=Cancel       F6=Command
F8=Image         F9=Shell         F10=Exit

```

Figure 5. List inetd Configuration SMIT Panel

In the above example the services *bootps* and *tftp* are already running so you will not have to do any further configuration.

If they were not running you would have to enter the following:

```
smit mkinetdconf
```

Then press F4 to get a list. This will cause the following SMIT panel to pop up.

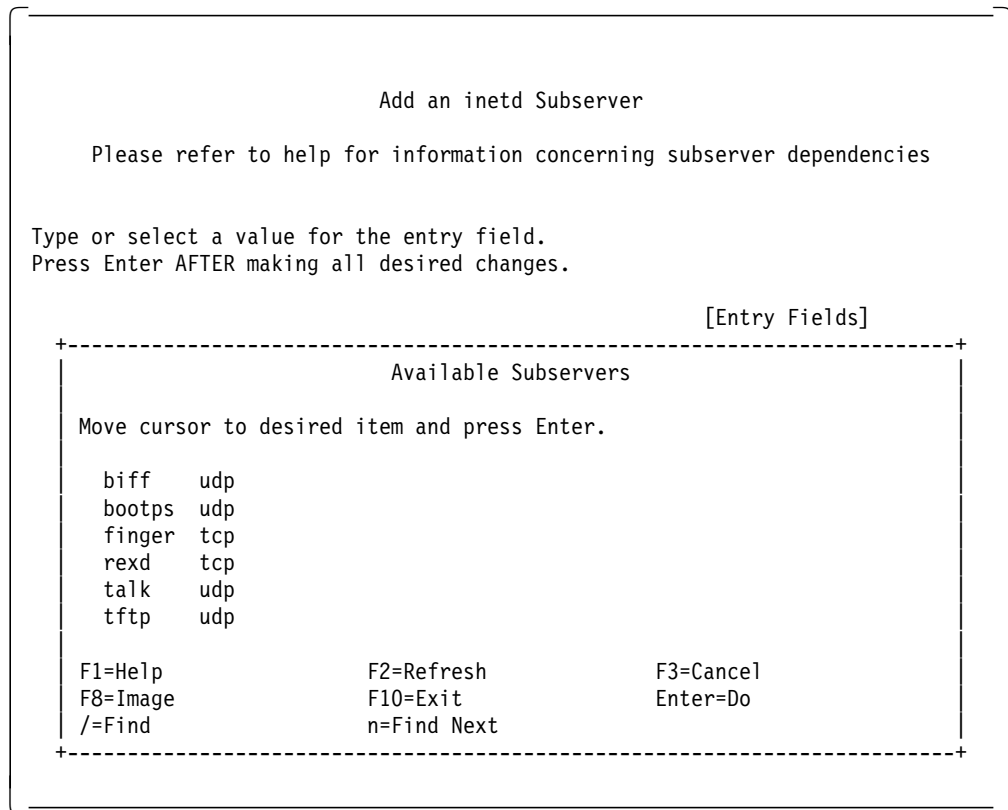


Figure 6. Configure inetd SMIT Panel

Move the cursor to *bootps* and press Enter. When the service is finished repeat the same procedure for *tftp*.

The next thing you have to do is edit the */.rhosts* file on the model to grant the client root access to the model's file systems.

In our example we add the following line to */.rhosts* :

```
9.24.104.27 root
```

Where 9.24.104.27 is the IP address of our client. Do not use the hostname of the client in the */.rhosts* file. We have found that the installation of the client will fail when you put in the hostname instead of the IP address.

Further we need to put an entry for the client into the */etc/hosts* file at the model workstation. In our example the line is:

```
9.24.104.27    rs60004
```

If you use name resolution, for example *named*, you can put the new hostname into the database at your name server.

The last thing to do in TCP/IP configuration at the model workstation is to activate the *shell* service. The *shell* subserver contains the *rshd* process. This is done in the same way we activated the *bootps* and *tftp* services before. First check if the service is already running using `smiit lsinetdconf`.

If not, start it by using:

```
smit mkinetdconf
```

as shown in the examples above.

Remember to refresh the *inetd* configuration after you have added sub-servers to it. This will make the *inetd* server recognize its newly added sub-servers.

Type:

```
refresh -s inetd
```

to update the configuration with the new values stored in */etc/inetd.conf*.

Or send a signal to the *inetd* process:

```
ps -ef | grep inetd  
kill PID
```

Where *PID* is the process ID of the *inetd* process.

2.1.8 Defining a CC Client as an Installation Target

We need to define a local target for every client to be installed. In our example this will be the client rs60004.

For that purpose we login at the CC server (rs600012) as NetView DM/6000 administrator and start the NetView DM/6000 graphical interface:

```
nvdmgf &
```

This will show the NetView DM/6000 catalog window:

NetView DM/6000 Catalog (rs600012)	
Catalog Selected View System Windows Help	
Global File Name	Description
IBM.NDMG000.&SERVER.&S	Backup RBAPI log file
IBM.NDMG000.&SERVER.&S	RBAPI log file
IBM.NDMG000.&SERVER.&S	Distribution catalog
IBM.NDMG000.&SERVER.&S	AIX diagnostic trace file
IBM.NDMG000.&SERVER.&S	NG parser dump file
IBM.NDMG000.&SERVER.&S	SNA/DS routing table
IBM.NDMG000.&SERVER.&S	SNA internal configuration file
IBM.NDMG000.&SERVER.&S	SNA/DS configuration record
IBM.NDMG000.&SERVER.&S	SNA/DS connection record
IBM.NDMG000.&SERVER.&S	TCP/IP connection record
IBM.NDMG000.&SERVER.&S	SNA internal trace file
IBM.NDMG000.&SERVER.&S	Internal trace file
IBM.NDMG000.&SERVER.&S	Backup internal trace file
IBM.NDMG000.&SERVER.&S	User authorization configuration record
IBM.NDMG000.&SERVER.&T	Base configuration record
IBM.NDMG000.&SERVER.&T	Croca shared memory segment dump file
IBM.NDMG000.&SERVER.&T	fndcma dump file
IBM.NDMG000.&SERVER.&T	fndcmam dump file
IBM.NDMG000.&SERVER.&T	fndcmap dump file
IBM.NDMG000.&SERVER.&T	fndcmi dump file

Figure 7. NetView DM/6000 Catalog Window

From the action bar we select **Windows** and then **Targets** from the pull-down menu. A panel similar to the following will appear:

NetView DM/6000 Targets (rs600012)			
Target Selected View Windows Help			
Name	Type	OS	Description
RA39TCF1	Focal Point		NVDM/MVS
rs600012	this (push)	AIX	INITIAL TARGET CONFIGURATION RECORD
rs60003	local (push)	AIX	client workstation

Figure 8. NetView DM/6000 Target Window

From the action bar we select **Target** and then **New Local Target** from the pull-down menu.

The following panel will appear:

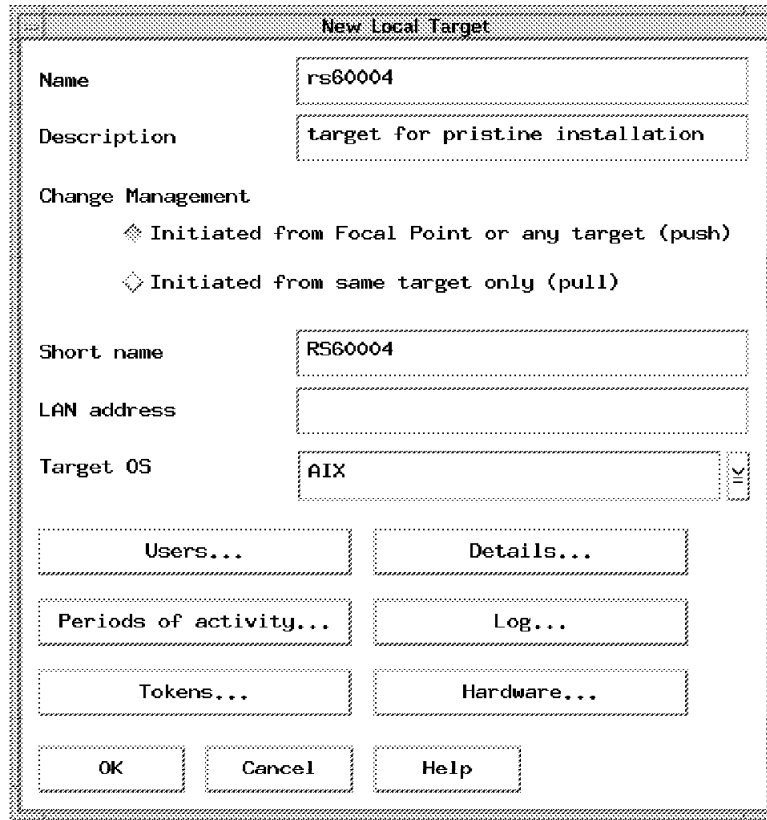


Figure 9. NetView DM/6000 New Local Target Window

We perform the following steps:

- Step 1. In the Name field enter **rs60004**.
- Step 2. In the Description field enter a description of the client (optional).
- Step 3. In the Change Management field select **push**.
- Step 4. In the Short name field enter **RS60004**.
- Step 5. Leave the LAN address field blank.
- Step 6. In the Target OS field select **AIX**.
- Step 7. Select the **Users** button.
- Step 8. Add the root user as a client user.

2.1.9 Copying Necessary Script Files from CC Server to Model

If you have installed NetView DMA/6000 on your model workstation you will need to copy some script files from a NetView DM/6000 server which are required to perform the installation.

The following files which reside in `/usr/lpp/netviewdm/script` are needed:

- `fndnprel`
- `fndboot`
- `fndpru`
- `fndc1n`

- fnd7013

If your NetView DM/6000 agent on the model is configured you can distribute the files from the server using NetView DM/6000.

You create a change file including the five script files and install them on the model.

The following change file profile can be used to distribute the files:

```

GLOBAL NAME:                NVDM.SCRIPTS.REF.1
CHANGE FILE TYPE:           GEN
COMPRESSION TYPE:           LZW
REBOOT REQUIRED:             NO
PACK FILES:                 NO
SECURE PACKAGE:             NO
OBJECT:
  SOURCE NAME:               /usr/lpp/netviewdm/script/fnd7013
  TARGET NAME:               /usr/lpp/netviewdm/script/fnd7013
  TYPE:                      FILE
  ACTION:                    COPY
  INCLUDE SUBDIRS:           NO
OBJECT:
  SOURCE NAME:               /usr/lpp/netviewdm/script/fndc1n
  TARGET NAME:               /usr/lpp/netviewdm/script/fndc1n
  TYPE:                      FILE
  ACTION:                    COPY
  INCLUDE SUBDIRS:           NO
OBJECT:
  SOURCE NAME:               /usr/lpp/netviewdm/script/fndboot
  TARGET NAME:               /usr/lpp/netviewdm/script/fndboot
  TYPE:                      FILE
  ACTION:                    COPY
  INCLUDE SUBDIRS:           NO
OBJECT:
  SOURCE NAME:               /usr/lpp/netviewdm/script/fndpru
  TARGET NAME:               /usr/lpp/netviewdm/script/fndpru
  TYPE:                      FILE
  ACTION:                    COPY
  INCLUDE SUBDIRS:           NO
OBJECT:
  SOURCE NAME:               /usr/lpp/netviewdm/script/fndnpre1
  TARGET NAME:               /usr/lpp/netviewdm/script/fndnpre1
  TYPE:                      FILE
  ACTION:                    COPY
  INCLUDE SUBDIRS:           NO

```

Figure 10. Change File Profile for Distributing Cloning Scripts

Or, you can use *ftp* to transfer the files. On the model workstation type:

```
ftp ndmserver
Connected to ndmserver.itso.ra1.ibm.com.
220 ndmserver FTP server (Version 4.13 Wed Apr 27 08:16:51 CDT 1994)
ready.
Name (rs60003:root): root
331 Password required for root.
Password:
230 User root logged in.
ftp> lcd /usr/lpp/netviewdm/script
Local directory now /usr/lpp/netviewdm/script
ftp> cd /usr/lpp/netviewdm/script
250 CWD command successful.
ftp> prompt
ftp> mget *
```

Figure 11. Copying Script Files from Server Using ftp

Copying the files to the model using NetView DM/6000 has the advantage that the script files will be included in the change history at your server.

If you have NetView DM/6000 installed on your model workstation you do not need to copy the files because they already exist in the /usr/lpp/netviewdm/script directory.

2.1.10 Checking the Version of the Cloning Scripts

You need to have the correct version of the cloning scripts in order to perform the pristine installation. Some older versions of the scripts will not work correctly. You can enter the following commands to test if you have the correct versions:

```
cd /usr/lpp/netviewdm/script
grep shut_clean *
```

Warning!

If the grep command does not produce any output you have the wrong script versions. Obtain the latest PTF level before you try the pristine installation.

2.1.11 Preparing the Model for Distribution

Depending on if the client workstations we will install support remote IPL (RIPL) or not we will have two different ways of preparing the model workstation.

2.1.11.1 Determining if Client Workstation Supports RIPL

To boot a RISC System/6000 a boot image is required. The boot image is located and loaded by the IPL ROM which is a memory chip containing the firmware of the machine. The boot image can be either on a local device such as a hard disk, magnetic tape or floppy disk or it can be on a boot-server which is accessible via the network.

While all versions of the IPL ROM are able to search local devices for a boot image only some versions are able to use network adapters such as token-ring

or Ethernet to locate and load a boot image. These are usually called BOOTP-enabled IPL ROM.

Machines with a BOOTP-enabled IPL ROM send out a BOOTP request to the network in order to locate a network server which can supply a boot image. If the request is successful the machine uses another TCP/IP protocol called Trivial File Transfer Protocol (TFTP) to copy the boot image from the server.

If your machine does not support BOOTP you must create a bootable diskette which will be used for booting the machine. This diskette will be created automatically by the preparation script for machines that do not support RIPL.

You can determine if your IPL ROM is BOOTP-enabled by the following procedure:

Step 1. Turn the key switch to Secure position and switch on the system.

Step 2. Wait until the 3-digit LED displays 200.

Step 3. Turn the key switch to Service position and press the yellow reset button.

- If the 3-digit LED displays 260, 261, or 262 your system is BOOTP-enabled.
- If the 3-digit LED does not display one of the above numbers your system is not BOOTP enabled.

2.1.11.2 Preparing the Model for Workstations that Support RIPL

We use the script file `fndnpre1` from the `/usr/lpp/netviewdm/script` directory to prepare the model for installing workstations that support RIPL. If you have NetView DMA/6000 installed on your model workstation then this is one of the script files you have copied from the NetView DM/6000 server.

The syntax for `fndnpre1` is as follows:

```
fndnpre1 netdevice clientname hardwareaddress  
servername -G GatewayIPAddress -S Subnetmask
```

Where:

netdevice is the device file of the network adapter used for booting. In our example this will be `/dev/tok0`.

clientname is the IP hostname of the client workstation we want to install. In our example this will be `rs60004`.

hardwareaddress is the hardware address of the adapter from which to boot. In terms of TCP/IP this is the ARP (Address Resolution Protocol) address. In our example this will be a 12-digit token-ring address.

servername is the IP hostname of the CC server which actually does the software distribution to our client. In our example this will be `rs600012`.

The parameters **-G** and **-S** are optional. Use the **-G** parameter if you want your clients to boot from a server which is in another IP subnet. Then the IP address following **-G** specifies the IP gateway. When using a gateway a subnet mask is required which is specified using the **-S** parameter.

Both the gateway address and the subnet mask are specified in standard IP notation, for example 9.24.104.33 as the gateway address.

Determining Hardware Address of Client:

When configuring the model for workstations that support remote IPL you need to find out the hardware address of the built-in network adapter.

If you are on a pristine workstation refer to 2.1.13.1, "Starting a Client that Supports RIPL" on page 29 on how to obtain the hardware address of the client.

On a non-pristine workstation there are several ways to obtain the hardware address. One of them is by entering the following command:

```
netstat -v
```

This should produce an output similar to the following:

```
TOKEN STATISTICS (tr0) :
Hardware Address: 10:00:5a:c9:3f:63:
Transmit Byte Count: 326205.0      Receive Byte Count: 529008.0
Transmit Frame Count: 2280.0      Receive Frame Count: 3636.0
Transmit Error Count: 0           Receive Error Count: 0
Max Netid's in use: 1            Max Transmits queued: 0
Max Receives queued: 0           Max Stat Blks queued: 0
Interrupts lost: 0                WDT Interrupts lost: 0
Timeout Ints lost: 0             Status lost: 0
Receive Packets Lost: 0           No Mbuf Errors: 0
No Mbuf Extension Errors: 0      Receive Int Count: 4357
Transmit Int Count: 2280          Packets Rejected No NetID: 723
Packets Accepted Valid NetID: 3636  Overflow Packets Received: 0
Packets Transmitted and Adapter Errors Detected: 0
```

Figure 12. Output from netstat Command

As you can see in the above output the hardware address for our client is **10005ac93f63**. So the complete command for preparing our model is finally:

```
cd /usr/lpp/netviewdm/script
./fndnpre1 /dev/tok0 rs60004 10005ac93f63 rs600012
```

Remember to be *root* when invoking the command. Since our client and our CC Server reside in the same IP subnet we do not need to specify a gateway or a subnet mask.

Possible Errors when Running the Preparation Script:

There are a lot of errors which can occur when running the preparation script. To solve possible problems it is essential to have an understanding of what the preparation script actually does. To help detect errors you should redirect the script output into a file when running the script. You can use the following command to do this:

```
cd /usr/lpp/netviewdm/script
./fndnpre1 /dev/tok0 rs60004 10005ac93f63 rs600012 2>&1 | tee protocol
```

This will display the output of the script on the screen and place it in the file `protocol` for later review.

The `protocol` file for a successful run of `fndnpre1` should look similar to the following:

```
Creating /export/install filesystem 8MB large.

New File System size is 16384
Creating /export/root filesystem 4MB large.

New File System size is 8192
Creating /export/nvdma filesystem 4MB large.

New File System size is 8192
Creating /export/nvdma/rs60004 directory.

Making the boot image...

bosboot: Boot image is 4252 512 byte blocks.
Making the INSTALL spot...
Creating the rs60004 client.

Making NFS and exporting file systems: it may take some minutes.

Creating diskettes files...
Creating extended display diskette...
Creating display diskette...
Creating install and maintenance diskette...
Populating /export/install with needed commands...
```

Figure 13. Protocol File for `fndnpre1`

The preparation script invokes a lot of commands in order to prepare the model workstation. Because the script does not check every possible return code from each command it may continue its execution although there was an error with one of the commands. Under some conditions this may cause unpredictable results.

The first thing the `fndnpre1` preparation script does is create the file systems to be exported to the client workstation.

The following list contains the file systems and their sizes:

- `/export/install` (8MB)
- `/export/root` (4MB)
- `/export/nvdma` (4MB)

Further, the script checks the sizes of `/export/root` and `/export/nvdma` each time you prepare a new client. If there is not enough space left it will enlarge the file

system by 2000 blocks. In fact it will increase the size of the file systems by 4MB when additional space is needed since this is the Logical Partition (LP) size.

So if you run the preparation script for the first client you must ensure that there are at least 16MB left in your rootvg. Otherwise the script will fail.

In the next step the script creates a network boot image using the `bosboot` command. If your `/usr` file system is extremely full the `bosboot` command will fail and display the following message:

```
Making the boot image ...
0301-164 bosboot: Boot image is 4252 512 byte blocks.
0301-161 bosboot: dd failed to copy /usr/lib/boot/net.image
0301-165 bosboot: WARNING! bosboot failed - do not attempt to boot
                device.
bosboot failed.
```

The reason for this is as follows:

The `fndnpre1` moves the original `/usr/lib/boot/net.image` to `/usr/lib/boot/net.image.pid` (`pid` is the process ID of the `fndnpre1` process). The `bosboot` command then tries to create a new `/usr/lib/boot/net.image`. If `/usr` is already full this command will fail because `/usr/lib/boot/net.image` resides in the `/usr` file system.

The `fndnpre1` script will not check for this error and continue execution leaving an environment which cannot be used for booting a client from the network.

In the next step the preparation script creates a Shared Product Object Tree (SPOT) using the `mkspot` and `mkdclient` commands. For this it uses the customized version of `/usr/lib/boot/net.image` and also a customized version of `/sbin/rc.boot`.

The customized version of `/sbin/rc.boot` resides in `/usr/lpp/netviewdm/script/fndboot`. Before it copies the customized versions over the original versions it makes a backup copy of the original versions which are named `/sbin/rc.boot.pid` and `/usr/lib/boot/net.image.pid`.

If the `fndnpre1` script fails it will restore the original versions. However, if you stop the script yourself, for example, by pressing `Ctrl-C` the original versions will not be restored and the customized files keep their places.

If you then run `fndnpre1` again it will take the customized versions as the original ones and copy them to `/sbin/rc.boot.pid` and `/usr/lib/boot/net.image.pid`.

When the script has done its work it will copy the backup copies to the original places but the backup copies now hold the customized versions. Especially the `/sbin/rc.boot` script may then crash your client when booting.

So if you stopped `fndnpre1` at the stage where it creates the SPOT check if `/sbin/rc.boot` and `/usr/lib/boot/net.image` contain the original versions. If not copy the original versions from another machine on your network before running `fndnpre1` again.

Files Modified by the Preparation Script:

The preparation script `fdnpre1` modifies several files in order to create an install server for the client.

First it sets up a boot-server for remote IPL. For this to work there has to be an entry for each client in the model's `/etc/bootptab` file. In our example the `/etc/bootptab` file looks like the following after the script has been run:

```
# \tcip\etc\bootptab: database for bootp server BOOTPD
# Blank lines and lines beginning with '#' are ignored.
#
# Legend:
#
# first field -- hostname
#   (full domain name)
#
# bf -- bootfile (not supported)
# ds -- domain name server address list
# gw -- gateway address list
# ha -- host hardware address (follows ht)(hexadecimal)
# hd -- home directory (not supported)
# hn -- send host name (boolean tag)
# ht -- host hardware type (precedes ha) (ethernet, ether)
# ip -- host IP address
# sm -- subnet mask
# tc -- template host (points to similar host entry)
#
# Be careful about including backslashes where they're needed.
# Strange things can happen when a backslash is
# omitted where one is intended.
#

# First, we define a global entry which specifies the info every
# host uses.

global.dummy:\
    :sm=255.255.255.0:\
    :hd=/bootpd/trypd:bf=null:\
    :ds=9.19.141.242 9.24.1.9:

# Next, the subnets information.

subnet101.dummy:\
    :tc=global.dummy:gw=9.24.104.1

# Last, the individual information.

rs60004.itso.ral.ibm.com:bf=/tftpboot/rs60004:ip=9.24.104.27:\
ha=10005ac93f63:
```

Figure 14. `/etc/bootptab` File on Model

The last entry in the file is that used for our client.

The `/etc/exports` file is modified by the script to contain the file systems needed to boot the client:

```
/milan
/SVCS
/usr -root=rs60004.itso.ral.ibm.com,access=rs60004.itso.ral.ibm.com
/export/root/rs60004 -root=rs60004.itso.ral.ibm.com,
access=rs60004.itso.ral.ibm.com
/export/dump/rs60004 -root=rs60004.itso.ral.ibm.com,
access=rs60004.itso.ral.ibm.com
/export/install -root=rs60004
/export/nvdma/rs60004 -root=rs60004
```

Figure 15. `/etc/exports` File on Model

The file `/etc/aixdwm/dwmdb` contains the database for diskless workstation management and is also modified by the preparation script:

```
# AIX Diskless Workstation Management (DWM) database
# this is a colon separated file which contains root & spot info
# the first field determines the format of the following fields
#
# tag = root
# root:name:hostname:hostname:path:SPOT:superclient:
#
# name = clients name
# hostname = clients hostname
# hostname = root server hostname
# path = directory which contains the clients root
# SPOT = name of clients SPOT
# superclient = only present if client has install privileges
#
# tag = spot
# spot:spotname:hostname:path:hostname:path:filename:hostname:path
#
# spotname = name of this SPOT
# hostname = SPOT server hostname
# path = directory which contains the SPOT
# hostname = bootp server hostname
# path = directory which contains the boot images
# filename = absolute pathname of the bootptab
# hostname = share server hostname
# path = share directory pathname
#
spot:INSTALL:rs600012.itso.ral.ibm.com:/usr:rs600012.itso.ral.ibm.com:\
/tftpboot:/etc/bootptab:rs600012.itso.ral.ibm.com:/usr/share:
root:rs60004:rs60004.itso.ral.ibm.com:rs600012.itso.ral.ibm.com:\
/export/root:INSTALL:no:
```

Figure 16. `/etc/aixdwm/dwmdb` File on Model

The preparation script will not create a new bootfile for each client you prepare. Instead it creates one bootfile the first time you call it in `/tftpboot/INSTALL`. For

each client you prepare it creates a symbolic link to this file called `/tftpboot/clientname`, for example, `/tftpboot/rs60004`.

2.1.11.3 Preparing the Model for Workstations that Do Not Support RIPL

If your client does not support RIPL you will have to use the the scriptfile `fnd7013` instead of `fndnprel`.

The syntax for `fnd7013` is as follows:

```
fnd7013 netdevice options clientname servername  
netdevtype netmask GatewayIPAddress
```

Where:

netdevice, **clientname**, **servername**, **mask**, **GatewayIPAddress** are the same as for `fndnprel`. Refer to 2.1.11.2, “Preparing the Model for Workstations that Support RIPL” on page 18 for the description.

options specifies the type of the network adapter used. If you use token-ring (*netdevice* is `tok0`, `tok1`, ...) then you can specify either 4 or 16 defining the ring speed in your network. If you use Ethernet (*netdevice* is `ent0`, `ent1`, ...) then you can specify the cable type here which is either **bnc** or **dix**.

netdevtype specifies the type of Ethernet if your *netdevice* is Ethernet. You can specify 0 if it is standard Ethernet or 1 if it is 802.2. The default is 0.

If your client does not support RIPL the command for preparing the model is:

```
cd /usr/lpp/netviewdm/script  
./fnd7013 tok0 4 rs60004 rs600012 2>&1 | tee protocol
```

Warning

Please note that you have to use for example `tok0` as the name of the network adapter, unlike with `fndnprel` where you would use `/dev/tok0`.

If you use for example `/dev/tok0` as the name of the network adapter, the client will fail to boot. Some older versions of `fnd7013` will not check if you enter the name of the network adapter in the right way.

When the script is running it will ask you to insert two diskettes into the disk drive. These diskettes will later be used together with the `bosboot` diskettes when booting the client.

The `protocol` for `fnd7013` should look similar to the following:

```

                                Interruption of the execution before it ends may have
                                unpredictable results!

Creating /export/nvdma filesystem 4MB large.

New File System size is 8192
Creating /export/nvdma/rs60004 directory.

Making NFS
New volume on /usr/sys/inst.images/netviewdm6000.1.0.1.0.U429963:
Cluster 51200 bytes (100 blocks).
Volume number 1
Date of backup: Mon Jun 20 07:46:20 1994
Files backed up by name
User builder
files restored: 11
Creating customized Installation and Maintenance diskette.
Insert a diskette in the drive and press Enter.
Creating install diskette...
Backing up to /dev/rfd0
Cluster 9216 bytes (18 blocks).
Volume 1 on /dev/rfd0
Please mount volume 2 on /dev/rfd0
... and press Enter to continue Backing up to /dev/rfd0
Cluster 9216 bytes (18 blocks).
Volume 2 on /dev/rfd0
Done at Thu Oct 13 10:23:40 1994.
3186 blocks on 2 volume(s)

```

Figure 17. Protocol File for fnd7013

Warning

Do not interrupt the execution of the script. It backs up several system files and modifies them. The original files are restored at the end of the script. If you interrupt the script it may will leave the system in an undetermined state.

The preparation script fnd7013 creates a customized version of the "Installation and Maintenance Diskette".

Usually this diskette is used to install software or maintain your system, when you need to boot from a diskette. This diskette is used together with the standard AIX "bosboot" diskettes. How you boot a workstation using these diskettes is described in 2.1.13.2, "Starting a Client that Does Not Support RIPL" on page 32.

The command mkinstdskt is used to create the "Install and Maintenance Diskette". It takes the file /usr/lpp/bosinst/diskette/dsktfiles3 as an input to decide which files to write to the diskette.

The preparation script modifies this file to contain the file names necessary to run NetView DMA/6000 on the client workstation. The files included contain

customized information specific to the client to be installed as well as NetView DMA/6000 executables and scripts needed for booting.

Before the creation of the diskette the file `/usr/lpp/bosinst/bosmain` is replaced with the script `fndpru` from the `/usr/lpp/netviewdm/script` directory. This script is executed when the client is booted. It configures the network and starts NetView DMA/6000.

If anything goes wrong while booting the client you should examine the `fndpru` file to trace the booting process. For example you can modify the `fndpru` file before running `fnd7013` to include debugging information.

2.1.12 Preparing the Change File for Cloning

After the client has booted we will initiate an install request from the CC Server in order to copy the file systems of the model workstation to the client.

We will create a generic change file which will be used to perform the cloning. In fact this change file will contain only one file, `/usr/lpp/netviewdm/script/fndinstcl`. This is the shell script which will be used as the pre-installation script.

The pre-installation script will actually perform the cloning.

To create the change file we do the following:

- Step 1. Start the NetView Distribution Manager/6000 user interface.
- Step 2. Select **Catalog** from the menu bar.
- Step 3. Select **New** from the menu.
- Step 4. Select **Change File** from the cascaded menu.
- Step 5. Select **Refresh** from the next cascaded menu.
- Step 6. Select **Generic**.

The following panel will appear:

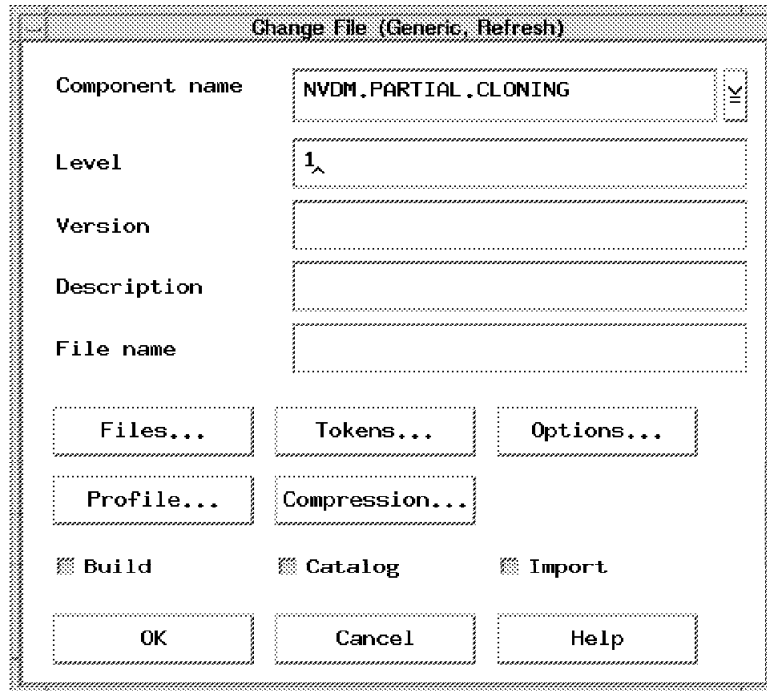


Figure 18. NetView Distribution Manager/6000 New Change File Window

We do the following:

- Step 1. Enter **NVDM.PARTIAL.CLONING** as the **Component name**.
- Step 2. Enter **1** as the **Level**.
- Step 3. Select the **Files** push button.

The following panel will appear:

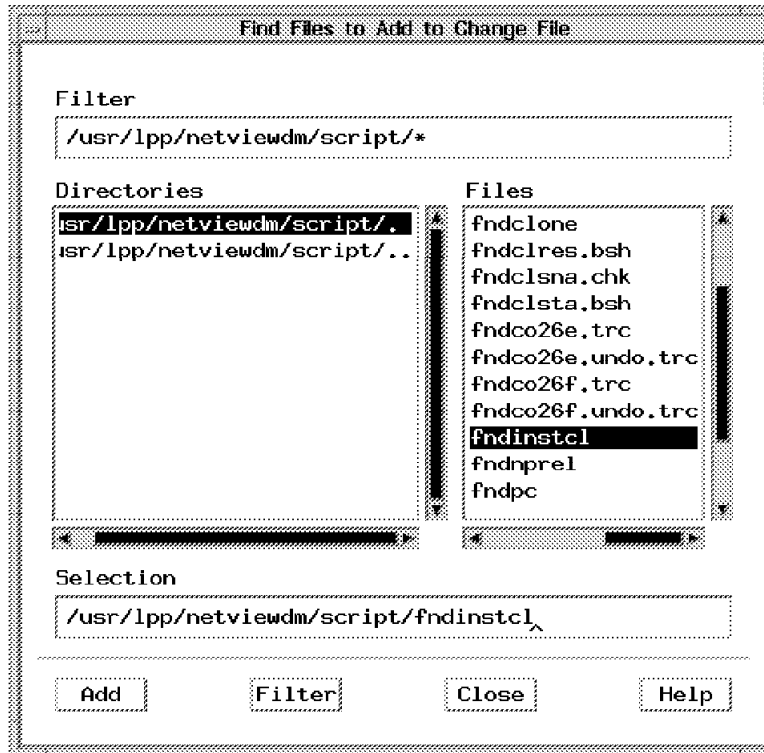


Figure 19. NetView Distribution Manager/6000 Files Window

Type in the **Filter** as shown above then select **fndinstcl** and select the **Add** push button. After this select the **Close** push button. In the Files window select `/usr/lpp/netviewdm/script/fndinstcl` and then select the **Options** push button.

The following panel will appear:

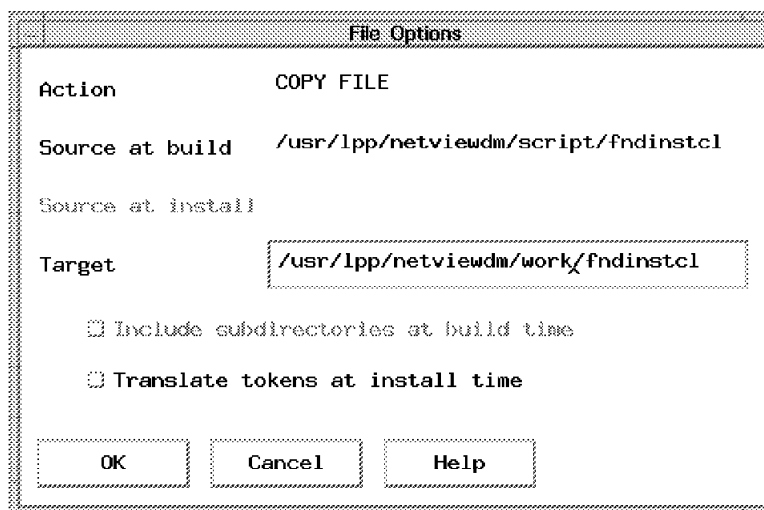


Figure 20. NetView Distribution Manager/6000 File Options Window

Enter the values as shown above, and especially change the Target file from `/usr/lpp/netviewdm/script/fndinstcl` to `/usr/lpp/netviewdm/work/fndinstcl`. When finished select the **OK** push button. This will get you back to the Change File window. Select the **Options** push button and then the **Install** push button.

The following panel will appear:

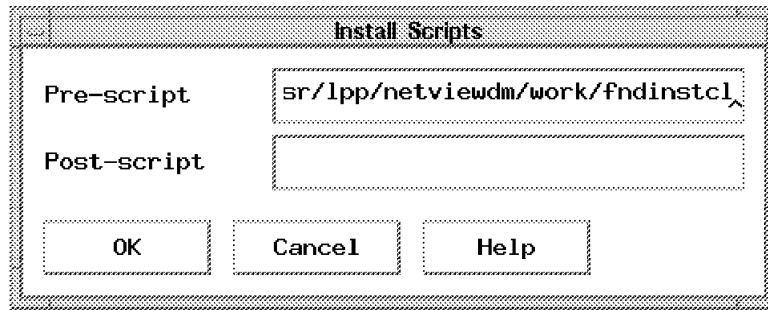


Figure 21. NetView Distribution Manager/6000 Install Scripts Window

Type in `/usr/lpp/netviewdm/work/fndinstcl` as the Pre-script and then select the **OK** push button. In the Change Management Options window select the **OK** push button. In the Change File window select the **Build** and the **Catalog** check boxes and then select the **OK** push button.

The new change file is now in the catalog.

2.1.13 Starting the Client

Depending on if your client supports RIPL or not there are two different procedures to start it.

2.1.13.1 Starting a Client that Supports RIPL

To start a client that supports RIPL do the following:

- Step 1. Turn the key switch to Secure position and switch on the system.
- Step 2. Wait until the 3-digit LED displays 200.
- Step 3. Turn the key switch to Service position, press the yellow reset button and wait until the following panel appears on your console.

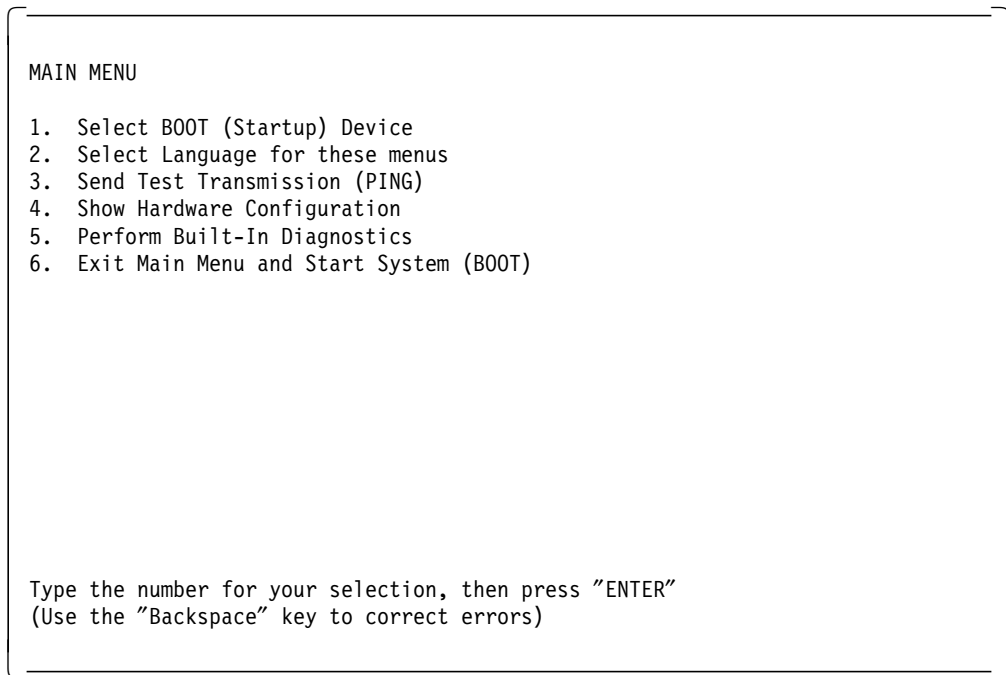


Figure 22. IPL ROM Main Menu

Select **1** and then press Enter. This will get you to the SELECT BOOT (STARTUP) DEVICE menu:

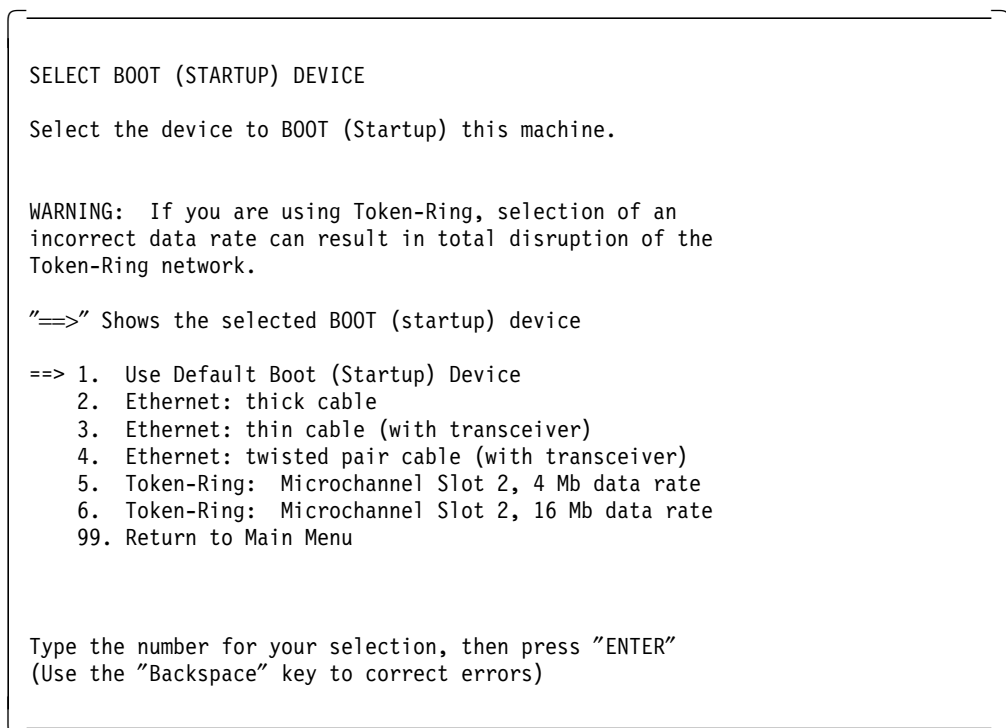


Figure 23. IPL ROM Select Boot Device Menu

In our example we use a 4 Mb Token-Ring network, so we select **5** and press Enter. The SET OR CHANGE NETWORK ADDRESSES menu will appear:


```
SET OR CHANGE NETWORK ADDRESSES

Select an address to change

Currently selected BOOT (startup) device is:
Token-Ring: Microchannel Slot 2, 4 Mb data rate
Hardware address ..... 10005AC93F63

1. Client address                000.000.000.000
   (address of this machine)
2. BOOTP server address          000.000.000.000
   (address of the remote machine you boot from)
3. Gateway address              000.000.000.000
   (Optional, required if gateway used)

97. Return to Select Boot (Startup) Device
99. Return to Main Menu (SAVES addresses)

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)
```

Figure 24. IPL ROM Set or Change Network Addresses Menu

As shown in the above panel you can look up the adapter hardware address which is needed to run the preparation script.

We do the following:

- Step 1. Select **1** and press Enter.
- Step 2. Enter the IP address of the client machine and press Enter. This must be the same address under which the client is known to the model and the CC Server. In our example this is 9.24.104.27.
- Step 3. Select **2** and press Enter.
- Step 4. Enter the IP address of the boot-server. Since the model workstation acts as the boot-server for the client we enter the IP address of the model here. In our example this is 9.24.104.124.
- Step 5. Enter **99** to save the addresses and get back to the main menu.

In the Main Menu we select **3** to send a test transmission to our boot-server. The following menu will appear:

```

SEND TEST TRANSMISSION (PING)

A test to see if the machine at the origin
address can communicate, thru the network, with the
machine at the destination address.

Currently selected BOOT (startup) device is:
Token-Ring: Microchannel Slot 2, 4 Mb data rate
Hardware address ..... 10005AC93F63

Select an address to change or select "4" to begin the test.

1. Origin address                009.024.104.027
2. Destination address          009.024.104.124
3. Gateway address              000.000.000.000
   (Optional, required if gateway used)
4. START PING TEST

99. Return to Main Menu

Type the number for your selection, then press "ENTER"
(Use the "Backspace" key to correct errors)

```

Figure 25. IPL ROM Send Test Transmission Menu

We select **4** and press Enter in order to start the transmission. The transmission will be started. After a few seconds you should see the message SUCCESSFUL TEST on the screen.

If the test was successful do the following:

- Select **99** and press Enter to return to the main menu.
- In the main menu select **6** and press Enter.
- Turn the key switch to Normal position and press Enter.

The machine will then boot from the boot-server.

If the test was not successful do the following:

- Step 1. Go back to the SET OR CHANGE NETWORK ADDRESSES and check the addresses. If one of the addresses was wrong correct it and try the test transmission again.
- Step 2. Check if the boot-server is available.
- Step 3. Check the cabling of the network adapter.
- Step 4. Perform a hardware check on your network adapter.

2.1.13.2 Starting a Client that Does Not Support RIPL

If you have a client that does not support RIPL you have to boot it using diskettes.

You should already have prepared the model using the fnd7013 script. This script has created two customized Install and Maintenance Diskettes which you will need now. These diskettes will be used together with the standard AIX

bosboot diskettes. If you do not have them already create them now using the following commands:

On the model enter the command:

```
bosboot -a -d /dev/fd0
```

The system will ask you to insert a diskette into the disk drive. Insert the diskette and press Enter. When the creation of the bosboot diskette is finished enter:

```
mkextdskt
```

The system will ask you to insert another diskette into the disk drive. Insert the diskette and press Enter. This will create the Display Extension diskette. When the creation of this disk is finished enter:

```
mkdispsdskt
```

The system will ask you again to insert a diskette into the disk drive. Insert a diskette and press Enter. This will create the Display diskette.

You now have three diskettes, which we will use to boot a client that does not support RIPL.

To boot the machine do the following:

- Step 1. Insert the bosboot diskette into the disk drive.
- Step 2. Turn the key switch to Service position and switch on the machine.
- Step 3. Wait until the LED displays C07. (If you are not familiar with the LED messages refer to *AIX Version 3.2 Messages Guide and Reference*.)
- Step 4. Insert the Display Extension diskette into the disk drive. If the LED display continues to show C07 you have inserted the wrong diskette.
- Step 5. Wait until the LED displays C07 again.
- Step 6. Insert the Display diskette into the disk drive.
- Step 7. Wait until there is a message on the console which requests you to insert the "Install and Maintenance Diskette".
- Step 8. Insert the first diskette created by fnd7013 and press Enter.
- Step 9. Wait until a message on the console requests you to insert the second diskette.
- Step 10. Insert the second diskette created by fnd7013 and press Enter.

2.1.13.3 Possible Errors when Starting the Client

RIPL Clients:

When you start up the client, it will try to boot from the boot-server. First it sends a BOOTP request to the server and waits for a response. If it gets a response from the server it starts copying files from the server using TFTP. The console screen should display something similar to the following:

```
STARTING SYSTEM (BOOT)

Booting . . . Please wait.

Token-Ring: Microchannel Slot 2, 4 Mb data rate
Hardware address ..... 10005AC93F63

          Packets Sent      Packets Received

BOOTP          00001          00001
TFTP           04253          04254
```

Figure 26. Console Display while Booting Client

You should see the TFTP packets being transferred indicated by the number of Packets Received increasing. If the client does not start transferring TFTP packages something is wrong with the setup of the boot-server.

Note
If your model workstation and your client workstation are interconnected using a router or a bridge and the client fails to boot you have to check your router or bridge. Some routers and bridges may have problems with BOOTP packages. Refer to your router or bridge documentation.

In order for the boot-server to work you must ensure the following things:

- The *inetd* process must be running on the server.
- The *bootps* and *tftp* sub-servers must be running. Refer to 2.1.7, "Configuring TCP/IP at the Model Workstation" on page 10 for information on how to start them.
- Check if "others" have read permission for the file */tftpboot/clientname* or */tftp/INSTALL* respectively.
- The file */etc/services* must contain the entries:
 - *bootps 67/udp*
 - *bootpc 68/udp*
 - *tftp 69/udp*
- The file */etc/bootptab* must have an entry for the client that wants to boot from the server. This entry should have been created by the preparation script. Refer to Figure 14 on page 22 to see how the entry in */etc/bootptab* should look. Check especially if the hardware address specified by the **ha=** tag is correct.

Note

The network boot will also fail if you have two or more TCP/IP network interfaces on your boot-server which are configured for different IP subnet masks.

In our example environment we had an X.25 adapter in addition to the token-ring adapter we used for the installation. While the token-ring network interface was configured for a subnet mask of 255.255.255.0 the X.25 IP interface was configured for a subnet mask of 255.0.0.0.

The following panel shows the output from the `ifconfig` command for both network interfaces:

```
# ifconfig tr0
tr0: flags=8063<UP,BROADCAST,NOTRAILERS,RUNNING,ALLCAST>
      inet 9.24.104.124 netmask 0xfffff00 broadcast 9.24.104.255

# ifconfig xt0
xt0: flags=61<UP,NOTRAILERS,RUNNING>
      inet 9.24.105.2 netmask 0xff000000
```

Figure 27. Output from `ifconfig` Command

The client was not able to boot from the boot-server until we reconfigured or deleted the `xt0` interface.

The interface can be reconfigured using:

```
ifconfig xt0 9.24.105.2 netmask 255.255.255.0
```

The interface can be deleted using `smit rminet`.

Non-RIPL Clients:

If you boot the client with the customized "Installation and Maintenance" diskettes, NetView DMA/6000 should be started.

If it does not, you should check the following things:

- The necessary NFS directories must be mounted.
- The `fndcmps` process must be running after the client has been booted.

Use the `df` or the `mount` command on the client to check if the directories `/usr` and `/export/nvdma/clientname` are mounted from the server.

Make sure that these directories are exported with root access for the client you want to install.

Use the `ps -ef | grep fndcmps` command to check if the `fndcmps` process is running. If it is not running after the client has been booted, check if you can start the process manually by typing `fndcmps`.

If you cannot start the process manually, check if the directory /usr/lpp/netviewdm/bin is included in your PATH and if this directory is accessible. If not, check if the NFS exported directories have the correct attributes.

2.1.14 Submitting the Install Request from the CC Server

If you were able to boot your client from the network server or using diskettes it should be ready now to accept CC requests.

If your client is ready for distribution it displays the following message at its console:

```
NetView DMA/6000 started: waiting for CC requests...
```

We can now submit the request to install our change file to do the partial cloning. In fact you can schedule the request even before the client is started. The cloning will then start as soon as the agent is ready to accept CC requests.

We start the NetView DM/6000 graphical interface:

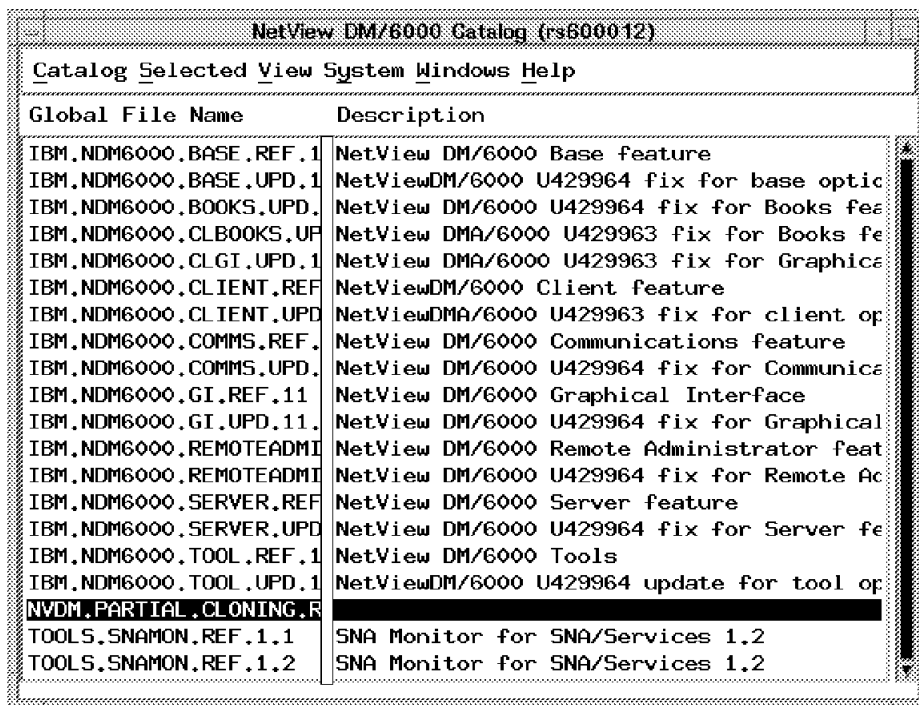


Figure 28. NetView DM/6000 Catalog Window

We select the change file **NVDM.PARTIAL.CLONING.REF.1** from the catalog and then **Install** from the Selected menu.

The following panel will appear:

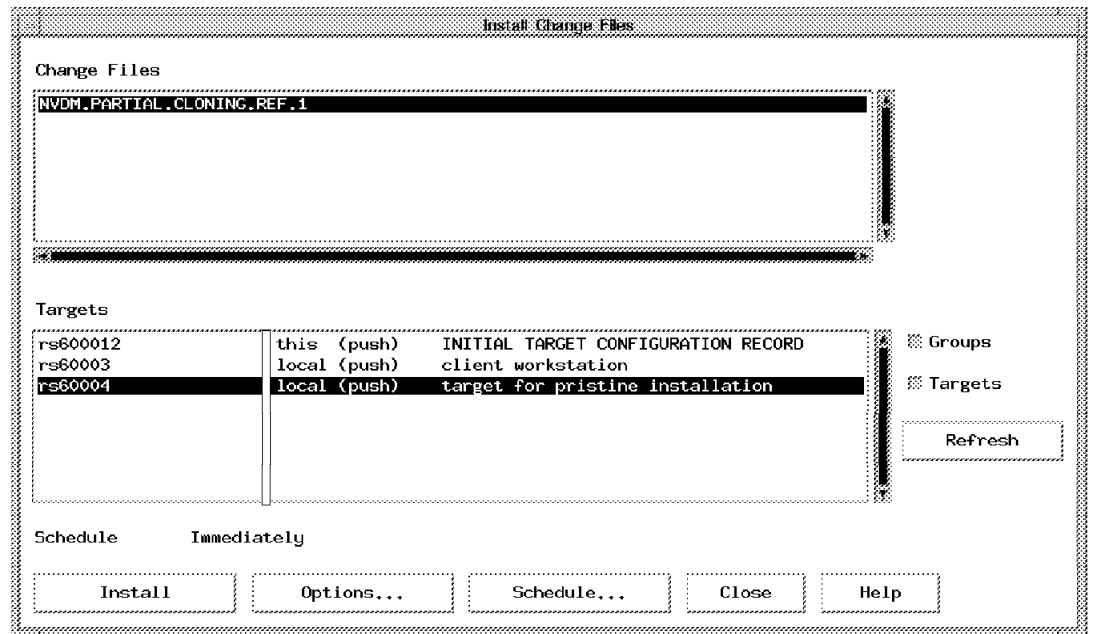


Figure 29. NetView DM/6000 Install Change Files Window

We do the following:

- Step 1. Select **rs60004** as our Target.
- Step 2. Select the **Options** push button.
- Step 3. Ensure that **Install as removable** is not selected.
- Step 4. Select the **OK** push button.
- Step 5. Select the **Install** push button.

To check if the request is running we do the following:

- Step 1. Go back to the Catalog window.
- Step 2. Select our change file.
- Step 3. Select **Open** from the menu bar.
- Step 4. Select **History** from the menu.

The following panel should appear:

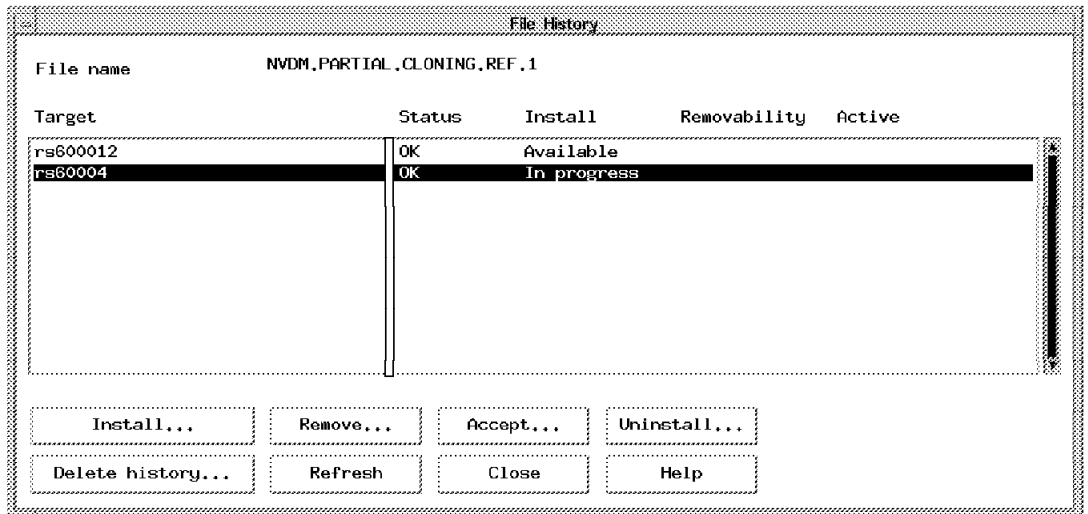


Figure 30. NetView DM/6000 File History Window

The Install column should contain In progress for the client (rs60004). If it does not check the file /usr/lpp/netviewdm/fndlog for errors. This file will contain any NetView DM/6000 errors.

2.1.14.1 Possible Errors when Running the Cloning Script

Normally the install request for partial cloning will run for some time. In our environment using a 4 Mbps token-ring network the installation took about 2.5 hours.

If the install request terminates immediately, there has been an error with the installation. This can either be a NetView DM/6000 error or a problem with the installation script itself.

If there was a NetView DM/6000 error you will find an entry in the fndlog file. Refer to the NetView DM/6000 documentation on how to resolve the problem. Then submit the request again.

If there was no NetView DM/6000 error, something is wrong with the installation script itself. When you start the installation of the change file NetView DM/6000 will install the script /usr/lpp/netviewdm/script/fndinstcl from the server to /usr/lpp/netviewdm/work/fndinstcl at the client. Since the client was booted from the network using the model workstation as its boot-server this will actually be the file /export/nvdma/clientname/work/fndinstcl at the model workstation. In the example we use it is /export/nvdma/rs60004/work/fndinstcl.

The script /export/nvdma/rs60004/work/fndinstcl will then be executed as the pre-install script and perform the cloning. The script output will be placed in the file /export/nvdma/rs60004/work/request.out. You should run the following command at the model while the request is running:

```
tail -f /export/nvdma/rs60004/work/request.out
```

This will show the progress of the request and if there are any errors. If the installation is successful the request.out file should look similar to the following:


```
9.24.104.124
hdisk0 Available 00-00-0S-00 1.0 GB SCSI Disk Drive
cat vgdisk
hdisk0
/etc/methods/chgdisk -l hdisk0 -a pv=yes
1
hdisk0 will be the only rootvg disk
250
hdisk0

Creating the rootvg.
rootvg

Vary on the rootvg.

Creating page logical volume(s).
hd6

Creating boot logical volume.
hd5

Creating dump logical volume.
hd7

Creating log logical volume.
hd8

Creating hd4 with a size of 3 PPs ...
Creating hd2 with a size of 150 PPs ...
Creating hd9var with a size of 5 PPs ...
Creating lv01 with a size of 37 PPs ...

Copying hd4 ...
192+0 records in
12288+0 records out
8666+8662 records in
192+0 records out
hd4 successfully copied

Copying hd9var ...
320+0 records in
20480+0 records out
14444+14434 records in
320+0 records out
hd9var successfully copied

Copying hd2 ...
9600+0 records in
```

Figure 31. request.out File on Model Workstation (Part 1)

```

614400+0 records out
433311+433011 records in
9600+0 records out
hd2 successfully copied

Copying lv01 ...
2368+0 records in
151552+0 records out
106881+106832 records in
2368+0 records out
lv01 successfully copied

Creating /tmp logical volume.
crfs: /tmp file system already exists
rmlv: Logical volume hd3 is removed.
hd3
New File System size is 16384

** Checking /dev/rhd3 (/tmp)
** Phase 0 - Check Log
log redo processing for /dev/rhd3
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
7 files 576 blocks 15808 free

Creating /home logical volume.
crfs: /home file system already exists
rmlv: Logical volume hd1 is removed.
hd1
New File System size is 8192

** Checking /dev/rhd1 (/home)
** Phase 0 - Check Log
log redo processing for /dev/rhd1
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
7 files 320 blocks 7872 free
Checking hd4 ...

** Checking /dev/rhd4 (/)
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames

```

Figure 32. request.out File on Model Workstation (Part 2)

```

** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
Superblock is marked dirty (FIXED)
1077 files 21832 blocks 2744 free
***** File system was modified *****
Checking hd2 ...

** Checking /dev/rhd2 (/usr)
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
Bad Block Map (SALVAGED)
** Phase 6b - Salvage Block Map
Superblock is marked dirty (FIXED)
24386 files 1223904 blocks 4896 free
***** File system was modified *****
Checking hd9var ...

** Checking /dev/rhd9var (/var)
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
Superblock is marked dirty (FIXED)
1415 files 36464 blocks 4496 free
***** File system was modified *****
Checking lv01 ...

** Checking /dev/r1v01 (/usr/l)
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
Superblock is marked dirty (FIXED)
274 files 251984 blocks 51120 free
***** File system was modified *****
      Filesystems check completed.
Copy from server the things we need

** Checking /dev/rhd4 (/)
** Phase 1 - Check Blocks and Sizes

```

Figure 33. request.out File on Model Workstation (Part 3)

```
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Inode Map
** Phase 6 - Check Block Map
1077 files 21832 blocks 2744 free
      Exiting from procedure.
```

Figure 34. *request.out* File on Model Workstation (Part 4)

Possible errors when running the script can be:

- The *rshd* sub-server is not configured on the model.
- The */.rhosts* file on the model workstation is not configured.
- There is not enough disk space on the client workstation.

If the *rshd* sub-server is not configured on the model workstation the client will fail to access the model using the *rsh* command. Refer to 2.1.7, “Configuring TCP/IP at the Model Workstation” on page 10 for information on how to add the *rshd* sub-server to the TCP/IP configuration.

If the */.rhosts* file on the model does not contain the IP address of the client then any requests from the client using the *rsh* command will be refused by the *rshd* process on the model. Refer to 2.1.7, “Configuring TCP/IP at the Model Workstation” on page 10 for information on how to edit the */.rhosts* file.

There may not be enough disk space on the client to create all the logical volumes needed. You should notice that the script will create file systems that are same size as they are on the model workstation. When you calculate the space needed you should also consider that besides the file systems additional space is needed for:

- The paging space.
The size depends on the size of the hard disk at the client system.
- The boot logical volume (8MB)
- The log logical volume (4MB)
- The dump logical volume (8MB)
- The */tmp* file system (8MB)
- The */home* file system (4MB)

2.1.15 Rebooting the Client Workstation after Installation

When the change request is completed you can reboot the client workstation.

You can examine if the request has finished by checking the history of the change file on the client system.

Do the following:

Step 1. In the Catalog window of NetView DM/6000 select the change file
NVDM.PARTIAL.CLONING.REF.1.

Step 2. Choose **Selected** from the menu bar.

Step 3. Select **Open** from the menu.

Step 4. Select **History** from the cascaded menu.

If the status for the client (in our case rs60004) has changed from **In progress** to **Installed** the change request is completed.

If you are on the client you can check if the request is still running by typing:

```
ps -ef | grep fndninstcl
```

If the process `fndninstcl` is not in the process list then the request is completed.

Before you can reboot the client you must provide a local boot image on the client workstation. This is done by invoking the script `/shut_clean` at the client workstation. The script `/shut_clean` has been created by the preparation script.

If the creation of the boot image was successful you can reboot the machine. The installation script `fndninstcl` sets the bootlist for the Normal mode to contain only `/dev/hdisk0` so the client will boot from its hard disk if the key switch is in Normal position.

You may wish to reboot the machine automatically after the change request has completed. One way to achieve this is by adding the following lines to `/usr/lpp/netviewdm/script/fndninstcl` before you build the change file for partial cloning:

```
/shut_clean  
/usr/sbin/shutdown -Fr
```

2.1.16 Performing a Complete Cloning

Complete cloning is based on partial cloning. This means that whether you wish to perform a complete or partial cloning you must perform the partial cloning anyway.

To perform the complete cloning you must create another change file. This is done exactly the same way as we created the change file for partial cloning in 2.1.12, "Preparing the Change File for Cloning" on page 26. Refer to this part on how to build the change file for complete cloning. Just replace the script name `fndninstcl` with `fndclone`.

There is just one difference:

The script `fndclone` needs a command line parameter which indicates the model workstation from where to copy the file systems. As a consequence you have to specify the line:

```
/usr/lpp/netviewdm/work/fndclone <model>
```

in the Pre-script field of the Install Scripts window.

2.1.17 Cleaning Up the Model Workstation after Installation

You will need disk space on the model workstation for every client you wish to install. After the installation has been performed you can free this space again. For that purpose NetView DM/6000 provides the script `fndc1n` which will free all the resources used for the installation. This script works only for clients which have been prepared using `fndnpre1`.

The syntax for the script is as follows:

```
fndc1n clientname -f
```

The parameter `-f` is optional and enforces the cleanup even if the CC Client is currently running.

The script will do the following:

- Remove `/tftpboot/clientname`
- Remove `clientname` entry from `/etc/bootptab`
- Remove `clientname` entry from `/etc/aixdwmdb/dwmdb`
- Remove `/export/install`, `/export/root` and `/export/nvdma` file systems if there is no other client left
- Remove SPOT if there is no other client left

In our example we use the following command to free the resources:

```
cd /usr/lpp/netviewdm/script  
./fndc1n rs60004 -f
```

If the client has been prepared using `fnd7013` there has been only one file system created. You can remove this file system manually using the following sequence of commands:

```
rm -r /export/nvdma/clientname  
umount /export/nvdma  
rmfs /export/nvdma
```

If the system will not let you unmount the file system it may be busy. You can check if there are processes left running on `/export/nvdma` by typing:

```
fuser /export/nvdma
```

Do not remove the file system if there are other clients left to be installed.

2.1.18 Writing an Automation Script

In the previous scenario we had to perform all the steps needed to do the installation manually.

To increase the degree of automation it may be desirable to perform the steps needed at the CC Server automatically, for example by using a shell script.

We have included a sample script that will perform the necessary commands to:

- Define a local target for the installation client.
- Prepare the model workstation.
- Build a change file for partial cloning.
- Submit the change request.
- Wait for the change request to finish.
- Clean up the model.

Remember that this is just a sample script. It will only work if the CC Server and the model workstation reside on the same RISC System/6000 because it performs all the steps needed at the CC Server and the model.

Using a script is especially useful when you wish to install a large number of client workstations. You can then submit all the change requests automatically without using the graphical interface.

```

#!/bin/ksh
#
# script for performing pristine installation
#
# this is a sample for clients which support RIPL
# only a partial cloning will be performed
#
# 1. define new local target for installation target
# 2. prepare model
# 3. build change file for partial cloning
# 4. submit change request for partial cloning
# 5. wait for request to be finished
# 6. cleanup
#
if [ $# -ne 5 ]
then
    print "Usage: $0 client server model netdevice hardwareaddress"
    print "Example: $0 rs60004 rs600012 rs60003 /dev/tok0 10005ac93f63"
    exit 99
fi

CLIENT=$1
SERVER=$2
MODEL=$3
NETDEVICE=$4
HARDWARE=$5

print "**** Adding local target for installation client..."
#
# convert clientname into uppercase and use it as short name
#
SHORTNAME=echo $CLIENT | awk '{ print ( toupper ( $0 ) ) }'
print "**** using $SHORTNAME as short name"
nvdn addtg $CLIENT -d "Target for pristine installation" -m push\
-s $SHORTNAME -y AIX -u root
#
# check if target already exists
#
if [ $? -ne 0 ]
then
    print "**** target already exists. using existing one !"
fi
#
# run preparation script for RIPL client
#
print "**** now running preparation script"
cd /usr/lpp/netviewdm/script
set -x
./fndnprel $NETDEVICE $CLIENT $HARDWARE $SERVER
set +x

```

Figure 35. *pristine.ksh (Part 1)*


```

#
# create a change profile
#
print "**** creating change file for partial cloning"
echo "GLOBAL NAME:                NVDM.PARTIAL.CLONING.REF.1
LOCAL NAME:                       \$(REPOSITORY)/NVDM.PARTIAL.CLONING.REF.1
CHANGE FILE TYPE:                  GEN
COMPRESSION TYPE:                  LZW
PACK FILES:                        NO
SECURE PACKAGE:                    NO
PRE-INSTALL:                       /usr/lpp/netviewdm/work/fndinstcl
OBJECT:
    SOURCE NAME:                    /usr/lpp/netviewdm/script/fndinstcl
    TARGET NAME:                    /usr/lpp/netviewdm/work/fndinstcl
    TYPE:                            FILE
    ACTION:                          COPY
    INCLUDE SUBDIRS:                 NO" >/tmp/partial.profile
#
# build and catalog change file
#
nvdm bld /tmp/partial.profile
#
# submit install request
#
print "**** submit change request"
set -x
nvdm inst NVDM.PARTIAL.CLONING.REF.1 -w $CLIENT -n
set +x
#
# waiting for request to finish
#
print "**** waiting for installation to finish"
while [ "nvdm lsrq $CLIENT | grep 'There are no'" = "" ]
do
    sleep 1
done
#
# clean up
#
print "**** cleaning up"
cd /usr/lpp/netviewdm/script
./fndcln $CLIENT -f

```

Figure 36. *pristine.ksh (Part 2)*

Chapter 3. TCP/IP over X.25 between NetView Distribution Manager/6000 Server and Client

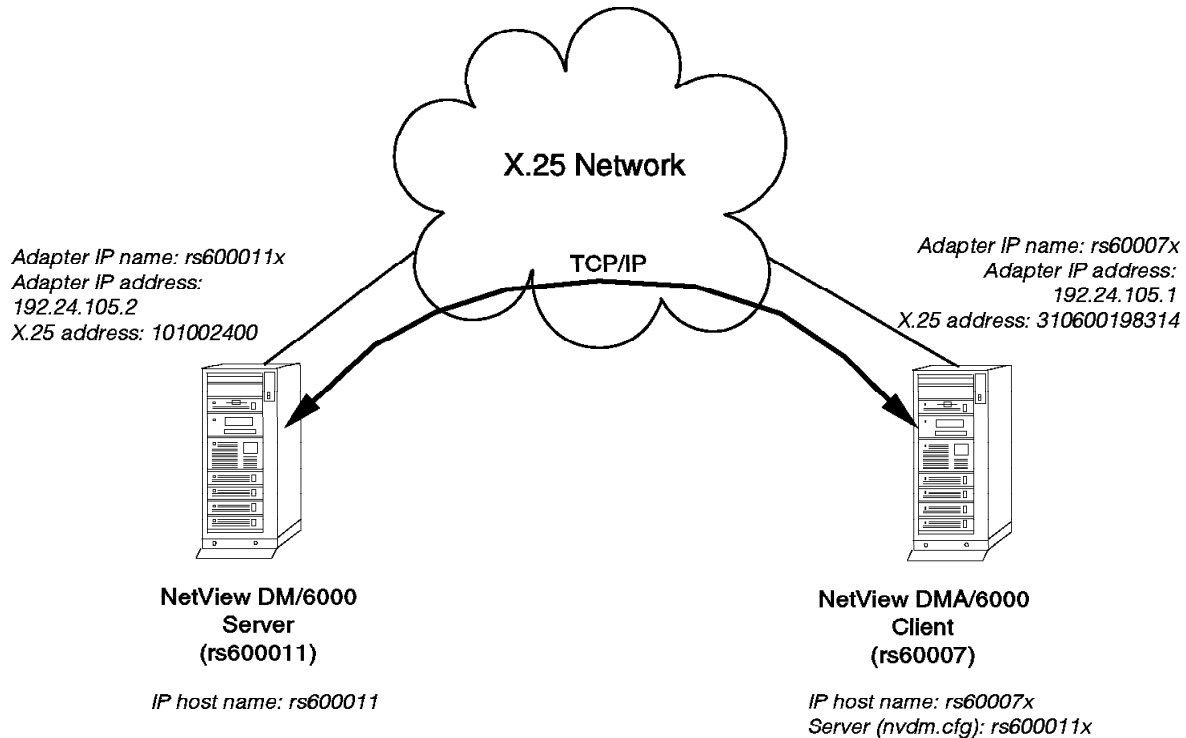


Figure 37. TCP/IP over X.25 Scenario Configuration

As Figure 37 shows, the RISC System/6000 system called rs600011 is the NetView Distribution Manager/6000 server, and rs60007 the client. The two systems are interconnected by an X.25 network.

The aim of this scenario is to help you with aspects of NetView DM/6000 configuration that are unique to TCP/IP over X.25. We therefore focus exclusively on configuration activities, and testing the connection at the X.25 and TCP/IP levels. We leave it to you to devise your own distribution and change control activities to test the connection at the NetView DM/6000 level.

As a suggestion, we refer you to the SEND MESSAGE procedure described in scenario I of *The NetView Distribution Manager/6000 Cookbook*, GG24-4246. You will find instructions there on creating and cataloging the procedure at the server. You can then use the NetView Distribution Manager/6000 GUI to have the procedure executed at the client.

3.1 Introduction to the Configuration Activities

The activities we carry out in this scenario are:

- Configuring X.25
- Testing the X.25 connection
- Configuring TCP/IP
- Testing the TCP/IP connection
- Setting the server short name
- Adding the client as a target on the server
- Adding the server to the client's NetView Distribution Manager/6000 base configuration

We assume that the X.25 network and cabling to the RISC System/6000 systems are in place already, and that the X.25 adapter and microcode are installed in the client and server RISC System/6000s, but the adapter is not yet configured. We also assume that the BOS X.25 and TCP/IP options are already installed. See *AIX Communications Concepts and Procedures* for instructions on installing the X.25 adapter and microcode.

Detailed knowledge of X.25 may be required if you get involved in solving problems on connections that don't work the first time. If you are not already familiar with X.25, you may need to enlist specialist support. *AIX/V3 X.25 Communication Cookbook, GG24-3692* provides a comprehensive guide to installing and configuring X.25, and solving problems. We recommend that you have it by your side when setting up the X.25 connections in this chapter.

Our scenario uses switched virtual circuits (SVCs) because they are vastly more common than permanent virtual circuits (PVCs). If your requirements call for PVCs, or they diverge significantly from our scenario in some other respect, consult *AIX Communications Concepts and Procedures* for additional instructions.

Before you begin you will need to find out a number of things about your connections to the X.25 network from your X.25 network administrator or service provider. The essential parameters are:

- Network user address (also known as DTE or X.25 address)
- Type of network (especially if you are connecting to a public service)
- Number of SVCs for incoming, outgoing and both-way calls

Some of the configuration activities use the `smit` tool. The `smit` command allows you to go quickly to a panel using *fastpath* names. Where appropriate, the menu selection instructions are annotated with the corresponding fastpath. For example the fastpath name of the X.25 Add a Device Driver panel is `mkx25dd`. To get to this screen directly, you would type `smit mkx25dd` at the AIX command line.

— Before You Use SMIT Fastpath Names —

It is possible that one or two of the smit fastpath names may change from one release of AIX to the next. If you try one of the recommended fastpath names and get the message "There are currently no SMIT screen entries available for this FastPath", then to find the new name for next time, navigate through the menus until you are at the panel you desire, and press the F8 (image) key and the new fastpath name will be revealed.

3.2 Configuring X.25

Configuring X.25 involves the following tasks:

- Adding an X.25 device driver at the server
- Adding an X.25 device driver at the client
- Customizing the following X.25 parameter sets at the server and client:
 - Network
 - Packet
 - Frame
 - General

The X.25 device driver parameters are different at the server and client systems. In particular, each have their own network user address (NUA).

The other parameter settings must match the settings of the port that the system is connected to in the X.25 network. In our example, both systems are connected to identically configured network ports, making the settings for the various X.25 parameter sets identical also.

Therefore, to avoid repetition, we list the steps involved in customizing the parameter sets only once. You must remember to carry them out at both the server *and* the client system.

3.2.1 Adding an X.25 Device Driver at the Server

```

                                Add a Device Driver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
Device name                       ampx0
* Network User Address             [101002400]      +#
* Network identifier               [other public]   +

F1=Help      F2=Refresh    F3=Cancel    F4=List
F5=Reset     F6=Command   F7=Edit     F8=Image
F9=Shell     F10=Exit     Enter=Do

```

Figure 38. X.25 Add a Device Driver SMIT Panel (Server)

Do the following:

- Step 1. Type `smit` on the AIX command line at the server.
- Step 2. Select **Devices**.
- Step 3. Select **Communications**.
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 5. Select **Adapter**.
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**.
- Step 8. Select **Add a Device Driver** (*fastpath name: mkx25dd*). The Parent Adapter panel will appear..
- Step 9. Select **ampx0** from the Parent Adapter panel and press Enter. This should bring up the Add a Device Driver panel.
- Step 10. Fill in the fields according to Figure 38 and press Enter to make the changes effective.

3.2.1.1 Explanation

We have set Network User Address to 101002400 to match the address of the port in the X.25 network that the adapter is connected to.

How are X.25 addresses made up? Most X.25 switches will recognize two NUAs for each port. One is derived directly from the *physical* location of the port within the X.25 switch (the shelf number, slot number within shelf, and port number within adapter, or some such similar scheme). The other is a *logical*

address, based on the X.121 addressing standard, where the most significant 3 digits represent the country code, and the remaining (up to 12) digits represent the national terminal number, thus ensuring a number that is unique across all national, public X.25 switching services.

In this case, we have used the *physical* number.

We have set the Network identifier to "other public", because our lab environment simulates a public network. The advice given in *AIX/V3 X.25 Communication Cookbook, GG24-3692* is as follows:

1. Select PF4 in the Network identifier field to bring up a list of valid identifiers. Included in the list are two generic types, "other public" and "other private".
2. If your specific network type is listed, select it.
3. If your network type is not listed, and you are connected to a public network select "other public". The country code will be used to identify the network.
4. Otherwise select "other private".

The network type, whether derived from the network identifier or country code, is used to select defaults for the other X.25 parameter sets (network, packet, etc.).

3.2.2 Adding an X.25 Device Driver at the Client

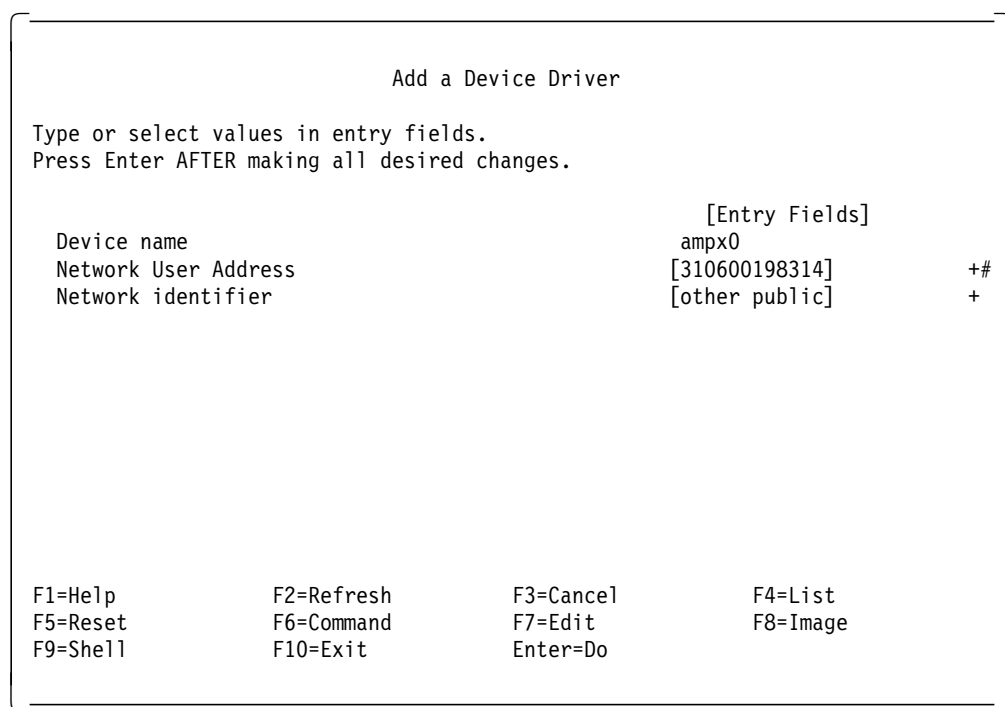


Figure 39. X.25 Add a Device Driver SMIT Panel (Client)

Do the following:

- Step 1. Type **smit** on the AIX command line at the client.
- Step 2. Select **Devices**.
- Step 3. Select **Communications**.
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**.

- Step 5. Select **Adapter**.
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**.
- Step 8. Select **Add a Device Driver** (*fastpath name: mkx25dd*). The Parent Adapter panel will appear..
- Step 9. Select **ampx0** from the Parent Adapter panel and press Enter. This should bring up the Add a Device Driver panel.
- Step 10. Fill in the fields according to Figure 39 on page 53 and press Enter to make the changes effective.

3.2.2.1 Explanation

We have set Network User Address to 310600198314 to match the address of the port in the X.25 network that the adapter is connected to.

In this case, we have used the *logical* number (310 is the country code for the USA).

We have set the Network identifier to "other public", because our lab environment simulates a public network.

See 3.2.1.1, "Explanation" on page 52 for further guidance on setting these parameters.

3.2.3 Customizing the Network Parameters (Server and Client)

```

Change / Show X.25 Network Parameters

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                     [Entry Fields]
Device name                          x25s0
Network User Address                  [101002400]      + #
Network identifier                    [other public]    +
Lowest logical channel number for an incoming SVC [0]              + #
Number of logical channels for incoming SVCs      [0]              + #
Lowest logical channel number for a two-way SVC   [1]              + #
Number of logical channels for two-way SVCs       [20]             + #
Lowest logical channel number for an outgoing SVC [251]           + #
Number of logical channels for outgoing SVCs     [0]              + #
Lowest logical channel number for a PVC          [1]              + #
Number of PVCs                            [0]              + #
Auto-call unit                          [none]           +

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 40. Change/Show X.25 Network Parameters SMIT Panel

Do the following:

- Step 1. Type **smit** on the AIX command line.
- Step 2. Select **Devices**.
- Step 3. Select **Communications**.
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 5. Select **Adapter**.
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**.
- Step 8. Select **Change/Show Characteristics of a Device Driver**.
- Step 9. Select **Change/Show Network Parameters** (*fastpath name: x25csn*) The Name of Device to Change/Show panel will appear..
- Step 10. Select **x25s0** from the Name of Device to Change/Show panel and press Enter. This should bring up the Change/Show X.25 Frame Parameters panel.
- Step 11. Fill in the fields according to Figure 40 and press Enter to make the changes effective.

Perform steps 1 to 11 at the server *and* client systems.

3.2.3.1 Explanation

Network User Address and Network Identifier have the values that we set when we added the device driver.

Warning: It is important that you use the X.25 Add a Device Driver smit panel to set these two parameters for the first time, so that the defaults for the other parameters are set up correctly (the Add a Device Driver panel generates the chx25 command instead of the usual chdev command). You should generally treat the Network User Address and Network Identifier fields in the Change/Show X.25 Network Parameters panel as information only. The only thing you should ever change in these two fields is the national terminal portion of the NUA. You should *not* use this panel to change the country code or network identifier, as this could cause the remaining X.25 parameters to become inconsistent with your network subscription.

We have not changed the defaults for the other parameters, since they match the settings for the port in the X.25 network.

The number of logical channels for incoming, outgoing and PVCs is set to 0 in each case, indicating that we don't want any incoming-only, outgoing-only SVCs or any PVCs.

We have, however, subscribed to 20 SVCs for both-way calls (that is, calls that can be originated by either end), starting from logical channel 1. This happens to be the default for a network type of "other public".

Notes:

1. Once a virtual circuit is established over a logical channel, it can be used for normal bi-directional communications, regardless of whether the channel is defined as incoming-only, outgoing-only, both-way or for use as a PVC.
2. The RISC System/6000 X.25 adapter supports a maximum of 64 virtual circuits, and does not support logical channel 0.
3. If the channel assignments you supply in this panel do not match your network subscription, you will get problems at virtual circuit establishment time. A call involving a mismatched logical channel number will generally be cleared immediately. The cause of the trouble will be evident in the clearing cause and diagnostic code.

3.2.4 Customizing the Packet Parameters (Server and Client)

```

Change / Show X.25 Packet Parameters

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[TOP]                                     [Entry Fields]
Device name                             x25s0
CCITT support                            [1984]      + #
Packet modulo                            [8]        + #
Type of line                             [DTE]      + #
                                           +
    Default Attributes for SVCs
    *****
Default receive packet size              [128]      + #
Default transmit packet size             [128]      + #
Default receive packet window            [2]        + #
Default transmit packet window           [2]        + #
Default receive throughput class         [9600]     + #
Default transmit throughput class        [9600]     + #
                                           +
    Maximum Negotiable Attributes for SVCs
    *****
Maximum receive packet size              [128]      + #
Maximum transmit packet size             [128]      + #
Maximum receive packet window            [3]        + #
Maximum transmit packet window           [3]        + #
Maximum receive throughput class         [48000]    + #
Maximum transmit throughput class        [48000]    + #
                                           +
    Optional Facilities Control
    *****
Packet size negotiation                  [enable]   +
Window size negotiation                  [enable]   +
Throughput class negotiation             [enable]   +
[MORE...45]

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 41. Change/Show X.25 Packet Parameters SMIT Panel (Part 1 of 3)

```

Change / Show X.25 Packet Parameters

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[MORE...26]                                [Entry Fields]
Window size negotiation                    [enable]      +
Throughput class negotiation               [enable]      +
Close User Group (CUG) basic format       [enable]      +
Close User Group (CUG) extended format    [enable]      +
Close User Group (CUG) with OA selection basic for [enable]      +
mat
Close User Group (CUG) with OA selection extended [enable]      +
format
Bilateral closed user group (BCUG)       [enable]      +
Reverse charging or fast select           [enable]      +
Network user identification (NUI)         [enable]      +
Charging requesting service               [enable]      +
Receiving information about monetary unit [enable]      +
Receiving information about segment count [enable]      +
Receiving information about call duration [enable]      +
RPOA basic format                        [enable]      +
RPOA extended format                     [enable]      +
Called line address modified notification [enable]      +
Call redirection notification             [enable]      +
Transit delay selection and indication    [enable]      +
Marker code, 0x00 Calling network facilities [enable]      +
Marker code, 0xFF Called network facilities [enable]      +
Marker code, 0x0F CCITT-DTE facilities   [enable]      +
+

IS08208-Defined Timers
*****
T21 timer                                [200]         +#
T22 timer                                [180]         +#
[MORE...19]

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 42. Change/Show X.25 Packet Parameters SMIT Panel (Part 2 of 3)

```

Change / Show X.25 Packet Parameters

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[MORE...45]                                [Entry Fields]
Transit delay selection and indication      [enable]          +
Marker code, 0x00 Calling network facilities [enable]          +
Marker code, 0xFF Called network facilities [enable]          +
Marker code, 0x0F CCITT-DTE facilities     [enable]          +
                                             +

IS08208-Defined Timers
*****
T21 timer                                  [200]             +#
T22 timer                                  [180]             +#
T23 timer                                  [180]             +#
T24 timer                                  [180]             +#
T25 timer                                  [180]             +#
T26 timer                                  [180]             +#
                                             +

Packet-Level Features
*****
Throughput-class negotiation               [negotiate]       +
Packet size negotiation                    [negotiate]       +
Incoming calls                             [allow]           +
Outgoing calls                             [allow]           +
Fast select                                [disable]         +
Call-confirmation D bit                    [allow]           +
Maximum number of reset packets            [5]               +#
Maximum number of clear packets            [5]               +#
Closed user group                          [1]               +#
Bilateral closed user group                [yes]             +
Reverse charging                            [disable]         +
Local charges                              [allow]           +
[BOTTOM]

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit      Enter=Do

```

Figure 43. Change/Show X.25 Packet Parameters SMIT Panel (Part 3 of 3)

Do the following:

- Step 1. Type `smit` on the AIX command line.
- Step 2. Select **Devices**.
- Step 3. Select **Communications**.
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 5. Select **Adapter**.
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**.
- Step 8. Select **Change/Show Characteristics of a Device Driver**.
- Step 9. Select **Change/Show Packet Parameters**. (*fastpath name: x25csp*) The Name of Device to Change/Show panel will appear.

Step 10. Select **x25s0** from the Name of Device to Change/Show panel and press Enter. This should bring up the Change/Show X.25 Packet Parameters panel.

Step 11. Fill in the fields according to Figure 41 on page 57, Figure 42 on page 58 and Figure 43 on page 59, and press Enter to make the changes effective.

Perform steps 1 to 11 at the server *and* client systems.

3.2.4.1 Explanation

The following parameters are derived from your network type, and should only be changed if, for some reason, the derived default does not match your network subscription:

- CCITT support
- Packet modulo
- Type of line
- Default receive packet size
- Default transmit packet size
- Default receive packet window
- Default transmit packet window
- Default receive throughput class
- Default transmit throughput class

You must ensure that the maximum values are consistent with the defaults. For example the default receive packet size should be no greater than the maximum receive packet size, and so on. If you introduce an inconsistency between maximum and default values, the X.25 device driver will be changed from the available to the defined state (smit does not consistency check these parameters). To rectify this, you must set the values correctly, and run the `cfgmgr` command to reconfigure the device driver.

To begin with, it is advisable to set all optional facilities to "enable", to avoid any potential conflicts. You can set some of these back later, if necessary, once the connection is working satisfactorily.

We have accepted the defaults for all other values.

3.2.5 Customizing the Frame Parameters (Server and Client)

```

Change / Show X.25 Frame Parameters

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
Device name                      x25s0
Frame window size                 [7]                +#
T1 timer                          [60]                +#
T4 timer                          [180]               +#
N2 counter                        [20]                +#
Connection mode                   [active]            +
Physical level startup counter    [11]                +#
Physical level poll timer         [10]                +#
Physical level poll counter       [9]                 +#
Frame modulo                      [8]                 +#

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit         Enter=Do

```

Figure 44. Change/Show X.25 Frame Parameters SMIT Panel

Do the following:

- Step 1. Type `smit` on the AIX command line.
- Step 2. Select **Devices**.
- Step 3. Select **Communications**.
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 5. Select **Adapter**.
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**.
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**.
- Step 8. Select **Change/Show Characteristics of a Device Driver**.
- Step 9. Select **Change/Show Frame Parameters**. (*fastpath name: x25csf*). The Name of Device to Change/Show panel will appear.
- Step 10. Select **x25s0** from the Name of Device to Change/Show panel and press Enter. This should bring up the Change/Show X.25 Frame Parameters panel.
- Step 11. Fill in the fields according to Figure 44 and press Enter to make the changes effective.

Perform steps 1 to 11 at the server *and* client systems.

3.2.5.1 Explanation

The following parameters are derived from your network type, and should only be changed if for some reason the derived default does not match your network subscription:

- Frame window size
- Frame modulo

We have accepted the defaults for all values.

3.2.6 Customizing the General Parameters (Server and Client)

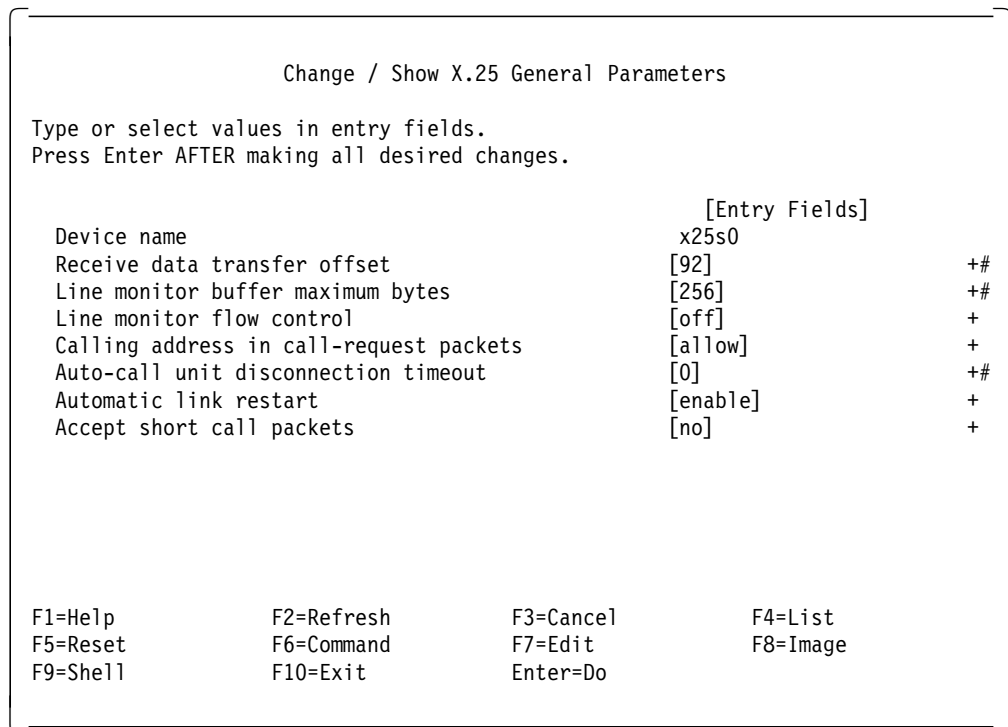


Figure 45. Change/Show X.25 General Parameters SMIT Panel

Do the following:

- Step 1. Type `smit` on the AIX command line
- Step 2. Select **Devices**
- Step 3. Select **Communications**
- Step 4. Select **X.25 CoProcessor/2 or Multiport/2 Adapter**
- Step 5. Select **Adapter**
- Step 6. Select **Manage Device Drivers for X.25 CoProcessor/2 or Multiport/2 Adapter**
- Step 7. Select **Manage X.25 CoProcessor/2 Device Driver**
- Step 8. Select **Change/Show Characteristics of a Device Driver**
- Step 9. Select **Change/Show General Parameters** (*fastpath name: x25csg*). The Name of Device to Change/Show panel will appear.

- Step 10. Select **x25s0** from the Name of Device to Change/Show panel and press enter. This should bring up the Change/Show X.25 General Parameters panel.
- Step 11. Fill in the fields according to Figure 45 on page 62 and press Enter to make the changes effective.

Perform steps 1 to 11 at the server *and* client systems.

3.2.6.1 Explanation

If you set line monitor flow control to on, the rate of arrival of frames will be throttled to match the speed with which the device driver can pass the frames to xmonitor for analysis (when it is active). This is useful if you are tracing, and wish to ensure that your xmonitor trace includes all packets. (In most cases, the xmonitor trace will be complete even with this option off, but switching it on eliminates any element of doubt.)

You should normally leave the calling address in call-request packets as "allow" (unless your service provider stipulates no calling address in the call request). If you set it to "forbid", the NUA of the calling party will not be included in the call request. In most cases, the X.25 network will insert it for you before forwarding the request to the called party.

Checking your own NUA

You can exploit this to check your own NUA. To do this, set the NUA to some arbitrary value in the Add a Device Driver smit panel, set the calling address in call-request packets to "forbid", make an xtalk call to yourself. So long as the network inserts it, you will be able to see your own NUA in the xtalk "Incoming call from" pop-up window when the call arrives. See 3.3.4, "Establishing a Test Virtual Circuit" on page 68 for instructions on using xtalk.

Note: To start two xtalk sessions on the same system, start the *sending* session with the command `xtalk -s` and press the Escape key to get past the warning message. Start the *receiving* session with the command `xtalk -s -l IBMXTALK`. (You will not be allowed to start two sessions listening on IBMXTALK.)

Unless your service provider forbids it, we advise you to set the automatic link restart to "enable" so that the link will recover automatically after a physical disconnection. Otherwise after a disconnection, you must use xmanage to bring it into the connected state again before you can establish a virtual circuit. This can be extremely inconvenient if the system concerned is located on a remote site, and the only way to access it remotely is over X.25.

We have accepted the defaults for the other values.

3.3 Testing the X.25 Connection

Now that you have configured X.25 at both server and client, you should verify the X.25 connection before going any further. If you can't get one or other end of the link into the connected state, or are unable to establish a virtual circuit, you will certainly not be able to establish a TCP/IP connection.

The ability to establish a virtual circuit in one direction does not guarantee a similar outcome in the opposite direction, so we will test both.

The AIX V3 X.25 support comes with a number of tools to help in this task. We will use three of these:

- xmanage** Enables you to bring the X.25 link into the connected state.
- xtalk** Enables you to set up and establish an X.25 circuit, and hold an electronic conversation between the two ends.
- xmonitor** Enables you to trace link and packet level activity. Particularly useful for diagnosing problems.

3.3.1 Guidance on Using the X.25 Tools

The interactive X.25 tools (xmanage and xtalk) have one or two quirks of behavior that you should be aware of:

1. The tools use the Escape key to quit, *not* F3. The F3 key is used to open a shell whilst keeping the xmanage or xtalk dialogue open in background. Both keys cause the same visual effect; that is, both Escape and F3 cause the xmanage or xtalk panel to be replaced with a command line prompt. If you press F3 by mistake when you intend to quit the program, you may think you have succeeded until you try to use the tool again and are refused because you already have an instance of the tool running in background. If this happens to you, simply type `exit` on the command line and you will be returned to the existing instance of the tool.
2. If you are using rlogin to remotely login to the target system, you may notice that sometimes when you press a cursor or function key, you get dropped out of the tool, just as if you had pressed the Escape key.

This is because cursor and function keys actually generate a string of characters, always beginning with the escape character (0x1B). In protocols like rlogin, the escape character can sometimes go from the rlogin client to server in a separate IP datagram to the rest of the characters in the sequence.

If there is sufficient delay between the arrival of these datagrams, the rlogin server can misinterpret the unaccompanied escape character as being just that, instead of the first character in a sequence. Consequently, the server sometimes tells xmanage or xtalk that Escape was pressed when in fact it was a function or cursor key.

If you must login remotely, you can avoid these problems altogether by using telnet. If you still prefer to use rlogin, you can make the problem less likely to happen by increasing the time that the rlogin server waits between the escape character and the rest of the sequence arriving by setting the ESCDELAY environment variable. The following command sets it to two seconds:

```
ESCDELAY=2000; export ESCDELAY
```

If you use rlogin frequently, you should place this command in your profile.

Finally, unless you are expert in X.25 and the way it is implemented in AIX V3, it is unlikely that all will go smoothly. We strongly recommend, therefore, that in addition to the *AIX Communications Concepts and Procedures* manual, you have a copy of *AIX/V3 X.25 Communication Cookbook*, GG24-3692 on hand during this activity.

3.3.2 Bringing the X.25 Link into the Connected State

Do the following:

- Step 1. Type `xmanage -s` on the AIX command line. This will bring up the base xmanage panel (Figure 46).

```
+-----+
| X.25 Communications XMANAGE |
+-----+
|          CHANGE STATUS          STATISTICS          MONITOR          QUIT          |
+-----+
| Port    Physical Layer    Frame Layer    Packet Layer    Monitoring    |
| x25s0   Disconnected      Disconnected  Disconnected   Off           |
+-----+
|                                     F1 = Help          F3 = Shell      |
+-----+
```

Figure 46. Base xmanage Panel

- Step 2. Select **CHANGE STATUS**. This will bring up the xmanage status panel (Figure 47).

```
+-----+
| X.25 Communications XMANAGE | STATUS |
+-----+
| Port x25s0 selected.       |
|
| CONNECT                    |
| DISCONNECT                  |
| QUIT                         |
|
+-----+
|                                     F1 = Help          F3 = Shell      |
+-----+
```

Figure 47. xmanage Status Panel

- Step 3. Select **CONNECT**. This will bring up the "Trying to connect port" message. After a short delay, the message should be replaced by "The port has been connected".
- Step 4. Press Escape to clear the "The port has been connected" message, and select **QUIT** from the xmanage status panel to return to the updated base xmanage panel. The port status should now be shown as connected at all levels (Figure 48).

X.25 Communications XMANAGE				
	CHANGE STATUS	STATISTICS	MONITOR	QUIT
Port	Physical Layer	Frame Layer	Packet Layer	Monitoring
x25s0	Connected	Connected	Connected	Off

F1 = Help F3 = Shell

Figure 48. Base xmanage Panel (Updated)

- Step 5. Press Escape to quit.

Carry out steps 1 to 4 at both the client *and* the server systems.

3.3.3 Troubleshooting

If you encounter problems connecting the link at either system, here are some things to check:

Symptom When you start xmanage, you get the message "There are no X.25 ports configured"

Remedy You either have no device driver configured, or you have misconfigured it (for example, with conflicting parameters). Delete any existing device driver with the command `rmdev -d -l x25s0` and add it again (with default attributes) with the command `cfgmgr`. You will then have to repeat the steps in 3.2.1, "Adding an X.25 Device Driver at the Server" on page 52 or 3.2.2, "Adding an X.25 Device Driver at the Client" on page 53 with valid parameters.

Symptom The base xmanage panel displays status of "unknown" for all three layers.

Remedy Generally indicates a configuration problem. Check that you have not introduced conflicting parameter values, for example set a packet parameter default greater than the corresponding maximum.

Symptom When you try to connect the link, you get the error message "CIO Status 72"

Remedy There are a number of possibilities:

1. You may have forgotten to install the adapter microcode. It is held in the AIX file system in a file called `/etc/microcode/icaaim.com`. If this file is missing, you will need to copy it from another system with X.25 already installed, or install it from the diskette that was shipped with the X.25 adapter.

Warning about early microcode diskettes!

Some early microcode diskettes are erroneously labelled as being in "tar" format, when in fact they are in DOS format. If you have a diskette that is labelled in this way, insert it in the RISC System/6000 diskette drive and try the `dosdir` command. If the command succeeds and returns the file `ICAAIM.COM`, ignore the instructions on the diskette label, and use the following command instead:

```
dosread ICAAIM.COM /etc/microcode/icaaim.com
```

2. The microcode may have been wrongly installed. The person who installed the microcode may have used `dosread -a`, instead of just `dosread`. This mistake is easily made because `dosread` is most commonly used to transfer *text* files from DOS to AIX systems, in which case `-a` is a required option. It instructs the command to convert the file from DOS ASCII to UNIX ASCII form. This option plays havoc with non-text files. It will cause the microcode to be compressed to about half its original size. Therefore if your microcode file is present, but significantly less in size than 22KB, re-install it.
3. There is a cabling problem. The AIX error log can give some clues here. Check it using the `errpt` command, or `errpt -a` for a detailed listing.

If you are using the V.24 physical interface option, ensure that you only use cables that are suitable for synchronous use. V.24 cables that are rated for asynchronous use often have fewer pins wired through, making them unsuitable for synchronous use (for example, the clock pins are often missing or not connected). If the error log indicates a cabling problem, check that the 25-pin connectors on your cables, modem eliminators, etc., have at least the following pins present: 2-9, 15, 20-22, 24-26 and that they are properly wired through. Run the advanced diagnostic routines on the X.25 adapter to test the cable.

Symptom When you try to connect the link, you get the error message "Error 229 - X25TIMEOUT. A timeout occurred during processing of this function".

Remedy There are a number of possibilities:

1. The X.25 network is configured to expect the RISC System/6000 to initiate the link-level connection, but the connection mode is set to "passive". If your connection mode is set to "passive" (X.25 general parameters), set it to "active", and try again.

2. There is a cabling problem, in particular a broken send or receive wire. Check the cable by running the advanced diagnostic routines on the X.25 adapter.

If you understand the HDLC LAPB protocol, you can obtain a link-level trace as follows:

Step 1. Start the X.25 monitor with the command:

```
xmonitor -frame x25s0 > /tmp/x25s0 &
```

Step 2. Attempt to connect the link from xmanage.

Step 3. After you get the "Error 229 message", stop the monitor with the kill command. (You must stop the monitor to ensure that all trace output is flushed to the disk file.)

Step 4. View the trace output, which should be written to the file /tmp/x25s0.

Note: You can also start xmonitor from the base xmanage panel by selecting the **MONITOR** option.

The trace output is fairly self-explanatory to those who understand the protocol. If you need help interpreting the trace, refer to *AIX/V3 X.25 Communication Cookbook*, GG24-3692.

We have been able to explore only some of the possibilities here. If your symptoms are not in the list, or none of the remedies seem to work, refer to *AIX/V3 X.25 Communication Cookbook*, GG24-3692 for more comprehensive diagnostic and remedial guidance.

3.3.4 Establishing a Test Virtual Circuit

Assuming you have successfully brought X.25 at client and server into the connected state, the next step in verifying the link is to establish a virtual circuit.

Do the following:

Step 1. On the AIX command line at the *server*, type:

```
xtalk -s -l IBMXTALK
```

This will bring up the base xtalk panel (Figure 49 on page 69).

```

+-----+
|X.25 Communications XTALK|
+-----+
|      TALK      ADD      BROWSE      CHANGE      DELETE      QUIT      |
+-----+
|You can make and receive calls|
+-----+
|  Name          Port    NUA          Extension|
|Your address list:|
|                |
|                |
|                |
|System address list:|
|                |
+-----+
|                F1 = Help          F2 = Switch Lists          F3 = Shell|
+-----+

```

Figure 49. Base xtalk Panel

Step 2. Repeat step 1 at the *client*.

Step 3. At the *server*, select **TALK**. This will bring up the xtalk address details panel. Fill in the Name/NUA and Port details according to Figure 50.

```

+-----+
|X.25 Communications XTALK|TALK|
+-----+
|Name/NUA          ==>310600198314|
|Port              ==>x25s0|
+-----+
|Press Enter when finished.          û Esc = Cancel|
+-----+
|Your address list:|
|                |
|                |
|                |
|System address list:|
|                |
+-----+
|                F1 = Help          F2 = Switch Lists          F3 = Shell|
+-----+

```

Figure 50. xtalk Address Details Panel

Step 4. Press Enter to initiate the call. The xtalk panel should change to the xtalk awaiting answer panel (Figure 51 on page 70) at the *server* and to the xtalk incoming call panel (Figure 52 on page 70) at the *client*.

```

+-----+
|X.25 Communications XTALK                                     WAIT 001 |
+-----+
| Making call to <unknown> (310600198314 at x25s0)          |
| Press Esc to cancel the call.                             |
+-----+
| Name           Port     NUA           Extension          |
| Your address list:                                       |
|                                                         |
| System address list:                                     |
|                                                         |
+-----+
| F1 = Help           F2 = Switch Lists          F3 = Shell          |
+-----+

```

Figure 51. xtalk Awaiting Answer Panel

```

+-----+
|X.25 Communications XTALK                                     INFORMATION |
+-----+
| Incoming call from <unknown> (101002400 on x25s0)        |
|                                                         |
| ACCEPT           REJECT                                |
|                                                         |
| Your address list:                                       |
|                                                         |
| System address list:                                     |
|                                                         |
+-----+
| F1 = Help           F2 = Switch Lists          F3 = Shell          |
+-----+

```

Figure 52. xtalk Incoming Call Panel

Select **ACCEPT** at the *client* to complete the call. The xtalk panel should change to the xtalk connected panel (Figure 53 on page 71) at both the client *and* the server (of course, the "Connected to" numbers will be different on each system).


```

+-----+
|X.25 Communications XTALK                               Message logging is OFF |
+-----+
| Connected to <unknown> (101002400 on x25s0)           |
+-----+
|
| TRANSFER FILE
| BEGIN LOGGING
| END LOGGING
| CHANGE LOG FILENAME
| QUIT CALL
|
+-----+
| F1 = Help      F2 = Messages      F3 = Shell
+-----+

```

Figure 53. xtalk Connected Panel

You could, if you wish, press F2 at this point on both systems. This would bring up an input area within the xtalk panel. Anything you typed in the client's input area would appear in the server's input area, and vice-versa. However, initiating and accepting the call is sufficient to verify that it is possible to establish a virtual circuit between the two systems (at least when the call is initiated from the server).

Step 5. Select **QUIT CALL** to close the virtual circuit. This should return both system to the base xtalk panel.

We now need to verify that it is possible to establish the call in the other direction (from client to server).

Step 6. Repeat steps 3 through 5, but initiating the call from the *client* this time (wherever the step specifies *server*, carry it out on the *client* system instead, and vice-versa). Don't forget to use the *server's* NUA in the xtalk address details panel.

3.3.5 Troubleshooting

If you encounter problems getting xtalk to establish a call from either system, the first clue will come from the clearing cause and diagnostic code values, which xtalk displays for you (in hexadecimal). You will need to understand X.25 to correctly interpret the meaning of these values. However, you may wish to perform the following, simple checks:

- The NUA configured for the adapter at each end matches the address in the X.25 network.
- The NUA of the remote system supplied in the xtalk address details panel has been typed correctly, and matches the value in the X.25 network.
- The packet parameters configured for each adapter match those in the X.25 network.

- There are no closed user group conflicts in the X.25 network between the two ends.

You can obtain more diagnostic information from a packet-level trace, as follows:

Step 1. Start the X.25 monitor with the command:

```
xmonitor -packet x25s0 > /tmp/x25s0 &
```

Step 2. Attempt to establish a call from xtalk, as before.

Step 3. After the call has been cleared, stop the monitor with the `kill` command. (You must stop the monitor to ensure that all trace output is flushed to the disk file.)

Step 4. View the trace output, which should be written to the file `/tmp/x25s0`.

Note: You can also start `xmonitor` from the base `xmanage` panel by selecting the **MONITOR** option.

The trace output is fairly self-explanatory to those who understand the X.25 protocol.

Beware!

The `xmonitor` output expresses clearing cause and diagnostic values in *decimal*, whereas `xtalk` displays them in *hexadecimal*.

The possible clearing cause and diagnostic code combinations are too numerous to list here. For an explanation of these, help in interpreting the trace, or just general diagnostic guidance, refer to *AIX/V3 X.25 Communication Cookbook*, GG24-3692.

Finally, the ability to establish a virtual circuit in both directions does not guarantee a successful TCP/IP connection. There are still one or two potential problems that will only come to light when you actually try TCP/IP itself (for example if you mistyped the remote DTE address in one of the INTERNET/X.25 SVC Host Entry `smit` panels).

3.4 Configuring TCP/IP

Configuring TCP/IP involves the following tasks:

- Initializing the server's X.25 IP device driver
- Adding the client's IP name to address mapping in the server's configuration
- Adding the client's X.25 NUA to IP name/address mapping in the server's configuration
- Optionally resetting the server's IP host name
- Initializing the client's X.25 IP device driver
- Adding the server's IP name to address mapping in the client's configuration
- Adding the server's X.25 NUA to IP name/address mapping in the client's configuration

In our example, we have kept the network as simple as possible by choosing to use:

- Local name resolution (/etc/hosts)
- Non-domain naming scheme
- No subnetting
- A single network, without gateways

If your IP network is more complex

If you plan to use nameserving, or a domain naming scheme, or subnetting, or any other feature of TCP/IP not mentioned here, you must refer to the *AIX Communications Concepts and Procedures* for the additional configuration tasks that you may need to carry out at the server. You should also have a good understanding of TCP/IP principles, or enlist specialist help.

3.4.1 Configuring TCP/IP at the Server

Before you begin!

The following steps will change the IP host name of your server. The IP host name is used by other applications, for example by UNIX mail to perform routing. If TCP/IP is already configured on your server (over a LAN interface for example) it is likely that you will wish to change it back again, to avoid any unwanted side-effects. The steps to do this are described later.

Before you begin, enter the hostname command to find out what the server IP host name is currently set to, and make a note of it.

```

                                Minimum Configuration & Startup

To Delete existing configuration data, please use Further Configuration menus

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
* HOSTNAME                        [rs600011x]
* Internet ADDRESS (dotted decimal) [9.24.105.2]
  Network MASK (dotted decimal)     []
* Network INTERFACE                xt0
  NAMESERVER
    Internet ADDRESS (dotted decimal) []
    DOMAIN Name                      []
  Default GATEWAY Address           []
  (dotted decimal or symbolic name)
  START Now                          yes      +

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 54. TCP/IP Minimum Configuration & Startup SMIT Panel (Server)

Do the following:

- Step 1. Type smit on the AIX command line at the server.

- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Minimum Configuration & Startup** (*fastpath name: mktcpip*). The Available Networks Interfaces panel will appear.
- Step 5. Select **xt0** from the Available Networks Interfaces panel and press Enter. This should bring up the Minimum Configuration & Startup panel.
- Step 6. Fill in the fields according to Figure 54 on page 73 and press Enter to make the changes effective.

If your device is not configured

If your IP device driver (for example, x25s0) is not in the list, or you get an error message indicating that there are no devices of this type configured in the system, it may be because the IP driver created in the previous activity has not taken effect. You can either reboot the system, or get the system to configure devices added after IPL by running the configuration manager:

```
/etc/cfgmgr
```

3.4.1.1 Explanation

In our scenario, we already have a token-ring adapter in rs600011, through which most IP traffic is routed. The IP address of the token-ring adapter maps to the name rs600011 throughout the IP network. Therefore, we must choose another name to correspond to the X.25 adapter's IP address (throughout the network). We have chosen rs600011x.

We have chosen 9.24.105.2 as the IP address, and the first X.25 IP network interface, xt0.

The network is class A (the high-order two bits of the high-order byte are 00). Therefore the network address is the high-order three bytes, 9.24.105, and the host address the low-order byte, 2.

Now we add the client to the server's TCP/IP configuration. First we set the IP name to IP address mapping, then the IP name to X.25 NUA mapping.

```

                                Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* INTERNET ADDRESS (dotted decimal)      [Entry Fields]
* HOST NAME                               [9.24.105.1]
  ALIAS(ES) (if any - separated by blank space) [rs60007x]
  COMMENT (if any - for the host entry)         []
                                                []

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Undo      F6=Command      F7=Edit        F8=Image
F9=Shell     F10=Exit        Enter=Do

```

Figure 55. TCP/IP Add a Host Name SMIT Panel (Server)

Do the following:

- Step 1. Type `smit` on the AIX command line at the server.
- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Further Configuration**.
- Step 5. Select **Name Resolution**.
- Step 6. Select **Host Table** (*fastpath name: mkhostent*).
- Step 7. Fill in the fields according to Figure 55 and press Enter to make the changes effective.

3.4.1.2 Explanation

INTERNET ADDRESS is set to the IP address of the client, 9.24.105.1, and must correspond with Internet ADDRESS in Figure 58 on page 79.

HOST NAME is set to the IP name of the client, rs60007x, and must correspond with HOSTNAME in Figure 58 on page 79.

```

Change / Show an INTERNET / X.25 SVC Host Entry

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
* Remote HOSTNAME                rs60007x
* Remote DTE Address              [310600198314]      #
* X25 Device Number              0                    +
----- Optional X.25 Facilities -----
RECEIVED data PACKET size        +
TRANSMITTED data PACKET size     +
RECEIVED data WINDOW size       []                #
TRANSMITTED data WINDOW size     []                #
CLOSED USER GROUP selection      []                #
CLOSED USER GROUP WITH OUTGOING ACCESS selection []      #
Recognized Private Operating Agency (RPOA) []
User-Defined Facilities           []
----- CALL USER Data -----

Note: RFC-877 mandates the first byte of call
user data is 0xcc. If you do not put "cc" as
the first byte, SMIT will put it there for you.

Call User Data                   [cc]

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 56. Change / Show an INTERNET / X.25 SVC Host Entry (Server)

Do the following:

- Step 1. Type **smit** on the AIX command line at the server.
- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Further Configuration**.
- Step 5. Select **Network Interfaces**.
- Step 6. Select **Network Interface Selection**.
- Step 7. Select **IP/X.25 Host Configuration**.
- Step 8. Select **Add an IP/X.25 Host Entry**.
- Step 9. Select **Add a Switched Virtual Circuit (SVC) IP Host Entry** (*fastpath name: chinex25*).
- Step 10. Fill in the fields according to Figure 56 and press Enter to make the changes effective.

Note: You must use the Tab key to set the X25 Device Number field. You cannot input the number directly.

3.4.1.3 Explanation

Remote HOSTNAME is set to the IP name of the client, rs60007x, and must correspond with HOSTNAME in Figure 58 on page 79.

Remote DTE Address is set to the NUA of the client, 310600198314, and must correspond with Network User Address in Figure 39 on page 53.

The X25 Device Number is set to 0 because we have chosen the first adapter, x25s0 (IP device driver xt0).

We have accepted the defaults for all other parameters, as we do not wish to have any particular facilities included in the call request, or override the packet size settings for the adapter.

Do not alter the value of "cc" (0xCC) in the call user address field.

Why do you need to supply this information?

You may notice that there is no equivalent panel when configuring TCP/IP over Ethernet or token ring. This is because LAN network interfaces use the ARP protocol to resolve IP to LAN MAC addresses dynamically. ARP is a broadcast protocol. However, the concept of broadcasting does not exist in X.25 networks. Consequently IP name/address to X.25 NUA mappings are held in static tables, and managed explicitly through this panel (and the underlying X25xlate command).

3.4.1.4 Server IP Host Name Setting

Smit will have set the IP host name of your system to **rs600011x** (or whatever value you used for HOSTNAME in the Minimum Configuration and Startup panel). As explained above, you may wish to change it back, so as not to interfere with UNIX mail, etc. The following steps show you how to do this.

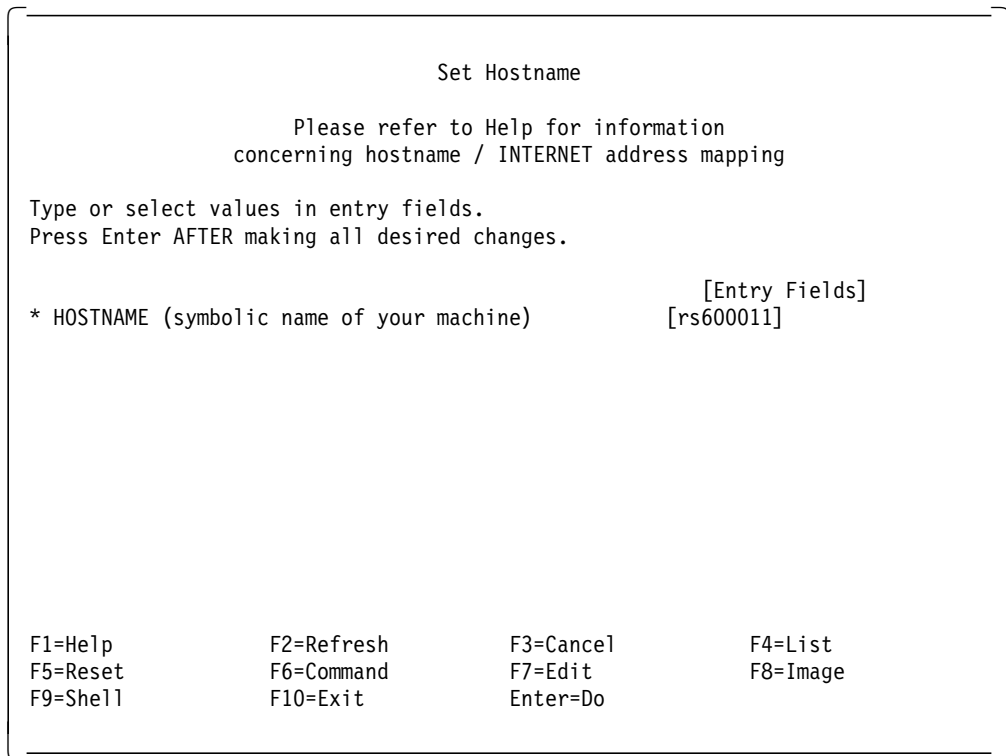


Figure 57. Set Hostname SMIT Panel (Server)

Do the following:

- Step 1. Type `smit` on the AIX command line at the server.
- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Further Configuration** (*fastpath name: mkhostname*).
- Step 5. Select **Host name**.
- Step 6. Fill in the fields according to Figure 57 and press Enter to make the changes effective.

3.4.2 Configuring TCP/IP at the Client

```

                                Minimum Configuration & Startup

To Delete existing configuration data, please use Further Configuration menus

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
* HOSTNAME                       [rs60007x]
* Internet ADDRESS (dotted decimal) [9.24.105.1]
  Network MASK (dotted decimal)     []
* Network INTERFACE               xt0
  NAMESERVER
    Internet ADDRESS (dotted decimal) []
    DOMAIN Name                     []
  Default GATEWAY Address           []
  (dotted decimal or symbolic name)
  START Now                          yes      +

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit        Enter=Do

```

Figure 58. TCP/IP Minimum Configuration & Startup SMIT Panel (Client)

Do the following:

- Step 1. Type `smit` on the AIX command line at the client.
- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Minimum Configuration & Startup** (*fastpath name: mktcpip*). The Available Networks Interfaces panel will appear.
- Step 5. Select **xt0** from the Available Networks Interfaces panel and press Enter. This should bring up the Minimum Configuration & Startup panel.
- Step 6. Fill in the fields according to Figure 58 and press Enter to make the changes effective.

If your device is not configured

If your IP device driver (for example `x25s0`) is not in the list, or you get an error message indicating that there are no devices of this type configured in the system, it may be because the IP driver created in the previous activity has not taken effect. You can either reboot the system, or get the system to configure devices added after IPL by running the configuration manager:

```
/etc/cfgmgr
```

3.4.2.1 Explanation

In our scenario, we already have a token ring adapter in rs60007, through which most IP traffic is routed. The IP address of the token ring adapter maps to the name rs60007 throughout the IP network. Therefore, we must choose another name to correspond to the X.25 adapter's IP address (throughout the network). We have chosen rs60007x.

We have chosen 9.24.105.1 as the IP address, and the first X.25 IP network interface, xt0.

The network is class A (the high-order two bits of the high-order byte are 00). Therefore the network address is the high-order three bytes, 9.24.105, and the host address the low-order byte, 1.

Now we add the server to the client's TCP/IP configuration. First we set the IP name to IP address mapping, then the IP name to X.25 NUA mapping.

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* INTERNET ADDRESS (dotted decimal)	[Entry Fields] [9.24.105.2]
* HOST NAME	[rs600011x]
ALIAS(ES) (if any - separated by blank space)	[]
COMMENT (if any - for the host entry)	[]

F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

Figure 59. TCP/IP Add a Host Name SMIT Panel (Client)

Do the following:

- Step 1. Type `smit` on the AIX command line at the client.
- Step 2. Select **Communications Applications and Services**.
- Step 3. Select **TCP/IP**.
- Step 4. Select **Further Configuration**.
- Step 5. Select **Name Resolution**.
- Step 6. Select **Host Table** (*fastpath name: mkhostent*).

Step 7. Fill in the fields according to Figure 59 and press Enter to make the changes effective.

3.4.2.2 Explanation

INTERNET ADDRESS is set to the IP address of the server, 9.24.105.2, and must correspond with Internet ADDRESS in Figure 54 on page 73.

HOST NAME is set to the IP name of the server, rs600011x, and must correspond with HOSTNAME in Figure 54 on page 73.

```

Change / Show an INTERNET / X.25 SVC Host Entry

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
* Remote HOSTNAME                rs600011x
* Remote DTE Address              [101002400]      #
* X25 Device Number               0                +
----- Optional X.25 Facilities -----
RECEIVED data PACKET size        +
TRANSMITTED data PACKET size     +
RECEIVED data WINDOW size       []             #
TRANSMITTED data WINDOW size     []             #
CLOSED USER GROUP selection      []             #
CLOSED USER GROUP WITH OUTGOING ACCESS selection []       #
Recognized Private Operating Agency (RPOA) []
User-Defined Facilities           []
----- CALL USER Data -----

Note: RFC-877 mandates the first byte of call
user data is 0xcc. If you do not put "cc" as
the first byte, SMIT will put it there for you.

Call User Data                    [cc]

F1=Help      F2=Refresh      F3=Cancel      F4=List
F5=Reset     F6=Command     F7=Edit       F8=Image
F9=Shell     F10=Exit       Enter=Do

```

Figure 60. Change / Show an INTERNET / X.25 SVC Host Entry (Client)

Do the following:

- Step 1. Type **smit** on the AIX command line at the client
- Step 2. Select **Communications Applications and Services**
- Step 3. Select **TCP/IP**
- Step 4. Select **Further Configuration**
- Step 5. Select **Network Interfaces**
- Step 6. Select **Network Interface Selection**
- Step 7. Select **IP/X.25 Host Configuration**
- Step 8. Select **Add an IP/X.25 Host Entry**

- Step 9. Select **Add a Switched Virtual Circuit (SVC) IP Host Entry** (*fastpath name: chinex25*)
- Step 10. Fill in the fields according to Figure 60 on page 81 and press Enter to make the changes effective.

Note: You must use the Tab key to set the X25 Device Number field. You cannot input the number directly.

3.4.2.3 Explanation

Remote HOSTNAME is set to the IP name of the server, rs600011x, and must correspond with HOSTNAME in Figure 54 on page 73.

Remote DTE Address is set to the NUA of the server, 101002400, and must correspond with Network User Address in Figure 38 on page 52.

The X25 Device Number is set to 0 because we have chosen the first adapter, x25s0 (IP device driver xt0).

We have accepted the defaults for all other parameters, as we do not wish to have any particular facilities included in the call request, or override the packet size settings for the adapter.

Do not alter the value of "cc" (0xCC) in the call user address field.

Why do you need to supply this information?

You may notice that there is no equivalent panel when configuring TCP/IP over Ethernet or token ring. This is because LAN network interfaces use the ARP protocol to resolve IP to LAN MAC addresses dynamically. ARP is a broadcast protocol. However, the concept of broadcasting does not exist in X.25 networks. Consequently IP name/address to X.25 NUA mappings are held in static tables, and managed explicitly through this panel (and the underlying X25xlate command).

3.4.2.4 Client IP Host Name Setting

Smit will have set the IP host name of your system to **rs60007x** (or whatever value you used for HOSTNAME in the Minimum Configuration and Startup Panel).

Note:

When we set up the X.25 environment we used pre-GA code of Release 1.2. According to development information the problem described in this section should be solved in the official code.

However, the IP address that the client's IP host name resolves to at the *server* must be the same as the IP address of the adapter at the client that carries NetView Distribution Manager/6000 traffic.

This is because the connect request from the NetView DMA/6000 (generated when the nvdm start command is entered at the client) contains the client's IP host name (the name you get when you enter the hostname command on the client's command line), *not* the Workstation Name in the client's nvdm.cfg. (The latter can become out-of-date if the IP host name is changed after NetView Distribution Manager/6000 has been installed.)

When the server receives the connect request, it resolves the client's IP name to an IP address at the *server* system. If the resolved address does not match the originator's address (obtained from the IP header portion of the IP datagram), it rejects the request, placing the following message in the server's *fnolog*:

```
1994/09/28 20:29:08 rs600011      32932 FNDRX083E: Connection refused
for client rs60007 as its address, 9.24.105.1 does not match the address
for the client, 9.24.104.76 held at the server.
```

This happened to us because:

- We had an X.25 *and* token-ring adapter in rs600011 and rs60007. This provided two TCP/IP routes between the two systems, one via token-ring, and the other via X.25. Prior to installing X.25, all TCP/IP traffic had been carried over the token ring.
- The token-ring adapter in rs600011 was configured with IP address 9.24.104.123, which was mapped to an IP name of rs600011 in */etc/hosts*. The X.25 adapter was configured with IP address 9.24.105.2, which was mapped to an IP name of rs600011x in */etc/hosts*. We restored the hostname to rs600011, as it was before TCP/IP over X.25 had been configured.
- The token-ring adapter in rs60007 was configured with IP address 9.24.104.76, which was mapped to an IP name of rs60007 in */etc/hosts*. The X.25 adapter was configured with IP address 9.24.105.2, which was mapped to an IP name of rs60007x in */etc/hosts*. We restored the hostname to rs60007, as it was before TCP/IP over X.25 had been configured.
- The server name in the client's *nvdn.cfg* file was set to rs600011x.
- When the client attempted to connect to the server, the request was sent via X.25 to rs600011x. (The client obtained the server name, rs600011x from its *nvdn.cfg* file, and resolved it locally to 9.24.105.2. The IP routing tables at the client direct all 9.24.105 network traffic through the X.25 adapter.)
- The request contained the client's IP host name, rs60007. The originating address in the IP header was 9.24.105.1 (the client's X.25 IP address).
- On receiving the request, the server resolved the client IP host name (rs60007) locally to an IP address of 9.24.104.76. It compared this to the address in the IP datagram header (9.24.105.1), discovered they were different and consequently rejected the request.

We solved the problem by setting the client's IP host name to rs60007x.

In TCP/IP networks, it is good practice to give a router node (a node with multiple adapters carrying IP traffic) a different IP name for each network interface it contains, and then use that name consistently throughout the network. In fact, TCP/IP nameserving enforces this (where it is in use) because the nameserver keeps a single copy of the mapping tables for the entire network.

Effectively, then, if a NetView Distribution Manager/6000 client is an IP router, the IP host name *must* be set to the IP name of the adapter that carries the NetView DM/6000 traffic, even if that adapter was added later than the others.

3.5 Testing the TCP/IP Connection

Now that you have configured TCP/IP at both server and client, you should verify the TCP/IP connection before going any further. If you are unable to initiate a TCP/IP connection from the client to the server, you won't be able to start the client.

The ability to establish a TCP/IP connection in one direction does not guarantee a similar outcome in the opposite direction, so we will test both.

We use the TCP/IP ping command to test the connection. The procedure for doing this is covered in 3.11.1.4, "Originating TCP/IP Connection from Server" on page 98 and 3.11.1.5, "Originating TCP/IP Connection from Client" on page 98.

You may notice that once the ping command has been successful, in either direction, an SVC is established between the two systems. This SVC will stay connected until there has been no IP traffic for 20 minutes (by default). This SVC is used to carry IP traffic in both directions, regardless of which end established the connection.

If you enter the command `arp`, you will see an entry for the local X.25 IP device driver, containing its IP address and NUA. You can clear the SVC by deleting this entry with the `arp -d` command. Supply IP address or IP name of the IP network interface (`xt0`) as a parameter.

You can also change the time that the SVC is held up during idle periods to 2 minutes with the `no -o arrpt_killc=2` command.

3.5.1 Troubleshooting

If the ping command fails, we first of all assume that you have already carried out the steps to test and troubleshoot the X.25 connection (3.3, "Testing the X.25 Connection" on page 63). If not, do this now in order to eliminate any basic X.25 problems, and try the ping command again. If it still fails, here are some things to check:

Symptom The ping error message is "Can't assign requested address" or "The socket name is not valid"

Remedy The problem lies with the IP address/X.25 NUA translation table. Use `smit` to check the entries you made earlier (`fastpath: smit chinex25`), and correct them if necessary.

If this doesn't cure the problem, it may be that the tables have somehow become corrupted (double entries, etc). It is actually an ODM table called `X25xlate`. If you understand the AIX object repository, and the structure of this table, you could repair it with the ODM editor (`odme`), and then run the `X25xlate` command to update the runtime copy of the table.

Otherwise, the safest approach is to delete the table altogether with the command `odmdrop -o X25xlate`. Note that the first "X" in "X25xlate" is a capital X. Make sure that the environment variable `ODMDIR` is set to `/etc/objrepos` and exported before using this command. You must then repeat the steps associated with Figure 56 on page 76 and Figure 60 on page 81 to re-create the entries.

Symptom Ping issues a different error message, or doesn't respond.

Remedy Get a packet level and IP trace as follows:

Step 1. Start the X.25 monitor with the command:
`xmonitor -packet x25s0 > /tmp/x25s0 &`

Start the monitor at both sending *and* receiving end.

Step 2. Start an IP trace with the command:
`iptrace -i xt0 -a /tmp/xt0`

You need only start the iptrace at the receiving end.

Step 3. Attempt the ping command as before.

Step 4. After ping has issued the error message (or you've interrupted a non-responding ping request) stop the monitor at both ends with the `kill` command. (You must stop the monitor to ensure that all trace output is flushed to the disk file.)

Step 5. Stop the iptrace command with the `kill` command. (You must stop the IP trace to ensure that all trace output is flushed to the disk file.)

Step 6. Output from the iptrace command is non-text. Format it with the command:

```
ipreport /tmp/xt0 > /tmp/xt0.out
```

Step 7. View the X.25 trace output at both ends, which should be written to the file `/tmp/x25s0`.

Step 8. View the ipreport output in `/tmp/xt0.out`.

Note: You can also start `xmonitor` from the base `xmanage` panel by selecting the **MONITOR** option.

It is not essential to understand every detail of the traces in order to perform basic problem determination. The remaining symptom/remedies are based on the trace contents.

Symptom The X.25 trace shows the call being cleared with a clearing cause of 0 and diagnostic of 0:

```
PR 0 0001 CALL dN 1a:11 1f:0 1d:1 9C310600198314101002400000CC
PS 0 0001 CLEAR c:0 d:0
PR 0 0001 CF CLEAR
```

We have removed superfluous detail from the front of each trace record (time and device driver name). This trace was obtained from the receiving end. Examining the important fields in the first record: PR means a packet was received. 0001 means the call was received on logical channel 1. CALL is the type of packet received. 9C is the lengths of the called (9) and calling (12) addresses in hexadecimal. 310600198314 is the calling address. 101002400 is the called address. The subsequent 00 means no facilities requested. Finally, the CC is the called user data (0xCC means the call is for TCP/IP).

The next packet is a CLEAR request. c:0 represents a clearing cause of 0. d:0 represents a diagnostic code of 0. This combination means that the DTE (the receiving RISC System/6000) cleared the call for some reason, not the DCE (the X.25 network).

Remedy Assuming you have carried out the steps to test and troubleshoot the X.25 connection successfully, this can mean that either:

- The X.25 routing table does not have an entry for TCP/IP. Call up the X.25 xroute tool with the command `xroute -s`. Check that there is an entry called IBMTCP0 with port x25s0 (or `""`) and CUD of CC. This entry should have been added when the BOS X.25 option was installed. If it is missing, you will need to add it. See *AIX Communications Concepts and Procedures*, or *AIX/V3 X.25 Communication Cookbook*, GG24-3692 for instructions on adding or changing an xroute entry.
- The X.25 IP device driver (xt0) is not running. See 3.11, "Managing TCP/IP at the Server or Client" on page 97 for instructions on getting the status of the IP device driver. If it not running, try starting it by recalling the smit TCP/IP Minimum Configuration & Startup panel (smit mktcpip), and ensuring the "start now" field is set to "yes", before pressing Enter.

Symptom The X.25 trace shows the call being established as normal, but the IP trace shows only received IP datagrams. The X.25 trace for successful establishment would look similar to:

```
PR 0 0001 CALL      dN 1a:11 1f:0 1d:1 9C310600198314101002400000CC
PS 0 0001 CF CALL   dN 1a:11 1f:0 1d:0 9C310600198314101002400000
PS 0 0001 DATA     pr:0  ps:0  dN mN qN 1:44 4500002CF5B800003C06A
4E0091869010918690203FF02D9304E360100000000600240000A68000002040218
PR 0 0001 DATA     pr:1  ps:0  dN mN qN 1:84 450000546FCB0000FF016
7AA091869020918690108001ACE60FDE4AA2E8AFA3D00096EB800000000000000000
000000000000000000000000000000000000000000000000000000000000000000
00000
PS 0 0001 RR        pr:1
```

Notice that the CALL request is confirmed by a CF CALL packet, and is then followed by DATA packets. (TCP/IP data packets generally begin with 450000.)

A typical incoming IP trace record would look like:

```
====( packet received on interface xt0 )====Thu Sep 29 13:38:52 1994
X.25 packet (IP)
```

IP header breakdown:

```
< SRC = 9.24.105.2 > (rs600011x)
< DST = 9.24.105.1 > (rs60007x)
ip_v=4, ip_hl=20, ip_tos=0, ip_len=44, ip_id=29363, ip_off=0
ip_ttl=60, ip_sum=27e6, ip_p = 6 (TCP)
```

TCP header breakdown:

```
<source port=729, destination port=1022 >
th_seq=6478ec01, th_ack=331cf602
th_off=6, flags<SYN |ACK |>
th_win=16080, th_sum=f83e, th_urp=0
```

```
00000000 02040218 |.... |
```

Each record contains the IP name and address of the source and destination network interfaces. Only the IP address is actually carried in the IP datagram. The IP name is inserted afterwards by `iptrace/ipreport`. The IP address is translated to an IP name *locally* after the datagram is received, and is therefore subject to any local name resolution errors. Bear this in mind when looking at the IP name and address information in the IP header breakdown field.

If there are any ASCII characters in the data part of the datagram, they are shown between the vertical bars on the right of the trace.

Note: The X.25 and IP trace records were not taken at the same time or in the same circumstances and therefore do not correspond directly.

Remedy Check that the destination IP address is correct. If not, the most likely cause is that you specified an incorrect IP address against the IP name of the remote system when you added its host name. This error will have been propagated to the IP address/X.25 NUA translation (X25xlate) table when you added the entry for the remote system to this table (via the smit Add an INTERNET / X.25 SVC Host Entry panel).

You will notice that this smit panel entry only asks you to specify IP name (Remote HOSTNAME) and NUA (Remote DTE address). However, smit performs normal IP name resolution to translate the IP name to the corresponding IP address, and stores them *both* against the NUA in the X25xlate table. Therefore, if you get the IP address wrong in the Add a Host Name panel, and then correct it *after* creating the X25xlate table entry, the X25xlate table will still be wrong, so you will continue to experience the problem.

The only safe way to correct it (that is without creating duplicate entries in the X25xlate table for the same IP name) is to delete the offending entry from the table and add it again.

We have been able to explore only some of the possibilities here. If your symptoms are not in the list, or none of the remedies seem to work, refer to *AIX/V3 X.25 Communication Cookbook, GG24-3692* for more comprehensive diagnostic and remedial guidance.

3.6 Setting the Server Short Name

In this example, we use the NetView Distribution Manager/6000 Graphical Interface (GI). If you are working at a graphics terminal and wish to use the GI, you must first start the GI by entering the following command:

```
nvdmg&
```

After entering this command, a transient program copyright window will be displayed. You can either click on the **OK** button or wait a few moments. The copyright window will close and be replaced by the Catalog window (Figure 61 on page 88).

If you get the "Can't open display" message

If you get this message when you try to start `nvdmg`, check that the `DISPLAY` variable is set correctly. You can check it by entering the command:

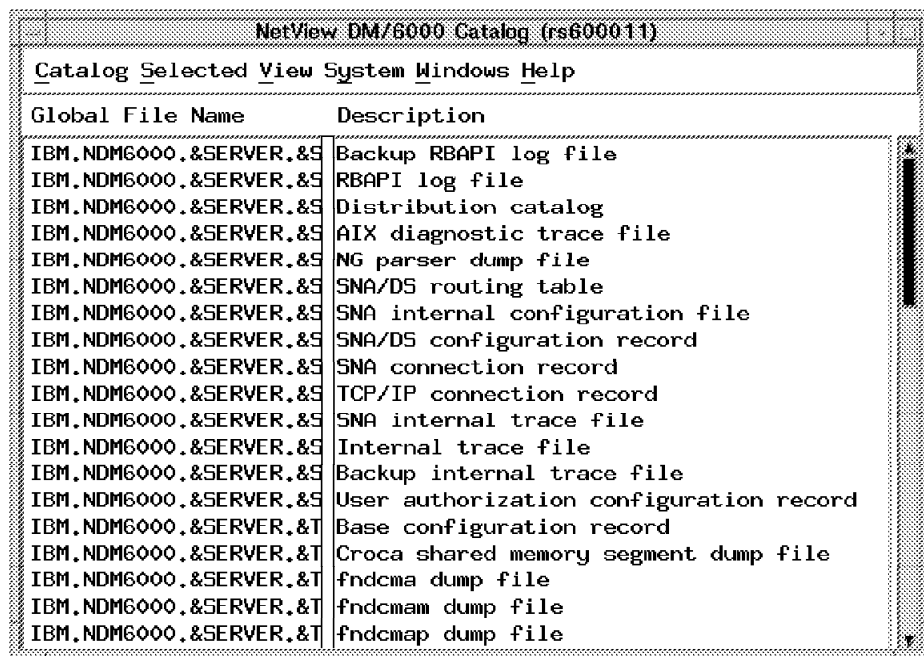
```
echo $DISPLAY
```

The variable should contain the IP name of the system in which the X-server resides, post-fixed with the string `":0"`. For example, if you are at an X-station whose IP name is `xstn2`, the `DISPLAY` variable should be set to `xstn2:0`. You must also export this variable.

To set and export the `DISPLAY` variable, type the following on the command line:

```
DISPLAY=xstn2:0; export DISPLAY
```

Substitute the IP name of the system containing your X-server for `xstn2`.



The screenshot shows a window titled "NetView DM/6000 Catalog (rs600011)". The window has a menu bar with "Catalog", "Selected", "View", "System", "Windows", and "Help". Below the menu bar is a table with two columns: "Global File Name" and "Description". The table lists various system files and their descriptions.

Global File Name	Description
IBM.NDM6000.&SERVER.&S	Backup RBAPI log file
IBM.NDM6000.&SERVER.&S	RBAPI log file
IBM.NDM6000.&SERVER.&S	Distribution catalog
IBM.NDM6000.&SERVER.&S	AIX diagnostic trace file
IBM.NDM6000.&SERVER.&S	NG parser dump file
IBM.NDM6000.&SERVER.&S	SNA/D5 routing table
IBM.NDM6000.&SERVER.&S	SNA internal configuration file
IBM.NDM6000.&SERVER.&S	SNA/D5 configuration record
IBM.NDM6000.&SERVER.&S	SNA connection record
IBM.NDM6000.&SERVER.&S	TCP/IP connection record
IBM.NDM6000.&SERVER.&S	SNA internal trace file
IBM.NDM6000.&SERVER.&S	Internal trace file
IBM.NDM6000.&SERVER.&S	Backup internal trace file
IBM.NDM6000.&SERVER.&S	User authorization configuration record
IBM.NDM6000.&SERVER.&T	Base configuration record
IBM.NDM6000.&SERVER.&T	Croca shared memory segment dump file
IBM.NDM6000.&SERVER.&T	fndcma dump file
IBM.NDM6000.&SERVER.&T	fndcmam dump file
IBM.NDM6000.&SERVER.&T	fndcmap dump file

Figure 61. NetView DM/6000 Catalog Window (Server)

If you are not at a graphics terminal, or simply prefer to use the command line interface, follow the "command line alternative" instructions for each task.

The installation process automatically creates a local target entry in the NetView Distribution Manager/6000 database for the server system; that is, the RISC System/6000 on which you have just installed NetView DM/6000. The name of the target automatically defaults to the RISC System/6000's *hostname*.

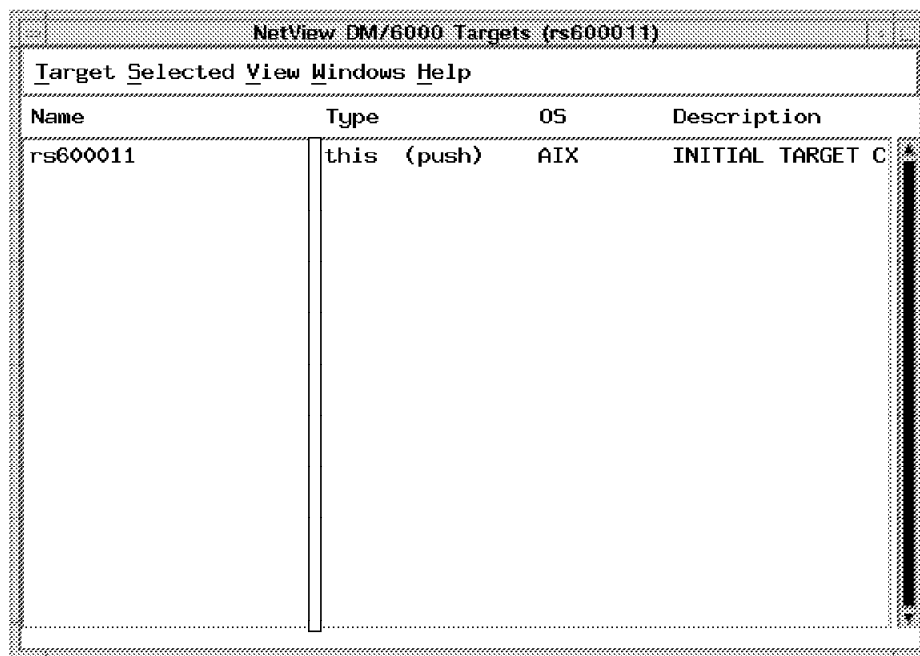
There are a number of additional local target attributes that you may customize, such as periods of activity, the level of logging and so on. For the purposes of this example, we will take the defaults on all attributes except those that we have to change to get this scenario to work, namely the server short name.

Note: The installation process chooses reasonable defaults for the other attributes. We recommend that you accept these for the present, and

concentrate on getting the basic communications between server and client working first. You can adjust some of the defaults later, if necessary.

To set the short name, do the following:

- Step 1. In the Catalog window (Figure 61 on page 88), select **Windows** from the menu bar.
- Step 2. Select **Targets** from the pull-down menu. After a short delay, the Targets window will open (Figure 62).



Name	Type	OS	Description
rs600011	this (push)	AIX	INITIAL TARGET C

Figure 62. Targets Window (Server)

- Step 3. From the Targets window, select the only target of type "this" in the list of targets. The "this" target should now be highlighted (Figure 63 on page 90).

NetView DM/6000 Targets (rs600011)			
_Target _Selected _View _Windows _Help			
Name	Type	OS	Description
rs600011	this (push)	AIX	INITIAL TARGET C

Figure 63. Targets Window with "This" Target Highlighted (Server)

- Step 4. Select **Selected** from the Targets window menu bar.
- Step 5. Select **Open** from the pull-down menu.
- Step 6. Select **Details** from the cascaded menu. After a short delay, a Local Target Details window will open.

The image shows a window titled "Local Target Details" with the following fields and options:

- Name:** rs600011
- Description:** INITIAL TARGET CONFIGURATION RECORD
- Change Management:**
 - Initiated from Focal Point or any target (push)
 - Initiated from same target only (pull)
- Short name:** RA60011B^
- LAN address:** (empty field)
- Target OS:** AIX

At the bottom, there are several buttons: Users..., Details..., Periods of activity..., Log..., Tokens..., Hardware..., OK, Cancel, and Help.

Figure 64. Local Target Details Window (Server)

- Step 7. Fill in the Short name field according to Figure 64.
- Step 8. Select the **OK** push button to make the changes effective. This will cause the change of network ID warning message to pop up (Figure 65).

The image shows a window titled "NetView DM/6000 Targets" with a message box containing the text: "The network-id of this domain has been changed to the short-name." Below the message is an "OK" button.

Figure 65. Targets Window with "This" Target Highlighted (Server)

- Step 9. Select the **OK** push button to clear the message.

Command Line Alternative

```
nvdm updtg rs600011 -s RA60011B
```

3.6.1.1 Explanation

We have chosen RA60011B as the server short name in anticipation of integrating the server into our NetView Distribution Manager/MVS environment. As this node is a NetView Distribution Manager/6000 server, RA60011B also becomes the RGN *and* REN for the node.

3.7 Adding the Client as a Target on the Server

To add the NetView Distribution Manager/6000 client as a target on the NetView Distribution Manager/6000 server, do the following:

- Step 1. Go to the Targets window (Figure 63 on page 90). If the Targets window is not already open, you can call it up by selecting **Windows** from the menu bar in any other NetView DM/6000 window (the Catalog window, for example) and selecting **Targets** from the pull-down menu.
- Step 2. Select **Target** from the Targets window menu bar.
- Step 3. Select **New local target** from the pull-down menu and the New Local Target window will open:

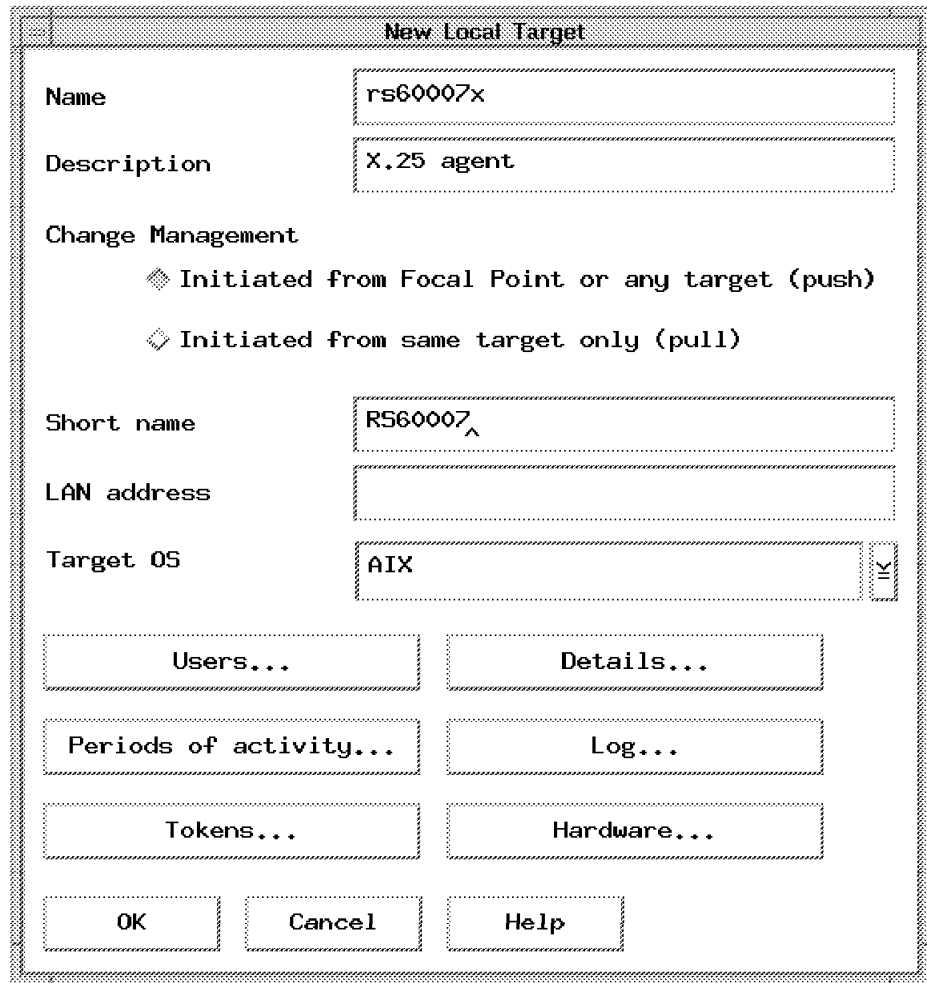


Figure 66. New Local Target Window

Step 4. Fill in all fields according to Figure 66.

Step 5. Select the **Users** button and the Target Users window will open.

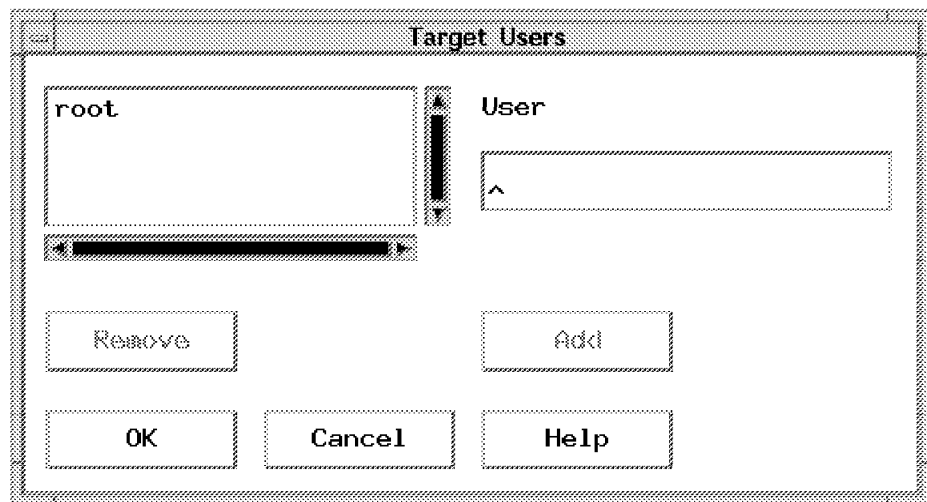


Figure 67. Updated Targets Window (Server)

- Step 6. Fill in the User field with root and select the **Add** button (see Figure 67).
- Step 7. Select the **OK** button. You will be returned to the New Local Target window. Make sure that the "Initiated from focal point or any target (push)" radio button is selected (this is the default).
- Step 8. Select the **OK** button to make the changes effective. You will be returned to the Targets window with the NetView Distribution Manager/6000 client added to the list of targets.

The screenshot shows a window titled "NetView DM/6000 Targets (rs600011)". Inside the window, there is a menu bar with "Target", "Selected", "View", "Windows", and "Help". Below the menu bar is a table with the following columns: Name, Type, OS, and Description. The table contains two rows of data:

Name	Type	OS	Description
rs600011	this (push)	AIX	INITIAL TARGET C
rs60007x	local (push)	AIX	X.25 agent

Figure 68. Updated Targets Window (Server)

The Targets window should now have the server and client system in the targets list (see Figure 68)

Command Line Alternative

```
nvdms addtg rs60007x -s RS60007 -u root -d "X.25 agent"
```

3.7.1.1 Explanation

We have chosen rs60007x as Name so it is the same as the IP host name of the client, for ease of reference.

We have chosen RS60007 as the Short name in anticipation of integrating the client into our NetView Distribution Manager/MVS environment. As this node is a NetView DMA/6000, RS60007 also becomes the REN for the node. It inherits its RGN (RA60011B) from the NetView Distribution Manager/6000 server short name.

3.8 Adding the Server to the Client's NetView Distribution Manager/6000 Base Configuration

```
WORKSTATION NAME:    rs60007x
MESSAGE LOG LEVEL:   N
LAN AUTHORIZATION:   0
CONFIGURATION:       CLIENT
MACHINE TYPE:        AIX
LOG FILE SIZE:       50000
TRACE FILE SIZE:     1000000
API TRACE FILE SIZE: 100
TCP/IP PORT:         729
SERVER:              rs600011x
REPOSITORY:          /usr/lpp/netviewdm/repos
SERVICE AREA:       /usr/lpp/netviewdm/service
BACKUP AREA:         /usr/lpp/netviewdm/backup
WORK AREA:           /usr/lpp/netviewdm/work
```

Figure 69. NetView Distribution Manager/6000 Base Configuration File (Client)

Do the following:

- Step 1. Log on to the client as the NetView DM/6000 administrator (root, in our example).
- Step 2. Go to the NetView DM/6000 database directory:
- ```
cd /usr/lpp/netviewdm/db
```
- Step 3. Using your preferred AIX editor (for instance *vi*) change the contents of the base configuration (*nvdn.cfg*) to that shown in Figure 69.

### 3.8.1.1 Explanation

Server (rs600011x) must match the IP host name of the server.

We have left all other attributes at their default values (or the values automatically inserted by the installation process).

---

## 3.9 Starting the Resources

Now that you have completed the configuration activities, you must start all the network resources. You should also check that they are still active before each distribution.

On the server, you must ensure that TCP/IP is running and that there is a path to the client.

On the client, you must ensure that:

- TCP/IP is running and there is a path to the server.
- NetView DMA/6000 is running

Instructions on starting these resources (and keeping them running) can be found in 3.10, "Managing NetView Distribution Manager/6000 at the Server or Client System" on page 96 and 3.11, "Managing TCP/IP at the Server or Client" on page 97.

---

## 3.10 Managing NetView Distribution Manager/6000 at the Server or Client System

Before you enter any of these commands, you must log on to the system concerned as the NetView DM/6000 administrator (root, in our examples).

If you need more information about using the `nvdn` sub-commands, look at the *NetView DM/6000 User's Guide*. For more information on the `startsrc` command, look in the *AIX Commands Reference*.

### 3.10.1 Getting the Status of NetView Distribution Manager/6000

To get the status of NetView DM/6000, enter the command:

```
nvdn stat
```

### 3.10.2 Starting NetView Distribution Manager/6000

To start NetView DM/6000, enter the command:

```
nvdn start
```

You can also start NetView DM/6000 using the source master:

```
startsrc -s NetViewDM/6000
```

However, source master support is not fully implemented in this release of NetView Distribution Manager/6000. For example, the status shows up as inoperative in the output from the `lssrc` command. Also, `stopsrc` fails because the source master believes that NetView DM/6000 is already inoperative.

We recommend that you steer clear of the source master commands, and use the `nvdn` command set instead.

**Note:** The NetView Distribution Manager/6000 installation process places an entry in `/etc/inittab` that automatically starts NetView DM/6000 on system reboot. This entry uses the `startsrc` command. Using the source master to *start* NetView DM/6000 seems to work OK. So long as you want NetView DM/6000 to be started automatically on reboot, we suggest that you leave this entry alone.

### 3.10.3 Stopping NetView Distribution Manager/6000

To gracefully terminate NetView DM/6000 at the *server*, enter the command:

```
nvdn stop -x
```

To gracefully terminate NetView DM/6000 at the *client*, enter the command:

```
nvdn stop
```

In either case, NetView DM/6000 has not completely stopped (and therefore cannot be started again) until the following message is written to the log (`/usr/lpp/netviewdm/fndlog`):

```
FNDC0149I: The last NetViewDM/6000 task is exiting.
```

If you use `nvdn stat` to get the status of NetView DM/6000 after it has stopped, you will get the error:

```
FNDCL127E "Cannot process the request. The transmission controller is not running"
```

As an alternative, you can check if NetView DM/6000 has stopped completely by examining the process table for NetView DM/6000 processes, all of which have names beginning with "fnd". We used the following pipe to do this:

```
ps -ef | grep fnd
```

When NetView DM/6000 is stopped, this command sequence will produce no output, so long as there are no other processes in your system that have the string "fnd" in their name. If there are, you may wish to use a more selective grep pattern.

The ps and grep commands are described in the *AIX Commands Reference*.

### 3.10.4 Refreshing NetView Distribution Manager/6000 "In Flight"

If NetView Distribution Manager/6000 is running when you make changes to the SNA/DS configuration, you must either stop and start NetView DM/6000 again, or refresh the runtime system "in flight" with the new values. It can take NetView DM/6000 several minutes to complete its stop processing; therefore, in most cases you will find it more convenient to refresh in flight (this generally takes just a few seconds to complete).

To refresh the NetView DM/6000 runtime tables in flight, do the following:

```
nvdm rld
```

---

## 3.11 Managing TCP/IP at the Server or Client

Before you enter any of these commands, you must log on to the system concerned as root.

If you need more information about using these commands, look at the *AIX Command Reference*.

### 3.11.1 Getting the Status of TCP/IP

In order for TCP/IP to function correctly:

- The TCP/IP server (inetd) needs to be active.
- The TCP/IP device driver for the X.25 adapter needs to be active.
- The NetView Distribution Manager/6000 subsystem needs to be active.
- A TCP/IP route must exist at server and client.
- A TCP/IP path must exist between server and client.

If you find a problem in any of these areas, you may need expert help, for example from your local network administrator. Diagnosing problems in the TCP/IP network is beyond the scope of this book. Refer to *AIX Communications Concepts and Procedures* for guidance.

#### 3.11.1.1 Status of TCP/IP Server (at Server or Client)

To check the status of the TCP/IP server and NetView DM/6000, enter the command:

```
lssrc -l -s inetd
```

Check that NetViewDM/6000 shows up as active in the output.

### 3.11.1.2 Status of TCP/IP Device Driver (at Server or Client)

To check the TCP/IP device driver status for the X.25 IP network interface enter the command:

```
ifconfig xt0
```

Check that the device driver shows up as RUNNING in the output.

### 3.11.1.3 TCP/IP Route (at Server or Client)

To check that a TCP/IP route exists for the X.25 IP network interface enter the command:

```
netstat -r
```

Check that the X.25 IP network interface (xt0) shows up in the output against your X.25 IP network address (9.24.105 in our examples).

### 3.11.1.4 Originating TCP/IP Connection from Server

Check the path to the client (from the server) with the command:

```
ping rs60007x 5 5
```

The ping command will send 5 packets to the client and wait 5 seconds for a response. Check that you get the message 64 bytes received from rs60007. If the path is reliable, you will get this message 5 times.

### 3.11.1.5 Originating TCP/IP Connection from Client

Check the path to the server (from the client) with the command:

```
ping rs600011x 5 5
```

The ping command will send 5 packets to the server and wait 5 seconds for a response. Check that you get the message 64 bytes received from rs600011. If the path is reliable, you will get this message 5 times.

## 3.11.2 Starting TCP/IP

TCP/IP should have been started automatically because you put "yes" in the Start Now field when you configured it (Figure 54 on page 73 and Figure 58 on page 79).

TCP/IP is also started automatically on system reboot.

## 3.11.3 Stopping TCP/IP

There should be no reason, during normal use of NetView Distribution Manager/6000, for you to stop TCP/IP at the server or client.

---

## Chapter 4. NetView DM Agent for HP-UX

---

### 4.1 Overview and Objective

In this scenario we will perform the installation and configuration of NetView Distribution Management Agent for HP-UX (NetView DM Agent for HP-UX). When NetView DM Agent for HP-UX is configured we will show some examples how software can be distributed to an HP-UX client using a NetView DM/6000 server.

This chapter is intended for system administrators who have to manage software distribution to HP-UX clients in their network.

It is assumed that the reader is already familiar with NetView DM/6000 and with the AIX operating system. Also a knowledge of TCP/IP and UNIX systems in general is recommended. Necessary HP-UX commands will be explained if they differ from the AIX commands.

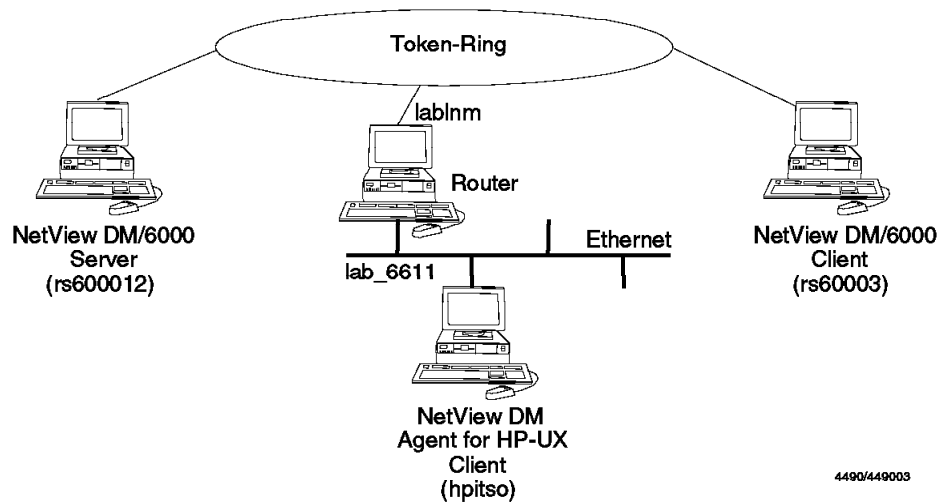


Figure 70. NetView DM Agent for HP-UX Scenario

In this scenario we will perform the following steps:

- Install NetView DM Agent for HP-UX.
- Configure NetView DM Agent for HP-UX.
- Install a change file on both, AIX and HP-UX.
- Install an HP system file on HP-UX.

#### 4.1.1 Scenario

We use a RISC System/6000 Model 370 as our NetView DM/6000 server. The NetView DM Agent for HP-UX client will be an HP Apollo Model 715/75. The NetView DM/6000 server (rs600012) is assigned the IP address 9.24.104.124.

The HP workstation (hpitso) is connected to an Ethernet and is assigned the IP address 9.67.32.12.

In addition we will use a NetView DMA/6000 client (rs60003) to demonstrate how a software package can be distributed to both platforms.

The HP-UX 9.0 operating system is installed on the Apollo workstation. This is a BSD (Berkeley Software Distribution) style UNIX operating system.

### 4.1.2 Prerequisites

In order to install NetView DM Agent for HP-UX you need the following on the HP workstation:

- HP-UX Version 8.07 or later (we use HP-UX 9.0)
- X-Windows Release 4 (X11R4) or later
- The OSF/Motif or HP Visual Environment Resource Manager (VUERM) window managers
- HP9000-Transmission Control Protocol/Internet Protocol (HP9000-TCP/IP)
- 16MB memory
- At least 8MB free disk space in the /usr file system to install the product
- At least 7MB free disk space to temporarily store the install files of NetView DM Agent for HP-UX

---

## 4.2 Installing NetView DM Agent for HP-UX

NetView DM Agent for HP-UX will not be installed directly at the HP workstation. Instead NetView DM Agent for HP-UX is packaged as an AIX installp image. So it will be installed at a RISC System/6000 first and then be copied to the HP workstation.

### 4.2.1 Installing NetView DM Agent for HP-UX on the RISC System/6000

The NetView DM Agent for HP-UX will be installed on a RISC System/6000 first. That can be any workstation that has a network connection to the HP workstation you want to install.

If you use a workstation in your NetView DM/6000 domain then you can pre-configure the NetView DM Agent for HP-UX before you install it on the HP workstation.

We will use the NetView DM/6000 server to install NetView DM Agent for HP-UX.

To install NetView DM Agent for HP-UX we use the command:

```
smitty install_latest
```

We select /usr/sys/inst.images as our input device because we use an installp image stored on our hard disk. If you install from a tape you must select the tape drive.

A panel similar to the following will appear:

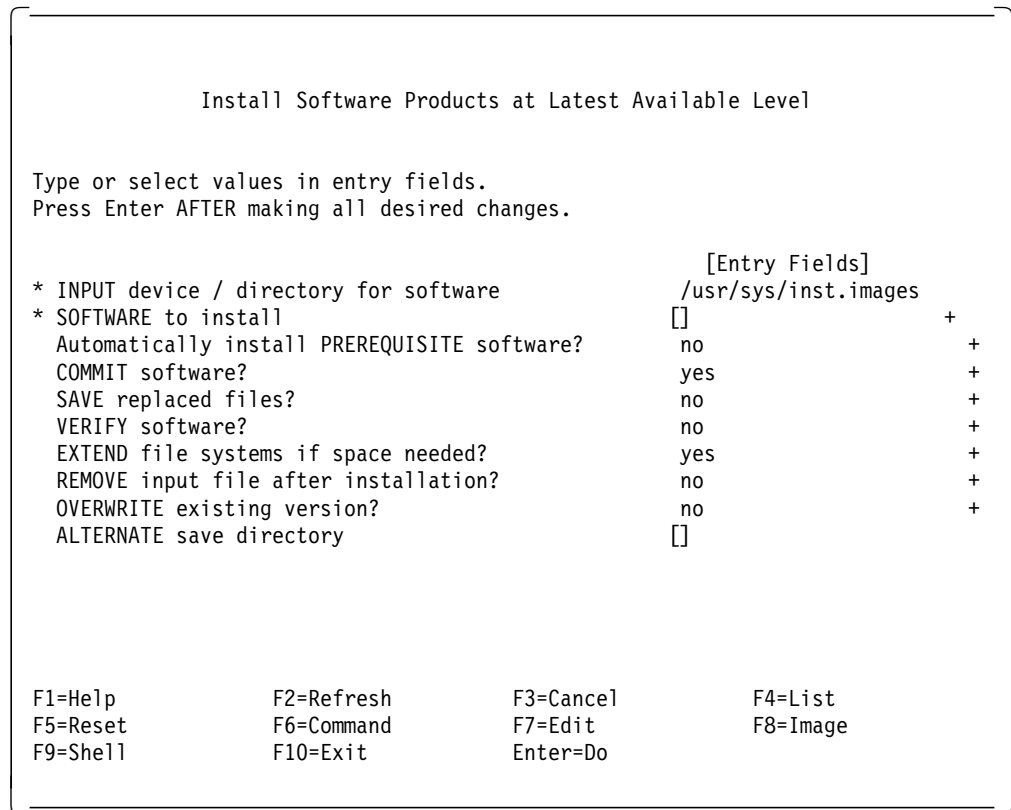


Figure 71. SMIT Install Software Products Panel

Move the cursor to the SOFTWARE to install field and press **F4**.

A panel similar to the following will appear:

```

Install Software Products at Latest Available Level

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

 [Entry Fields]
* INPUT device / directory for software /usr/sys/inst.images
* +-----+-----+-----+-----+
| SOFTWARE to install |++
| |++
| Move cursor to desired item and press F7. |++
| ONE OR MORE items can be selected. |++
| Press Enter AFTER making all selections. |++
| |++
| > 1.0.0.0 nvdmHP7c1t ALL |++
| 1.0.0.0 nvdmHP7c1t.obj |++
| |++
| > 1.0.0.0 nvdmHP7c1tEn_US |++
| 1.0.0.0 nvdmHP7c1tEn_US.msg |++
| |++
| F1=Help F2=Refresh F3=Cancel |++
| F7=Select F8=Image F10=Exit |++
| F5 Enter=Do /=Find n=Find Next |++
| F9+-----+-----+-----+-----+

```

Figure 72. SMIT Install Software Products Panel

Move the cursor to `nvdmHP7c1t` and select it using **F7**. Then move the cursor to `nvdmHP7c1tEn_US` and select it using **F7**. When you have selected both objects press Enter. Change the fields to the values displayed in Figure 71 on page 101 and press Enter again.

**Note**

If you want to install just one NetView DM Agent for HP-UX client it may be a good idea just to apply the NetView DM Agent for HP-UX software at the RISC System/6000 and then reject it again after you have installed the HP workstation. This will free the space that is consumed by the NetView DM Agent for HP-UX installation files.

This will install the NetView DM Agent for HP-UX software on your RISC System/6000 workstation.

After the installation you will have the following files in the `/usr/lpp/nvdmHP7` directory.

**README**

This file contains the latest product information.

**nvdmHP7c1t.tar**

This file contains the code for NetView DM Agent for HP-UX in `tar` format.



### **nvdmHP7cltEn\_US.tar**

This file contains the English messages for NetView DM Agent for HP-UX in *tar* format.

### **nvdminstall**

This is a shell script which will be used to install NetView DM Agent for HP-UX on the HP workstation.

### **oemfndpc**

This is a shell script which will be used to pre-configure NetView DM Agent for HP-UX on the RISC System/6000.

## **4.2.2 Pre-configuring NetView DM Agent for HP-UX at the RISC System/6000**

NetView DM Agent for HP-UX can be pre-configured on your RISC System/6000 before you copy it to the HP client system.

For that purpose there is a script *oemfndpc* in the */usr/lpp/nvdMHP7* directory after you have installed NetView DM Agent for HP-UX.

Invoke this script to pre-configure NetView DM Agent for HP-UX:

```
cd /usr/lpp/nvdMHP7
./oemfndpc
```

The script will:

- Extract the files from the NetView DM Agent for HP-UX installation archive.
- Modify the *nvdM.cfg* file which will be installed at the HP client.
- Rebuild the installation archive.

The *oemfndpc* script is equivalent to the *fndpc* script used in NetView DMA/6000.

The configuration script will modify the *SERVER* and the *TCP/IP PORT* fields in the *nvdM.cfg* file.

It copies the values from the */usr/lpp/netviewdm/db/nvdM.cfg* file at the RISC System/6000 where you run the configuration script. Therefore you should run the script at a workstation inside the same NetView DM/6000 domain where the HP workstation will reside.

#### **Warning**

If you decide to run the configuration script *oemfndpc* you must ensure that there is enough space left in the file system where */usr/lpp/nvdMHP7* resides.

If there is not enough space in your file system the *oemfndpc* script may damage the install image because it then cannot rebuild the *tar* file.

Usually */usr/lpp/nvdMHP7* resides in the */usr* file system. You will need about 6MB in this file system to extract the installation image.

Use the following command to check if there is enough space left in the file system:

df

The output should look similar to the following:

| Filesystem  | Total KB | free  | %used | iused | %iused | Mounted on           |
|-------------|----------|-------|-------|-------|--------|----------------------|
| /dev/hd4    | 12288    | 1424  | 88%   | 1078  | 26%    | /                    |
| /dev/hd9var | 20480    | 2200  | 89%   | 1430  | 23%    | /var                 |
| /dev/hd2    | 643072   | 11852 | 98%   | 24640 | 15%    | /usr                 |
| /dev/hd3    | 12288    | 9620  | 21%   | 140   | 3%     | /tmp                 |
| /dev/hd1    | 4096     | 3764  | 8%    | 47    | 4%     | /home                |
| /dev/lv01   | 151552   | 23224 | 84%   | 331   | 0%     | /usr/lpp/netviewdm   |
| /dev/lv04   | 32768    | 14084 | 57%   | 21    | 0%     | /usr/sys/inst.images |

Figure 73. Output from df Command

If there is less than 6MB left in the /usr file system do either of the following:

- Erase some unnecessary files from the /usr file system *or*
- Enlarge the /usr file system using `smit chfs`.

To check if the archive is in the right format after you have run the configuration script you can invoke the following command:

```
cd /usr/lpp/nvdmHP7
tar -tvf nvdmHP7c1t.tar
```

This command should produce an output similar to the following:

|            |   |     |         |                      |  |                |
|------------|---|-----|---------|----------------------|--|----------------|
| -rw-r--r-- | 0 | 3   | 4915200 | Oct 11 18:54:35 1994 |  | nvdmHP7exe.tar |
| -r-sr-s--- | 0 | 200 | 6338    | Apr 14 11:50:59 1994 |  | dvainc.pi      |
| -r-sr-s--- | 0 | 200 | 12453   | Apr 14 11:50:59 1994 |  | dvainc.cf      |

Figure 74. Output from tar Command

If it does not the archive is damaged.

### 4.2.3 Configuring TCP/IP at the CC Server

In order to communicate with the HP workstation we add the the IP address of the workstation to the /etc/hosts file at the CC Server (rs600012).

We add the following line:

```
9.67.32.12 hpitso
```

The HP workstation resides in another IP subnet, so we also have to add an entry to the IP routing table. The CC Server is attached to a token-ring network (subnet 9.24.104) which is connected to the Ethernet network (subnet 9.67.32) where the HP workstation resides through a router (lablnm).

The following command will add the IP route:

```
route add net 9.67.32 labnm 1
```

The above command will add the route only temporarily, that is until the next reboot.

To add the route permanently we use the command:

```
smit mkroute
```

The following panel will appear:

Add Static Route

Type or select values in entry fields.  
Press Enter AFTER making all desired changes.

|                                                            | [Entry Fields] |   |  |  |
|------------------------------------------------------------|----------------|---|--|--|
| Destination TYPE                                           | net            | + |  |  |
| * DESTINATION Address<br>(dotted decimal or symbolic name) | [9.67.32]      |   |  |  |
| * GATEWAY Address<br>(dotted decimal or symbolic name)     | [labnm]        |   |  |  |
| * METRIC (number of hops to destination gateway)           | [1]            | # |  |  |
| Network MASK (dotted decimal)                              | []             |   |  |  |

|             |               |            |             |
|-------------|---------------|------------|-------------|
| F1=Help     | F2=Refresh    | F3=Cancel  | F4=List     |
| Esc+5=Reset | Esc+6=Command | Esc+7=Edit | Esc+8=Image |
| Esc+9=Shell | Esc+0=Exit    | Enter=Do   |             |

Figure 75. SMIT Add Static Route Panel

We enter the values as shown and press Enter. This will add the new route permanently.

At the HP workstation the router is known under the name *lab\_6611*, and has the following entry in the */etc/hosts* file:

```
9.67.32.10 lab_6611
```

To add the route to the network 9.24.104 at the HP workstation we type:

```
route add 9.24.104 lab_6611 1
```

To add the route permanently to the system we add the above line to the /etc/netlinkrc file. This file will be executed at system boot.

#### 4.2.4 Installing NetView DM Agent for HP-UX on the HP Workstation

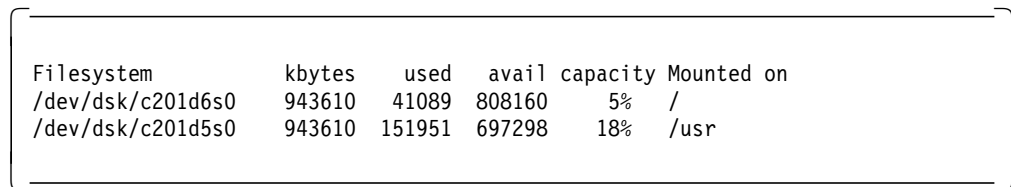
We will now install NetView DM Agent for HP-UX from the RISC System/6000 to the HP workstation.

The installation files will be copied to a temporary area at the HP workstation and then be installed in the /usr file system.

You will need about 7MB to temporarily store the installation files and about 7MB to install the product.

You can use the bdf command on the HP workstation to check if there is enough space left.

On our client this produced the following output:



```
Filesystem kbytes used avail capacity Mounted on
/dev/dsk/c201d6s0 943610 41089 808160 5% /
/dev/dsk/c201d5s0 943610 151951 697298 18% /usr
```

Figure 76. Output from bdf Command

We will copy the installation files to the /tmp directory in the / file system. The files will be copied using the ftp command:

```
ftp hpitso
```

The following panel shows the ftp sequence we used to transfer the files:

```

Connected to hpitso.
220 hpitso FTP server (Version 1.7.193.3 Thu Jul 22 18:32:22 GMT 1993) ready.
Name (hpitso:root): root
331 Password required for root.
Password:
230 User root logged in.
ftp> cd /tmp
250 CWD command successful.
ftp> bi
200 Type set to I.
ftp> put nvdminstall
200 PORT command successful.
150 Opening BINARY mode data connection for nvdminstall.
226 Transfer complete.
19287 bytes sent in 0.03 seconds (627.9 Kbytes/s)
ftp> put nvdmHP7c1t.tar
200 PORT command successful.
150 Opening BINARY mode data connection for nvdmHP7c1t.tar.
226 Transfer complete.
4567040 bytes sent in 60.01 seconds (74.32 Kbytes/s)
ftp> put nvdmHP7c1tEn_US.tar
200 PORT command successful.
150 Opening BINARY mode data connection for nvdmHP7c1tEn_US.tar.
226 Transfer complete.
1300480 bytes sent in 19.69 seconds (64.5 Kbytes/s)
ftp> quit
221 Goodbye.

```

Figure 77. Transferring Files Using ftp

When the file transfer is finished we log into the HP workstation as root user to perform the installation.

Before we can execute the installation script `nvdminstall` we have to set the execute permission for the user in the access permission field:

```

cd /tmp
chmod u+x nvdminstall

```

Then we can start the installation using:

```

./nvdminstall 2>1& | tee logfile

```

This will invoke the installation script `nvdminstall` and write all screen output into the file `logfile`.

The `nvdminstall` script will guide you through the installation. It can also be used to remove the product from the workstation.

The following figure shows the sequence we used to install the product:

This is the install program for  
NetView Distribution Management Agent for HP-UX  
(NetView DMA for HP-UX) version 1.0

This program will install or remove  
NetView DMA for HP-UX version 1.0  
Please select the desired action from the list below:

1. Install the Agent for HP series 700
2. Uninstall the Agent for HP series 700
3. Quit

1 <ENTER>

You selected to install the Agent for HP series 700

Please select the desired operating language for  
NetView DMA for HP-UX from the list below:

1. English
2. Return to main menu

1 <ENTER>

You selected English

WARNING: THIS IS YOUR LAST CHANCE TO QUIT THE INSTALL PROCESS.

Do you wish to continue with the installation (y/n)? y

OK

Installing NetView DMA for HP-UX ...  
x nvdMHP7exe.tar, 4915200 bytes, 9600 tape blocks  
x dvainc.pi, 6338 bytes, 13 tape blocks  
x dvainc.cf, 12453 bytes, 25 tape blocks  
...

Work, Repository, Service and Backup directories are defaulted to  
/usr/lpp/netviewdm  
Please ensure adequate space or modify the nvdM.cfg file accordingly

Do you wish to delete the installation (\*.tar) files(y/n)? n

Figure 78. Installation Protocol (Part 1)

```
Leaving installation files as they are.

Installation successfully ended.

This program will install or uninstall
the NetView DMA for HP-UX version 1.0
Please select the desired action from the list below:

 1. Install the Agent for HP series 700
 2. Uninstall the Agent for HP series 700
 3. Quit

 3 <ENTER>

Quitting...
```

Figure 79. Installation Protocol (Part 2)

The agent is now ready to be started. The installation script has changed the WORKSTATION NAME entry in `nvdn.cfg` to contain the hostname of the workstation where you execute the script.

If you did not pre-configure the NetView DM Agent for HP-UX on your RISC System/6000 using the `oemfndpc` script you have to edit the SERVER and the TCP/IP PORT in the `/usr/lpp/netviewdm/db/nvdn.cfg` file on your HP workstation to reflect the server configuration.

The only thing left to do is to add an entry for the NetView DM/6000 server in your `/etc/hosts` file.

In our example we add the line:

```
9.24.104.124 rs600012
```

The installation script `nvdninstall` will call two other shell scripts during the installation, the pre-installation script `dvainc.pi` and the post-installation script `dvainc.cf`.

The pre-installation script `dvainc.pi` will:

- Prepare the environment for NetView DM Agent for HP-UX
- Add the user group FNDADMN to the system
- Create the `/usr/lpp/netviewdm` directory

The post-installation script `dvainc.cf` will:

- Create all necessary symbolic links
- Adjust file permissions
- Add an entry to `/etc/inittab` which starts NetView DM Agent for HP-UX at system boot
- Generate the NetView DM Agent for HP-UX entries for the software inventory file `/usr/lpp/netviewdm/fndswinv`

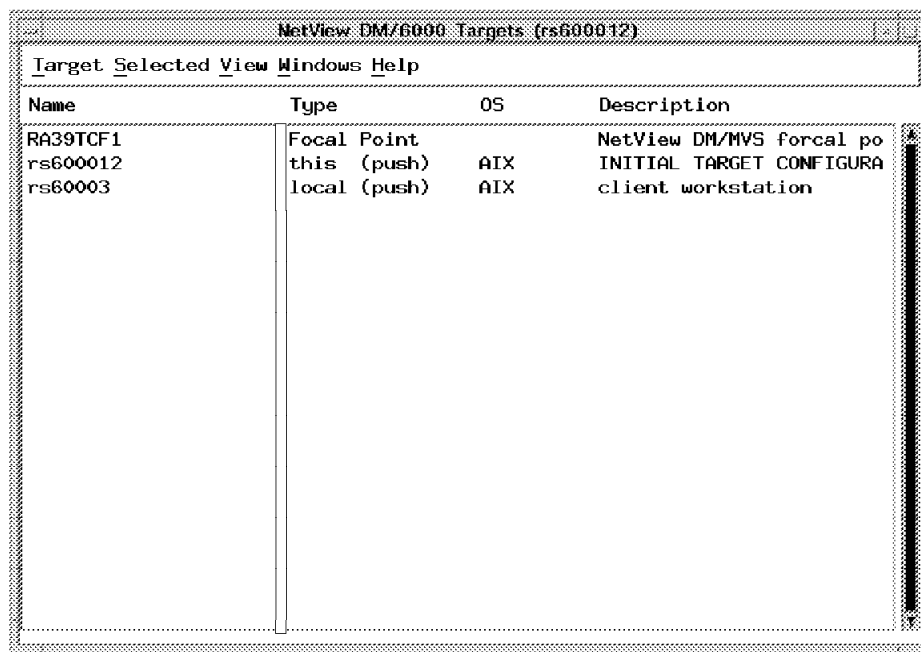
### 4.3 Adding a New Local Target for NetView DM Agent for HP-UX

In order to distribute software to the newly installed NetView DM Agent for HP-UX workstation we have to add a local target at our NetView DM/6000 server.

We do the following:

1. Log into the NetView DM/6000 server as CC administrator.
2. Start the graphical interface using `nvdmg` &.
3. From the action bar we select **Windows**.
4. From the menu we select **Targets**.

A panel similar to the following will appear:



The screenshot shows a window titled "NetView DM/6000 Targets (rs600012)". The window has a menu bar with "Target", "Selected", "View", "Windows", and "Help". Below the menu bar is a table with the following data:

| Name     | Type         | OS  | Description              |
|----------|--------------|-----|--------------------------|
| RA39TCF1 | Focal Point  |     | NetView DM/MVS forcal po |
| rs600012 | this (push)  | AIX | INITIAL TARGET CONFIGURA |
| rs60003  | local (push) | AIX | client workstation       |

Figure 80. NetView DM/6000 Target Window

From the action bar we select **Target** and then **New Local Target** from the pull-down menu.

The following panel will appear:



**New Local Target**

Name

Description

Change Management

Initiated from Focal Point or any target (push)

Initiated from same target only (pull)

Short name

LAN address

Target OS

Figure 81. NetView DM/6000 New Local Target Window

We perform the following steps:

- Step 1. In the Name field enter **hpitso**. This is the hostname of our HP workstation.
- Step 2. In the Description field enter a description of the client (optional).
- Step 3. In the Change Management field select **push**.
- Step 4. In the Short name field enter **HPITSO**.
- Step 5. Leave the LAN address field blank.
- Step 6. In the Target OS field select **HP-UX**.
- Step 7. Select the **Users** push button.
- Step 8. Add the root user as a client user.
- Step 9. Select the **OK** push button.

We have now added a local CC target for the HP workstation.

### 4.3.1 Starting NetView DM Agent for HP-UX

You can start NetView DM Agent for HP-UX by typing the following command at your HP workstation:

```
nvdn start
```

The next time you boot your HP workstation NetView DM Agent for HP-UX will be started automatically, because the installation script adds the following entry to your `/etc/inittab` file:

```
NvDM:234:once:/etc/rc.ndm
```

The script `/etc/rc.ndm` will start NetView DM Agent for HP-UX.

If NetView DM Agent for HP-UX does not start correctly there may be one of the following error conditions:

- The NetView DM/6000 server is not known.
- The connection to the NetView DM/6000 server does not work.
- The hostname of the agent is wrong.
- The agent is not configured correctly.
- There is no local target defined for NetView DM Agent for HP-UX.

Ensure that you have an entry for the NetView DM/6000 server in your `/etc/hosts` file.

Enter the following command to test if the connection to your NetView DM/6000 server works:

```
ping rs600012
```

If the ping command does not produce any output, check if your network interface is working and if your routing table contains the necessary entries.

To check your TCP/IP network interface on a HP workstation with an Ethernet card you can use the following command:

```
ifconfig lan0
```

To display the current routing table you can use the command:

```
netstat -r
```

Check that your hostname is set correctly. NetView DM Agent for HP-UX will use the hostname of your system to contact the server, so it must be the same as the `WORKSTATION NAME` in your `nvdn.cfg` file.

You can use the `hostname` command to display the hostname. If the displayed hostname is not correct, you can set it using the System Administration Manager (SAM).

Make sure that your `nvdn.cfg` file contains the correct entries for `SERVER`, `WORKSTATION NAME` and `TCP/IP PORT`. Normally this configuration is done by the scripts `oemfndpc` and `nvdninstall`.

In our example the correct configuration file looks like the following:

```
WORKSTATION NAME: hpitso
MESSAGE LOG LEVEL: N
LAN AUTHORIZATION: 0
CONFIGURATION: CLIENT
MACHINE TYPE: HP_UX
LOG FILE SIZE: 50000
TRACE FILE SIZE: 1000000
API TRACE FILE SIZE: 100
TCP/IP PORT: 729
SERVER: rs600012
REPOSITORY: /usr/lpp/netviewdm/repos
SERVICE AREA: /usr/lpp/netviewdm/service
BACKUP AREA: /usr/lpp/netviewdm/backup
WORK AREA: /usr/lpp/netviewdm/work
```

Figure 82. `/usr/lpp/netviewdm/db/nvdn.cfg` File

Make sure that you have defined a local target for NetView DM Agent for HP-UX at your NetView DM/6000 server. How to do this is described in 4.3, “Adding a New Local Target for NetView DM Agent for HP-UX” on page 110.

---

## 4.4 Using NetView DM Agent for HP-UX at the HP Workstation

To use the NetView DM graphical interface on the HP workstation you use the same command as on the NetView DM/6000 workstations:

```
nvdnmg &
```

On the HP workstation you can either use the Motif Window Manager (`mwm`) or the HP Visual Environment Resource Manager (`VUERM`).

If you use Motif the windows will look the same as on a RISC System/6000 workstation. If you use `VUERM` they will look slightly different.

To start Motif on the HP workstation from the ASCII mode type:

```
/usr/bin/x11start
```

This will bring up the Motif Window Manager.

You can customize the graphical interface of NetView DM Agent for HP-UX by editing the file `/usr/lib/X11/app-defaults/Nvdnmg` which is a symbolic link to `/usr/lpp/netviewdm/bitmaps/Nvdnmg`.

You can of course also redirect the display of NetView DM Agent for HP-UX to any RISC System/6000 on the network which supports X11 and Motif.

For example to display the NetView DM Agent for HP-UX graphical user interface of *hpitso* on *rs600012* type the following on *rs600012*:

```
export DISPLAY=rs600012:0
xhost +hpitso
```

On *hpitso* type:

```
DISPLAY=rs600012:0
export DISPLAY
nvdmgj &
```

This is especially useful when you telnet into *hpitso* from a RISC System/6000 and want the graphical interface to appear on the screen of your RISC System/6000 workstation.

---

## 4.5 Installing a Change File on a RISC System/6000 and an HP Workstation

In this section we will create a change file to distribute a software package to a RISC System/6000 client as well as to an HP workstation.

### 4.5.1 Creating a Sample Application

We will create a simple application that can be used on both operating systems, HP-UX and AIX.

Both systems have a tool for system management, the System Management Interface Tool (SMIT) on AIX and the System Administration Manager (SAM) in HP-UX.

Both tools provide a menu system for performing the different system administration tasks. These menus can be modified by the user on both operating systems.

We will add two new menus linked to two commands:

- One menu for executing the `ls` command.
- One menu for executing the `ps` command.

#### 4.5.1.1 Preparing the HP-UX Application

In HP-UX you have to supply a file `*.ou` in the `/usr/sam/custom` directory to add your own menus to SAM. This file has to have a special syntax. Refer to the appropriate HP documentation for information about the syntax.

The following file contains the definitions to add the new menus:

```
label "Execute simple commands"
{
 label "Execute ls -l command"
 command "/bin/ls -l"
 label "Execute ps -ef command"
 command "/bin/ps -ef"
}
```

*Figure 83. Menu Definition File testmenu.ou*

We will store this file at our preparation system under the name:

`/pictures/hp/testmenu.ou`

To remove the menus from SAM you just have to remove the file from the directory:

`/usr/sam/custom`

#### **4.5.1.2 Preparing the AIX Application**

In AIX you have to write an ODM definition file to define new menus and commands for SMIT.

The following file contains the necessary definitions to add the desired menus and commands.

```

sm_menu_opt:
 id = "top_menu"
 id_seq_num = "105"
 text = "Other Utilities"
 next_type = "m"
 next_id = "other_utils"
sm_menu_opt:
 id = "other_utils"
 id_seq_num = "010"
 text = "Execute ls -l command"
 next_type = "d"
 next_id = "other_ls"
sm_menu_opt:
 id = "other_utils"
 id_seq_num = "020"
 text = "Execute ps -ef command"
 next_type = "d"
 next_id = "other_ps"
sm_cmd_hdr:
 id = "other_ls"
 name = "Execute ls"
 cmd_to_exec = "/bin/ls -l"
 ask = "n"
 ghost = "y"
 exec_mode = "p"
sm_cmd_hdr:
 id = "other_ps"
 name = "Execute ps"
 cmd_to_exec = "/bin/ps -ef"
 ask = "n"
 ghost = "y"
 exec_mode = "p"

```

Figure 84. test.odmadd

We will store this file at our preparation system under the name:

```
/pictures/hp/test.odmadd
```

The new definitions can be added to the object repository using the command:

```
odmadd test.odmadd
```

To remove the definitions we have to remove the entries from all affected ODM classes. The following shell script will do this:

```

odmdelete -o sm_menu_opt -q next_id="other_utils"
odmdelete -o sm_menu_opt -q "id like 'other_*'"
odmdelete -o sm_cmd_hdr -q "id like 'other_*'"

```

Figure 85. test.odmdel

We will store this file at our preparation system under the name  
/pictures/hp/test.odmdel.

### 4.5.1.3 Writing an Installation Script

We will use one installation script to install the application on both platforms.

The script takes the first argument to decide whether it installs on HP-UX or AIX.

We assume that the workstations on our network obey the following naming conventions:

- The names of HP workstations start with "hp".
- The names of AIX workstations start with "rs".

We can then use the \$(TARGET) token to differentiate between an HP and an IBM target.

This is to demonstrate how to use the \$(TARGET) token to differentiate between HP and IBM systems. As an alternative you can use the following lines to detect if you are on an IBM or HP system:

```
#!/bin/ksh
while AIX uses the file /etc/filesystems to
store file system information, HP-UX uses the
file /etc/checklist

if ["ls /etc/checklist 2>/dev/null" != ""]
then
 print "HP-UX"
else
 print "AIX"
fi
```

The installation script will be used as the post-installation script to configure the application at the target:

```
#!/bin/ksh
#
demo package installer
#
type=echo $1 | cut -c1-2

if ["$type" = "hp" -o "$type" = "HP"]
then
 print "Machine Type : HP"
 cp /usr/lpp/test/testmenu.ou /usr/sam/custom
fi

if ["$type" = "rs" -o "$type" = "RS"]
then
 print "Machine Type : IBM"
 /usr/bin/odmadd /usr/lpp/test/test.odmadd
fi
```

Figure 86. Installer

We will store this file at our preparation system under the name:

/pictures/hp/installer

#### 4.5.1.4 Writing an Uninstall Script

To remove the application when the change file is uninstalled we use a script which is similar to the install script:

```
#!/bin/ksh
#
demo package uninstaller
#
type=echo $1 | cut -c1-2

if ["$type" = "hp" -o "$type" = "HP"]
then
 print "Machine Type : HP"
 rm /usr/sam/custom/testmenu.ou
fi

if ["$type" = "rs" -o "$type" = "RS"]
then
 print "Machine Type : IBM"
 /usr/lpp/test/test.odm del
fi
```

Figure 87. Uninstaller

We will store this file at our preparation system under the name:

/picture/hp/uninstaller

#### 4.5.2 Creating the Change File

We will create a change file profile for our application and use it to generate the change file.



```

GLOBAL NAME: NVDM.MENUTOOL.REF.1
CHANGE FILE TYPE: UNIXGEN
COMPRESSION TYPE: LZW
PACK FILES: NO
POST-INSTALL: /usr/lpp/test/installer $(TARGET)
PRE-REMOVE: /usr/lpp/test/uninstaller $(TARGET)
PRE-UNINSTALL: /usr/lpp/test/uninstaller $(TARGET)
OBJECT:
 SOURCE NAME: /pictures/hp/installer
 TARGET NAME: /usr/lpp/test/installer
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /pictures/hp/test.odmadd
 TARGET NAME: /usr/lpp/test/test.odmadd
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /pictures/hp/test.odmde1
 TARGET NAME: /usr/lpp/test/test.odmde1
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /pictures/hp/testmenu.ou
 TARGET NAME: /usr/lpp/test/testmenu.ou
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /pictures/hp/uninstaller
 TARGET NAME: /usr/lpp/test/uninstaller
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO

```

Figure 88. Change File Profile for Sample Application

We use the `nvdms` command to build and catalog our change file. If the change profile was named `test.profile` the command to build and catalog the change file would be:

```
nvdms bld test.profile
```

This will build and catalog the change file. The application is now ready to be distributed.

**Note**

You have to ensure that you use a workstation for building the profile which has the right level of NetView DM installed so that the change file can be used on all target systems.

In our example we have to build the change file at the HP workstation because NetView DM Agent for HP-UX is Version 1.0 while our NetView DM/6000 server is Version 1.2.

Since we have no other system on our network left which is able to produce Version 1.0 change files we have to use the HP client.

If we built the change file on a NetView DM/6000 system that uses Version 1.1 or higher we would not be able to install it on NetView DM Agent for HP-UX.

### 4.5.3 Installing the Change File on a RISC System/6000

We will use the following command to install the change file at the RISC System/6000 with the name *rs60003*.

```
nvdms inst NVDM.MENUTOOL.REF.1 -w rs60003
```

If the installation succeeds the following line should be in the */usr/lpp/netviewdm/work/request.out* file at *rs60003*.

Machine Type : IBM

To validate if the new menu is included in SMIT we log into *rs60003* and start smit.

The following panel should appear:

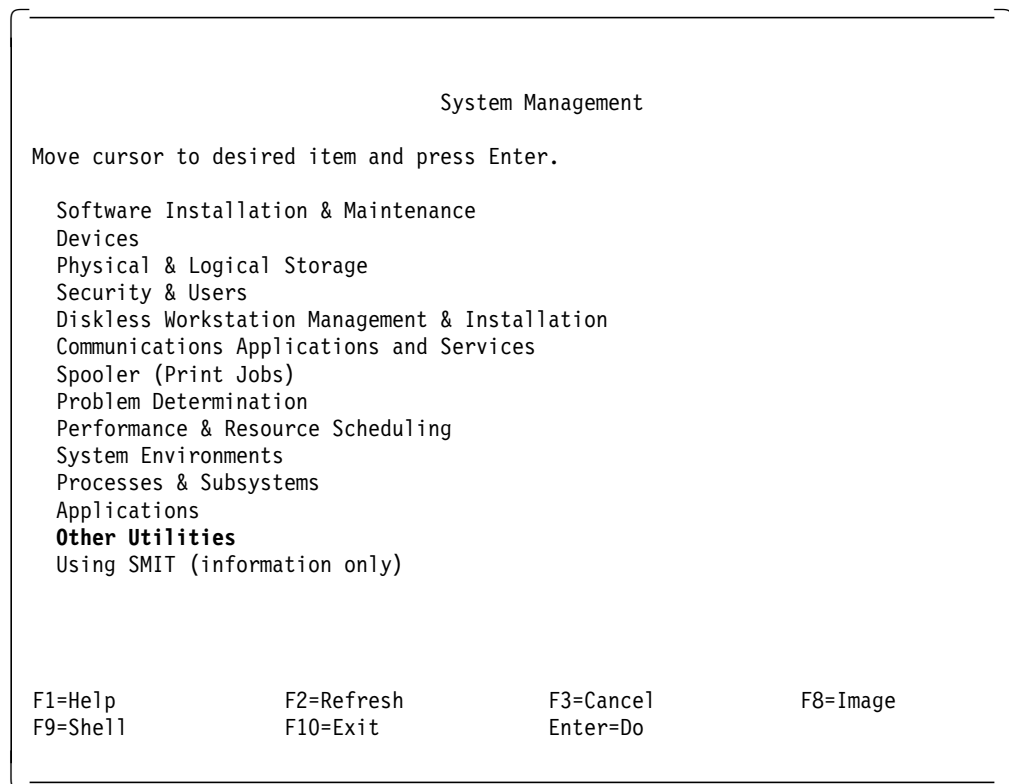
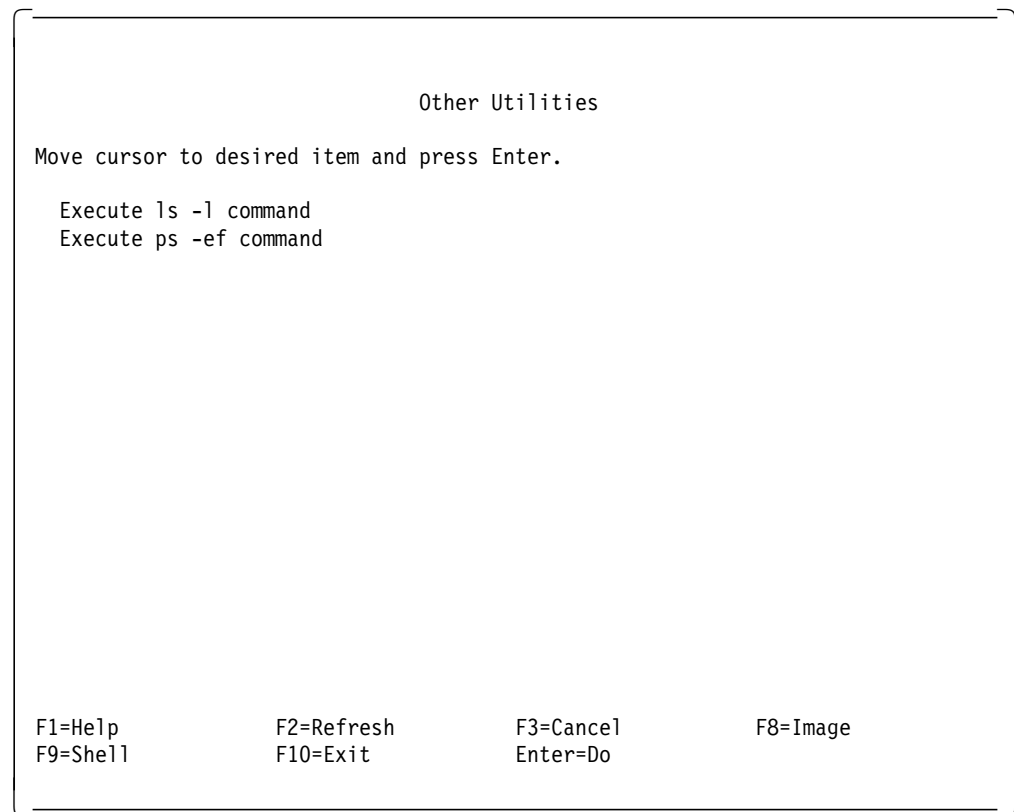


Figure 89. Modified SMIT Main Menu

There is a new menu **Other Utilities** which has been added to SMIT. Move the cursor to this menu and press Enter.

The following panel will appear:



*Figure 90. Own Menu Added to SMIT*

If you select **Execute ls -l command** the following panel will appear:

```

 COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below.

[TOP]
total 5913
dr-xr-xr-x 3 root system 2048 May 12 1989 ...
lrwxrwxrwx 1 root sys 29 Jul 22 21:24 .: -> /.../dcecell.itso.ra
l.ibm.com
-rw-r--r-- 1 root system 0 Aug 29 18:36 .STlist
-rw-r--r-- 1 root system 37662 Apr 13 1994 .Xdefaults
-rw-r--r-- 1 root system 36149 Mar 24 1994 .Xdefaults.bak
-rw-r--r-- 1 root system 17 Sep 8 17:51 .bash_history
-rw-r-xr-- 1 root system 2957 Aug 19 13:20 .emacs
-rw-r--r-- 1 root system 62 Jul 28 17:53 .fixdistcfg
-rw-r--r-- 1 root system 236 Sep 28 13:30 .fs.size
-rw-r-xr-- 1 root system 3600 Aug 19 13:21 .gnusrc
-rwxr-xr-x 1 root system 1240 Aug 29 11:25 .kshrc
-rw-r--r-- 1 root system 12375 Aug 31 18:00 .mosaic-global-history
[MORE...217]

F1=Help F2=Refresh F3=Cancel F6=Command
F8=Image F9=Shell F10=Exit

```

Figure 91. Execute ls Command (IBM)

If you select **Execute ps -ef command** the following panel will appear:

```

 COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below.

[TOP]
USER PID PPID C STIME TTY TIME CMD
root 1 0 0 09:43:56 - 0:28 /etc/init
root 1822 1 0 09:45:10 - 0:08 /etc/syncd 60
root 2919 3923 0 09:45:25 - 0:00 /usr/etc/portmap
root 3169 3923 0 09:45:22 - 0:00 /usr/lib/sendmail -bd -q30m
root 3371 16677 0 09:47:11 - 0:00 /usr/etc/nfsd 8
root 3616 1 0 09:45:10 - 0:00 /usr/lib/errdemon
root 3923 1 0 09:45:14 - 0:00 /etc/srcmstr
root 4860 5226 0 12:56:04 - 0:00 telnetd
root 4958 3923 0 09:45:18 - 1:03 /etc/syslogd
root 5226 3923 0 09:45:28 - 0:00 /etc/inetd
root 5487 3923 3 09:45:31 - 6:56 /usr/sbin/snmpd
root 5745 1 0 09:45:32 - 0:00 /usr/lpp/x_st_mgr/bin/x_st_mgrd -
b /usr/lpp/x_st_mgr/bin/x_st_mgrd.cf -s x_st_mg
[MORE...74]

F1=Help F2=Refresh F3=Cancel F6=Command
F8=Image F9=Shell F10=Exit

```

Figure 92. Execute ps Command (IBM)

#### 4.5.4 Uninstalling the Change File on a RISC System/6000

To uninstall the product from the target system again we type the following at the NetView DM/6000 server:

```
nvdn uninst NVDM.MENUTOOL -w rs60003
```

If the uninstall request was successful the request.out file at your target system should contain the following lines:

```
Machine Type : IBM
0518-307 odmdelete : 1 objects deleted.
0518-307 odmdelete : 2 objects deleted.
0518-307 odmdelete : 2 objects deleted.
```

If you call SMIT again at *rs60003* the Other Utilities menu should have disappeared.

#### 4.5.5 Installing the Change File on an HP Workstation

We will use the following command to install the change file at the HP client:

```
nvdn inst NVDM.MENUTOOL.REF.1 -w hpitso
```

If the installation succeeds the following line should be in the */usr/lpp/netviewdm/work/request.out* file at *hpitso*.

```
Machine Type : HP
```

To validate that the new menu is included in SAM we log into *hpitso* and type:

```
sam
```

This will pop up the SAM main menu:

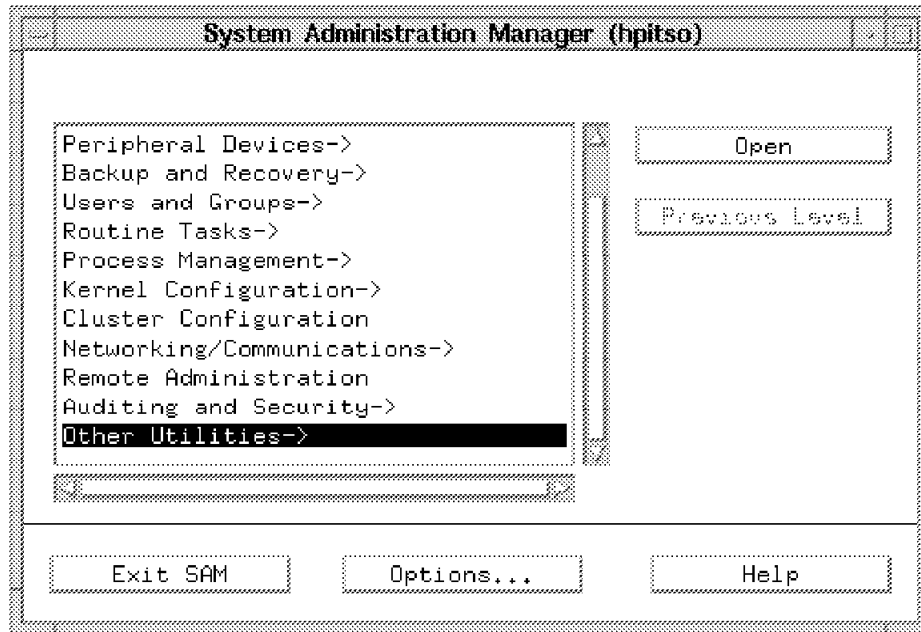


Figure 93. SAM Main Menu

In the main menu we select **Other Utilities**. This will pop up our new top-level menu:

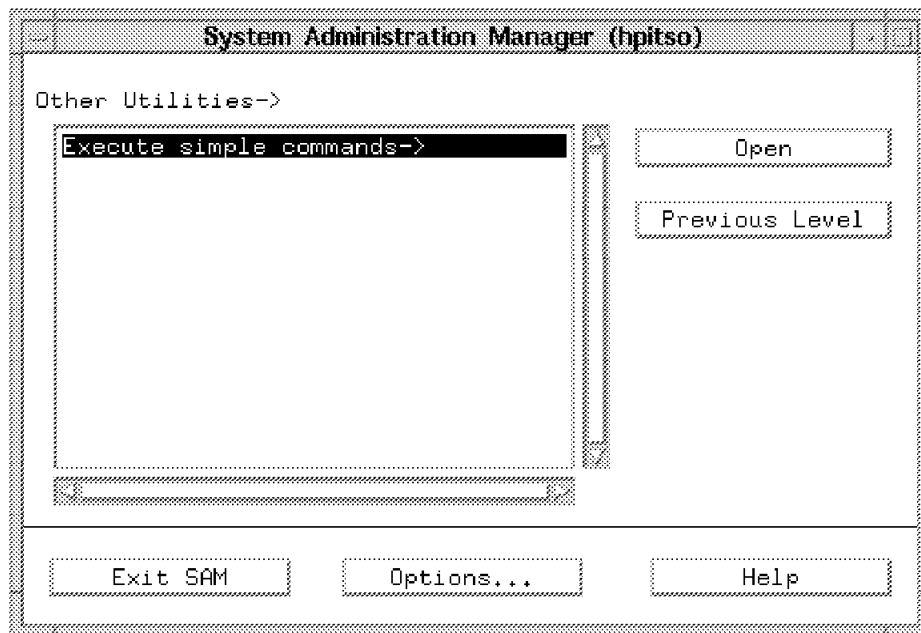


Figure 94. SAM Own Top-level Menu

We select **Execute simple commands**. Our two sub-menus will appear:

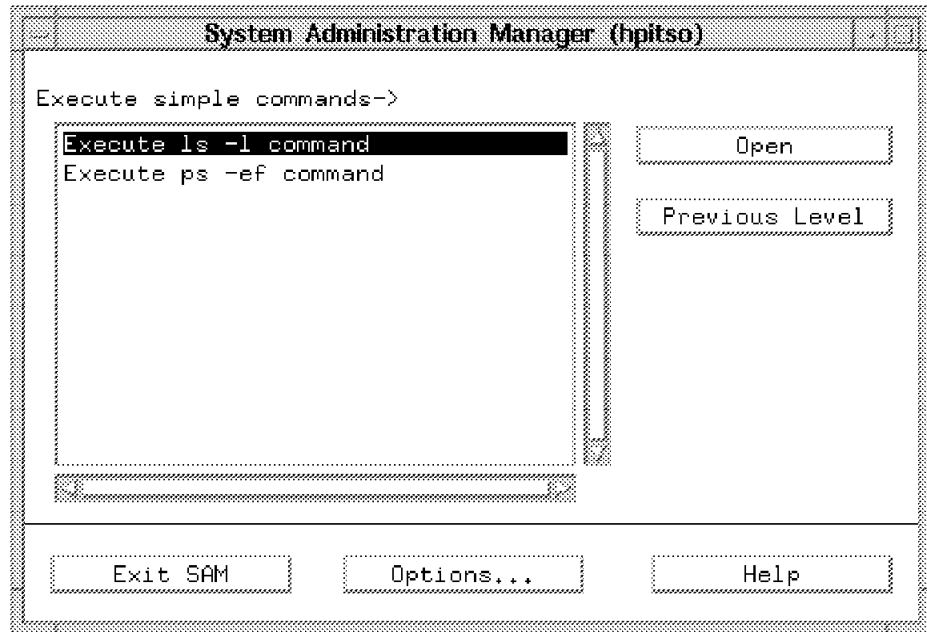


Figure 95. SAM Own Sub-Menus

If you select **Execute ls -l command** the following panel will appear:

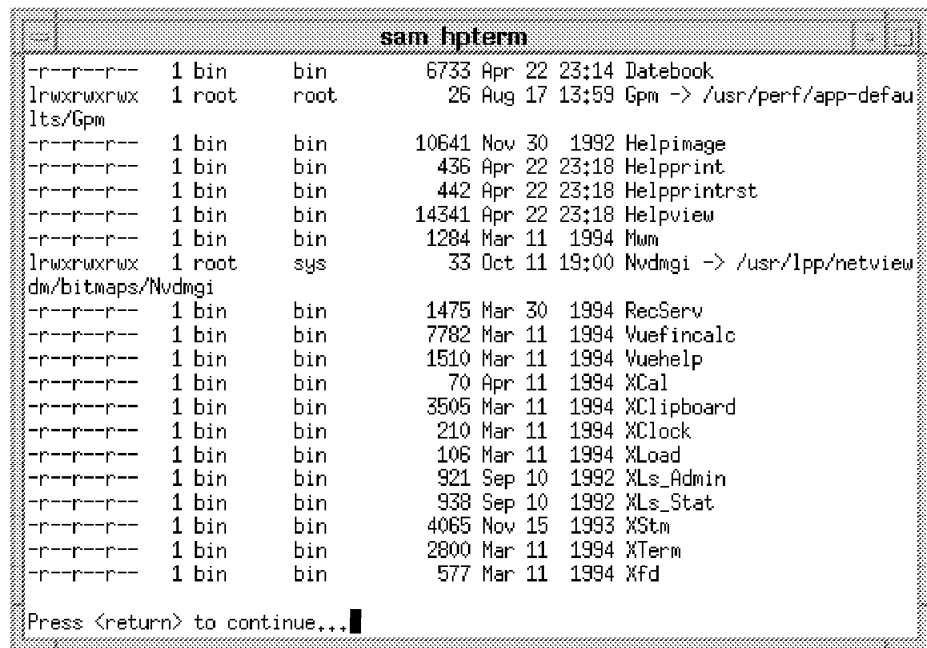


Figure 96. Execute ls Command (HP)

If you select **Execute ps -ef command** the following panel will appear:

```

sam hpterm
root 1356 1 0 Oct 11 tty4 0:00 /usr/softbench/bin/softmsgsrv -bo
otfile /usr/softbench/confi
root 4335 4334 3 16:14:35 tty4 0:00 /bin/ps -ef
root 1354 1 0 Oct 11 tty3 0:00 /usr/softbench/bin/softmsgsrv -in
itfile /usr/softbench/confi
root 4057 3563 0 16:50:05 tty6 0:16 /usr/vue/bin/vuefile -noview
root 3563 1 0 Oct 13 tty6 0:00 /usr/softbench/bin/softmsgsrv -bo
otfile /usr/softbench/confi
root 3342 1 0 Oct 11 ? 0:08 fndcmpr
root 4203 130 0 16:08:22 ttys0 0:00 telnetd
root 4334 4333 1 16:14:35 tty4 0:00 sh -cQ /bin/ps -ef
root 4204 4203 0 16:08:22 ttys0 0:00 -sh
root 3553 3541 0 Oct 13 ? 0:00 /usr/vue/bin/vuesession
root 4320 4303 0 16:12:27 ttys0 0:01 cbox -p 4303
root 4161 4057 0 17:22:08 ? 0:00 hpterm -title Execute -n Execute
-e /usr/vue/bin/vueexec -1
root 4333 4332 1 16:14:34 tty4 0:00 /etc/interface.lib/obam/ui_exec /
bin/ps -ef
root 4332 4320 8 16:14:34 ttys0 0:00 /usr/vue/bin/hpterm -title sam hp
term -e /etc/interface.lib/
root 4162 4161 0 17:22:08 tty9 0:00 /usr/vue/bin/vueexec -1 /usr/cont
rib/games/xpilots
Press <return> to continue...

```

Figure 97. Execute ps Command (HP)

#### 4.5.6 Uninstalling the Change File on an HP Workstation

To uninstall the product from the HP workstation again type the following at the NetView DM/6000 server:

```

nvdm uninst NVDM.MENUTOOL -w hpitso
:

```

If the uninstall request was successful the request.out file at your target system should contain the following line:

```

Machine Type : HP

```

If you call SAM again at *hpitso* the Other Utilities menu should have disappeared.

---

#### 4.6 Installing an HP-UX System File Using NetView DM/6000

In this part we will install an HP-UX system file on our HP workstation from a NetView DM/6000 server.

This can be compared to installing an installp image on a RISC System/6000.

The purpose of this part is to show how you can install HP-UX install packages using NetView DM/6000.



## 4.6.1 HP-UX System File Format

Normally HP-UX system files like the operating system are delivered in a special format.

This format is readable by the `/etc/update` command which is used to install system software on HP-UX. The update command is similar to the `installp` command in AIX. You can include files, installation scripts, remove scripts, etc. in an install image.

If you want to create your own software packages you can use the `fpkg` command to create an install image readable by the update command. In our example we will use an HP product which is delivered with the machine to demonstrate software distribution and installation to an HP client.

To remove software from the system you can use the `/etc/rmfn` command which will remove software which has been installed using update.

On HP-UX software is organized in "filesets." For every fileset installed on your system there is a file `/etc/filesets/filesetname`. This is an ASCII file which contains all the file names included in a product.

You can use the commands `man update` and `man rmfn` on the HP workstation to get a detailed description of those commands.

## 4.6.2 Preparing a Change File for an HP System File

For the installation of system code on NetView DM Agent for HP-UX we will use the change file type UNIXGEN.

This is different from the way you would do it on AIX where you have a specific change file type AIXINSTP to install AIX system code.

We will create a change file to install the HP LaserROM/UX product on our HP workstation.

HP LaserROM/UX is an online retrieval system which is comparable to InfoExplorer on AIX. It is delivered on a CD-ROM which contains the HP LaserROM/UX product itself as well as the system documentation. We will install the HP LaserROM/UX software, the documents will then be read directly from the CD-ROM drive.

The install image for the product is stored in the file `/uxinstal/lrom.800.8` on the CD-ROM, so if the CD-ROM was mounted at the `/CDROM` directory we could access the file under the name `/CDROM/uxinstal/lrom.800.8`.

We need this file to be included in our change file, so we will copy it to the `/tmp` directory at our HP workstation:

```
cp /CDROM/UXINSTALL/LROM.800.8 /tmp/lrom.800.8
```

### Note

If you do not have a CD-ROM drive on your HP workstation you can also use the CD-ROM drive of a RISC System/6000 workstation to copy the file to your workstation.

In our example we use the NetView DM/6000 server (rs600012) to read the software from the CD-ROM.

In order to do so we perform the following steps:

- Step 1. Insert the CD-ROM into the CD-ROM drive at *rs600012*.
- Step 2. Mount the CD-ROM drive using the command `mount mountpoint` where *mountpoint* is the name of a CD-ROM file system. If you do not have a CD-ROM file system yet, create one using `smit crfs`. In our example we mount the CD-ROM using the command `mount /cdrom` since `/cdrom` is the name of our CD-ROM file system.
- Step 3. Copy the file to the `/tmp` directory using `cp /cdrom/uxinstal/lrom800.8 /tmp`. Note that unlike on HP-UX you have to type the file names on the CD-ROM in lowercase letters.
- Step 4. Copy the file `/tmp/lrom800.8` to the HP workstation, for example using the `ftp` command.
- Step 5. Remove the `/tmp/lrom800.8` file at *rs600012*.

We want to automatically install the software at the HP workstation, so we will write an installation script, which we will store in `/tmp/install` at the HP workstation. The script uses the `update` command to install the install image `/tmp/lrom800.8` on the target system. This script will be used as the post-install script in our change file:

```
echo "Installing HP Laserrom"
/etc/update -s /usr/lpp/laserrom/lrom800.8 -d / '*'
```

Figure 98. Post-install Script for Installing HP System File

We store this file under the name `/tmp/install` at our HP workstation.

Remember to set the execute permission for the file owner using:

```
chmod u+x /tmp/install
```

To uninstall the product we write a similar script using the `rmfn` command to remove the software. This script will be used as the pre-script with the NetView DM/6000 uninstall option:

```
echo "Removing HP Laserrom"
/etc/rmfn -l "LROM_DOC LROM_SW"
```

Figure 99. Pre-uninstall Script for Removing HP System File

We store this file under the name `/tmp/uninstall` at our HP workstation.

Remember to set the execute permission for the owner using:

```
chmod u+x /tmp/uninstall
```

We are now ready to build the change file. To do so we use the following change file profile:

```
GLOBAL NAME: HP.LASERROM.REF.1
CHANGE FILE TYPE: UNIXGEN
COMPRESSION TYPE: LZW
PACK FILES: NO
POST-INSTALL: /usr/lpp/laserrom/install
PRE-REMOVE: /usr/lpp/laserrom/uninstall
PRE-UNINSTALL: /usr/lpp/laserrom/uninstall
OBJECT:
 SOURCE NAME: /tmp/install
 TARGET NAME: /usr/lpp/laserrom/install
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /tmp/lrom800.8
 TARGET NAME: /usr/lpp/laserrom/lrom800.8
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
OBJECT:
 SOURCE NAME: /tmp/uninstall
 TARGET NAME: /usr/lpp/laserrom/uninstall
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
```

Figure 100. Change File Profile for HP System File

This file is stored in `/tmp/lrom.profile` at our HP client, so we can use the following command to build and catalog the change file:

```
nvdn bld lrom.profile
:
```

### 4.6.3 Installing the Change File at the HP Workstation

We will install the change file on our HP client *hpitso* from our NetView DM/6000 server (*rs600012*).

We log into *rs600012* as CC administrator and submit the install request using:

```
nvdn inst HP.LASERROM.REF.1 -w hpitso
```

This will install the software product on *hpitso*.

**Note**

Most of the HP system images are protected by a code word. So if you want to install such a product you have to supply the code word with the update command. Refer to the update man page for information on how to do so.

HP LaserROM/UX is not protected by a code word.

For a successful installation the request.out file in the /usr/lpp/netviewdm/work directory on *hpitso* should look like this:

```

Installing HP Laserrom
Initializing...
Reading information from the update media...
Loading selected filesets.
The program should proceed to completion without additional attention.
Review the log file, /tmp/update.log, afterward by:
1) typing "more /tmp/update.log";
2) finding the correct date and time heading;
3) looking for any messages that begin with ERROR or WARNING.
Beginning to load fileset "LROM_SW" (1 of 2).
/system/LROM_SW/CDFinfo
/usr/bin/lrom
/usr/lib/X11/app-defaults/LRom
/usr/lib/nls/C/lrom.cat
/usr/man/man1.Z/lrom.1
/usr/lrom/.lromrc
/usr/lrom/lromg800
/usr/lrom/lromg300
/usr/lrom/lromc800
/usr/lrom/lromc300
/usr/lrom/xcheck800
/usr/lrom/xcheck300
/usr/lrom/LRom
/usr/lrom/lromg.help
/usr/lrom/lromc.help
/usr/lrom/prnlist.gen

...

/system/LROM_SW/customize
/system/LROM_SW/index
Finished loading fileset "LROM_SW".
Beginning to load fileset "LROM_DOC" (2 of 2).
/usr/lrom/doc/LROMMAN.LJ
/usr/lrom/doc/SWGUID.LJ
/usr/lrom/doc/USERGUID.LJ
/usr/lrom/README
/system/LROM_DOC/CDFinfo
/system/LROM_DOC/customize
/system/LROM_DOC/index
Finished loading fileset "LROM_DOC".
Beginning customize script for fileset "LROM_SW" (1 of 2).
Beginning customize script for fileset "LROM_DOC" (2 of 2).
Review the log file, /tmp/update.log, by:
1) typing "more /tmp/update.log";
2) finding the correct date and time heading;
3) looking for any messages that begin with ERROR or WARNING.

```

Figure 101. request.out File on HP-UX Client (Install)

After the software product is installed we can start it using the command:

```
lrom
```

This will bring up the following window:

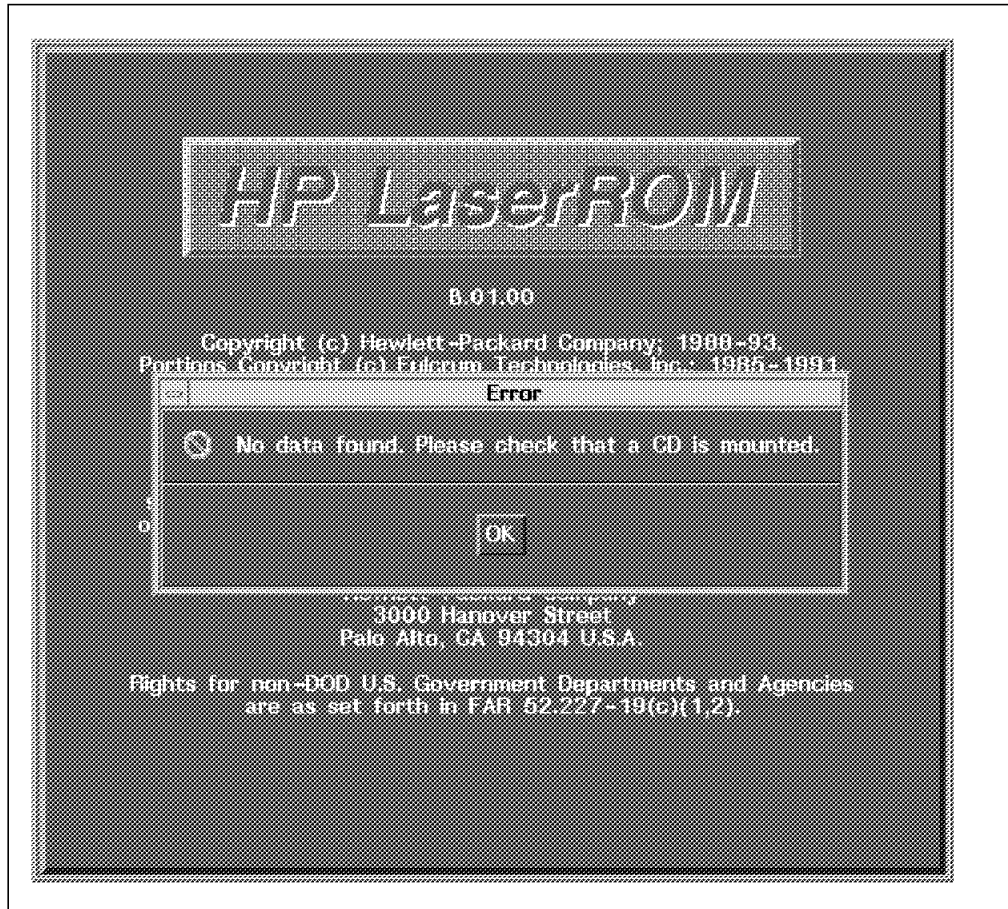


Figure 102. HP LaserROM/UX Main Window

In the example shown in Figure 102 we get an error message, because we do not have a CD-ROM inserted in the CD-ROM drive at the HP workstation. At the time when this test was made the CD-ROM drive was out of order.

The installation has put two new files into the `/etc/filesets` directory at `hpitso` which are named `LROM_DOC` `LROM_SW` for the two filesets we have installed.

#### 4.6.4 Uninstalling the System File from the HP Client

The software can be uninstalled by typing the following command at the server:

```
nvdn uninst HP.LASERROM -w hpitso
```

This will uninstall the software product on the HP client.

The `request.out` file at `hpitso` for a successful remove should look like this:

```
Removing HP Laserrom
Getting fileset information ...
rmfn: Removing the selected filesets.
rmfn: Removed fileset "LROM_SW". Freed 6252 kbytes of disk space.
rmfn: Removed fileset "LROM_DOC". Freed 5992 kbytes of disk space.
rmfn: Removed a total of 2 fileset(s) and freed 12244 kbytes of disk space.
rmfn: Removal has completed. Check the log file for results.
```

*Figure 103. request.out File on HP-UX Client (Uninstall)*





---

## Chapter 5. NetView DM Agent for SunOS

---

### 5.1 Overview and Objective

In this scenario we will perform the installation and configuration of NetView Distribution Management Agent for SunOS (NetView DM Agent for SunOS). When NetView DM Agent for SunOS is configured we will show an example how software can be distributed to a SunOS client using NetView DM/6000.

This chapter is intended for system administrators who have to manage software distribution to SunOS clients on their network.

**Note**

SunOS V4.1 is also referred to as Solaris V1.1. To distinguish it from Solaris V2.X which we refer to as "Solaris", we will use the term "SunOS".

It is assumed that the reader is familiar with NetView DM/6000 and with the AIX operating system. Also a knowledge of TCP/IP and UNIX systems in general is recommended. Necessary SunOS commands will be explained if they differ from the AIX commands.

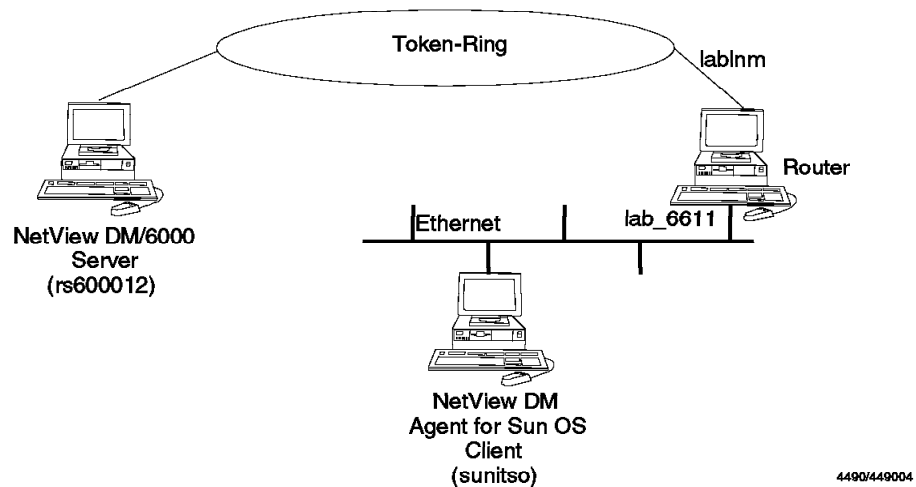


Figure 104. NetView DM Agent for SunOS Scenario

In this scenario we will perform the following steps:

- Install NetView DM Agent for SunOS.
- Configure NetView DM Agent for SunOS.
- Install a change file on NetView DM Agent for SunOS.

## 5.1.1 Scenario

We use a RISC System/6000 Model 370 as our NetView DM/6000 server. The NetView DM Agent for SunOS client will be a SPARCstation 20. The NetView DM/6000 server (rs600012) is assigned the IP address 9.24.104.124.

The SPARCstation (sunitso) is connected to an Ethernet and is assigned the IP address 9.67.32.11.

The SunOS 4.1.3 operating system is installed on the SPARCstation. This is a BSD (Berkeley Software Distribution) style UNIX operating system.

## 5.1.2 Prerequisites

In order to install NetView DM Agent for SunOS you need the following on your SPARCstation:

- Sun Solaris Version 1.1.1 (SunOS Version 4.1.3) or later
- 8MB memory
- At least 11MB free disk space in the /usr file system to install the product
- At least 8MB free disk space to temporarily store the install files of NetView DM Agent for SunOS

### Note

A windowing system like X-Windows is not required because NetView DM Agent for SunOS does not provide a graphical interface.

---

## 5.2 Installing NetView DM Agent for SunOS

NetView DM Agent for SunOS will not be installed directly at the SPARCstation. Instead NetView DM Agent for SunOS is packaged as an AIX installp image. So it will be installed at a RISC System/6000 first and then be copied to the SPARCstation.

### 5.2.1 Installing NetView DM Agent for SunOS on the RISC System/6000

The NetView DM Agent for SunOS will be installed on a RISC System/6000 first. That can be any workstation that has a network connection to the SPARCstation you want to install.

If you use a workstation in your NetView DM/6000 domain then you can pre-configure the NetView DM Agent for SunOS before you install it on the SPARCstation.

We will use the NetView DM/6000 server to install NetView DM Agent for SunOS.

To install NetView DM Agent for SunOS we use the command:

```
smitty install_latest
```

We select /usr/sys/inst.images as our input device because we use an installp image stored on our hard disk. If you install from a tape you must select the tape drive.

A panel similar to the following will appear:

```

 Install Software Products at Latest Available Level

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

 [Entry Fields]
* INPUT device / directory for software /usr/sys/inst.images
* SOFTWARE to install []
Automatically install PREREQUISITE software? no
COMMIT software? yes
SAVE replaced files? no
VERIFY software? no
EXTEND file systems if space needed? yes
REMOVE input file after installation? no
OVERWRITE existing version? no
ALTERNATE save directory []

F1=Help F2=Refresh F3=Cancel F4=List
F5=Reset F6=Command F7=Edit F8=Image
F9=Shell F10=Exit Enter=Do

```

Figure 105. SMIT Install Software Products Panel

Move the cursor to the SOFTWARE to install field and press **F4**.

A panel similar to the following will appear:

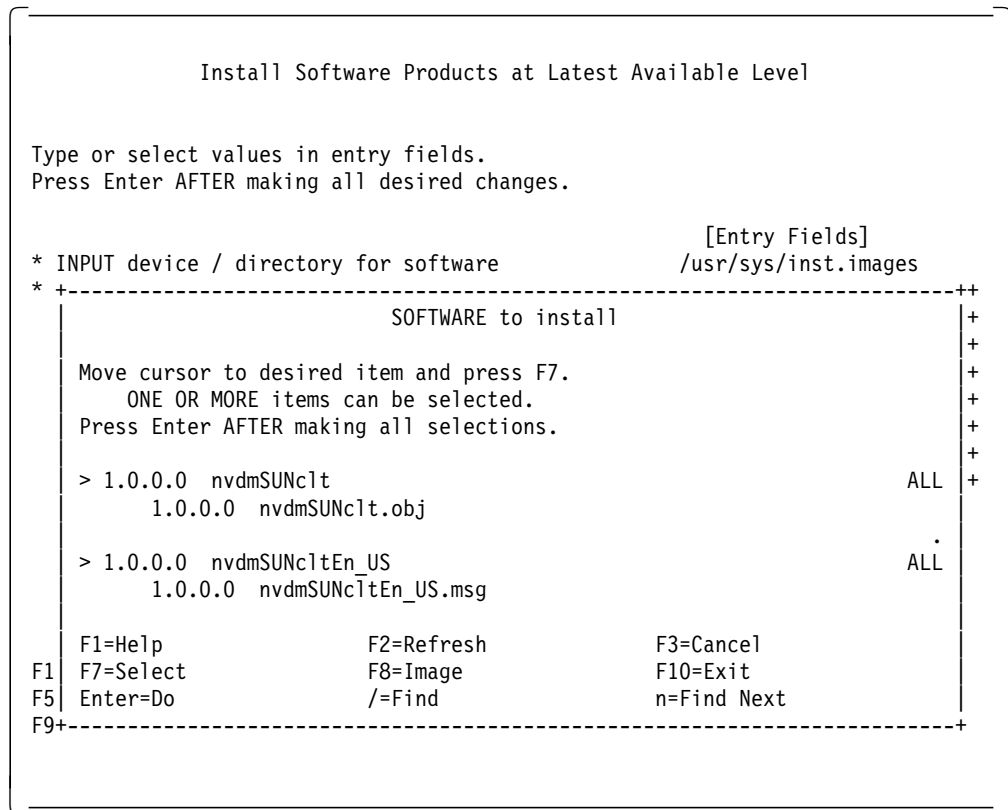


Figure 106. SMIT Install Software Products Panel

Move the cursor to `nvdmsUNclt` and select it using **F7**. Then move the cursor to `nvdmsUNcltEn_US` and select it using **F7**. When you have selected both objects press Enter. Change the fields to the values displayed in Figure 105 on page 137 and press Enter again.

This will install NetView DM Agent for SunOS on your RISC System/6000 workstation.

**Note**

If you want to install just one NetView DM Agent for SunOS client it may be a good idea just to apply the NetView DM Agent for SunOS software at the RISC System/6000 and then reject it again after you have installed the SPARCstation. This will free the space that is consumed by the NetView DM Agent for SunOS installation files.

After the installation you will have the following files in the `/usr/lpp/nvdmsUN` directory:

**README**

This file contains the latest product information.

**nvdmsUNclt.tar**

This file contains the code for NetView DM Agent for SunOS in `tar` format.

### **nvdmsUNcltEn\_US.tar**

This file contains the English messages for NetView DM Agent for SunOS in *tar* format.

### **nvdminstall**

This is a shell script which will be used to install NetView DM Agent for SunOS on the SPARCstation.

### **oemfndpc**

This is a shell script which will be used to pre-configure NetView DM Agent for SunOS on the RISC System/6000.

### **fndl1mst.ps**

This file contains the manual for NetView DM Agent for SunOS in PostScript format.

## **5.2.2 Pre-configuring NetView DM Agent for SunOS at the RISC System/6000**

NetView DM Agent for SunOS can be pre-configured on your RISC System/6000 before you copy it to the SPARCstation.

For that purpose there is a script *oemfndpc* in the */usr/lpp/nvdmsUN* directory after you have installed NetView DM Agent for SunOS.

Invoke this script to pre-configure NetView DM Agent for SunOS:

```
cd /usr/lpp/nvdmsUN
./oemfndpc
```

The script will:

- Extract the files from the NetView DM Agent for SunOS installation archive.
- Modify the *nvdmsUN.cfg* file which will be installed at the SPARCstation.
- Rebuild the installation archive.

The *oemfndpc* is equivalent to the *fndpc* script used in NetView DMA/6000.

The configuration script will modify the *SERVER* and the *TCP/IP PORT* fields in the *nvdmsUN.cfg* file.

It copies the values from the */usr/lpp/netviewdm/db/nvdmsUN.cfg* file at the RISC System/6000 where you run the configuration script. Therefore you should run the script at a workstation inside the same NetView DM/6000 domain where the SPARCstation will reside.

#### **Warning**

If you decide to run the configuration script *oemfndpc* you must ensure that there is enough space left in the file system where */usr/lpp/nvdmsUN* resides.

If there is not enough space left in your file system the *oemfndpc* script may damage the install image because it then cannot rebuild the *tar* file.

Usually */usr/lpp/nvdmsUN* resides in the */usr* file system. You will need about 8MB left in this file system to extract the installation image.

Use the following command to check if there is enough space left in the file system:

```
df
```

The output should look similar to the following:

| Filesystem  | Total KB | free  | %used | iused | %iused | Mounted on           |
|-------------|----------|-------|-------|-------|--------|----------------------|
| /dev/hd4    | 12288    | 1424  | 88%   | 1078  | 26%    | /                    |
| /dev/hd9var | 20480    | 2200  | 89%   | 1430  | 23%    | /var                 |
| /dev/hd2    | 643072   | 11852 | 98%   | 24640 | 15%    | /usr                 |
| /dev/hd3    | 12288    | 9620  | 21%   | 140   | 3%     | /tmp                 |
| /dev/hd1    | 4096     | 3764  | 8%    | 47    | 4%     | /home                |
| /dev/lv01   | 151552   | 23224 | 84%   | 331   | 0%     | /usr/lpp/netviewdm   |
| /dev/lv04   | 32768    | 14084 | 57%   | 21    | 0%     | /usr/sys/inst.images |

Figure 107. Output from df Command

If there is less than 8MB left in the /usr file system do either of the following:

- Erase some unnecessary files from the /usr file system or
- Enlarge the /usr file system using smit chfs.

To check if the archive is in the right format after you have run the configuration script you can invoke the following command:

```
cd /usr/lpp/nvdmSUN
tar -tvf nvdmSUNc1t.tar
```

This command should produce an output similar to the following:

|            |     |         |                 |      |                |
|------------|-----|---------|-----------------|------|----------------|
| -rw-r--r-- | 0 1 | 3686400 | Oct 20 14:42:46 | 1994 | nvdmSUNexe.tar |
| -r-sr-s--- | 0 1 | 7506    | Oct 18 11:47:15 | 1994 | dvainc.pi      |
| -r-sr-s--- | 0 1 | 13776   | Oct 18 11:47:16 | 1994 | dvainc.cf      |

Figure 108. Output from df Command

If it does not the archive is damaged.

### 5.2.3 Configuring TCP/IP at the CC Server

In order to communicate to the SPARCstation we add the IP address of the workstation to the /etc/hosts file at the CC Server (rs600012).

We add the following line:

```
9.67.32.11 sunitso
```

The SPARCstation resides in another IP subnet, so we also have to add an entry to the routing table. The CC Server is attached to a token-ring network (subnet

9.24.104) which is connected to the Ethernet network (subnet 9.67.32) where the SPARCstation resides through a router (lablrm).

The following command will add the IP route:

```
route add net 9.67.32 lablrm 1
```

The above command will add the route only temporarily, that is until the next reboot.

To add the route permanently we use the command:

```
smit mkroute
```

The following panel will appear:

Add Static Route

Type or select values in entry fields.  
Press Enter AFTER making all desired changes.

| Destination TYPE                                                                  | [Entry Fields]   |   |
|-----------------------------------------------------------------------------------|------------------|---|
| * DESTINATION Address<br>(dotted decimal or symbolic name)                        | net<br>[9.67.32] | + |
| * GATEWAY Address<br>(dotted decimal or symbolic name)                            | [lablrm]         |   |
| * METRIC (number of hops to destination gateway)<br>Network MASK (dotted decimal) | [1]<br>[]        | # |

|             |               |            |             |
|-------------|---------------|------------|-------------|
| F1=Help     | F2=Refresh    | F3=Cancel  | F4=List     |
| Esc+5=Reset | Esc+6=Command | Esc+7=Edit | Esc+8=Image |
| Esc+9=Shell | Esc+0=Exit    | Enter=Do   |             |

Figure 109. SMIT Add Static Route Panel

We enter the values as shown and press Enter. This will add the new route permanently.

At the SPARCstation the router is known under the name *lab\_6611*, and has the following entry in the */etc/hosts* file:

```
9.67.32.10 lab_6611
```

To add the route to the network 9.24.104 at the SPARCstation we type:

```
route add 9.24.104.0 lab_6611 1
```

In order for the IP route to survive the next system boot you can add the above command line to the `/etc/rc.local` file which will be executed at system boot.

## 5.2.4 Installing NetView DM Agent for SunOS on the SPARCstation

We will now install NetView DM Agent for SunOS from the RISC System/6000 to the SPARCstation.

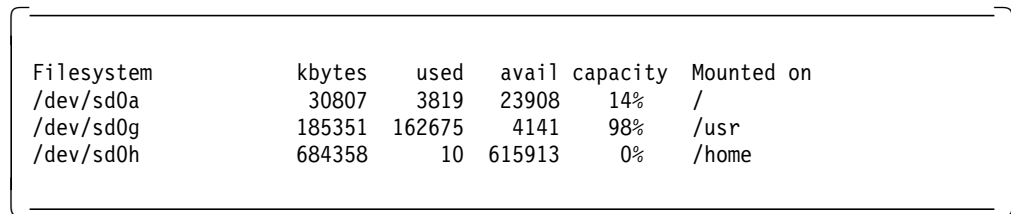
The installation files will be copied to a temporary area at the SPARCstation and then be installed in the `/usr` file system.

You will need about 8MB to temporarily store the installation files and about 11MB to install the product.

You can use the following command on the SPARCstation to check if there is enough space left:

```
df
```

On our client this produced the following output:



| Filesystem | kbytes | used   | avail  | capacity | Mounted on |
|------------|--------|--------|--------|----------|------------|
| /dev/sd0a  | 30807  | 3819   | 23908  | 14%      | /          |
| /dev/sd0g  | 185351 | 162675 | 4141   | 98%      | /usr       |
| /dev/sd0h  | 684358 | 10     | 615913 | 0%       | /home      |

Figure 110. Output from `df` Command

We will copy the installation files to `/tmp`. The files will be copied using the `ftp` command:

```
ftp sunitso
```

The following panel shows the `ftp` sequence we used to transfer the files:



```

Connected to sunitso.
220 sun FTP server (SunOS 4.1) ready.
Name (sunitso:root): root
331 Password required for root.
Password:
230 User root logged in.
ftp> bi
200 Type set to I.
ftp> cd /tmp
250 CWD command successful.
ftp> prompt
Interactive mode off.
ftp> mput *
200 PORT command successful.
150 Binary data connection for README (9.24.104.124,1160).
226 Binary Transfer complete.
243 bytes sent in 0.000734 seconds (323.3 Kbytes/s)
200 PORT command successful.
150 Binary data connection for fndslmst.ps (9.24.104.124,1161).
226 Binary Transfer complete.
1953042 bytes sent in 38.99 seconds (48.91 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdmSUNclt.tar (9.24.104.124,1167).
226 Binary Transfer complete.
3717120 bytes sent in 75.05 seconds (48.37 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdmSUNcltEn_US.tar (9.24.104.124,1168).
226 Binary Transfer complete.
475136 bytes sent in 9.164 seconds (50.63 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdminstall (9.24.104.124,1169).
226 Binary Transfer complete.
24111 bytes sent in 0.05005 seconds (470.4 Kbytes/s)
200 PORT command successful.
150 Binary data connection for oemfndpc (9.24.104.124,1170).
226 Binary Transfer complete.
3443 bytes sent in 0.000702 seconds (4790 Kbytes/s)
ftp> quit
221 Goodbye.

```

Figure 111. Transferring Files Using ftp

When the file transfer is finished we log into the SPARCstation as root user to perform the installation.

Before we can execute the installation script `nvdminstall` we have to set the execute permission for the user in the access permission field:

```

cd /tmp
chmod u+x nvdminstall

```

Then we can start the installation using:

```

./nvdminstall 2>&1 | tee logfile

```

**Warning**

The above command will not work in a C shell (csh) because the C shell uses a different syntax for output redirection.

The default shell in SunOS is the C shell.

If you want to start the installation script from a C shell you can use the following command:

```
./nvdminstall |& tee logfile
```

We recommend that you use a Bourne shell (bsh) to run the installation script.

To open a Bourne shell from a C shell type:

```
sh
```

The `nvdminstall` script will guide you through the installation. It can also be used to remove the product from the workstation.

The following figure shows the sequence we used to install the product:

```
This is the install program for
NetView Distribution Management Agent for SunOS
(NetView DMA for SunOS) version 1.0
```

```
This program will install or uninstall
the NetView DMA for SunOS version 1.0
Please select the desired action from the list below:
```

1. Install the Agent for SunOS
2. Uninstall the Agent for SunOS
3. Quit

```
Selection: 3 <ENTER>
```

```
You selected to install the Agent for SunOS
```

```
Please select the desired operating language for
NetView DMA for SunOS from the list below:
```

1. English
2. Return to main menu

```
Selection: 1 <ENTER>
```

```
You selected English
```

```
WARNING: THIS IS YOUR LAST CHANCE TO QUIT THE INSTALL PROCESS.
```

```
Do you wish to continue with the installation (y/n)? y
```

```
Installing NetView DMA for SunOS ...
x nvdmSUNexe.tar, 3686400 bytes, 7200 tape blocks
x dvainc.pi, 7506 bytes, 15 tape blocks
x dvainc.cf, 13776 bytes, 27 tape blocks
...
x /usr/lpp/netviewdm/db/nvdm.cfg, 465 bytes, 1 tape blocks
x /tmp/nvdm.cfg, 465 bytes, 1 tape blocks
x /usr/lpp/netviewdm/bin/nvdm, 434176 bytes, 848 tape blocks
x /usr/bin/nvdm symbolic link to /usr/lpp/netviewdm/bin/nvdm
x /usr/lpp/netviewdm/bin/fndcmps, 360448 bytes, 704 tape blocks
x /usr/bin/fndcmps symbolic link to /usr/lpp/netviewdm/bin/fndcmps
x /usr/lpp/netviewdm/bin/fndcma, 212992 bytes, 416 tape blocks
x /usr/bin/fndcma symbolic link to /usr/lpp/netviewdm/bin/fndcma
x /usr/lpp/netviewdm/bin/fndcmam, 499712 bytes, 976 tape blocks
x /usr/bin/fndcmam symbolic link to /usr/lpp/netviewdm/bin/fndcmam
x /usr/lpp/netviewdm/bin/fndcmi, 253952 bytes, 496 tape blocks
x /usr/bin/fndcmi symbolic link to /usr/lpp/netviewdm/bin/fndcmi
x /usr/lpp/netviewdm/bin/fndcmr, 221184 bytes, 432 tape blocks
```

Figure 112. Installation Protocol (Part 1)

```

x /usr/bin/fndcmr symbolic link to /usr/lpp/netviewdm/bin/fndcmr
x /usr/lpp/netviewdm/bin/fndcmt, 499712 bytes, 976 tape blocks
x /usr/bin/fndcmt symbolic link to /usr/lpp/netviewdm/bin/fndcmt

...

Work, Repository, Service and Backup directories are defaulted to
/usr/lpp/netviewdm
Please ensure adequate space or modify the nvdm.cfg file accordingly

Do you wish to delete the installation (*.tar) files(y/n)?: n

Leaving installation files as they are.

Installation successfully ended.

This program will install or uninstall
the NetView DMA for SunOS version 1.0
Please select the desired action from the list below:

 1. Install the Agent for SunOS
 2. Uninstall the Agent for SunOS
 3. Quit

Selection: 3 <ENTER>

Quitting...

```

Figure 113. Installation Protocol (Part 2)

The agent is now ready to be started. The installation script has changed the WORKSTATION NAME entry in nvdm.cfg to contain the hostname of the workstation where you execute the script.

If you did not pre-configure the NetView DM Agent for SunOS on your RISC System/6000 using the oemfndpc script you have to edit the SERVER and the TCP/IP PORT in the /usr/lpp/newtviewdm/db/nvdm.cfg file on your SPARCstation to reflect the server configuration.

The only thing left to do is to add an entry for the NetView DM/6000 server in your /etc/hosts file.

In our example we add the line:

```
9.24.104.124 rs600012
```

The installation script nvdminstall will call two other shell scripts during the installation, the pre-installation script dvainc.pi and the post-installation script dvainc.cf.

The pre-installation script dvainc.pi will:

- Prepare the environment for NetView DM Agent for SunOS

- Add the user group FNDADMN to the system
- Create the /usr/lpp/netviewdm directory

The post-installation script dvainc.cf will:

- Create all necessary symbolic links
- Adjust file permissions
- Add an entry to /etc/rc.local which starts NetView DM Agent for SunOS at system boot
- Generate the NetView DM Agent for SunOS entries for the software inventory file /usr/lpp/netviewdm/fndswinv

Before you can start NetView DM Agent for SunOS you have to ensure that the system has access to the right libraries. There are two different ways to achieve it:

1. Reboot your system:

For that purpose type:

```
halt
```

As soon as the OK> prompt appears type:

```
boot
```

This will reboot your system, using the default boot device, which is normally your hard disk.

2. Run the *ldconfig* command.

## 5.2.5 Adding a New Local Target for NetView DM Agent for SunOS

In order to distribute software to the newly installed NetView DM Agent for SunOS workstation we have to add a local target at our NetView DM/6000 server.

We do the following:

- Step 1. Log into the NetView DM/6000 server as CC administrator.
- Step 2. Start the graphical interface using `nvdmg` &.
- Step 3. From the action bar select **Windows**.
- Step 4. From the menu we select **Targets**.

A panel similar to the following will appear:

| NetView DM/6000 Targets (rs600012) |              |         |                 |
|------------------------------------|--------------|---------|-----------------|
| _Target Selected View Windows Help |              |         |                 |
| Name                               | Type         | OS      | Description     |
| RA39TCF1                           | remote       |         | NetView DM/MVS  |
| hpitso                             | local (push) | HP_UX   | NetView DM clie |
| rs600011                           | remote       |         | Remote server   |
| rs600012                           | this (push)  | AIX     | INITIAL TARGET  |
| rs60003                            | local (push) | AIX     | client workstat |
| rs60004                            | remote       |         | Remote Server c |
| solitso                            | local (push) | SOLARIS | NetView DM Agen |

Figure 114. NetView DM/6000 Target Window

From the action bar we select **Target** and then **New Local Target** from the pull-down menu.

The following panel will appear:

**New Local Target**

Name: sunitso

Description: NetView DM Agent for Sun05

Change Management:

- Initiated from Focal Point or any target (push)
- Initiated from same target only (pull)

Short name: SUNITSO

LAN address:

Target OS: SUNOS

Buttons: Users..., Details..., Periods of activity..., Log..., Tokens..., Hardware..., OK, Cancel, Help

Figure 115. NetView DM/6000 New Local Target Window

We perform the following steps:

- Step 1. In the Name field enter **sunitso**. This is the hostname of our SPARCstation.
- Step 2. In the Description field enter a description of the client (optional).
- Step 3. In the Change Management field select **push**.
- Step 4. In the Short name field enter **SUNITSO**.
- Step 5. Leave the LAN address field blank.
- Step 6. In the Target OS field select **SUNOS**.
- Step 7. Select the **Users** push button.
- Step 8. Add the root user as a client user.
- Step 9. Select the **OK** push button.
- Step 10. Add all users that will have access to the client and assign them to the appropriate user group (FNDADMN, FNDBLD or FNDUSER).

We have now added a local CC target for the SPARCstation.

**Note**

The Target OS name for SunOS clients has changed from NetView DM/6000 Release 1.1 to Release 1.2. While in Release 1.1 of NetView DM/6000 you have to use Solaris V1 as the Target OS name, whereas in Release 1.2 you use SUNOS.

## 5.2.6 Starting NetView DM Agent for SunOS

You can start NetView DM Agent for SunOS by typing the following command at your SPARCstation:

```
nvdn start
```

The next time you boot your SPARCstation NetView DM Agent for SunOS will be started automatically, because the installation script adds the following line to your `/etc/rc.local` file:

```
/etc/rc.ndm
```

The script `/etc/rc.ndm` will start NetView DM Agent for SunOS.

If NetView DM Agent for SunOS does not start correctly there may be one of the following error conditions:

- The NetView DM/6000 server is unknown.
- The connection to the NetView DM/6000 server does not work.
- The hostname of the agent is wrong.
- The agent is not configured correctly.
- There is no local target defined for NetView DM Agent for SunOS.

Ensure that you have an entry for your NetView DM/6000 server in your `/etc/hosts` file.

Enter the following command to test, if the connection to your NetView DM/6000 server works:

```
ping rs600012
```

This should produce the following output:

```
rs600012 is alive.
```

If it does not, then check your network interface and your routing table.

To check your TCP/IP network interface on a SPARCstation with an Ethernet card you can use the following command:

```
ifconfig le0
```



To display the current routing table you can use the command:

```
netstat -r
```

Check that your hostname is set correctly. NetView DM Agent for SunOS will use the hostname of your system to contact the server, so it must be the same as the WORKSTATION NAME in your nvdm.cfg file.

You can use the hostname command to display the hostname. If the displayed hostname is not correct, you can set it using the following command:

```
hostname sunitso
```

Put this command line into the `/etc/rc.local` file to be executed on every system start.

Make sure that your nvdm.cfg file contains the correct entries for SERVER, WORKSTATION NAME and TCP/IP PORT. Normally this configuration is done by the scripts `oemfndpc` and `nvdminstall`.

In our example the correct configuration file looks like the following:

```
WORKSTATION NAME: sunitso
MESSAGE LOG LEVEL: N
LAN AUTHORIZATION: 0
CONFIGURATION: CLIENT
MACHINE TYPE: SunOS
LOG FILE SIZE: 50000
TRACE FILE SIZE: 1000000
API TRACE FILE SIZE: 100
TCP/IP PORT: 729
SERVER: rs600012
REPOSITORY: /usr/lpp/netviewdm/repos
SERVICE AREA: /usr/lpp/netviewdm/service
BACKUP AREA: /usr/lpp/netviewdm/backup
WORK AREA: /usr/lpp/netviewdm/work
```

Figure 116. `/usr/lpp/netviewdm/db/nvdm.cfg` File

Make sure that you have defined a local target for NetView DM Agent for SunOS at your NetView DM/6000 server. How to do this is described in 5.2.5, “Adding a New Local Target for NetView DM Agent for SunOS” on page 147.

---

### 5.3 Installing a Change File Using NetView DM Agent for SunOS

In this part we will install a change file on our SPARCstation using the NetView DM/6000 server.

We will create a little sample application that will be installed on the SPARCstation and then be uninstalled again.

The sample application will modify the root menu in the Sun OpenWindows desktop. This is the menu which appears when you press the right mouse button on the desktop.

If you select "Programs..." in the root menu and then "Shell Tool" a window appears on your desktop containing a C shell. We will change this window to contain a Bourne shell instead.

### 5.3.1 Sun OpenWindows Configuration Files

The configuration of the SUN OpenWindows desktop is held in the /usr/openwin/lib directory.

The root menu configuration is stored in the file openwin-menu:

```
#
@(#)openwin-menu 23.15 91/09/14 openwin-menu
#
OpenWindows default root menu file - top level menu
#

"Workspace" TITLE

"Programs" MENU $OPENWINHOME/lib/openwin-menu-programs

"Utilities" MENU $OPENWINHOME/lib/openwin-menu-utilities

"Properties..." PROPERTIES

SEPARATOR

"Help..." exec $OPENWINHOME/bin/helpopen\
handbooks/top.toc.handbook
"Desktop Intro..." exec $OPENWINHOME/bin/helpopen\
handbooks/desktop.intro.handbook
SEPARATOR

"Exit..." EXIT
```

Figure 117. /usr/openwin/lib/openwin-menu File

The configuration of the "Programs" sub-menu is stored in the file openwin-menu-programs:

```

#
@(#)openwin-menu-programs 1.15 91/09/14 openwin-menu-programs
#
OpenWindows default root menu file - Programs submenu
#

"Programs" TITLE PIN

"Command Tool..." DEFAULT exec $OPENWINHOME/bin/cmdtool
"Text Editor..." exec $OPENWINHOME/bin/textedit
"File Manager..." exec $OPENWINHOME/bin/filemgr
"Mail Tool..." exec $OPENWINHOME/bin/mailtool
"Calendar Manager..." exec $OPENWINHOME/bin/cm
"Clock..." exec $OPENWINHOME/bin/clock
"Calculator..." exec $OPENWINHOME/bin/calctool
"Print Tool..." exec $OPENWINHOME/bin/printtool
"Audio Tool..." exec $OPENWINHOME/bin/audiotool
"Tape Tool..." exec $OPENWINHOME/bin/tapetool
"Binder..." exec $OPENWINHOME/bin/binder
"Snapshot..." exec $OPENWINHOME/bin/snapshot
"Icon Editor..." exec $OPENWINHOME/bin/iconedit
"Performance Meter..." exec $OPENWINHOME/bin/perfmeter
"Shell Tool..." exec $OPENWINHOME/bin/shelltool

"Demos" MENU $OPENWINHOME/lib/openwin-menu-demo

```

Figure 118. /usr/openwin/lib/openwin-menu-programs

### 5.3.2 Preparing a Change File for NetView DM Agent for SunOS

In order to replace the C shell with a Bourne shell we will replace the menu text and the command to be executed for "Shell Tool".

We will change the menu text from "Shell Tool..." to "Shell Tool (sh)..." and the command to be executed from \$OPENWINHOME/bin/shelltool to \$OPENWINHOME/bin/xterm -e sh.

This will be done by the following shell script which we will use as the post-install script for our change file:

```

#!/bin/sh
#
SunOS example
Author : S.Uelpenich
#

echo "Changing menu file... (install)"

#
change menu text
#

sed "s/Shell Tool/Shell Tool (sh)/" /usr/openwin/lib/\
openwin-menu-programs >/tmp/work

#
change command
#

sed "s/bin\shelltool/bin\xterm -e sh/" /tmp/work >/tmp/work2

#
replace menu file
#

cp /tmp/work2 /usr/openwin/lib/openwin-menu-programs

#
remove work files
#

rm /tmp/work
rm /tmp/work2

```

*Figure 119. Post-install Script for Installing SunOS Change File*

We store this file under the name `/usr/lpp/example/install` at our SPARCstation.

Remember to set the execute permission for the file owner:

```
chmod u+x /usr/lpp/example/install
```

To restore the old menu text and command we use the following shell script which will be used as the pre-uninstall and pre-remove script for our change file:

```

#!/bin/sh
#
SunOS example
Author : S.Uelpenich
#

echo "Changing menu file... (remove)"

#
change menu text
#

sed "s/Shell Tool (sh)/Shell Tool/" /usr/openwin/lib/\
openwin-menu-programs >/tmp/work

#
change command
#

sed "s/bin\xterm -e sh/bin\shelltool/" /tmp/work >/tmp/work2

#
replace menu file
#

cp /tmp/work2 /usr/openwin/lib/openwin-menu-programs

#
remove work files
#

rm /tmp/work
rm /tmp/work2

```

Figure 120. Pre-remove Script for Removing the SunOS Change File

We store this file under the name `/usr/lpp/example/remove` at our SPARCstation.

Remember to set the execute permission for the file owner:

```
chmod u+x /usr/lpp/example/uninstall
```

The following change file profile can be used to create the necessary change file:

```

GLOBAL NAME: SUN.ROOTMENU.REF.1
CHANGE FILE TYPE: GEN
COMPRESSION TYPE: LZW
PACK FILES: NO
POST-INSTALL: /usr/lpp/example/install
PRE-REMOVE: /usr/lpp/example/remove
PRE-UNINSTALL: /usr/lpp/example/remove
OBJECT:
 SOURCE NAME: /usr/lpp/example/install
 TARGET NAME: /usr/lpp/example/install
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: YES
OBJECT:
 SOURCE NAME: /usr/lpp/example/remove
 TARGET NAME: /usr/lpp/example/remove
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: YES

```

Figure 121. Change File Profile for SunOS Change File

This file is stored in `/usr/lpp/example/example.profile` at our SPARCstation.

To build and catalog the change file we use the following command on our SPARCstation:

```
nvdn bld example.profile
```

### 5.3.3 Installing the Change File on NetView DM Agent for SunOS

We will install the change file on our SunOS client *sunitso* from our NetView DM/6000 server (*rs600012*).

We log into *rs600012* as CC administrator and submit the install request using:

```
nvdn inst SUN.ROOTMENU.REF.1 -w sunitso
```

This will install the change file on *sunitso*.

After the installation press the right mouse button on your SPARCstation in the OpenWindows desktop and select **Programs** from the root menu.

The menu title "Shell Tool" has changed to "Shell Tool (sh)". When you select "Shell Tool (sh)" a Bourne shell window will appear on your desktop.

### 5.3.4 Removing the Change File on NetView DM Agent for SunOS

The change file can be uninstalled by typing the following command at the server:

```
nvdn remove SUN.ROOTMENU -w sunitso
```

After the remove all request has completed the root menu in your OpenWindows desktop will be in the original state.





---

## Chapter 6. NetView DM Agent for Solaris

---

### 6.1 Overview and Objective

In this scenario we will perform the installation and configuration of NetView Distribution Management Agent for Solaris (NetView DM Agent for Solaris). When NetView DM Agent for Solaris is configured we will show some examples how software can be distributed to a Solaris client using NetView DM/6000.

This chapter is intended for system administrators who have to manage software distribution to Solaris clients on their network.

It is assumed that the reader is familiar with NetView DM/6000 and with the AIX operating system. Also a knowledge of TCP/IP and UNIX systems in general is recommended. Necessary Solaris commands will be explained if they differ from the AIX commands.

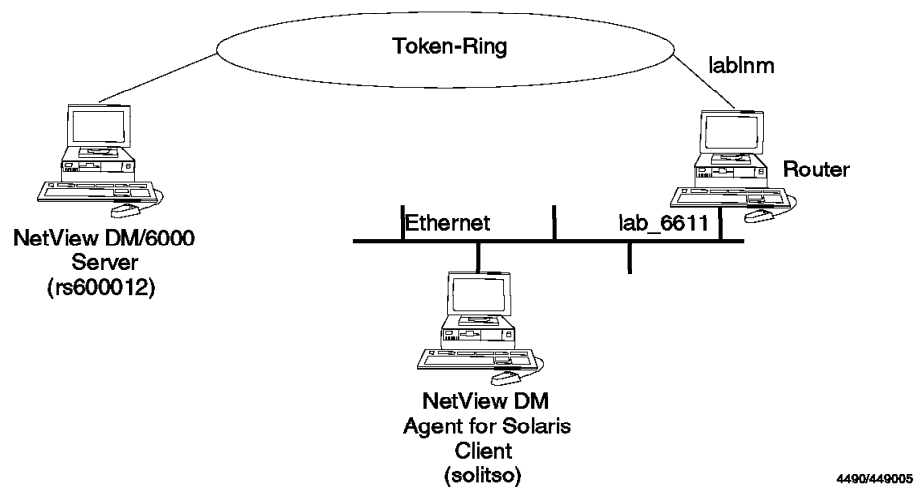


Figure 122. NetView DM Agent for Solaris Scenario

In this scenario we will perform the following steps:

- Install NetView DM Agent for Solaris.
- Configure NetView DM Agent for Solaris.
- Install a Solaris system file on a SPARCstation.
- Install a Solaris operating system patch on a SPARCstation.

#### 6.1.1 Scenario

We use a RISC System/6000 Model 370 as our NetView DM/6000 server. The NetView DM Agent for Solaris client will be a SPARCstation 20. The NetView DM/6000 server (rs600012) is assigned the IP address 9.24.104.124.

The SPARCstation (solitso) is connected to an Ethernet and is assigned the IP address 9.67.32.13.

The Solaris 2.3 operating system is installed at our SPARCstation. This is a UNIX System V style operating system. Solaris 2.x is also referred to as SunOS 5.x.

**Note**

In fact Solaris 2.x is a merge of Unix System V Release 4 (SVR4) and Berkeley Software Distribution (BSD). By default it provides a System V style but the BSD style commands are still available for compatibility reasons.

## 6.1.2 Prerequisites

In order to install NetView DM Agent for Solaris you need the following on your SPARCstation:

- Sun Solaris Version 2.2 or later (we use Version 2.3)
- 8MB memory
- At least 11MB free disk space in the /usr file system to install the product
- At least 8MB free disk space to temporarily store the install files of NetView DM Agent for Solaris

**Note**

A windowing system like X-Windows is not required because NetView DM Agent for Solaris does not provide a graphical user interface.

---

## 6.2 Installing NetView DM Agent for Solaris

NetView DM Agent for Solaris will not be installed directly at the SPARCstation. Instead NetView DM Agent for Solaris is packaged as an AIX installp image. So it will be installed at a RISC System/6000 first and then be copied to the SPARCstation.

### 6.2.1 Installing NetView DM Agent for Solaris on the RISC System/6000

The NetView DM Agent for Solaris will be installed on a RISC System/6000 first. That can be any workstation that has a network connection to the SPARCstation you want to install.

If you use a workstation in your NetView DM/6000 domain then you can pre-configure the NetView DM Agent for Solaris before you install it on the SPARCstation.

We will use the NetView DM/6000 server to install NetView DM Agent for Solaris.

To install NetView DM Agent for Solaris we use the command:

```
smitty install_latest
```

We select /usr/sys/inst.images as our input device because we use an installp image stored on our hard disk. If you install from a tape you must select the tape drive.

A panel similar to the following will appear:

```

 Install Software Products at Latest Available Level

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

 [Entry Fields]
* INPUT device / directory for software /usr/sys/inst.images
* SOFTWARE to install []
Automatically install PREREQUISITE software? no
COMMIT software? yes
SAVE replaced files? no
VERIFY software? no
EXTEND file systems if space needed? yes
REMOVE input file after installation? no
OVERWRITE existing version? no
ALTERNATE save directory []

F1=Help F2=Refresh F3=Cancel F4=List
F5=Reset F6=Command F7=Edit F8=Image
F9=Shell F10=Exit Enter=Do

```

Figure 123. SMIT Install Software Products Panel

Move the cursor to the SOFTWARE to install field and press **F4**.

A panel similar to the following will appear:

```

Install Software Products at Latest Available Level

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

 [Entry Fields]
 /usr/sys/inst.images
* INPUT device / directory for software
* +-----+-----+-----+-----+-----+-----+
 | |
 | SOFTWARE to install |
 | |
 | Move cursor to desired item and press F7. |
 | ONE OR MORE items can be selected. |
 | Press Enter AFTER making all selections. |
 | |
 | > 1.0.0.0 nvdmSOLc1t ALL +
 | 1.0.0.0 nvdmSOLc1t.obj |
 | |
 | > 1.0.0.0 nvdmSOLc1tEn_US ALL
 | 1.0.0.0 nvdmSOLc1tEn_US.msg |
 | |
 | F1=Help F2=Refresh F3=Cancel
 | F7=Select F8=Image F10=Exit
 | F5| Enter=Do /=Find n=Find Next
 | F9+-----+-----+-----+-----+-----+-----+

```

Figure 124. SMIT Install Software Products Panel

Move the cursor to `nvdmSOLc1t` and select it using **F7**. Then move the cursor to `nvdmSOLc1tEN_US` and select it using **F7**. When you have selected both objects press Enter. Change the fields to the values displayed in Figure 123 on page 161 and press Enter again.

This will install NetView DM Agent for Solaris on your RISC System/6000 workstation.

**Note**

If you want to install just one NetView DM Agent for Solaris client it may be a good idea just to apply the NetView DM Agent for Solaris software at the RISC System/6000 and then reject it again after you have installed the SPARCstation. This will free the space that is consumed by the NetView DM Agent for Solaris installation files.

After the installation you will have the following files in the `/usr/1pp/nvdmSOL` directory:

**README**

This file contains the latest product information.

**nvdmSOLc1t.tar**

This file contains the code for NetView DM Agent for Solaris in `tar` format

### **nvdmsOLcItEn\_US.tar**

This file contains the English messages for NetView DM Agent for Solaris in *tar* format.

### **nvdminstall**

This is a shell script which will be used to install NetView DM Agent for Solaris on the SPARCstation.

### **oemfndpc**

This is a shell script which will be used to pre-configure NetView DM Agent for Solaris on the RISC System/6000.

### **fndl1mst.ps**

This file contains the manual for NetView DM Agent for Solaris in PostScript format.

## **6.2.2 Pre-configuring NetView DM Agent for Solaris at the RISC System/6000**

NetView DM Agent for Solaris can be pre-configured on your RISC System/6000 before you copy it to the SPARCstation.

For that purpose there is a script *oemfndpc* in the */usr/lpp/nvdmsOL* directory after you have installed NetView DM Agent for Solaris.

Invoke this script to pre-configure NetView DM Agent for Solaris:

```
cd /usr/lpp/nvdmsOL
./oemfndpc
```

The script will:

- Extract the files from the NetView DM Agent for Solaris installation archive.
- Modify the *nvdms.cfg* file which will be installed at the SPARCstation.
- Rebuild the installation archive.

The *oemfndpc* is equivalent to the *fndpc* script used in NetView DMA/6000.

The configuration script will modify the *SERVER* and the *TCP/IP PORT* fields in the *nvdms.cfg* file.

It copies the values from the */usr/lpp/netviewdm/db/nvdms.cfg* file at the RISC System/6000 where you run the configuration script. Therefore you should run the script at a workstation inside the same NetView DM/6000 domain where the SPARCstation will reside.

#### **Warning**

If you decide to run the configuration script *oemfndpc* you must ensure that there is enough space left in the file system where */usr/lpp/nvdmsOL* resides.

If there is not enough space left in your file system the *oemfndpc* script may damage the install image because it then cannot rebuild the *tar* file.

Usually */usr/lpp/nvdmsOL* resides in the */usr* file system. You will need about 8MB in this file system to extract the installation image.

Use the following command to check if there is enough space left in the file system:

```
df
```

The output should look similar to the following:

| Filesystem  | Total KB | free  | %used | iused | %iused | Mounted on           |
|-------------|----------|-------|-------|-------|--------|----------------------|
| /dev/hd4    | 12288    | 1424  | 88%   | 1078  | 26%    | /                    |
| /dev/hd9var | 20480    | 2200  | 89%   | 1430  | 23%    | /var                 |
| /dev/hd2    | 643072   | 11852 | 98%   | 24640 | 15%    | /usr                 |
| /dev/hd3    | 12288    | 9620  | 21%   | 140   | 3%     | /tmp                 |
| /dev/hd1    | 4096     | 3764  | 8%    | 47    | 4%     | /home                |
| /dev/lv01   | 151552   | 23224 | 84%   | 331   | 0%     | /usr/lpp/netviewdm   |
| /dev/lv04   | 32768    | 14084 | 57%   | 21    | 0%     | /usr/sys/inst.images |

Figure 125. Output from df Command

If there is less than 8MB left in the /usr file system do either of the following:

- Erase some unnecessary files from the /usr file system or
- Enlarge the /usr file system using smit chfs.

To check if the archive is in the right format after you have run the configuration script you can invoke the following command:

```
cd /usr/lpp/nvdmSQL
tar -tvf nvdmSQLc1t.tar
```

This command should produce an output similar to the following:

|            |     |         |                      |                |
|------------|-----|---------|----------------------|----------------|
| -rw-r--r-- | 0 1 | 2867200 | Oct 20 17:22:19 1994 | nvdmSQLexe.tar |
| -r-sr-s--- | 0 1 | 7506    | Oct 18 10:41:50 1994 | dvainc.pi      |
| -r-sr-s--- | 0 1 | 13776   | Oct 18 10:41:50 1994 | dvainc.cf      |

Figure 126. Output from tar Command

If it does not produce this output the archive is damaged.

### 6.2.3 Configuring TCP/IP at the CC Server

In order to communicate with the SPARCstation we add the IP address of the workstation to the /etc/hosts file at the CC Server (rs600012).

We add the following line:

```
9.67.32.13 solitso
```

The SPARCstation resides in another IP subnet, so we also have to add an entry to the routing table. The CC Server is attached to a token-ring network (subnet

9.24.104) which is connected to the Ethernet network (subnet 9.67.32) where the SPARCstation resides through a router (lablrm).

The following command will add the IP route:

```
route add net 9.67.32 lablrm 1
```

The above command will add the route only temporarily, that is until the next reboot.

To add the route permanently we use the command:

```
smit mkroute
```

The following panel will appear:

Add Static Route

Type or select values in entry fields.  
Press Enter AFTER making all desired changes.

| Destination TYPE                                                                  | [Entry Fields]   |   |
|-----------------------------------------------------------------------------------|------------------|---|
| * DESTINATION Address<br>(dotted decimal or symbolic name)                        | net<br>[9.67.32] | + |
| * GATEWAY Address<br>(dotted decimal or symbolic name)                            | [lablrm]         |   |
| * METRIC (number of hops to destination gateway)<br>Network MASK (dotted decimal) | [1]<br>[]        | # |

|             |               |            |             |
|-------------|---------------|------------|-------------|
| F1=Help     | F2=Refresh    | F3=Cancel  | F4=List     |
| Esc+5=Reset | Esc+6=Command | Esc+7=Edit | Esc+8=Image |
| Esc+9=Shell | Esc+0=Exit    | Enter=Do   |             |

Figure 127. SMIT Add Static Route Panel

We enter the values as shown and press Enter. This will add the new route permanently.

At the SPARCstation the router is known under the name *lab\_6611*, and has the following entry in the */etc/hosts* file:

```
9.67.32.10 lab_6611
```

To add the route to the network 9.24.104 at the SPARCstation we type:

```
route add net 9.24.104.0 lab_6611 1
```

To add the route permanently to the system we put the above command line into the file `/etc/rc2.d/S72inetsvc` which is executed at system boot.

## 6.2.4 Installing NetView DM Agent for Solaris on the SPARCstation

We will now install NetView DM Agent for Solaris from the RISC System/6000 to the SPARCstation.

The installation files will be copied to a temporary area at the SPARCstation and then be installed in the `/usr` file system.

You will need about 8MB to temporarily store the installation files and about 11MB to install the product.

You can use the following command on the SPARCstation to check if there is enough space left:

```
df -a
```

### Note

The implementation of the `df` command is different on Solaris than it is on AIX. Therefore we have to specify the `-a` flag to produce a similar output like on AIX.

On our client this command produced the following output:

| Filesystem        | kbytes | used   | avail  | capacity | Mounted on   |
|-------------------|--------|--------|--------|----------|--------------|
| /dev/dsk/c0t1d0s0 | 21703  | 14258  | 5275   | 73%      | /            |
| /dev/dsk/c0t1d0s6 | 214647 | 158697 | 34490  | 82%      | /usr         |
| /proc             | 0      | 0      | 0      | 0%       | /proc        |
| fd                | 0      | 0      | 0      | 0%       | /dev/fd      |
| swap              | 163680 | 712    | 162968 | 0%       | /tmp         |
| /dev/dsk/c0t1d0s7 | 542430 | 9      | 488181 | 0%       | /export/home |
| /dev/dsk/c0t1d0s5 | 60591  | 44901  | 9640   | 82%      | /opt         |
| -hosts            | 0      | 0      | 0      | 0%       | /net         |
| auto_home         | 0      | 0      | 0      | 0%       | /home        |
| sun:vold(pid192)  | 0      | 0      | 0      | 0%       | /vol         |

Figure 128. Output from `df` Command

We will copy the installation files to `/tmp`. The files will be copied using the `ftp` command:

```
ftp solitso
```

The following panel shows the `ftp` sequence we used to transfer the files:



```

Connected to solitso.
220 sun FTP server (UNIX(r) System V Release 4.0) ready.
Name (solitso:root): root
331 Password required for root.
Password:
230 User root logged in.
ftp> bi
200 Type set to I.
ftp> cd /tmp
250 CWD command successful.
ftp> prompt
Interactive mode off.
ftp> mput *
200 PORT command successful.
150 Binary data connection for README (9.24.104.124,1316).
226 Transfer complete.
245 bytes sent in 0.000703 seconds (340.3 Kbytes/s)
200 PORT command successful.
150 Binary data connection for fndllmst.ps (9.24.104.124,1317).
226 Transfer complete.
1959713 bytes sent in 12.58 seconds (152.2 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdmsOLclt.tar (9.24.104.124,1318).
226 Transfer complete.
2897920 bytes sent in 20.3 seconds (139.4 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdmsOLcltEn_US.tar (9.24.104.124,1319).
226 Transfer complete.
471040 bytes sent in 2.221 seconds (207.1 Kbytes/s)
200 PORT command successful.
150 Binary data connection for nvdminstall (9.24.104.124,1320).
226 Transfer complete.
24111 bytes sent in 0.03901 seconds (603.5 Kbytes/s)
200 PORT command successful.
150 Binary data connection for oemfndpc (9.24.104.124,1321).
226 Transfer complete.
3487 bytes sent in 0.000723 seconds (4710 Kbytes/s)
ftp> quit
221 Goodbye.

```

Figure 129. Transferring Files Using ftp

When the file transfer is finished we log into the SPARCstation as root user to perform the installation.

Before we can execute the installation script `nvdminstall` we have to set the execute permission for the user in the access permission field:

```

cd /tmp
chmod u+x nvdminstall

```

Then we can start the installation using:

```

./nvdminstall 2>&1 | tee logfile

```

This will start the installation and write all screen output, either from `stdout` or `stderr` to the file `logfile`.

**Warning**

The above command will not work in a C shell (csh) because the C shell uses a different syntax for output redirection.

The default shell in Solaris is the C shell. If you did not start the windowing system you are normally in a C shell.

If you want to start the installation script from a C shell you can use the following command:

```
./nvdminstall |& tee logfile
```

We recommend that you use a Bourne shell (bsh) to run the installation script.

To open a Bourne shell from a C shell type:

```
sh
```

**Warning**

The installation script might fail because your PATH is not set correctly.

The installation script uses the commands `hostname` and `whoami` which reside in the `/usr/ucb` directory. The directory `/usr/ucb` is usually not included in your `PATH` variable. This is because it contains BSD style commands to provide BSD compatibility. Some BSD commands are the same name as the System V commands, but behave differently.

Therefore to avoid confusion `/usr/ucb` is normally not included in the `PATH`.

The commands `whoami` and `hostname` are both BSD style commands.

You should type the following commands before starting the installation script:

```
PATH=$PATH:/usr/ucb
export PATH
```

To execute the above commands you have to be either in a Bourne shell or a Korn shell.

The `nvdminstall` script will guide you through the installation. It can also be used to remove the product from the workstation.

The following figure shows the sequence we used to install the product:

```
This is the install program for
NetView Distribution Management Agent for Solaris
(NetView DMA for Solaris) version 1.0
```

```
This program will install or uninstall
the NetView DMA for Solaris version 1.0
Please select the desired action from the list below:
```

1. Install the Agent for Solaris
2. Uninstall the Agent for Solaris
3. Quit

```
Selection: 1 <ENTER>
You selected to install the Agent for Solaris
```

```
Please select the desired operating language for
NetView DMA for Solaris from the list below:
```

1. English
2. Return to main menu

```
Selection: 1 <ENTER>
You selected English
```

```
WARNING: THIS IS YOUR LAST CHANCE TO QUIT THE INSTALL PROCESS.
```

```
Do you wish to continue with the installation (y/n)? y
```

```
Installing NetView DMA for Solaris ...
x nvdmSOLExe.tar, 2867200 bytes, 5600 tape blocks
x dvainc.pi, 7506 bytes, 15 tape blocks
x dvainc.cf, 13776 bytes, 27 tape blocks
...
tar: problem reading group entry
tar: /tmp/nvdm.cfg: group not changed
x /usr/lpp/netviewdm/repos/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/service/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/uicfg/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/work/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/backup/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/db/, 0 bytes, 0 tape blocks
x /usr/lpp/netviewdm/db/nvdm.cfg, 467 bytes, 1 tape blocks
Work, Repository, Service and Backup directories are defaulted to
/usr/lpp/netviewdm
Please ensure adequate space or modify the nvdm.cfg file accordingly
```

```
Do you wish to delete the installation (*.tar) files(y/n)?: n
```

Figure 130. Installation Protocol (Part 1)

```
Leaving installation files as they are.

Installation successfully ended.

This program will install or uninstall
the NetView DMA for Solaris version 1.0
Please select the desired action from the list below:

 1. Install the Agent for Solaris
 2. Uninstall the Agent for Solaris
 3. Quit

Selection: 3 <ENTER>
Quitting...
```

Figure 131. Installation Protocol (Part 2)

The agent is now ready to be started. The installation script has changed the WORKSTATION NAME entry in `nvdn.cfg` to contain the hostname of the workstation where you execute the script.

If you did not pre-configure the NetView DM Agent for Solaris on your RISC System/6000 using the `oemfndpc` script you have to edit the SERVER and the TCP/IP PORT in the `/usr/lpp/newtviewdm/db/nvdn.cfg` file on your SPARCstation to reflect the server configuration.

The only thing left to do is to add an entry for the NetView DM/6000 server in your `/etc/hosts` file.

In our example we add the line:

```
9.24.104.124 rs600012
```

The installation script `nvdninstall` will call two other shell scripts during the installation, the pre-installation script `dvainc.pi` and the post-installation script `dvainc.cf`.

The pre-installation script `dvainc.pi` will:

- Prepare the environment for NetView DM Agent for Solaris
- Add the user group `fndadm` to the system
- Create the `/usr/lpp/netviewdm` directory

The post-installation script `dvainc.cf` will:

- Create all necessary symbolic links
- Adjust file permissions
- Add an entry to `/etc/inittab` which starts NetView DM Agent for Solaris at system boot
- Generate the NetView DM Agent for Solaris entries for the software inventory file `/usr/lpp/netviewdm/fndswinv`

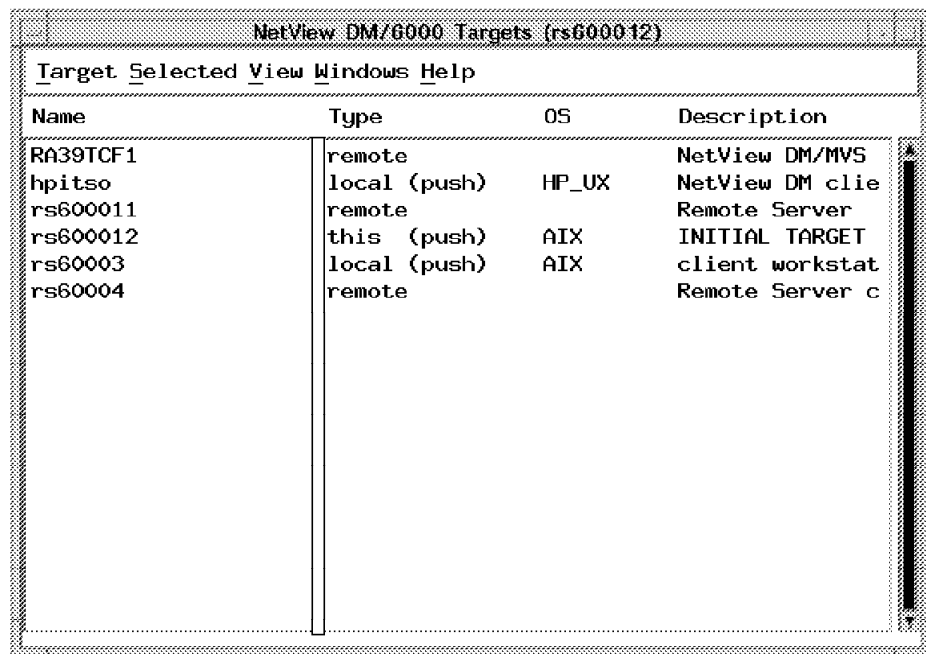
## 6.2.5 Adding a New Local Target for NetView DM Agent for Solaris

In order to distribute software to the newly installed NetView DM Agent for Solaris workstation we have to add a local target at our NetView DM/6000 server.

We do the following:

- Step 1. Log into the NetView DM/6000 server as CC administrator.
- Step 2. Start the graphical interface using `nvdmgj &`.
- Step 3. From the action bar select **Windows**.
- Step 4. From the menu we select **Targets**.

A panel similar to the following will appear:



The screenshot shows a window titled "NetView DM/6000 Targets (rs600012)". The window has a menu bar with "Target", "Selected", "View", "Windows", and "Help". Below the menu bar is a table with the following data:

| Name     | Type         | OS    | Description     |
|----------|--------------|-------|-----------------|
| RA39TCF1 | remote       |       | NetView DM/MVS  |
| hpitso   | local (push) | HP_UX | NetView DM clie |
| rs600011 | remote       |       | Remote Server   |
| rs600012 | this (push)  | AIX   | INITIAL TARGET  |
| rs60003  | local (push) | AIX   | client workstat |
| rs60004  | remote       |       | Remote Server c |

Figure 132. NetView DM/6000 Target Window

From the action bar we select **Target** and then **New Local Target** from the pull-down menu.

The following panel will appear:

**New Local Target**

Name: solitso

Description: NetView DM Agent for Solaris

Change Management

- Initiated from Focal Point or any target (push)
- Initiated from same target only (pull)

Short name: SOLITSO

LAN address:

Target OS: SOLARIS

Buttons: Users..., Details..., Periods of activity..., Log..., Tokens..., Hardware..., OK, Cancel, Help

Figure 133. NetView DM/6000 New Local Target Window

We perform the following steps:

- Step 1. In the Name field enter **solitso**. This is the hostname of our SPARCstation.
- Step 2. In the Description field enter a description of the client (optional).
- Step 3. In the Change Management field select **push**.
- Step 4. In the Short name field enter **SOLITSO**.
- Step 5. Leave the LAN address field blank.
- Step 6. In the Target OS field select **SOLARIS**.
- Step 7. Select the **Users** push button.
- Step 8. Add the root user as a client user.
- Step 9. Select the **OK** push button.

We have now added a local CC target for the SPARCstation.

**Note**

The Target OS name for Solaris clients has changed from NetView DM/6000 Version 1.1 to Version 1.2. While in Version 1.1 you have to use Solaris V2 as the Target OS name, in Version 1.2 you use just Solaris.

## 6.2.6 Starting NetView DM Agent for Solaris

You can start NetView DM Agent for Solaris by typing the following command at the SPARCstation:

```
nvdn start
```

The next time you boot your SPARCstation NetView DM Agent for Solaris will be started automatically, because the installation script adds the following entry to your `/etc/inittab` file:

```
NvDM:one:/etc/rc.ndm
```

The script `/etc/rc.ndm` will start NetView DM Agent for Solaris.

If NetView DM Agent for Solaris does not start correctly there may be one of the following error conditions:

- The NetView DM/6000 server is not known.
- The connection to the NetView DM/6000 server does not work.
- The hostname of the agent is wrong.
- The agent is not configured correctly.
- There is no local target defined for NetView DM Agent for Solaris.

Ensure that you have an entry for your NetView DM/6000 server in your `/etc/hosts` file.

Enter the following command to test if the connection to your NetView DM/6000 server works:

```
ping rs600012
```

If the connection is up the ping command will produce the following output:

```
rs600012 is alive.
```

If it does not, check if your network interface is working and if your routing table contains the necessary entries.

To check your TCP/IP network interface on a SPARCstation with an Ethernet card you can use the following command:

```
ifconfig le0
```

To display the current routing table you can use the command:

```
netstat -r
```

Check that your hostname is set correctly. NetView DM Agent for Solaris will use the hostname of your system to contact the server, so it must be the same as the WORKSTATION NAME in your nvdm.cfg file.

You can use the hostname command to display the hostname. If the displayed hostname is not correct, you can set it using the hostname command, for example:

```
hostname solitso
```

Make sure that your nvdm.cfg file contains the correct entries for SERVER, WORKSTATION NAME and TCP/IP PORT. Normally this configuration is done by the scripts oemfndpc and nvdminstall.

In our example the correct configuration file looks like the following:

```
WORKSTATION NAME: solitso
MESSAGE LOG LEVEL: N
LAN AUTHORIZATION: 0
CONFIGURATION: CLIENT
MACHINE TYPE: SOLARIS
LOG FILE SIZE: 50000
TRACE FILE SIZE: 1000000
API TRACE FILE SIZE: 100
TCP/IP PORT: 729
SERVER: rs600012
REPOSITORY: /usr/lpp/netviewdm/repos
SERVICE AREA: /usr/lpp/netviewdm/service
BACKUP AREA: /usr/lpp/netviewdm/backup
WORK AREA: /usr/lpp/netviewdm/work
```

Figure 134. /usr/lpp/netviewdm/db/nvdm.cfg File

Make sure that you have defined a local target for NetView DM Agent for Solaris at your NetView DM/6000 server. How to do this is described in 6.2.5, "Adding a New Local Target for NetView DM Agent for Solaris" on page 171.

---

### 6.3 Installing a Solaris System File Using NetView DM/6000

In this part we will install a Solaris system file on our SPARCstation from a NetView DM/6000 server.

This can be compared to installing an installp image on a RISC System/6000.

The purpose of this part is to show how you can install Solaris install packages using NetView DM/6000.



### 6.3.1 Solaris System File Format

Normally Solaris system files like the operating system are delivered in a special format.

This format is readable by the `/usr/sbin/pkgadd` command which is used to install system software on Solaris. The `pkgadd` command is similar to the `installp` command in AIX. You can include files, installation scripts, remove scripts, etc. in an install image.

If you want to create your own software packages you can use the `pkgmk` command to create an install image readable by the `pkgadd` command. In our example we will use a SUNSoft product which is delivered with the machine to demonstrate software distribution and installation to a Solaris client.

To remove software from the system you can use the `/usr/sbin/pkgrm` command which will remove software that has been installed using `pkgadd`.

You can use the commands `man pkgadd` and `man pkgrm` on the SPARCstation to get a detailed description of those commands.

### 6.3.2 Preparing a Change File for a Solaris System File

For the installation of system code on NetView DM Agent for Solaris we will use the change file type GEN.

This is different from the way you would do it on AIX where you have a specific change file type AIXINSTP to install AIX system code.

We will create a change file to install a Solaris AnswerBook on our SPARCstation.

AnswerBook is the online documentation system used for Solaris. This is comparable to InfoExplorer on AIX. The AnswerBook software is delivered on a CD-ROM. The AnswerBook software itself is already installed on our system. We will install the Hardware AnswerBook document.

First we create a new directory on our SPARCstation to contain the necessary data to build the change file:

```
mkdir /usr/lpp/answer
```

Then we copy the AnswerBook we want to install from the CD-ROM to our newly added directory. For that purpose we insert the AnswerBook CD-ROM into the CD-ROM drive. The volume management daemon will mount the CD-ROM automatically at `/cdrom/cdrom0`. Therefore we can copy the data we want using the following command:

```
cp -r /cdrom/cdrom0/SUNWabhdw /usr/lpp/answer
```

We want to automatically install the software at the SPARCstation, so we will write an installation script.

The installation script will use the `pkgadd` command to install the software package. The `pkgadd` command normally works interactively, requesting responses from the user. If the installation has to be performed unattended a

response file has to be supplied with the command which contains the user responses. The response file can be created using the pkgask command:

```
pkgask -d /usr/lpp/answer -r /usr/lpp/answer/resp SUNWabhdw
```

Type `man pkgask` on your SPARCstation to get a detailed description of the pkgask command.

The response file `/usr/lpp/answer/resp` then can be used with the pkgadd command to install the product:

```
pkgadd -r /usr/lpp/answer/resp -d /usr/lpp/answer SUNWabhdw
```

Although we supply a response file the pkgadd command will ask for a confirmation before it installs the product. This confirmation normally is given by the user, typing a `y` at the keyboard. We will supply this answer in a file and use an input redirection to provide the confirmation.

To create the answer file we type:

```
echo "y\n" >/usr/lpp/answer/yes
```

#### Note

As an alternative to creating a file including the user confirmation you can also modify the configuration file for the pkgadd command.

The configuration for the pkgadd command is held in the file `/var/sadm/install/admin/default`.

The following figure shows the default content of that file:

```
#ident "@(#)default 1.4 92/12/23 SMI" /* SVr4.0 1.5.2.1 */
mail=
instance=unique
partial=ask
runlevel=ask
idepend=ask
rdepend=ask
space=ask
setuid=ask
conflict=ask
action=ask
basedir=default
```

Figure 135. `/var/sadm/install/admin/default` File

For example the `setuid` bit field determines if the user should be asked if the installation script tries to set the `setuid` on files. This field is set to `ask` by default, so the user will be asked for a confirmation.

To remove the confirmation you can change the value from *ask* to *nocheck*. You can do that either by editing the file or by using the software installation tool `swmtool`.

To detect which types of confirmations are used for a specific software product you can use the `pkgask` command. You then will see for which confirmations you are asked.

If you want to use `swmtool` to change the default values type:

```
swmtool
```

The following panel will appear:

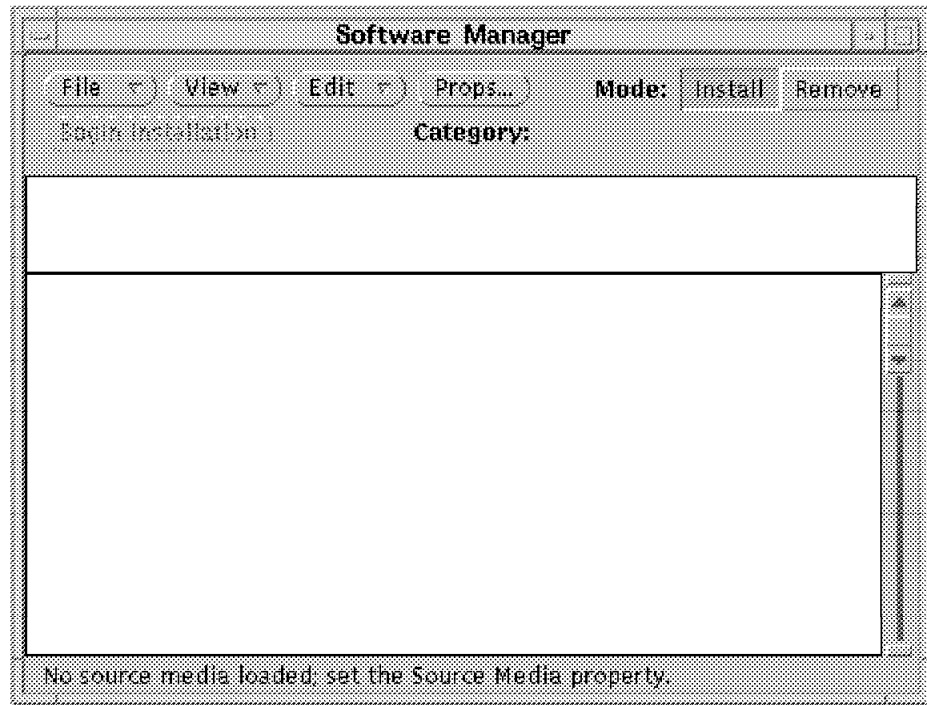


Figure 136. Software Manager Tool Main Window

Select the **Props...** push button.

The following panel will appear:

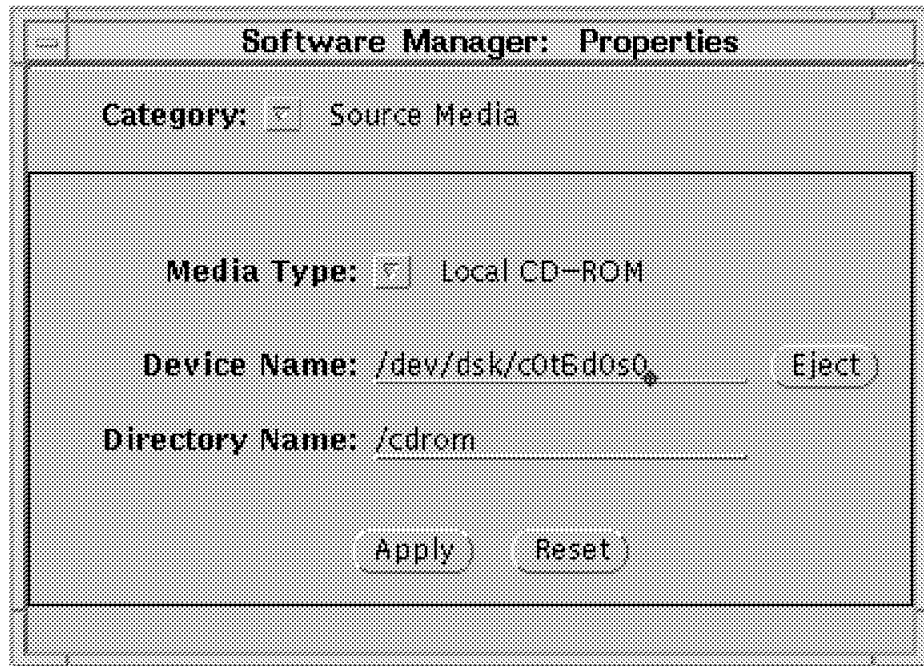


Figure 137. Software Manager Properties Window

Select **Package Administration** from the Category menu.

The following panel will appear:

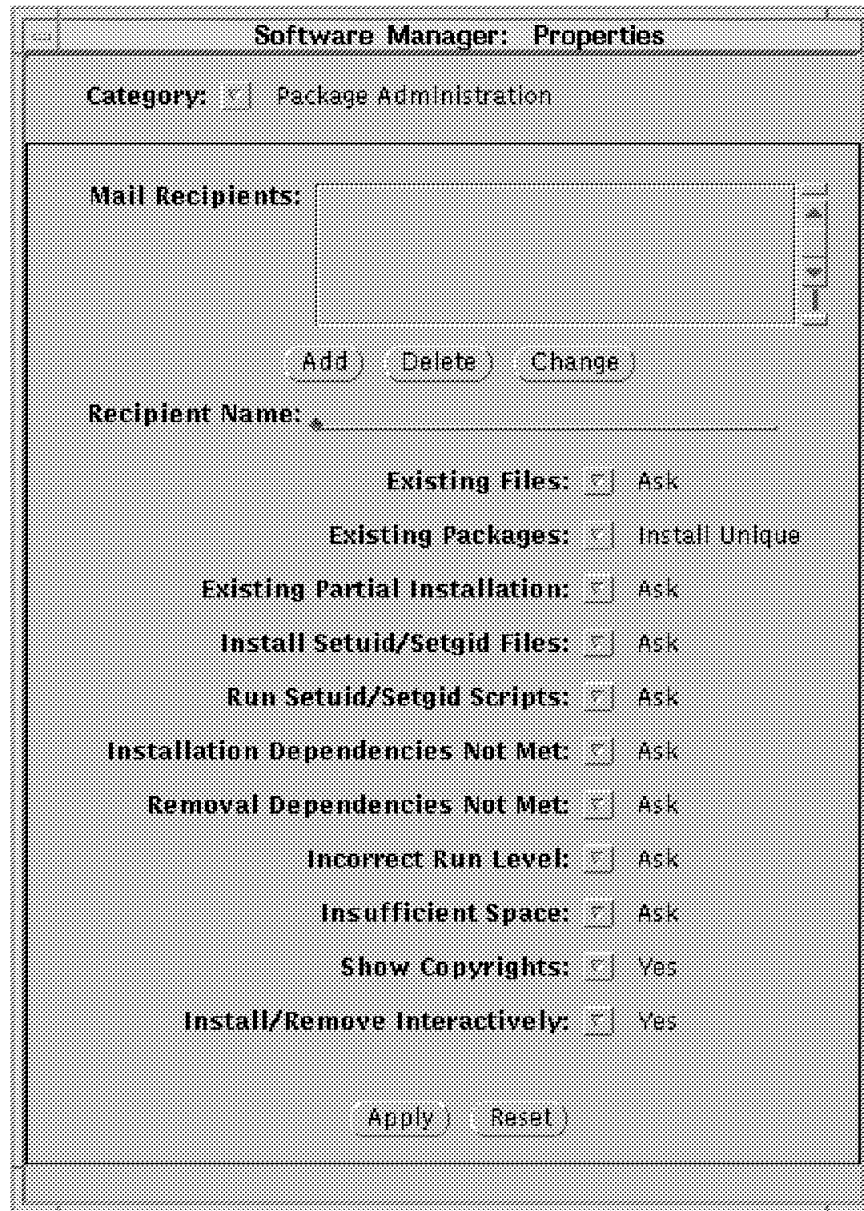


Figure 138. Software Manager Package Administration Window

Change the default values to the desired values and then select the **Apply** push button. This will save the values into the `/var/sadm/install/admin/default` file.

Now we can create the installation script, which is shown in the following figure:

```
#!/bin/sh

echo "Installing Answerbook..."

pkgadd -r /usr/lpp/answer/resp -d /usr/lpp/answer \
SUNWabhdw </usr/lpp/answer/yes
```

Figure 139. Post-Install Script for Installing Solaris System File

We store this file under the name `/usr/lpp/answer/install` at our SPARCstation.

Remember to set the execute permission for the file owner using:

```
chmod u+x /usr/lpp/answer/install
```

To uninstall the product we write a similar script using the `pkgrm` command to remove the software. This script will be used as the Pre-script with the NetView DM/6000 uninstall option:

```
#!/bin/sh

echo "Un-Installing Answerbook..."

pkgrm SUNWabhdw </usr/lpp/answer/yes
```

*Figure 140. Pre-uninstall Script for Removing Solaris System File*

We store this file under the name `/usr/lpp/answer/uninstall` at our SPARCstation.

Remember to set the execute permission for the file owner:

```
chmod u+x /usr/lpp/answer/uninstall
```

We are now ready to build the change file. To do so we use the following change file profile:

```
GLOBAL NAME: SOL.ANSWERBOOK.REF.1
CHANGE FILE TYPE: GEN
COMPRESSION TYPE: LZW
PACK FILES: NO
POST-INSTALL: /usr/lpp/answer/install
PRE-REMOVE: /usr/lpp/answer/uninstall
PRE-UNINSTALL: /usr/lpp/answer/uninstall
OBJECT:
 SOURCE NAME: /usr/lpp/answer/*
 TARGET NAME: /usr/lpp/answer/*
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: YES
```

*Figure 141. Change File Profile for SPARCstation*

This file is stored in `/usr/lpp/answer/test.profile` at our SPARCstation, so we can use the following command to build and catalog the change file:

```
nvdm bld test.profile
```

### 6.3.3 Installing the Change File at the SPARCstation

We will install the change file on our Solaris client *solitso* from our NetView DM/6000 server (rs600012).

We log into *rs600012* as CC administrator and submit the install request using:

```
nvdms inst SOL.ANSWERBOOK.REF.1 -w solitso
```

This will install the software product on *solitso*.

For a successful installation the request.out file in the `/usr/lpp/netviewdm/work` directory on *solitso* should look like this:

```

Installing Answerbook...

Processing package instance <SUNWabhdw> from </usr/lpp/answer>

Solaris 2.3 on Sun Hardware AnswerBook
(sparc) 28.2.7

 Copyright 1993 Sun Microsystems, Inc. All Rights Reserved.
 Printed in the United States of America.
2550 Garcia Avenue, Mountain View, California, 94043-1100 U.S.A.

...

Using </opt> as the package base directory.
Processing package information.
Processing system information.
Verifying package dependencies.
Verifying disk space requirements.
Checking for conflicts with packages already installed.
Checking for setuid/setgid programs.

This package contains scripts which will be executed with
super-user
permission during the process of installing this package.

Do you want to continue with the installation of
this package [y,n,?]
Installing
Solaris 2.3 on Sun Hardware AnswerBook as <SUNWabhdw>

Installing part 1 of 1.
/opt/SUNWabhdw/index
/opt/SUNWabhdw/index/Keys
/opt/SUNWabhdw <implied directory>
/opt/SUNWabhdw/index <implied directory>
/opt/SUNWabhdw/index/index.cat
/opt/SUNWabhdw/ps/SUNDIAGHW/Preface

...

/opt/SUNWabhdw/ps/SUNDIAGHW/Tables
/opt/SUNWabhdw/ps/SUNDIAGHW/files_to_print
[verifying class <PostScript>]
Executing postinstall script.

Installation of <SUNWabhdw> was successful.

```

Figure 142. request.out File on Solaris Client (Install)

The newly installed AnswerBook can now be used. To start the AnswerBook application we type:

```
answerbook
```

The following panel will appear:



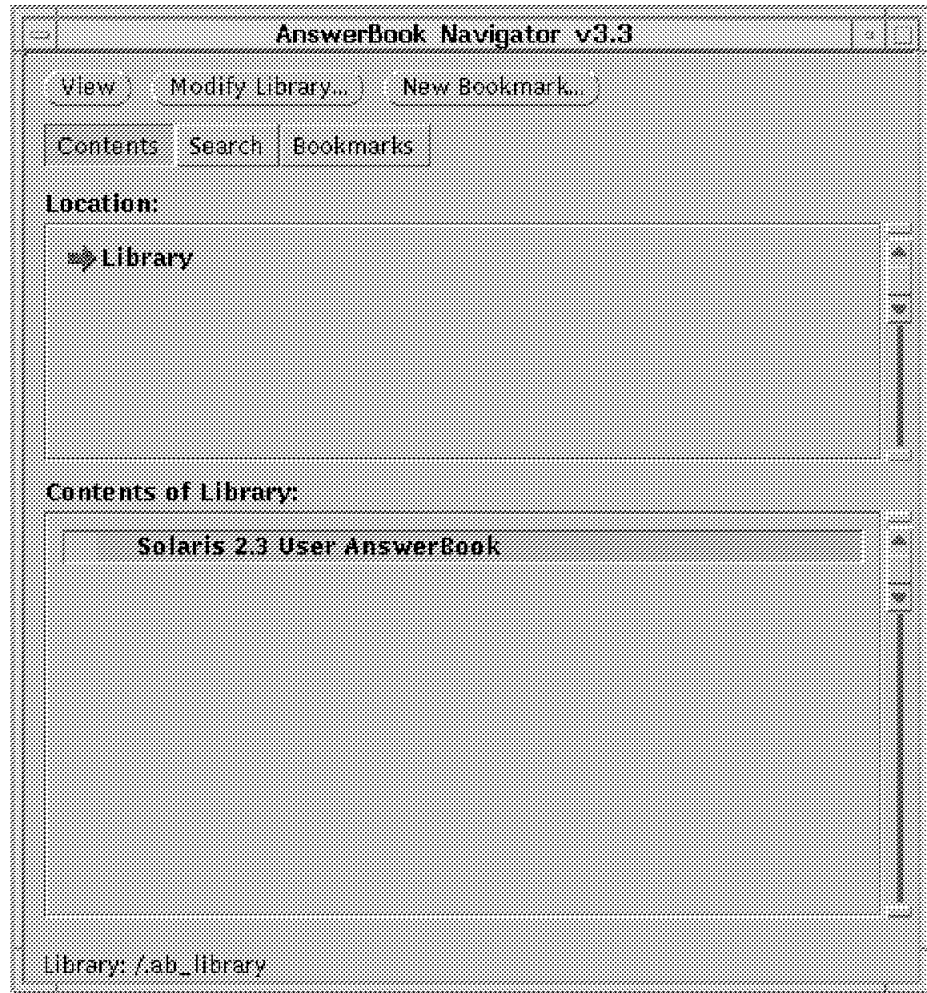


Figure 143. Sun AnswerBook Navigator Window

We select the **Modify Library** push button to add the new AnswerBook to the library. This will pop up the following panel:

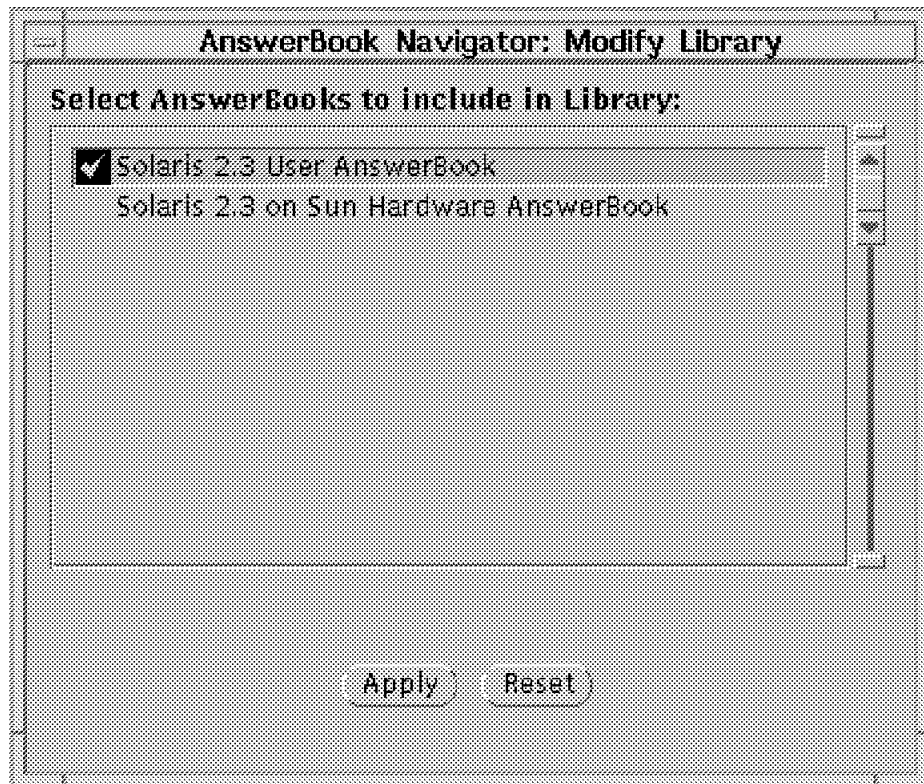


Figure 144. Sun AnswerBook Modify Library Window

We select **Solaris 2.3 Sun Hardware AnswerBook** and then select the **Apply** push button.

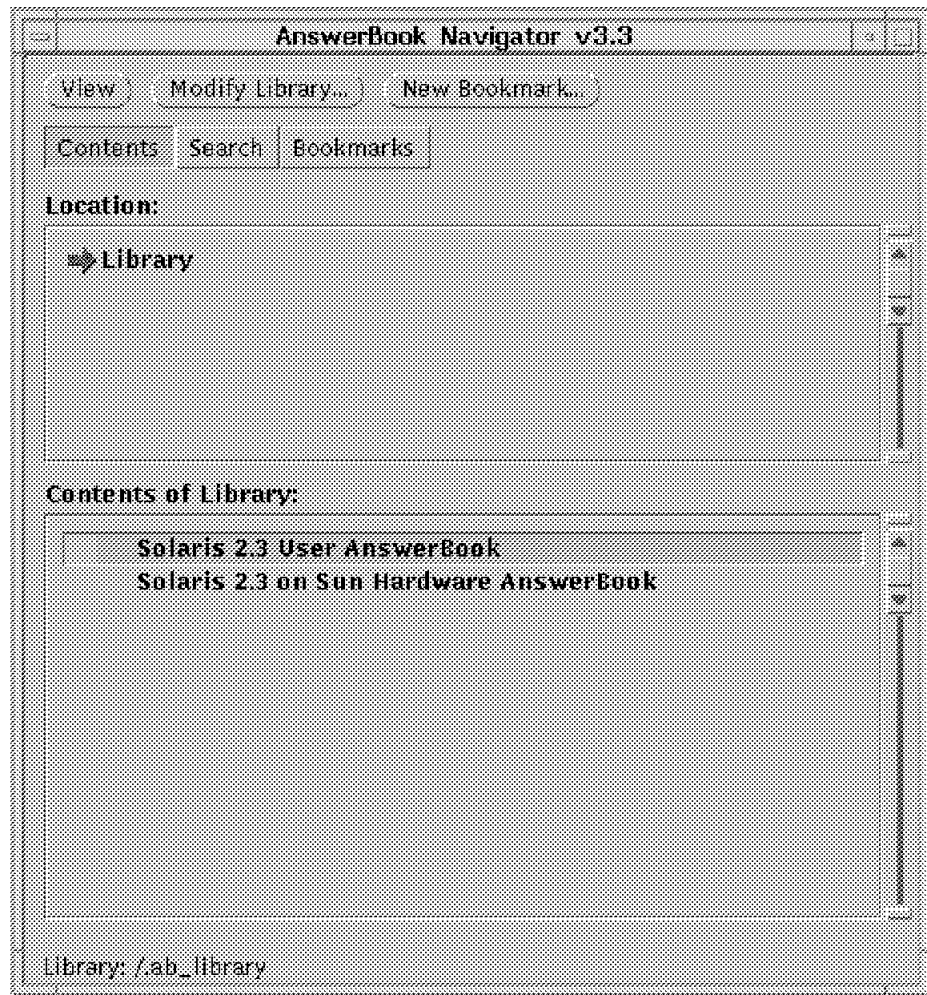


Figure 145. Sun AnswerBook Navigator Window

The new book has been added to the library.

### 6.3.4 Uninstalling the System File from the Solaris Client

The software can be uninstalled by typing the following command at the server:

```
nvdn uninst SOL.ANSWERBOOK -w solitso
```

The request.out file at *solitso* for a successful uninstall should look like this:

```

Un-Installing Answerbook...

The following package is currently installed:
 SUNWabhdw Solaris 2.3 on Sun Hardware AnswerBook
 (sparc) 28.2.7

Do you want to remove this package [y,n,?,q]
Removing installed package instance <SUNWabhdw>
Verifying package dependencies.
Processing package information.
Removing pathnames in class <PostScript>
/opt/SUNWabhdw/ps/SUNDIAGHW/files_to_print
/opt/SUNWabhdw/ps/SUNDIAGHW/Tables
/opt/SUNWabhdw/ps/SUNDIAGHW/Preface

...

/opt/SUNWabhdw/index
Removing pathnames in class <none>
/opt/SUNWabhdw/ab_cardcatalog
/opt/SUNWabhdw
Updating system information.

Removal of <SUNWabhdw> was successful.

```

Figure 146. request.out File on Solaris Client (Uninstall)

## 6.4 Installing a Solaris Operating System Patch Using NetView DM/6000

In this part we will install a Solaris operating system patch on the SPARCstation using NetView DM/6000.

This can be compared to installing a PTF on an AIX system.

The purpose of this part is to show how you can install Solaris patches using NetView DM/6000.

### 6.4.1 Solaris Patch Packaging

The Solaris patches are delivered with the SPARCstation on a CD-ROM called "Maintenance Supplement 1". You can install either all patches on the CD-ROM or patches for a specific problem.

In our example we will build a change file to install one patch on our system.

The patches are not installed like normal software packages using pkgadd. Instead there is a shell script delivered with each patch which can be used to install and uninstall the patch.

## 6.4.2 Preparing a Change File for a Solaris Patch

For the installation of Solaris patches on NetView DM Agent for Solaris we will use the change file type GEN.

This is different from the way you would do it on AIX where you have a specific file type AIXINSTP to install AIX PTFs.

We will create a change file to install one patch from the "Maintenance Supplement 1" CD-ROM as an example.

First we create a new directory on our SPARCstation to contain the necessary data to build the change file:

```
mkdir /usr/lpp/patch
```

Then we copy the patch files from the CD-ROM to our newly added directory. For that purpose we insert the "Maintenance Supplement 1" CD-ROM into the CD-ROM drive. The volume management daemon will mount the CD-ROM automatically at /cdrom/cdrom0. Therefore we can copy the data we want using the following command:

```
cp -r /cdrom/cdrom0/s0/Patches/101219-01 /usr/lpp/patch
```

In the above example 101219-01 is our patch number.

To install the patch automatically we write an installation script. The script will use the installpatch script which is delivered with each patch:

```
#!/bin/sh

echo "Installing Patch 101219-01"
/usr/lpp/patch/101219-01/installpatch /usr/lpp/patch/101219-01
```

Figure 147. Post-Install Script for Installing Solaris Patch

We store this file under the name /usr/lpp/patch/101219-01/install at our SPARCstation.

Remember to set the execute permission for the file owner using:

```
chmod u+x /usr/lpp/patch/101219-01/install
```

To uninstall the patch we write a similar script that uses the backoutpatch script which is delivered with each patch:

```
#!/bin/sh

echo "Un-Installing Patch 101219-01"
/usr/lpp/patch/101219-01/backoutpatch 101219-01
```

Figure 148. Pre-Uninstall Script for Removing Solaris Patch

We store this file under the name `/usr/lpp/patch/101219-01/uninstall` at our SPARCstation.

Remember to set the execute permission for the file owner using:

```
chmod u+x /usr/lpp/patch/101219-01/uninstall
```

We are now ready to build the change file. To do so we use the following change file profile:

```
GLOBAL NAME: SOL.PATCH.REF.10121901
CHANGE FILE TYPE: GEN
COMPRESSION TYPE: LZW
PACK FILES: NO
REBOOT REQUIRED: YES
POST-INSTALL: /usr/lpp/patch/101219-01/install
PRE-REMOVE: /usr/lpp/patch/101219-01/uninstall
PRE-UNINSTALL: /usr/lpp/patch/101219-01/uninstall
OBJECT:
 SOURCE NAME: /usr/lpp/patch/101219-01/*
 TARGET NAME: /usr/lpp/patch/101219-01/*
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: YES
```

Figure 149. Change File Profile for SPARCstation

This file is stored in `/usr/lpp/patch/101219-01/patch.profile` so we can use the following command to build and catalog the change file:

```
nvdm bld patch.profile
```

In order to activate the patches on the Solaris client you normally have to reboot the system. There are basically two different ways to do this:

1. Add the following line to the change file profile:

```
REBOOT REQUIRED : YES
```

In this case the reboot is considered part of the install command which means that the installation is finished successful as soon as the client has rebooted successfully. At this time the Catalog gets updated.

2. Submit an activate command for this client In this case the activate (reboot) is a separate command and not part of the installation. As soon as the install command has ended successfully the Catalog gets updated.

In this example we have used alternative 1.

### 6.4.3 Installing the Change File at the SPARCstation

We will install the change file on our Solaris client *solitso* from our NetView DM/6000 server (rs600012).

We log into *rs600012* as CC administrator and submit the install request:

```
nvdms inst SOL.PATCH.REF.10121901 -w solitso
```

This will install the patch on *solitso*.

For a successful installation the request.out file in the `/usr/lpp/netviewdm/work` directory on *solitso* should look like this:

```
Installing Patch 101219-01
@(#) installpatch 3.7 93/08/11
generating list of files to be patched
Save old versions of files to be patched
/var/sadm/patch/101219-01/save/opt/SUNWits
/var/sadm/patch/101219-01/save/opt/SUNWits/Graphics-sw

...

Installing patch packages
Doing pkgadd of SUNWxildg package:
2800 blocks

Installation of <SUNWxildg.2> was successful.
Doing pkgadd of SUNWxilow package:
2890 blocks

Installation of <SUNWxilow.2> was successful.
Patch installation finished
```

Figure 150. request.out File on Solaris Client (Install)

### 6.4.4 Uninstalling the Patch from the SPARCstation

The patch can be uninstalled by typing the following command at the server:

```
nvdms uninst SOL.PATCH -w solitso
```

The request.out file at *solitso* for a successful uninstall should look like this:

```
Un-Installing Patch 101219-01
@(#) backoutpatch 3.5 93/08/11
Doing pkgrm of SUNWxildg.2 package:

Removal of <SUNWxildg.2> was successful.
Doing pkgrm of SUNWxilow.2 package:

Removal of <SUNWxilow.2> was successful.
Restoring previous version of files
/.
/opt
/opt/SUNWits
/opt/SUNWits/Graphics-sw
/opt/SUNWits/Graphics-sw/xil
/opt/SUNWits/Graphics-sw/xil/lib

...

4627 blocks
Making the package database consistent with restored files:
```

Figure 151. request.out File on Solaris Client (Uninstall)



---

## Chapter 7. NetView DM Agent/2

In this chapter, we show the CID installation of a pristine OS/2 client using NetView Distribution Management Agent/2 and NetView Distribution Manager/6000 on the change control server.

---

### 7.1 Introducing NetView DMA/2

NetView Distribution Management Agent/2 (NetView DMA/2) runs on OS/2 workstations and provides change control and distribution functions to a client workstation in a TCP/IP network. NetView Distribution Manager/6000 (NetView DM/6000) controls and acts as a change control server (CC Server), and NetView DMA/2 acts as a change control client (CC Client).

In a client/server relationship with NetView DM/6000, NetView DMA/2 provides support for the installation and maintenance of the following:

- OS/2 operating system
- Other sub-systems
- Application software

The change management operations can be performed in two ways:

- Centrally initiated change control functions (push mode)
- User-initiated change control function (pull mode)

In both cases, NetView DM/6000 keeps track of what software packages are installed on the client workstation within the NetView DM/6000 domain (CC domain).

The software packages are installed in the form of change files. Two types of change files are supported by NetView DMA/2:

- OS/2 Generic for installing non-CID enabled products
- OS/2 CID for installing CID enabled OS/2 products

CID (Configuration/Installation/Distribution) is a software installation process that enables the remote unattended installation of software. NetView DMA/2 is a software distribution agent that supports installations of CID-enabled products.

**Note:**

There is another OS/2-based software distribution manager product, NetView Distribution Manager/2 (NetView DM/2). Both NetView DMA/2 and NetView DM/2 use change files to install software packages, but the formats of the change files are different. A change file built by NetView DM/2 can only be installed on a workstation running NetView DM/2 client software or NetView Distribution Management Agent/2 that has CSD20462 or higher installed. An OS/2 change file built by NetView DMA/2 can only be installed on a workstation running NetView DMA/2 but **not** on any NetView DM/2 workstation.

---

## 7.2 Lightly Attended Pristine System Installation Scenario

In the following sections, we describe the procedure for installing OS/2 and other products on a pristine workstation. A pristine workstation is a workstation without any operating system installed.

A pristine system installation cannot be done in an unattended way but requires minimal human intervention at the target workstation, because it does not have any means to load the software by itself. So we call it a lightly attended installation. But you usually need only to boot the pristine workstation from diskettes after you have finished some preparation activities. We show how to automate the installation process using NetView DM/6000 and NetView DMA/2.

### 7.2.1 Overview of Pristine Installation Scenario

We install the following CID-enabled products on a pristine workstation:

- OS/2 Version 2.11
- LAN Adapter and Protocol Support (LAPS)
- TCP/IP Version 2.0 for OS/2 (Base and Network File System kit)
- NetView DMA/2

The change file of a CID-enabled product usually contains only an installation program name with parameters and installs the product using the code images from the code server. So we set up the Network File Systems (NFS) server to store the product images on it. The installation parameters usually include a response file containing the installation instructions and configuration information, and a log file name where the installation and error log is written. These directories and files can also be stored on the NFS server.

The installation process begins by booting a pristine workstation from diskettes. The pristine workstation will be connected to both the NetView DM/6000 server and the NFS server. After the installation starts, the installation program(s) controlled by the CC Server and CC Client, takes care of the process, and you can leave the workstation unattended.

The following activities are performed in this scenario:

1. The pristine workstation is defined as a CC Client.
2. The code images are copied to the NFS server.
3. The response files are prepared on the NFS server.
4. The boot diskettes are prepared.
5. The change files are built on a NetView DMA/2 and cataloged on the NetView DM/6000 server.
6. The pristine workstation is started and the installation request is submitted.

### 7.2.2 Environment

The environment used in this scenario is a stand-alone TCP/IP network composed of:

- NetView DM/6000 CC Server, also used as an NFS Server (rs600011)
- NetView DM Agent/2 CC Client, used as a preparation site (nvdma9)
- NetView DM Agent/2 CC Client, used as an installation target (nvdma10)

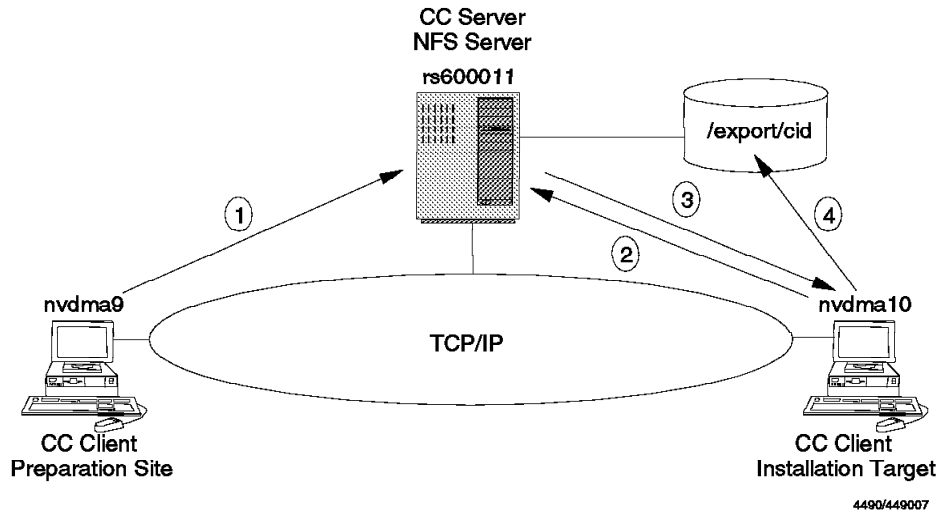


Figure 152. Pristine System Installation Scenario Environment

1. Build the change file and catalog it on the server.
2. Boot the installation target and get a connection to the CC Server.
3. Start the installation request and mount the NFS file system.
4. Load the images and response files from the NFS server.

We have configured both NetView DM/6000 server and NFS server on the same workstation but it is not necessary to do so. You can configure the NFS server on any other workstation as long as it can be accessed from the CC Clients.

The following is a list of software level installed on the CC Server and the CC Client at preparation site:

- rs600011 (CC Server)
  - AIX Version 3.2.5 with TCP/IP and NFS
  - NetView DM/6000 Release 1.2
- nvdma9 (CC Client, preparation site)
  - OS/2 Version 2.11 (Syslevel WR06200)
  - LAN Adapter and Protocol Support Version 2.20.2 (Syslevel WR07045)
  - TCP/IP Version 2.0 for OS/2 Base (Syslevel UN64092) and NFS (Syslevel UN57064)
  - NetView DMA/2 (CSD XR20459 applied)

We assume that nvdma9 is properly configured as a CC Client and connected to the NetView DM/6000 CC Server. We perform all change management activities on the OS/2 CC Client (nvdma9) because OS/2 change files can only be built on the NetView DMA/2. You can certainly issue the change management commands at the CC Server after you have created the change files.

---

## 7.3 Defining the Client on the NetView DM/6000 Server

On the CC Server, you have to define the pristine workstation as a CC Client. You can perform this task from the user interface at the preparation site if you have an administrator authorization and you are defined as a user of the client, or at the server from where you want to execute it.

At the OS/2 command prompt, enter the following command:

```
nvdn addtg nvdma9 -s nvdma9 -y OS/2 -u nvdmad1
```

Where:

- s Defines the short name of this target.
- y Specifies the operating system of the target.
- u Defines the user of this target. This name must be defined at AIX system on the server.

You will be prompted to enter your user ID and password every time you enter the line command. To avoid this, enter the following commands at the beginning of every session:

```
set FNDUSER=nvdmad1
set FNDPASSWORD=nvdmad1
```

Replace nvdmad1 with your own user name and password. Note that this user name and password are defined at the AIX system and they are case sensitive.

**Note:**

If you set user ID and password in a session or in the STARTUP.CMD you should be aware that you circumvent any security checks.

A logon through User Profile Management (UPM) does not help you because NetView DMA/2 does not use this information to forward it to the CC Server for being checked.

If you enter the line command at an AIX command prompt (for example, using telnet), you do not need to enter the user name and password, because you are already logged on as an AIX user.

---

## 7.4 Preparing the NFS Server Environment

On the NFS server, you have to:

- Define the CID directory structure.
- Copy the product images.
- Create the response files.

## 7.4.1 Defining the CID Directory Structure

You have to make a CID directory structure that contains the following directories:

- img** Stores the images of the software to be installed on the CC Client.
- rsp** Stores the response files used during the installation.
- log** Stores the log files written by the installation program.

Figure 153 shows the directory structure that we used. The `fnimg` sub-directory contains the NetView DMA/2 code used by all pristine workstations when it is booted from diskette. You are basically free in setting up the directory structure, so you should define what best suits your environment.

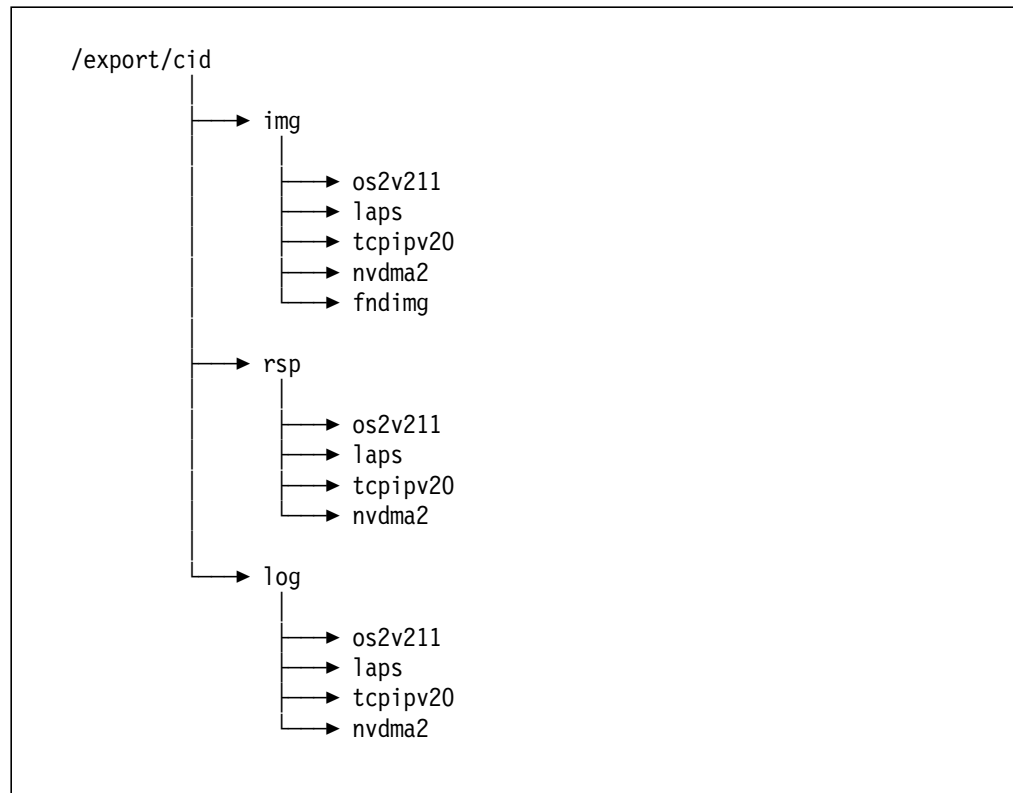


Figure 153. CID Directory Structure on the NFS Server

You also have to add this directory (`/export/cid` in our example) to the export list at the NFS server. We use also the NetView DM/6000 server as a NFS server and allow the access from both clients.

To export the directory at the NFS server, log on the NFS server as `root` and do the following:

- Step 1. Type `smit mknfsexp` on the AIX command line. The Add a Directory to Exports List panel will appear.

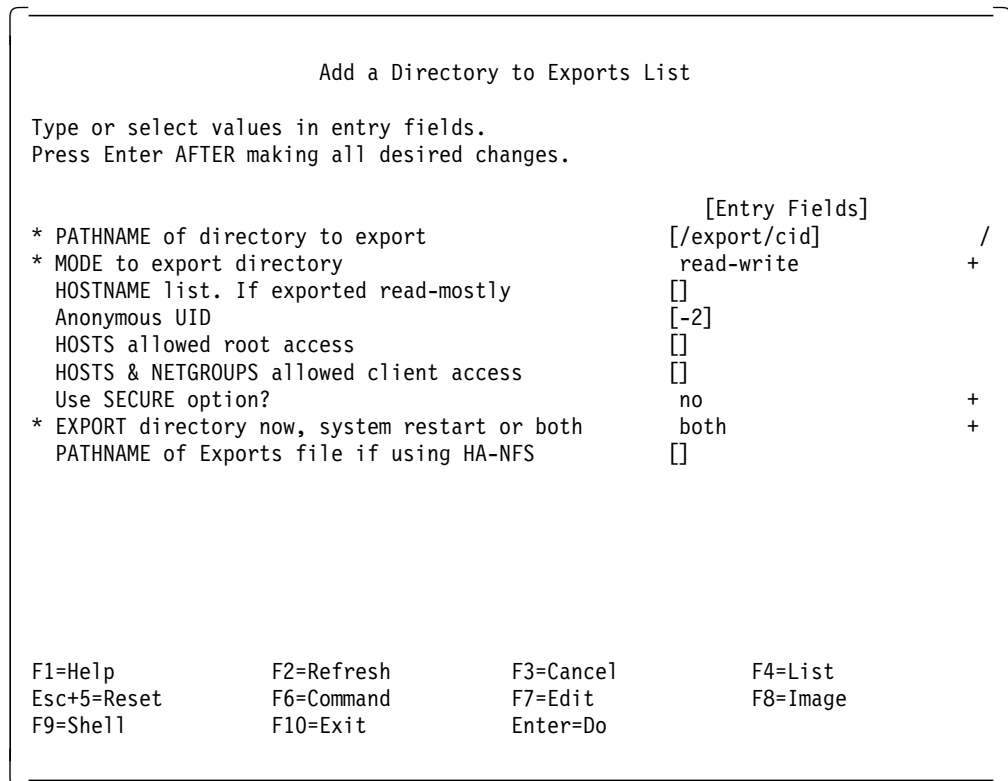


Figure 154. Directory to Export List SMIT Panel

- Step 2. Fill in the field according to Figure 154.
- Step 3. Press Enter to make the change effective.

This NFS file system will be mounted by NetView DMA/2 and used as a redirected drive.

## 7.4.2 Preparing the Product Images on the NFS Server

This section shows the procedure to copy product images on the server. In the following example, the /export/cid directory on the NFS server is mounted as X: drive on the preparation system by entering the command:

```
mount -lnvmdad1 -pnvmdad1 x: rs600011:/export/cid
```

**Note:** The MOUNT command uses PCNFSD if it is running on the NFS server. If PCNFSD is up on the server, the MOUNT command as it is show above, is accepted and you have access to the drive. If PCNFSD is not started you will be prompted to provide user ID and password.

To see if the **pcnfsd** daemon is running on the NFS server or not, enter the following command on the server:

```
RPCINFO -U host 150001
```

where *host* specifies the host name of the NFS server and 150001 is the Remote Procedure Call (RPC) program number of the pcnfsd daemon. After you enter the command, you should receive the message that the program is ready and running if it is available on the host.

If it is not available, use *-u* and *-g* options to specify UID and GID:

```
mount -u0 -g0 x: rs600011:/export/cid
```

In this case we take user "root" and group ID "system" to get access but any other *authorized* ID should work.

### 7.4.2.1 Copying OS/2 V2.11 Image

To copy an OS/2 V2.11 image, do the following:

Step 1. Insert OS/2 V2.11 diskette #2 into drive A: and enter the following command:

```
COPY A:\UNPACK2.EXE X:\IMG\OS2V211
```

Step 2. Insert OS/2 V2.11 diskette #7 into drive A: and enter the following commands:

```
X:
CD \IMG\OS2V211
UNPACK2 A:\CID X:\IMG\OS2V211
UNPACK2 A:\REQUIRED X:\IMG\OS2V211 /N:RSPINST.EXE
```

The following OS/2 V2.11 CID utilities are unpacked:

- SEIMAGE.EXE
- SEDISK.EXE
- SEMAINT.EXE
- SEINST.EXE
- RSPINST.EXE

Step 3. To copy the OS/2 V2.11 image to the server, enter the following command:

```
X:\IMG\OS2V211\SEIMAGE /S:A: /T:X:\IMG\OSV211
```

SEIMAGE creates the following directory structure:

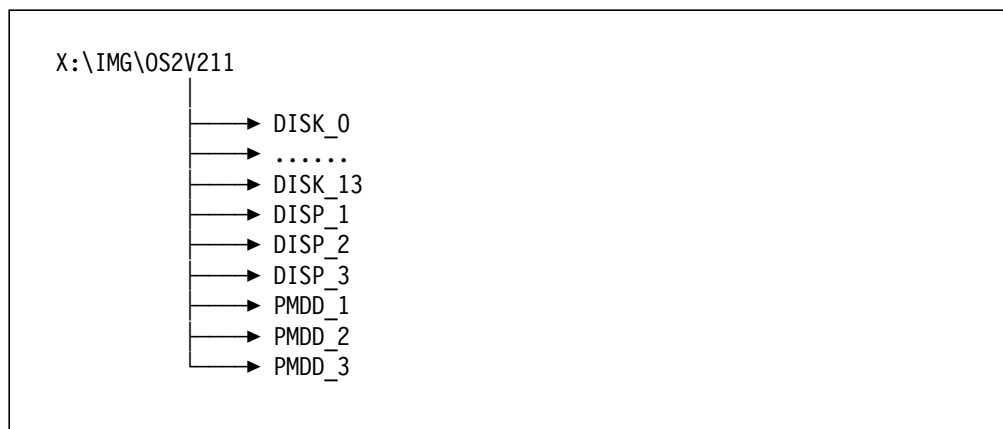


Figure 155. Directory Structure Created by SEIMAGE

### 7.4.2.2 Copying LAPS image

To copy the LAPS image, do the following:

- Insert the LAPS diskette into drive A: and enter the following command:

```
A:\LAPSDISK A: X:\IMG\LAPS
```

LAPSDISK creates the following directory structure:

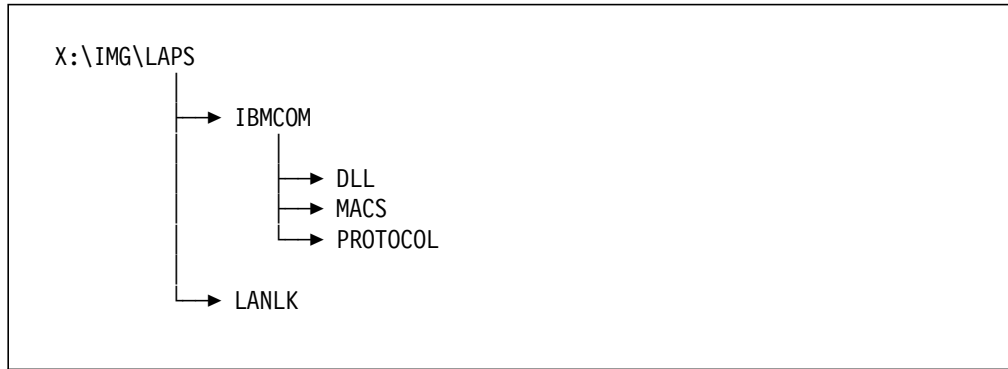


Figure 156. Directory Structure Created by LAPSDISK

The LAPS (LAN Adapter and Protocol Support) code is shipped with various products, such as NTS/2, Communications Manager/2, TCP/IP and so on.

**Note:**

The TCP/IP protocol drivers are supplied only with the LAPS (V2.13, Syslevel WR06000) that comes with TCP/IP V2.0. The current release of LAPS used when this document was written was NTS/2 LAPS CSD WR07045 (V2.20.2).

There are basically two alternatives to get to the latest LAPS software level installed on your target machine:

1. Install LAPS from TCP/IP V2.0 and apply CSD WR07045.
2. Use the latest LAPS level and copy the necessary TCP/IP parts into the package.

*Alternative 1:*

We have to perform the following two steps:

1. Install LAPS that comes with TCP/IP V2.0
2. Apply CSD WR07045

*Alternative 2:*

To avoid the two-step installation of LAPS, we take the TCP/IP drivers out of the TCP/IP LAPS diskette and incorporate them with the latest LAPS code on the server. If you want to merge the TCP/IP drivers into the LAPS code image, do the following:

Step 1. Make a temporary directory and switch to this directory:

```

C:
MD TEMP
CD \TEMP

```

Step 2. Insert the TCP/IP LAPS diskette into drive A: and enter the following command:

```

PKUNZIP2 A:\IBMCOM\PROTOCOL\PROTOCOL.ZIP

```

Step 3. Enter the following commands to incorporate the TCP/IP drivers to the LAPS image:

```

X:

```



```
CD \IMG\LAPS\IBMCOM\PROTOCOL
PKZIP2 -a PROTOCOL.ZIP C:\TEMP\IFNDIS.SYS
PKZIP2 -a PROTOCOL.ZIP C:\TEMP\INET.SYS
PKZIP2 -a PROTOCOL.ZIP C:\TEMP\TCPIP.NIF
```

### 7.4.2.3 Copying TCP/IP Image

To copy a TCP/IP image, do the following:

Step 1. Insert TCP/IP Base diskette #1 into drive A: and enter the following commands:

```
COPY A:\BASE1.ZIP X:\IMG\TCPIP20
COPY A:\UNZIP.DLL X:\IMG\TCPIP20
COPY A:\TCPINST.EXE X:\IMG\TCPIP20
COPY A:\TCPINST2.EXE X:\IMG\TCPIP20
COPY A:\TCPINST.HLP X:\IMG\TCPIP20
COPY A:\BASEXT.EXE X:\IMG\TCPIP20
```

Step 2. Insert the TCP/IP Base diskette #2 into drive A: and enter the following command:

```
COPY A:\BASE2.ZIP X:\IMG\TCPIP20
```

Step 3. Insert the TCP/IP Base diskette #3 into drive A: and enter the following command:

```
COPY A:\BASE3.ZIP X:\IMG\TCPIP20
```

Step 4. Insert the TCP/IP Base diskette #4 into drive A: and enter the following command:

```
COPY A:\BASE4.ZIP X:\IMG\TCPIP20
```

Step 5. Insert the NFS diskette into drive A: and enter the following commands:

```
COPY A:\NFS1.ZIP X:\IMG\TCPIP20
COPY A:\NFSXT.EXE X:\IMG\TCPIP20
```

**Note:** We install only the Base and NFS kits in this scenario. If you want to install other kits, you have to copy additional files to the NFS server. Copy the following files to the \IMG\TCPIP directory if you want to install a kit:

- *name\_n*.ZIP
- *nameXT*.EXE

Where *name* is the abbreviated name of the kit or the component in the kit, and *n* indicates the number of the diskette within the kit. See *TCP/IP for OS/2 V2.0 Installation and Administration* for more information about the abbreviated names.

When this document was written, the current CSD levels were the following:

- TCP/IP Base kit: UN64092
- NFS kit: UN57064

So we incorporate these CSDs into the TCP/IP image on the server and install the product with CSDs, instead of installing the product and then applying the CSDs.

To incorporate CSDs into the TCP/IP images, do the following:

Step 1. Insert TCP/IP Base CSD UN64092 diskette #1 into drive A: and enter the following commands:

```
COPY A:\BASEC1.ZIP X:\IMG\TCPIP20
COPY A:\UNZIP.DLL X:\IMG\TCPIP20
COPY A:\TCPINST.EXE X:\IMG\TCPIP20
COPY A:\TCPINST2.EXE X:\IMG\TCPIP20
COPY A:\TCPINST.HLP X:\IMG\TCPIP20
```

Step 2. Insert TCP/IP Base CSD UN64092 diskette #2 into drive A: and enter the following command:

```
COPY A:\BASEC2.ZIP X:\IMG\TCPIP20
```

Step 3. Insert TCP/IP Base CSD UN64092 diskette #3 into drive A: and enter the following command:

```
COPY A:\BASEC3.ZIP X:\IMG\TCPIP20
```

Step 4. Insert TCP/IP Base CSD UN64092 diskette #4 into drive A: and enter the following commands:

```
COPY A:\BASEC1.ZIP X:\IMG\TCPIP20
COPY A:\BASEXT.EXE X:\IMG\TCPIP20
```

Step 5. Insert NFS CSD UN57064 diskette into drive A: and enter the following commands:

```
COPY A:\NFSC1.ZIP X:\IMG\TCPIP20
COPY A:\NFSCXT.EXE X:\IMG\TCPIP20
```

**Note:** We install only Base and NFS CSDs in this scenario. If you want to incorporate other CSDs, you have to copy additional files to the NFS server. If you want to combine the CSD into the image on the server, copy the following files to the \IMG\TCPIP directory if they exist on the CSD diskettes:

- *namec\_n.ZIP*
- *nameXT.EXE* or *namecXT.EXE*

Where *name* is the abbreviated name of the kit or the component in the kit, *namec* is the abbreviated name of the CSD, and *n* indicates the number of the diskette within the CSD. In addition, copy the following files from the most recent CSD to the combined image:

- UNZIP.DLL
- TCPINST.EXE
- TCPINST2.EXE
- TCPINST.HLP

These files can be found in every CSD and they will overwrite each other in the combined directory.

#### 7.4.2.4 Copying NetView DM Agent/2 Image

To copy a NetView DMA/2 image, do the following:

Step 1. Insert NetView DMA/2 diskette #1 into drive A: and enter the following command:

```
COPY A:*.* X:\IMG\NVDMA2
```

Step 2. Repeat the above step for each diskette supplied with the product.

### 7.4.2.5 Preparing the FNDIMG Directory

The FNDIMG directory contains the NetView DMA/2 program consisting of an EXE and some DLL files. These files accessed used by the pristine machine to run the agent during the installation.

To prepare the FNDIMG directory, do the following:

- Step 1. Copy all the files from an installed NetView DMA/2 IBMNVDMA\BIN directory into the FNDIMG directory:

```
COPY C:\IBMNVDMA\BIN X:\IMG\FNDIMG
```

We assume that the NetView DMA/2 directory is C:\IBMNVDMA at the preparation system.

- Step 2. Copy the following files into the FNDIMG directory:

```
COPY C:\OS2\UNPACK.EXE X:\IMG\FNDIMG
COPY C:\TCP\IP\DLL\RPCDLL.DLL X:\IMG\FNDIMG
COPY C:\TCP\IP\DLL\TCP\IPDLL.DLL X:\IMG\FNDIMG
COPY C:\TCP\IP\BIN\MOUNT.EXE X:\IMG\FNDIMG
COPY C:\TCP\IP\BIN\UMOUNT.EXE X:\IMG\FNDIMG
```

We assume that the OS/2 boot drive is C: and the TCP/IP directory is C:\TCP\IP at the preparation system.

### 7.4.3 Creating the Response Files

You have to create the response files for each product you are installing and put them under the product sub-directories in the X:\RSP directory. They have a format of *client\_name*.RSP:

```
\RSP\OS2V211\NVDMA10.RSP
\RSP\LAPS\NVDMA10.RSP
\RSP\TCP\IPV20\NVDMA10.RSP
\RSP\NVDMA2\NVDMA10.RSP
```

See Appendix A, "Sample Files for NetView DM Agent/2 Scenario" on page 339 for a complete listing of all the response files we used.

You can find and modify the sample response files in the following places:

#### OS/2

Sample response file (SAMPLE.RSP) is bundled in the REQUIRED file on OS/2 V2.11 Base diskette #11. Insert the diskette into drive A: and issue the following command:

```
UNPACK A:\REQUIRED X:\RSP\OS2V211 /N:SAMPLE.RSP
```

You can also find the same response file in the \OS2\INSTALL directory on your OS/2 workstation.

#### LAPS

Sample response files are provided in the SAMPLE directory on the NTS/2 utility diskette. TCP/IP also provides a sample response file (LAPSRSP.RSP) on diskette #1 of the Base kit.

#### TCP/IP

Sample response file (DEFAULT.RSP) is provided on the first diskette of each kit. A sample response file is also provided with each CSD diskette.

NetView DMA/2

Sample response file (MODEL.RSP) is provided on product diskette #3.

The following are some considerations when you make response files.

### **OS/2 V2.11 Response File**

Make sure the following lines look like this:

```
ExitOnError=1
FormatPartition=0
RebootRequired=0
```

### **TCP/IP Response File**

We have incorporated the CSDs into the TCP/IP image on the server. So we also have to merge the response files to install TCP/IP from the combined image. We have simply combined the DEFAULT.RSP that comes with the Base kit and CSDs (Base and NFS), and made some modifications. We performed the following procedure:

1. Merge the DEFAULT.RSP in the Base kit with the same files that come with UN57064 and UN64092.
2. Delete the lines which do not relate to the Base kit or NFS kit installation.
3. Comment out the "EXEC = BASEOC" line. The EXEC line calls the exit program for a particular kit. The Base kit requires two INSTALL\_NAME lines, one for BASE and one for BASEC, but needs only one EXEC line which calls BASEXT.EXE which is the same for the kit and the CSD.

NFS kit and its CSD call different exit programs, which are NFSXT.EXE and NFSCXT.EXE respectively. So we need both "EXEC = NFS" and "EXEC = NFSC" lines in the response file.

4. Add the new options TCP\_SERVICES and STARTUP\_FOLDERS to the "EXEC = BASE" line, because they are supported options but not included in the default response file.

zp. See Appendix A, "Sample Files for NetView DM Agent/2 Scenario" on page 339 for a complete listing of all the response files we used.

---

## **7.5 Preparing the Boot Diskettes**

This section shows the procedure to create the boot diskettes which are used to install the products on the pristine workstation. Before you start, prepare three formatted diskettes.

### **7.5.1 Creating the Boot Diskettes**

To create the boot diskettes, do the following:

Step 1. Enter the following command at an OS/2 command prompt:

```
X:\IMG\OSS2V211\SEDISK /S:X:\IMG\OS2V211 /T:A:\
```

Step 2. Insert a formatted diskette into drive A: and press Enter when prompted. We call this diskette boot diskette #0.

Step 3. After the first diskette has been created, remove it and insert a new formatted diskette into drive A: and press Enter. We call this diskette boot diskette #1.

Step 4. While boot diskette #1 is in drive A:, enter the command:

MAKENFS

Answer the questions which MAKENFS asks you. Insert a new formatted diskette (boot diskette #2) into drive A: when MAKENFS prompts you.

**Note:** The MAKENFS.CMD file builds bootable diskettes for a workstation with an IBM Token-Ring card. If your system uses another network adapter, you will need to modify your LAPS configuration and MAKENFS.CMD file. MAKENFS.CMD file is located in the BIN sub-directory of the installed TCP/IP directory. See *TCP/IP for OS/2 V2.0 Installation and Administration* on how to modify the LAPS configuration.

You will see messages like those shown in Figure 157.

```
OS2 C:\>makenfs
Enter the full path to your NTS2 base directory (default is C:\IBMCOM)...

Enter the full path to your TCPIP base directory (Default is C:\TCPIP)...

Enter the full path to your NFS directory (Default is C:\TCPIP)...

Enter your CID server's hostname...
rs600011
Enter your CID server's IP address...
9.24.104.123

You should have used SEIMAGE and SEDISK to generate 2 bootable
OS/2 diskettes. Label these disks NFS Boot Disk 0 and NFS Boot
Disk 1. You should also have formatted a third, blank disk.
Label this disk NFS Boot Disk 2.
INSERT NFS BOOT DISK 1 IN THE A: DRIVE...
press enter to continue.

OS2 C:\>COPY C:\IBMCOM\DLL\LANMSGDL.DLL A:\
1 file(s) copied.
.
.

OS2 A:\>COPY C:\TCPIP\BIN\CNTRL.EXE A:\
1 file(s) copied.

Done!
INSERT NFS BOOT DISK 2 IN THE A: DRIVE...
press enter to continue.

OS2 A:\>COPY C:\TCPIP\BIN\MOUNT.EXE A:\
1 file(s) copied.
.
.

OS2 A:\>COPY C:\TCPIP\ETC\PROTOCOL A:\ETC
1 file(s) copied.

OS2 A:\>
```

Figure 157. MAKENFS Messages

Step 5. During the execution of MAKENFS we change from diskette #1 to #2. While boot diskette #2 is in drive A:, enter the commands:

```
COPY C:\OS2\ATTRIB.EXE A:
COPY C:\OS2\CHKDSK.COM A:
COPY C:\OS2\CMD.EXE A:
COPY C:\OS2\FDISK.COM A:
COPY C:\OS2\FORMAT.COM A:
COPY C:\OS2\DLL\UHPFS.DLL A:
COPY C:\TCP\BIN\UMOUNT.EXE A:
```

We assume that the OS/2 boot drive is C: and the TCP/IP directory is C:\TCP\BIN at the preparation system.

- Step 6. Insert boot diskette #1 into drive A: and edit the \CONFIG.SYS file using your preferred OS/2 editor. Remove the following line:

```
SET CID_TRANSPORT=NFS
```

If you do not remove this line, you have to add the MOUNT\_STRING variable in the CONFIG.SYS; otherwise, you are prompted to enter the MOUNT\_STRING during the pristine installation.

Now you have three diskettes which contain OS/2, LAPS, and TCP/IP and can be used to boot the client workstation. Before continuing to the next step, consider the following:

1. If you use locally administered addresses for the network adapters, change the following line in the \PROTOCOL.INI file on boot diskette #1 to contain the correct address of the pristine workstation:

```
NETADDRESS = "T400000033342"
```

You can remove this line if you want to use the universally administered address during the installation.

2. If the pristine workstation uses a network adapter driver which is different from that of the preparation system, you have to modify the PROTOCOL.INI file and copy the driver to the diskette.

If the pristine workstation uses the same driver but uses a different adapter, you may have to modify some parameters in the PROTOCOL.INI file because they may support a different range of values (for example, the buffer size).

See *TCP/IP for OS/2 V2.0 Installation and Administration* on how to modify the PROTOCOL.INI file.

3. If you configure the NetView DM/6000 server and NFS server on a different workstation, add an entry in the \ETC\HOSTS file on boot diskette #2 for name resolution.

## 7.5.2 Modifying the Installation Command File

NetView DMA/2 provides an installation command file called INSTALL.CMD on product diskette #3. The INSTALL.CMD file does the following on the pristine workstation:

- Configure TCP/IP
- Start the NFS client
- Mount the FNDIMG directory
- Configure and start NetView DMA/2

You have to customize the INSTALL.CMD according to your environment and requirements, then copy it to boot diskette #3.

We have simply changed three lines so the TCP/IP configuration would match our environment. The original file contains the following lines:

```
set netmask=255.255.254.0
set route=9.87.230.5
mount -u0 -g0 z: %nvdmimage%
```

We have changed them to:

```
set netmask=255.255.255.0
set route=9.24.104.1
mount -lnvdmad1 -pnvdmad1 z: %nvdmimage%
```

See Appendix A, "Sample Files for NetView DM Agent/2 Scenario" on page 339 for a complete listing of the INSTALL.CMD file.

### 7.5.3 Preparing Procedures to Partition the Hard Disk

You can create command files to partition and format the hard disk on the pristine workstation. The following file is a sample procedure to partition the hard disk:

```
@echo off
REM PREPDSK.CMD
cls
echo Partitioning the disk.....
FDISK.COM /file:FDISK.DAT
cls
echo Insert the NFS boot diskette #0 and restart the system.
```

Figure 158. PREPDSK.CMD

The FDISK command is invoked with the file FDISK.DAT, which contains the following instructions:

```
/delete:all,/disk:1
/create,/size:100,/vtype:1
/create,/vtype:2
```

Figure 159. FDISK.DAT

Where:

- /delete** Deletes a logical drive or primary partition. The *all* indicates to delete all logical drives on the disk specified by the */disk* option.
- /create** Creates a primary partition or logical drive in an extended partition. If you are installing the boot manager, you can also specify the name (*/create:name*).
- /disk:n** Represents the disk number.
- /size:m** Specifies the size of the partition; *m* is the size in MB and is optional.
- /vtype:n** Specifies the type of partition. The following values are valid for *n*.
  - 0** Space is not usable
  - 1** Primary partition
  - 2** Logical drive
  - 3** Free space that can be used to create a primary or extended partition

This sample procedure deletes all partitions and creates a 100MB primary partition and a logical drive using all remaining space.

The following file is a sample procedure to format the hard disk:

```
@echo off
REM FMTDSK.COM
cls
echo Formatting the disk.....
FORMAT.COM C: /FS:HPFS /V:C_DRIVE < YES.DAT
FORMAT.COM D: /FS:FAT /V:D_DRIVE < YES.DAT
```

Figure 160. FMTDSK.COM

Where:

**/FS** Specifies the file system.

**/V:label** Specifies the volume label.

The sample procedure formats the C drive for HPFS and the D drive for FAT, and names the drives C\_DRIVE and D\_DRIVE respectively. The YES.DAT file contains only one character Y, to escape answering the confirmation of the FORMAT command.

After preparing these files, copy them to boot diskette #3. They are:

- PREPDSK.COM
- FDISK.DAT
- FMTDSK.COM
- YES.DAT

---

## 7.6 Creating the Change Files

You can create the change files by filling the fields through the graphical interface, or editing the change file profiles and from there build the change files. We have prepared the change file profiles, but you can use our change file profiles as a sample if you use the graphical interface. See 7.8.1, "Creating the Change File" on page 211 on how to create a change file using the graphical interface.

### 7.6.1 Creating the Change File Profiles

We have created the following change file profiles:

- OS2V211.PRO
- LAPSINST.PRO
- TCPIPINS.PRO
- NVDMA2IN.PRO

In the following examples, the symbol ► at the end of a line means that the next line is a continuation of the string. All values following the keyword have to be written within one line.



```

GLOBAL NAME: IBM.OS2V211.INST.REF.2.11
DESCRIPTION: Installation Procedure for OS/2 V2.11
LOCAL NAME: $(REPOSITORY)\IBM.OS2V211.INST.REF.2.11
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvdmad1 -pnvdmad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\OS2V211\SEINST.EXE
 PARAMETERS: /S:X:\IMG\OS2V211 /B:C: ▶
 /R:X:\RSP\OS2V211\$(TARGET).RSP ▶
 /L1:X:\LOG\OS2V211\$(TARGET).LOG

```

Figure 161. OS/2 Change File Profile (OS2V211.PRO)

```

GLOBAL NAME: IBM.LAPS.INST.REF.2.2
DESCRIPTION: Installation Procedure for LAPS
LOCAL NAME: $(REPOSITORY)\IBM.LAPS.INST.REF.2.2
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvdmad1 -pnvdmad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\LAPS\LAPS.EXE
 PARAMETERS: /E:MAINT /S:X:\IMG\LAPS /T:C:\ /TU:C:\ ▶
 /R:X:\RSP\LAPS\$(TARGET).RSP ▶
 /L1:X:\LOG\LAPS\$(TARGET).LOG

```

Figure 162. LAPS Change File Profile (LAPSINST.PRO)

We install LAPS as a separate change file, but you can also install LAPS in the TCP/IP change file.

```

GLOBAL NAME: IBM.TCPIP20.INST.REF.2.0
DESCRIPTION: Installation Procedure for TCP/IP for OS/2 V2
LOCAL NAME: $(REPOSITORY)\IBM.TCPIP20.INST.REF.2.0
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvdmad1 -pnvdmad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\TCPIP20\TCPINST2.EXE
 PARAMETERS: /A- /S:X:\IMG\TCPIP20 /LP:X:\IMG\LAPS ▶
 /R:X:\RSP\TCPIP20\$(TARGET).RSP ▶
 /L1:X:\LOG\TCPIP20\$(TARGET).LOG

```

Figure 163. TCP/IP Change File Profile (TCPIPINS.PRO)

/A- is a parameter that specifies the unattended installation. It is documented in the README file for Base kit CSD.

We have decided to install LAPS separately, but we still have to specify the /LP parameter which specifies the LAPS code image. The TCP/IP install program looks for the LANLK directory to install some modules from that directory. The LANLK directory resides under the LAPS directory.

|                   |                                                                                                                           |
|-------------------|---------------------------------------------------------------------------------------------------------------------------|
| GLOBAL NAME:      | IBM.NVDMA2.INST.REF.1.0                                                                                                   |
| DESCRIPTION:      | Installation Procedure for NetView DM Agent/2                                                                             |
| LOCAL NAME:       | \$(REPOSITORY)\IBM.NVDMA2.INST.REF.1.0                                                                                    |
| CHANGE FILE TYPE: | OS2CID                                                                                                                    |
| COMPRESSION TYPE: | LZW                                                                                                                       |
| PREREQ COMMAND:   | mount -lnvdmad1 -pnvdmad1 x: rs600011:/export/cid                                                                         |
| POSTREQ COMMAND:  | umount x:                                                                                                                 |
| INSTALL PROGRAM:  |                                                                                                                           |
| PROGRAM NAME:     | X:\IMG\NVDMA2\FNDRESP.EXE                                                                                                 |
| PARAMETERS:       | /S:X:\IMG\NVDMA2 /WN:\$(TARGET) /SN:\$(SERVER) ►<br>/R:X:\RSP\NVDMA2\\$(TARGET).RSP ►<br>/L1:X:\LOG\NVDMA2\\$(TARGET).LOG |

Figure 164. NetView DMA/2 Change File Profile (NVDMA2IN.PRO)

## 7.6.2 Building the Change Files

To build change files from change file profiles, issue the following commands:

```
nvdms bld OS2V211.PRO
nvdms bld LAPSINST.PRO
nvdms bld TCPIPINS.PRO
nvdms bld NVDMA2IN.PRO
```

The change files are built and cataloged in the catalog at the CC Server. If you prefer to use the graphical interface, see 7.8.1, “Creating the Change File” on page 211 for more information.

---

## 7.7 Pristine System Installation Process

When you finish all the preparation steps above, you can start the pristine system installation.

### 7.7.1 Booting the Pristine Workstation

To boot the pristine workstation, do the following steps:

- Step 1. Insert boot diskette #0 into drive A:.
- Step 2. Turn the power on.
- Step 3. When prompted, insert boot diskette #1 in to drive A: and press Enter. The startup continues and the command prompt is displayed at the end.
- Step 4. Insert boot diskette #2 into drive A:. If you do not want to partition or format the hard disk, then skip to step 7.
- Step 5. To partition the hard disk, enter the following command:
 

```
A:\PREPDSK
```

 At completion, restart the system to make the change effective.
- Step 6. To format the partition, enter the following command:
 

```
A:\FMTDSK
```
- Step 7. While boot diskette #2 is in drive A, enter the following command:
 

```
A:\INSTALL nvdma10 9.24.104.176 rs600011 C: ►
```

```
rs600011:/export/cid/img/fndimg
```

The command format is as follows:

```
INSTALL host_name ip_address nvdm_server boot_drive ►
nvdma_image
```

Where:

**host\_name**

Is the TCP/IP host name of the pristine workstation.

**ip\_address**

Is the TCP/IP address of the pristine workstation.

**nvdm\_server**

Is the name of the server to which the pristine workstation is defined as a client.

**boot\_drive**

Is the boot drive where you are installing OS/2.

**nvdma\_image**

Is a host name and a remote directory name on the NFS server where executable product files are stored. This is the FNDIMG directory you have created in 7.4.2.5, "Preparing the FNDIMG Directory" on page 201.

See *NetView DMA/2 User's Guide* for more information about INSTALL.CMD file.

Step 8. When you see a message like this:

```
New Connection 12 from client nvdma10 agent 2.
```

```
remove the diskette from drive A:.
```

To confirm the client status from the NetView DM/6000 server, enter the following command:

```
nvdm stattg nvdma10
```

You will see a message like this:

| Target  | Status   |
|---------|----------|
| nvdma10 | Attached |

The attached status means that the target is attached to the server, but it is not processing a request.

**Note:** The nvdm stattg command is not supported at the current level of NetView DMA/2. You have to use the graphical interface to see the agent status at NetView DMA/2. See 7.8.3, "Examining the Client Status" on page 218 on how to see the client status from the graphical interface.

## 7.7.2 Submitting the Install Request

Now you can submit the installation request. Enter the following command:

```
nvdm inst IBM.OS2V211.INST.REF.2.11 IBM.LAPS.INST.REF.2.2 ►
IBM.TCPIP20.INST.REF.2.0 IBM.NVDMA2.INST.REF.1.0 -n -w nvdma10
```

If the install request is successfully submitted, you will see messages like this:

Request scheduled with correlator.

```
Originator: nvdma9
Submit date: 10/27/94
Sequence number: 7
Destination target: nvdma10
```

**Notes:**

1. You have to specify all the change file names in one `nvd m inst` command. If you enter multiple commands, the agent reboots the system between the installation of the different packages.
2. You have to specify the change file names in this order. The NetView DM/6000 server installs the change files in this order so that the prerequisite software is installed before the certain change file is installed. If the preceding installation fails, none of the remaining installation is executed. This kind of change file group is called a *corequisite* group.  
  
If you install the change files as a corequisite group, even if each installation program asks for the reboot, NetView DM/6000 and NetView DMA/2 keep this request until all change files in the group are installed. If the pristine workstation is rebooted with only OS/2 installed, it will lose connectivity to the server.
3. You have to specify `-n`, which means non-removable. Because NetView DM/6000 and NetView DMA/2 do not know what files are installed by the installation programs, they cannot be removed by NetView DM products unless you specify the remove program.

### 7.7.3 Examining the Status of the Change File

To see the status of the change file, issue the following command:

```
nvd m lscm IBM.OS2V211.INST.REF.2.11 -w nvdma10
```

If the installation is running, you will see output like this:

```
Global File Name: IBM.OS2V211.INST.REF.2.11
Target: nvdma10
Status: Install in progress
```

If the installation ends successfully, you will see output like this:

```
Global File Name: IBM.OS2V211.INST.REF.2.11
Target: nvdma10
Status: Installed, not removable, active
```

If you have any problem during the installation, look at the `/usr/lpp/netviewdm/fndlog` file on the NetView DM/6000 server and installation log files under the `/log` directory on the NFS server.

## 7.7.4 Post-Installation Activity

When all installation programs end successfully, the workstation is rebooted from the hard disk automatically. You can work on the workstation or continue with other product installations.

We have executed a simple command file to customize the workstation:

- The INSTALL.CMD file builds the \SERVICE directory on the boot drive and it remains after the installation has finished. You may want to remove this directory.
- The TCP/IP installation program cannot create the TCP/IP folder on the desktop during the pristine installation. It requires that Presentation Manager (PM) be loaded.

So we create a simple command file (procedure) to remove the \SERVICE directory and to create the TCP/IP folder. The following is the sample command file:

```
C:
ERASE C:\SERVICE /N
RMDIR C:\SERVICE
\TCP\BIN\TCPDSKTP.EXE
```

Figure 165. POSTINST.CMD

To execute the procedure using NetView DM/6000, the procedure must be placed on the NetView DM/6000 server. Catalog it by entering the following command:

```
nvdn cat POSTINST.CMD /export/cid/cmd/postinst.cmd -o PROC
```

Then execute the procedure on the client:

```
nvdn exec POSTINST.CMD -w nvdma10
```

---

## 7.8 Working with the Graphical Interface

As we have explained above, all change management activities can be done from the command line. But for those who prefer to work with a graphical interface, we introduce some panels from the graphical interface in this section. We will use the OS/2 package as an example.

### 7.8.1 Creating the Change File

To create the same OS/2 change file as we have created in 7.6, "Creating the Change Files" on page 206, do the following:

- Step 1. In the Catalog window, select **Catalog** from the menu bar.
- Step 2. Select **New** from the pull-down menu.
- Step 3. Select **Change file** from the cascaded menu.
- Step 4. Select **Refresh** from the cascaded menu. The Change File Type window will open:

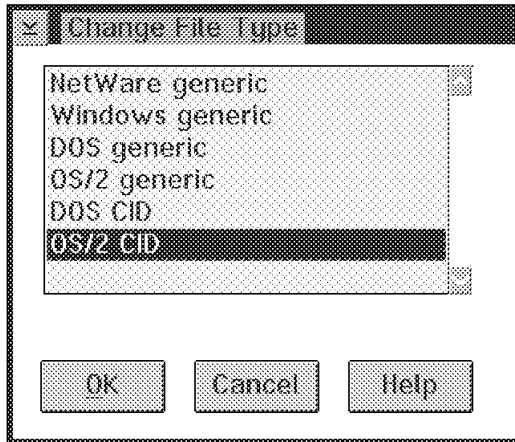


Figure 166. Change File Type Window

Step 5. Select **OS/2 CID**.

Step 6. Select the **OK** push button. The OS2CID Change File window will open:

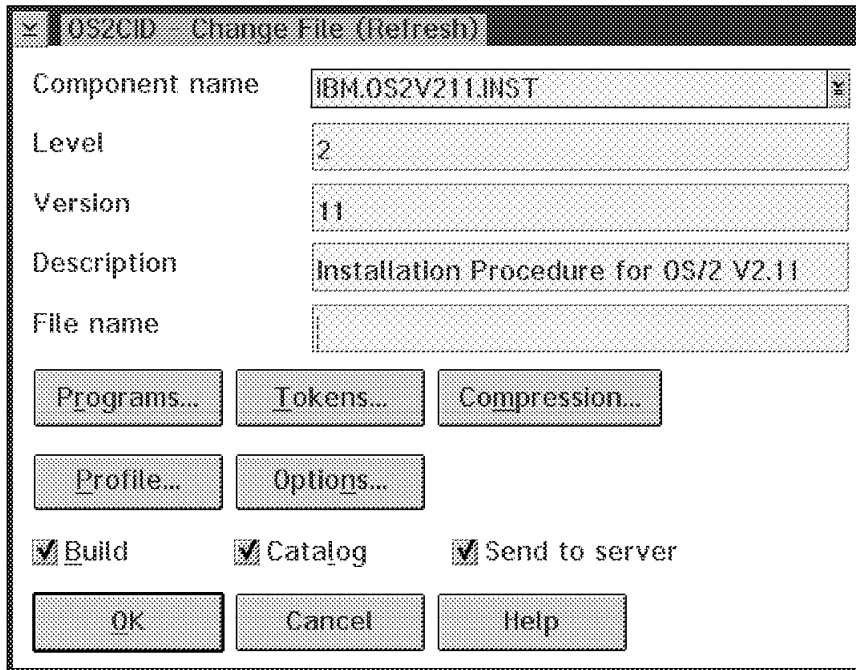


Figure 167. OS2CID Change File Window

Step 7. Fill in the fields according to Figure 167.

Step 8. Select the **Programs** push button. The C/I/D Change file profile window will open:

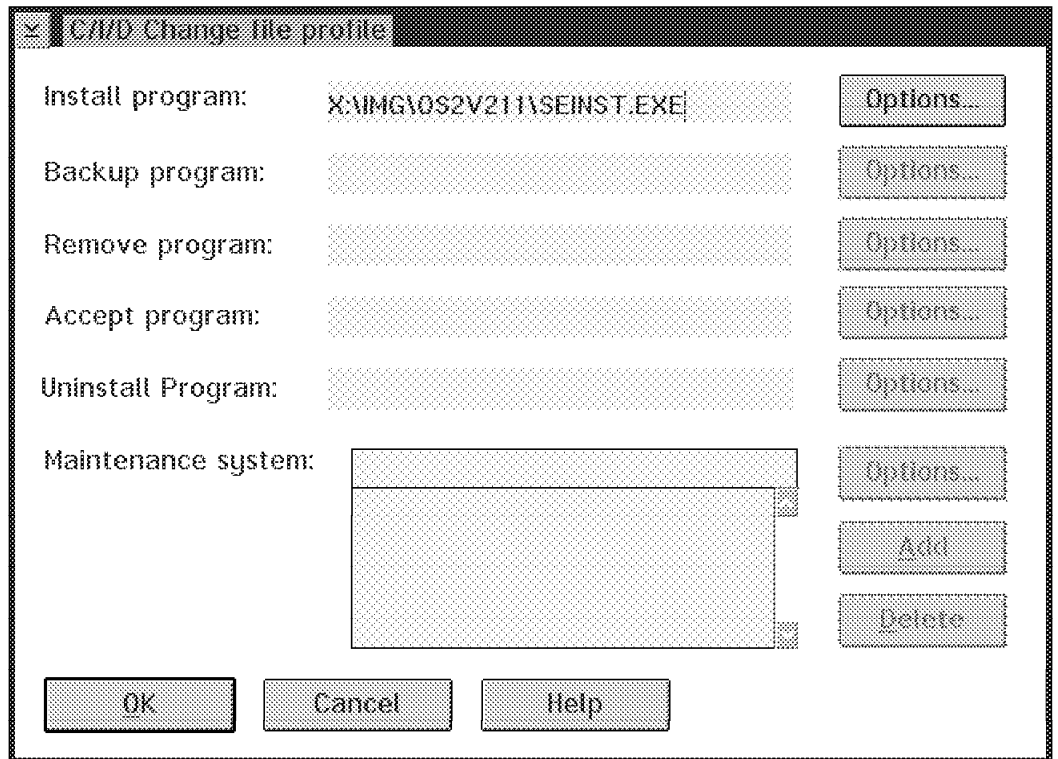


Figure 168. C//D Change File Profile Window

Step 9. Fill in the Install program field with the installation program name.

Step 10. Select the **Options** push button. The Installation program options window will open:

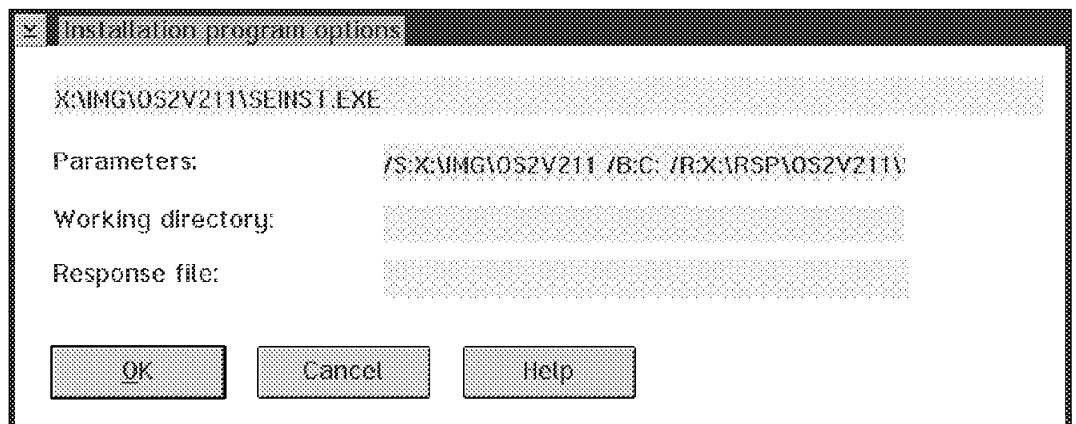


Figure 169. Installation Program Options Window

Step 11. Fill in the Parameters field with the parameters of the installation program.

Step 12. Select the **OK** push button to return to the C//D Change file profile window (Figure 168).

Step 13. Select the **OK** push button to return to the OS2CID Change File window (Figure 167 on page 212).

Step 14. In the OS2CID Change File window, select the **Options** push button. The Change Management Options window will open:

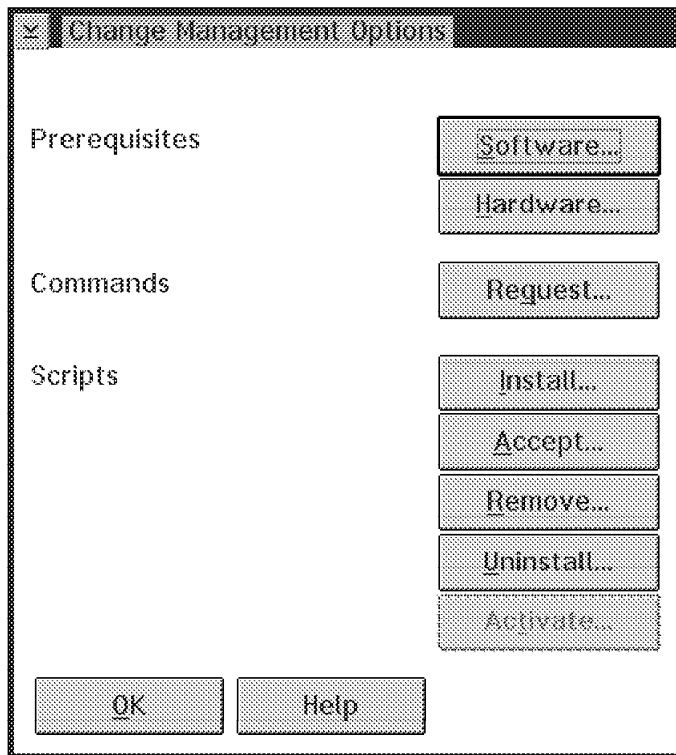


Figure 170. Change Management Options Window

Step 15. Select the **Request** push button. The Request Commands window will open:



Figure 171. Request Commands Window

Step 16. Fill in the fields according to Figure 171.

Step 17. Select the **OK** push button to return to the Change Management Options window (Figure 170).

Step 18. Select the **OK** push button to return to the Installation program options window (Figure 169 on page 213).

Step 19. Select the **OK** push button to return to the C/I/D Change file profile window (Figure 168 on page 213).

Step 20. Select the **OK** push button to return to the OS2CID Change File window (Figure 167 on page 212).



Step 21. Select the **OK** push button to catalog the change file and return to the Catalog window.

**Hint**

You can create a change file profile from a change file if you want. Select the **Profile** push button in the OS2CID Change File window (see Figure 167 on page 212) and enter the profile name after you finish filling all the fields you need.

## 7.8.2 Submitting the Install Request

To submit an install request that is equivalent to:

```
nvdn inst IBM.OS2V211.INST.REF.2.11 IBM.LAPS.INST.REF.2.2 ►
IBM.TCPIP20.INST.REF.2.0 IBM.NVDMA2.INST.REF.1.0 -n -w nvdma10
```

do the following:

Step 1. In the Catalog window, select the change files you are installing while depressing the Ctrl key.

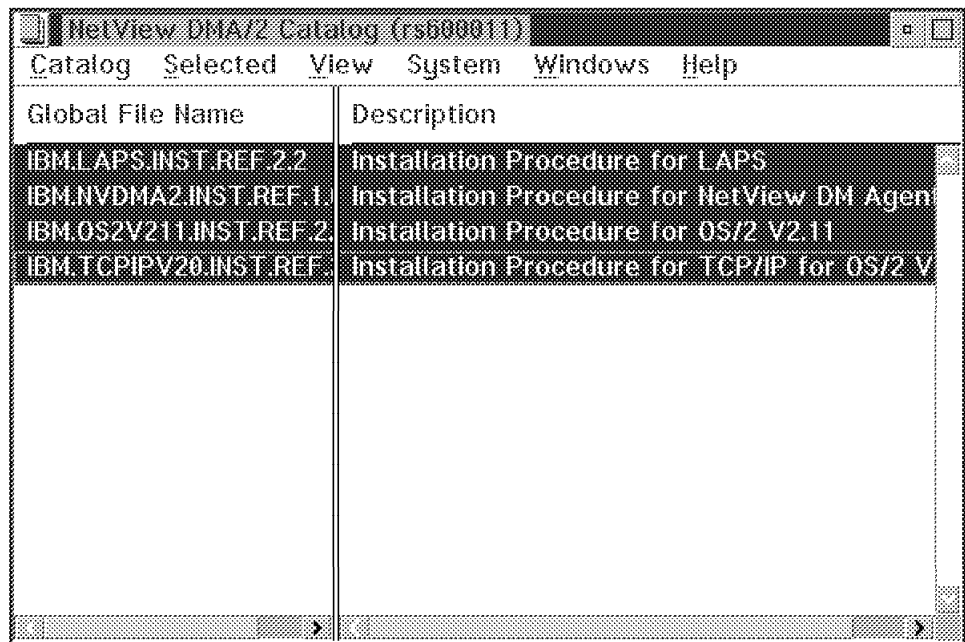


Figure 172. NetView DMA/2 Catalog Window

Step 2. Select **Selected** from the menu bar.

Step 3. Select **Install** from the pull-down menu. The Install Change Files window will open:

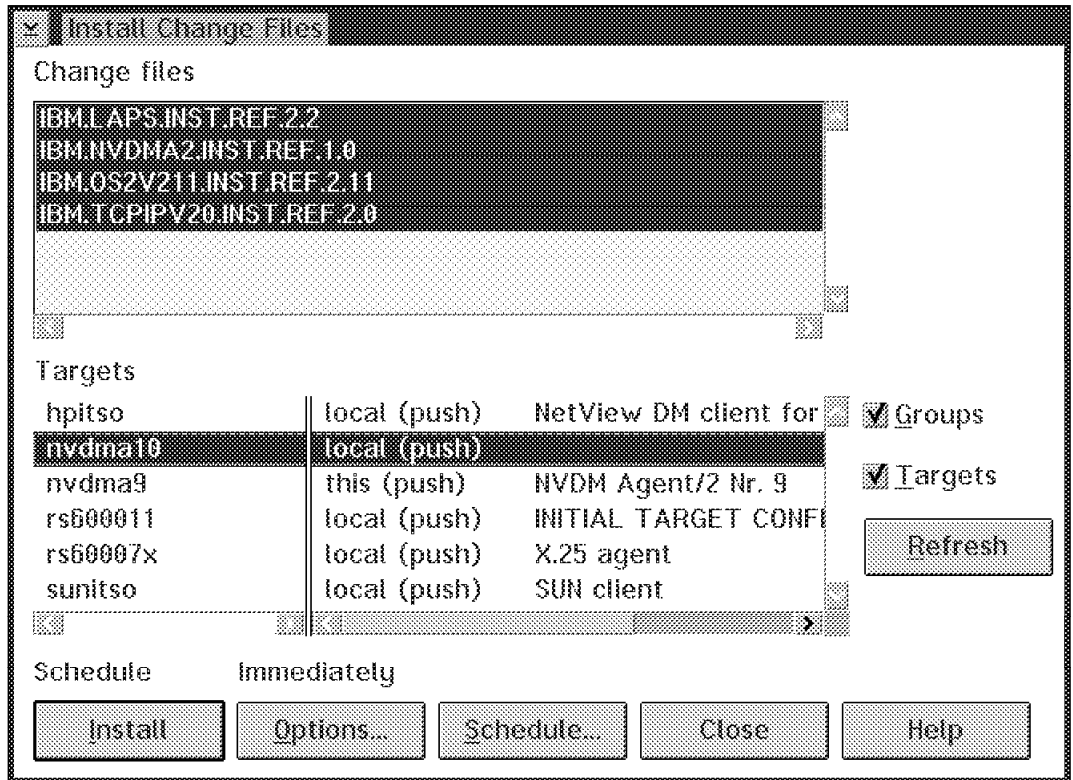


Figure 173. Install Change Files Window

Step 4. Select the target (nvdma10).

Step 5. Select the **Options** push button. The Install Options window will open:

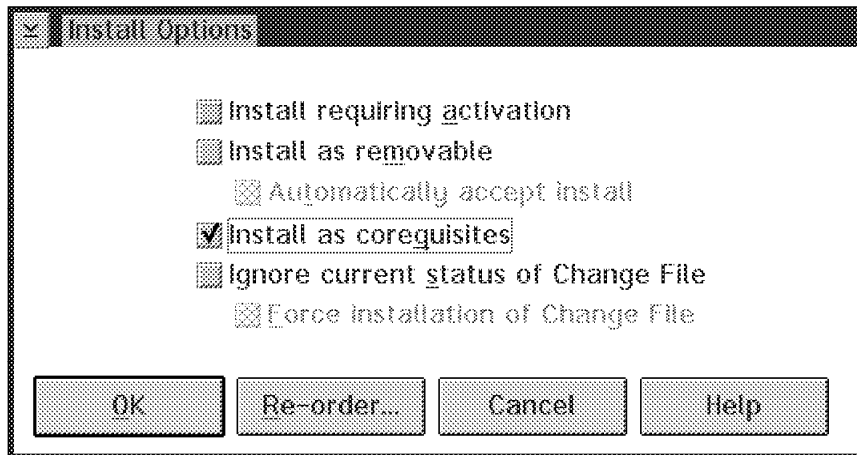


Figure 174. Install Options Window

Step 6. Deselect the **Install as removable** check box.

Step 7. Select the **Install as corequisites** check box.

Step 8. Select the **Re-order** push button. The Re-order Corequisite Change Files window will open:

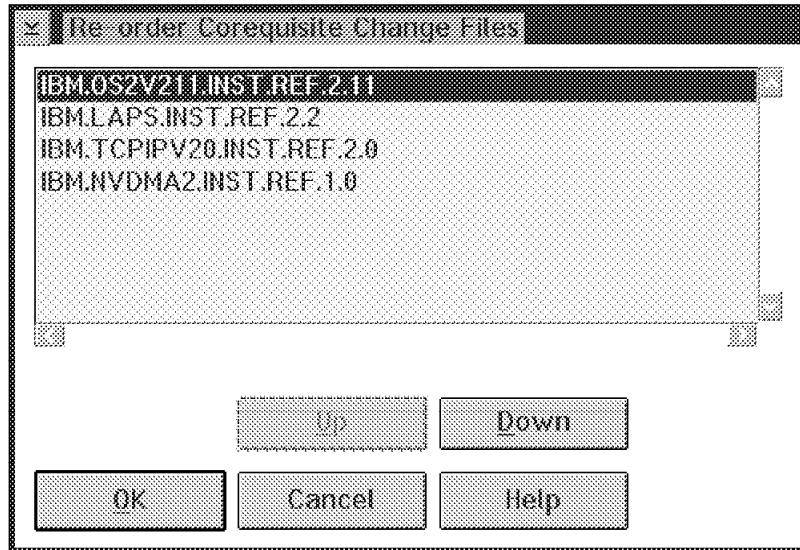


Figure 175. Re-order Corequisite Change Files

- Step 9. Select a change file and move it up or down the list by using the **Up** and **Down** push buttons.
- Step 10. When the list is in the correct order, select the **OK** push button to return to the Install Options window (Figure 174 on page 216).
- Step 11. Select the **OK** push button to return to the Install Change Files window (Figure 173 on page 216).
- Step 12. Select the **Install** push button. The install request is submitted and the Correlators window will open:

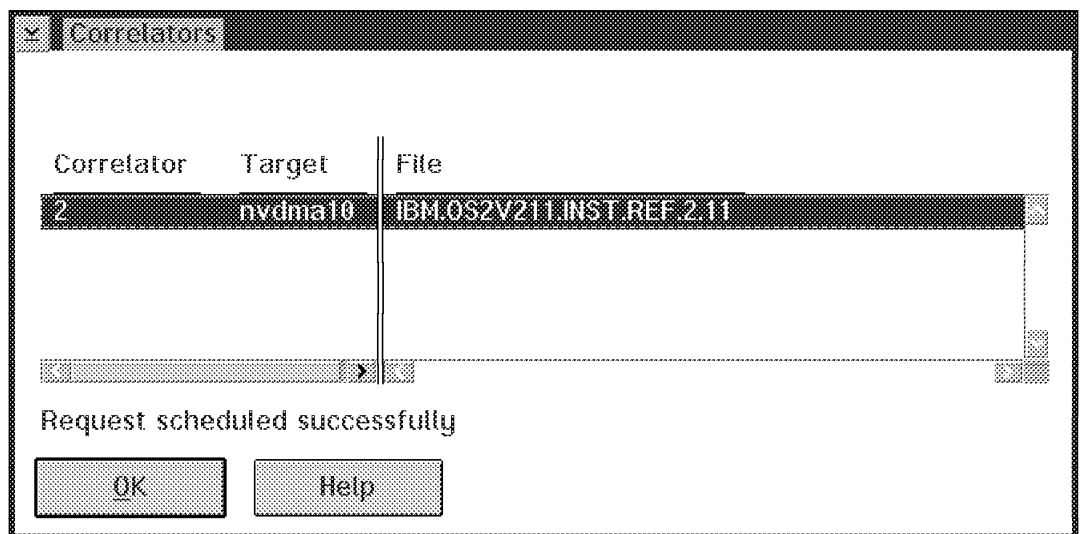


Figure 176. Correlators Window

- Step 13. Select the **OK** push button to return to the Install Change Files window (Figure 173 on page 216).
- Step 14. Select the **OK** push button to return to the NetView DMA/2 Catalog window.

### 7.8.3 Examining the Client Status

At the current release, the `nvdms statg` command is not supported on NetView DMA/2. To see the client status from the graphical interface, do the following:

- Step 1. In the Catalog window, select **Windows** from the menu bar.
- Step 2. Select **Targets** from the pull-down menu. The Targets window will open.
- Step 3. In the Targets window, select the target name.
- Step 4. Select **Selected** from the menu bar.
- Step 5. Select **Status** from the pull-down menu. The Target Connection Status window will open:

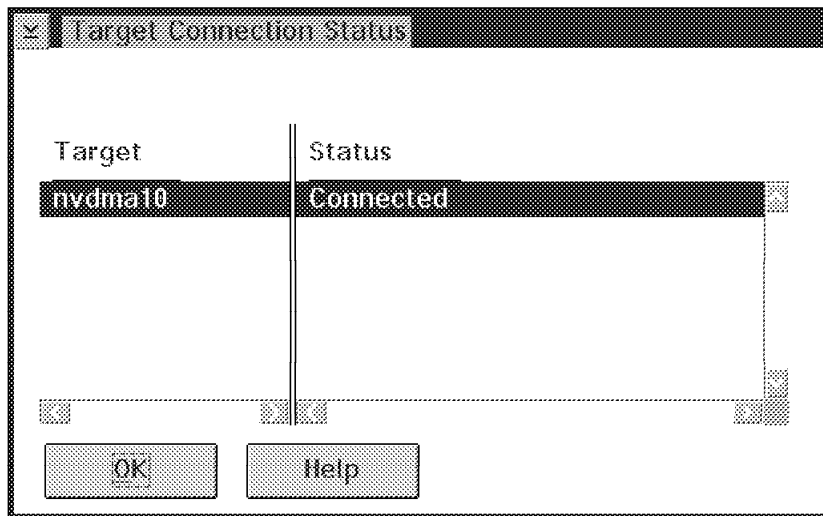


Figure 177. Target Connection Status Window

If the status shows "Connected", the client is connected to the server and ready to receive requests.

---

## Chapter 8. NetView DM Agent/DOS

In this chapter, we show the installation and customization of a pristine DOS client running NetView Distribution Management Agent/DOS. We will cover CID-driven installation for two products and will also explain the replicated installation for a non-CID-enabled product.

---

### 8.1 Introducing the NetView DMA/DOS

The NetView Distribution Management Agent/DOS (NetView DMA/DOS) runs on DOS workstations and provides change control and distribution functions to a client workstation in a TCP/IP network. NetView Distribution Manager/6000 (NetView DM/6000) controls and acts as a change control server (CC Server), and NetView DMA/DOS acts as a change control client (CC Client).

In a client/server relationship with NetView DM/6000, NetView DMA/DOS provides support for the installation and maintenance of the following:

- DOS operating system
- Other sub-systems
- Application software

The change management operations can be performed in two ways:

- Centrally initiated change control functions (push mode)
- User-initiated change control function (pull mode)

In both cases, NetView DM/6000 keeps track of what software packages are installed on the client workstation within the NetView DM/6000 domain (CC domain).

The software packages are installed in the form of change files. Two types of change files are supported by NetView DMA/DOS:

- DOS Generic for installing non-CID-enabled products
- DOS CID for installing CID-enabled DOS products

CID (Configuration/Installation/Distribution) is a software installation process that enables the remote unattended installation of software. NetView DMA/DOS is a software distribution agent that supports installations of CID-enabled products.

---

### 8.2 Lightly Attended Pristine System Installation Scenario

In the following sections, we describe the procedure for installing PC DOS and other products on a pristine workstation. A pristine workstation is a workstation without any operating system installed.

A pristine system installation cannot be done in an unattended way but requires minimal human intervention at the target workstation, because it does not have any means to load the software by itself. So we call it a lightly attended installation. Usually you only need to boot the pristine workstation from diskettes after you have finished some preparation activities. We show how to automate the installation process using NetView DM/6000 and NetView DMA/DOS.

## 8.2.1 Overview of Pristine Installation Scenario

We install the following products on a pristine workstation:

- PC DOS Version 6.3
- TCP/IP Version 2.1.1 for DOS (Base and NFS)
- NetView DM Agent/DOS

Among them, PC DOS V6.3 and NetView DM Agent/DOS are CID-enabled products and TCP/IP V2.1.1 for DOS is not. So we will show both a DOS CID change file installation and a DOS generic change file installation.

### 8.2.1.1 Overview of CID Installation

The change file of a CID-enabled product usually contains only an installation program name with parameters and installs the product using the code images from the code server. So we set up the Network File Systems (NFS) server to store the product images on it. The installation parameters usually include a response file containing the installation instructions and configuration information, and a log file name where the installation and error logs are written. These directories and files can also be stored on the NFS server.

### 8.2.1.2 Overview of Generic Installation

The non-CID product installation usually involves only replication of files from the preparation workstation to the target workstation. But there may be a need for some configuration changes at the target. This process can also be done automatically by using NetView DM/6000 and NetView DMA/DOS.

The installation process begins by booting a pristine workstation from a diskette. The pristine workstation will be connected to both the NetView DM/6000 server and the NFS server. After the installation starts, the installation program(s), controlled by the CC Server and CC Client, take care of the process, and you can leave the workstation unattended.

The following activities are performed in this scenario:

1. The pristine workstation is defined as a CC Client.
2. The code image is copied to the NFS server.
3. The response files are prepared on the NFS server.
4. The boot diskettes are prepared.
5. The changes made by the TCP/IP installation are recorded and the modification file is created using the DiskCamera utility.
6. The change files are built on a NetView DMA/DOS and cataloged on the NetView DM/6000 server.
7. The pristine workstation is started and the installation request is submitted.

## 8.2.2 Environment

The environment used in this scenario is a stand-alone TCP/IP network composed of:

- NetView DM/6000 CC Server, also used as a NFS Server (rs600012)
- NetView DMA/DOS CC Client, used as a preparation site (nvdma7)
- NetView DMA/DOS CC Client, used as a installation target (nvdma8)

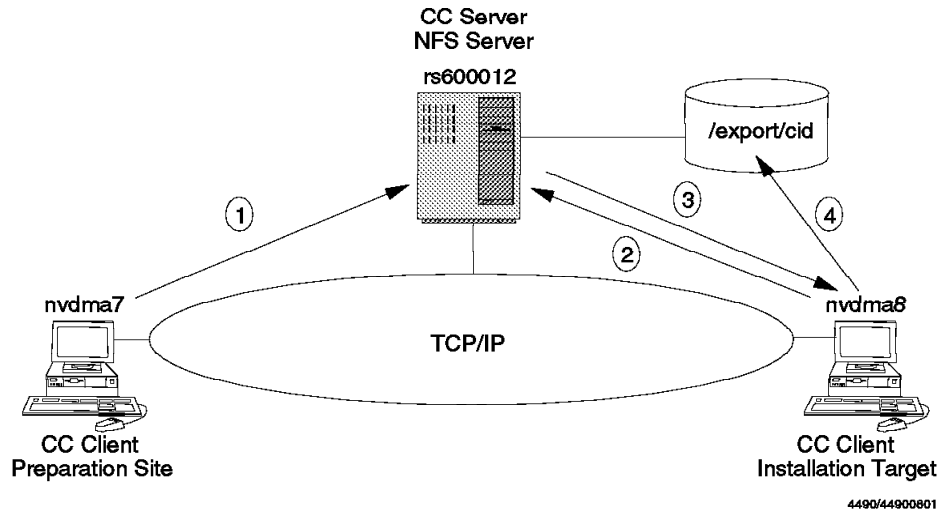


Figure 178. Pristine System Installation Scenario Environment

1. Build the change file and catalog it on the server.
2. Boot the installation target and get a connection to the CC Server.
3. Start the installation request and mount the NFS file system.
4. Run the installation using the images and response files from the NFS server.

We have configured both the NetView DM/6000 server and the NFS server on the same workstation but it is not necessary to have it on one system. You can configure the NFS server on any other workstation as long as it can be accessed from the CC Clients.

The following is a list of software level installed on the CC Server and the CC Client at preparation site:

- rs600012 (CC Server)
  - AIX Version 3.2.5 with TCP/IP and NFS
  - NetView DM/6000 Release 1.2
- nvdma7 (CC Client, preparation site)
  - PC DOS Version 6.3
  - TCP/IP Version 2.1.1 for DOS (Base and NFS)
  - NetView DM Agent/DOS

We assume that nvdma7 is properly configured as a CC Client and connected to the NetView DM/6000 CC Server. There are special considerations when you configure the DOS preparation site if you plan to use the DiskCamera utility program. In fact, we have configured the preparation system as a dual boot system using OS/2 boot manager, so we have two DOS systems and can switch between them. Furthermore, we installed the active TCP/IP program on the C drive and the TCP/IP program to be distributed on the D drive. This will be explained later in 8.9, “Using DiskCamera” on page 238.

We perform all change management activities on the DOS CC Client (nvdma7). The DOS change file can be built either on a NetView DMA/2 or on a NetView

DMA/DOS but *not* on the CC Server (RS/6000). You can issue the change management commands at the CC Server once you have created the change files.

---

### 8.3 Defining the Client on the NetView DM/6000 Server

On the CC Server, you have to define the pristine workstation as a CC Client. You can perform this task from the user interface at the preparation site if you have an administrator authorization and you are defined as a user of the client, or at the server from where you want to execute it.

At the command prompt, enter the following command:

```
nvdms addtg nvdma8 -s nvdma8 -y DOS -u nvdmd1
```

Where:

- s Defines the short name of this target.
- y Specifies the operating system of the target.
- u Defines the user of this target. This name must be defined to the AIX system on the server.

You will be prompted to enter your user name and password every time you enter a NetView DM/6000 command on the line command. To avoid this, enter the following commands at the beginning of a NetView DM session or in the AUTOEXEC.BAT file:

```
set FNDUSER=nvdmd1
set FNDPASSWORD=nvdmd1
```

Replace nvdmd1 with your own user ID and password. Note that the user name and password are defined at the AIX system and they are case sensitive.

**Note:**

If you set user ID and password in a session or AUTOEXEC.BAT you should be aware that you circumvent any security checks.

If you enter the line command at an AIX command prompt (for example, using telnet), you do not need to enter the user name and password, because you are already logged on as an AIX user.

---

### 8.4 Preparing the NFS Server Environment

On the NFS server, you have to:

- Define the CID directory structure.
- Copy the product images.
- Create the response files.



## 8.4.1 Defining the CID Directory Structure

You have to make a CID directory structure that contains the following directories:

- img** Stores the images of the software to be installed using CID on the CC Client.
- rsp** Stores the response files used during the CID installation.
- log** Stores the log files written by the CID installation program.
- pristine** Stores the NetView DMA/DOS program that is accessed by the pristine workstation. It is also used as a work area by the pristine workstation.

Figure 179 shows the directory structure we used. You are basically free in setting up the directory structure, so you should define what best suits your environment.

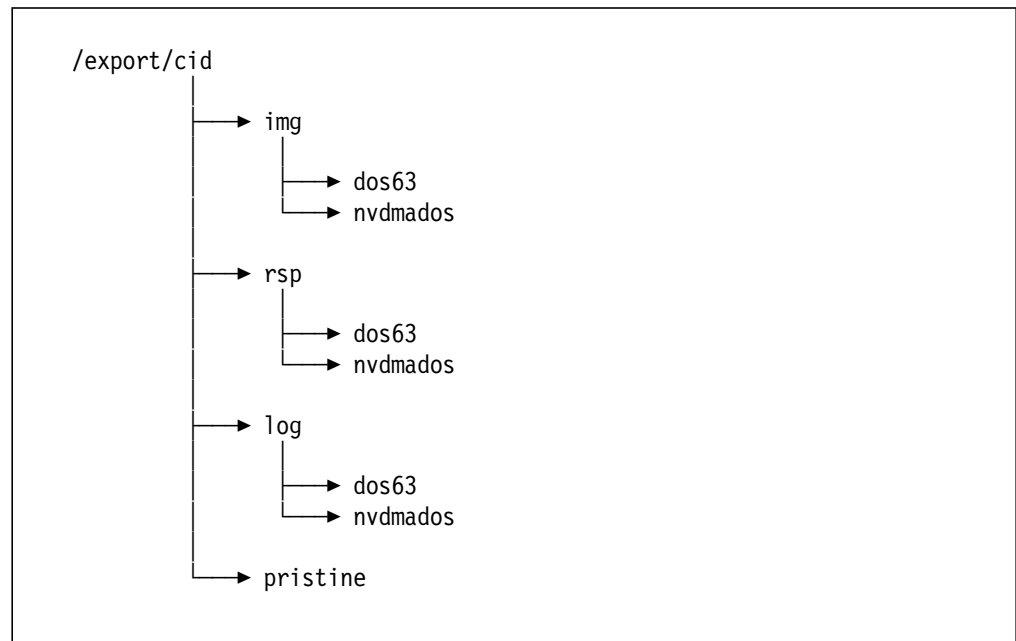


Figure 179. CID Directory Structure on the NFS Server

You also have to add the directory (`/export/cid` in our example) to the export list at the NFS server. We use the NetView DM/6000 server as the NFS server and allow access from both clients.

To export the directory at the NFS server, log onto the NFS server as root and do the following:

- Step 1. Type `smit mknfsexp` on the AIX command line. The Add a Directory to Exports List panel will appear:

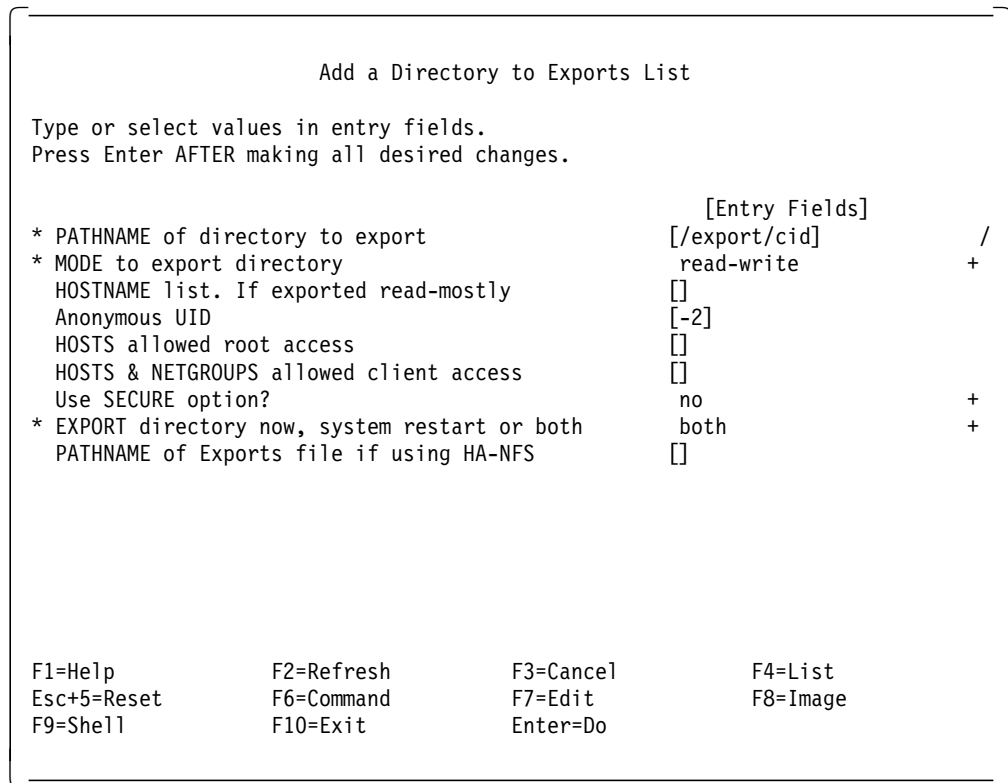


Figure 180. Directory to Export List SMIT Panel

Step 2. Fill in the field according to Figure 180.

Step 3. Press Enter to make the changes effective.

This NFS file system will be mounted by the NetView DMA/DOS and used as a redirected drive.

## 8.4.2 Preparing the Product Images on the NFS Server

This section shows the procedure to copy product images on the server. Before you start, you have to have the following diskettes:

- IBM PC DOS V6.3
- IBM PC DOS V6.3 CID Utility
- IBM NetView DM Agent/DOS

You can get the DOS CID Utility diskette from the PCTOOLS disk in the DOSCID63 package. For customers, please contact the IBM marketing representative to get this package.

In the following example, the /export/cid directory on the NFS server is mounted as X: drive on the preparation system by entering the command:

```
mount -lnvmdm1 -pnvmdm1 x: rs600012:/export/cid
```

**Note:** The MOUNT command uses PCNFSD if it is running on the NFS server. If PCNFSD is up on the server, the MOUNT command as it is shown above, is accepted and you have access to the drive. If PCNFSD is not started you will be prompted to provide a user ID and password.

To see if the **pcnfsd** daemon is running on the NFS server, enter the following command on the server:

```
rpcinfo -u host 150001
```

where *host* specifies the host name of the NFS server and 150001 is the Remote Procedure Call (RPC) program number of the *pcnfsd* daemon. After you enter the command, you should receive the message that the program is ready and running if it is available on the host.

If it is not available, use *-u* and *-g* options to specify UID and GID:

```
mount -u0 -g0 x: rs600012:/export/cid
```

In this case we take user "root" and group ID "system" to get access but any other *authorized* ID should work.

#### 8.4.2.1 Copying PC DOS V6.3 Image

To copy a PC DOS image, do the following:

Step 1. Insert PC DOS diskette #1 into drive A: and enter the following command:

```
A:\SETUP /A
```

Step 2. Change the target directory in the pop-up window to:

```
X:\IMG\DOS63
```

Step 3. Insert the diskettes as requested.

When you have finished, insert the DOS V6.3 CID Utilities Diskette into Drive A: and enter the following command:

```
COPY A:*.* X:\IMG\DOS63
```

#### 8.4.2.2 Copying NetView DM Agent/DOS Image

To copy a NetView DMA/DOS image, do the following:

Step 1. Insert NetView DMA/DOS diskette #1 into drive A: and enter the following command:

```
COPY A:*.* X:\IMG\NVDMA
```

Step 2. Repeat the above step for each diskette supplied with the product.

#### 8.4.2.3 Preparing the NetView DM Agent/DOS Program Directory

The PRISTINE directory stores the NetView DMA/DOS program that is shared by all pristine workstations. It is also used as a work area by NetView DMA/DOS for each pristine workstation.

To prepare the PRISTINE directory, copy all the files from an installed NetView DMA/DOS directory into the PRISTINE directory by entering the command:

```
XCOPY /S /E D:\IBMNVDM X:\PRISTINE\IBMNVDM
```

We assume that the NetView DMA/DOS directory is D:\IBMNVDM at the preparation system.

If you want to share this directory with the preparation system, it is possible. Specify the PRISTINE directory as the target directory when you install NetView DMA/DOS on your preparation system. Then you do not need to copy files from the preparation system to the PRISTINE directory as a separate step.

### 8.4.3 Creating the Response Files

You have to create the response files for each CID-enabled product you are installing and put them under the product sub-directories in the X:\RSP directory. The file names have a format *client\_name.RSP*:

```
\RSP\DOS63\NVDMA8.RSP
\RSP\NVDMA8DOS\NVDMA8.RSP
```

See Appendix B, "Sample Files for NetView DM Agent/DOS Scenario" on page 353 for a complete listing of all the response files we used.

#### 8.4.3.1 Creating the DOS Response File

You can find a sample response file (SAMPLE.RSP) on the CID Utility diskette. Copy it to the \RSP\DOS63 directory and comment out the following line:

```
PreviousDOSPath=C:\DOS
```

Otherwise, the pristine installation will fail. All other changes are optional.

#### 8.4.3.2 Creating the NetView DMA/DOS Response File

There is no sample response file provided, and you do not need to specify the response file with the installation command. You can specify the necessary parameters in the installation command. However, we recommend that you prepare the response file because it is easier to make a response file for each client rather than having a different change file for each client.

```
TargetDir = C:\IBMNVDM
BootDrive = C:\
WorkstationName = nvdma8
ServerName = rs600012 TCP 729
Pristine = YES
```

Figure 181. Example of a NetView DMA/DOS Response File

---

## 8.5 Preparing the Boot Diskettes

This section shows the procedure to prepare the boot diskette which is used to install DOS on the pristine workstation. You need one blank diskette which does not have to be formatted.

### 8.5.1 Creating the Boot Diskettes

To create the boot diskette, do the following:

Step 1. Insert a diskette into drive A and enter the following command at a DOS command prompt:

```
FORMAT A: /S
```

Step 2. Copy the following files from the DOS directory at the preparation site (C:\DOS in our example) to the diskette:

- HIMEM.SYS
- SETVER.EXE
- SHARE.EXE

- ANSI.SYS
  - FDISK.COM
  - FORMAT.COM
- Step 3. Copy the following file from the NetView DMA/DOS image directory (X:\IMG\NVDMA\DOS in our example) to the diskette:
- FNDPRST.EXE
- Step 4. Create the following directories on the diskette:
- \TCPDOS
  - \TCPDOS\BIN
  - \TCPDOS\ETC
- Step 5. Copy the following files from the BIN subdirectory under the TCP/IP directory (C:\TCPDOS\BIN in our example) to the A:\TCPDOS\BIN directory:
- INET.EXE
  - INET.SYM
  - PROTMAN.DOS
  - DOSTCP.SYS
  - IBMTOK.DOS
  - NETBIND.COM
  - TCPSTART.BAT
  - NFSSET.COM
  - DOSNFS.EXE
  - MOUNT.COM
  - LT2.MSG
  - INETCHK.EXE
  - IBMNFS.EXE
  - PING.EXE
  - PING.PIF
  - ROUTE.EXE
  - IFCONFIG.EXE
  - ARP.EXE
  - BOOTP.EXE - (not needed if you do not use BOOTP)
  - DOS16M.386
  - TCPCNTL.EXE
- Step 6. Copy the following files from the ETC subdirectory under the TCP/IP directory (C:\TCPDOS\ETC in our example) to the A:\TCPDOS\ETC directory:
- HOSTS - (we have copied this file to be independent from the domain name server)
  - PROTOCOL
  - SERVICES
  - TCPDOS.INI
  - RESOLV
  - PROTOCOL.INI
- Step 7. Set the keyword Files in the A:\TCPDOS\ETC\TCPDOS.INI file to a value greater than 80.
- Step 8. Create the following CONFIG.SYS file on the diskette:

```
DEVICE=A:\SETVER.EXE
DEVICE=A:\HIMEM.SYS
DOS=HIGH,UMB
DEVICE=A:\TCPDOS\BIN\PROTMAN.DOS /I:A:\TCPDOS\ETC
DEVICE=A:\TCPDOS\BIN\IBMTOK.DOS
DEVICE=A:\TCPDOS\BIN\DOSTCP.SYS
DEVICE=A:\ANSI.SYS
FILES=40
BUFFERS=30
STACKS=9,256
SHELL=A:\COMMAND.COM A:\ /P /E:2048
LASTDRIVE=Z
```

Figure 182. CONFIG.SYS File

Step 9. Create the following AUTOEXEC.BAT file on the diskette:

```
A:\TCPDOS\BIN\NETBIND
SET ETC=A:\TCPDOS\ETC
PROMPT pg
path=A:\;A:\TCPDOS\BIN;Z:\IBMVDMA\BIN;
SHARE
SET TEMP=A:\DOS
INET
BOOTP -t NDO > A:\CFG.OUT
CALL FNDPRST.EXE
```

Figure 183. AUTOEXEC.BAT File

The BOOTP command requests a BOOTP server for TCP/IP information such as IP address or host name. This will be explained later in 8.6, "Preparing the BOOTP Server" on page 231. If you do not use BOOTP, delete the line from the AUTOEXEC.BAT file.

Step 10. Create the following CFG.BAT file on the diskette. You have to keep the name CFG.BAT because the FNDPRST.EXE calls this batch file:

```

@echo off
REM host-name ip-addr
REM %1 %2

set hostname=%1
set ipaddr=%2
set netmask=255.255.255.0
set route=9.24.104.1

echo Configuring TCP/IP
route -fnq
arp -dan
ifconfig nd0 %ipaddr% netmask %netmask% up
route add -mtu 1496 default %route%
dosnfs
mount -c -lnvdmad1 -pnvdmad1 x: rs600012:/export/cid
mount -c -lnvdmad1 -pnvdmad1 z: rs600012:/export/cid/pristine
md z:\%hostname%
md z:\%hostname%\work
md z:\%hostname%\uicfg
del z:\%hostname%\nvdm.cfg
del a:\cfg.out

echo Writing NetView DMA/DOS configuration file...
echo WORKSTATION NAME: %hostname% > z:\%hostname%\nvdm.cfg
echo SERVER: rs600012 TCP 729 >> z:\%hostname%\nvdm.cfg
echo MESSAGE LOG LEVEL: D >> z:\%hostname%\nvdm.cfg
echo LOG FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo API TRACE FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo TRACE FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo REPOSITORY: z:\ibmnvdma\repos >> z:\%hostname%\nvdm.cfg
echo WORK AREA: z:\%hostname%\work >> z:\%hostname%\nvdm.cfg
echo BACKUP AREA: z:\ibmnvdma\backup >> z:\%hostname%\nvdm.cfg
echo SERVICE AREA: z:\ibmnvdma\service >> z:\%hostname%\nvdm.cfg
echo QUERY TIMESLICE: 5 >> z:\%hostname%\nvdm.cfg
echo DISPLAY TIMEOUT: -1 >> z:\%hostname%\nvdm.cfg
echo REDISPLAY TIMEOUT: 10 >> z:\%hostname%\nvdm.cfg
echo UNATTENDED ACTION: A >> z:\%hostname%\nvdm.cfg
set FNDCFG=z:\%hostname%
z:\IBMNVDMA\BIN\FNDCMPS.EXE

```

Figure 184. CFG.BAT File

Customize the following lines with values suitable for your environment:

- set netmask=255.255.255.0
- set route=9.24.104.1
- mount -c -lnvdmad1 -pnvdmad1 x: rs600012:/export/cid
- mount -c -lnvdmad1 -pnvdmad1 z: rs600012:/export/cid/pristine

## 8.5.2 Preparing the Hard Disk

You can create a batch file to partition and format the hard disk on the pristine workstation. Add the following statements at the beginning of the AUTOEXEC.BAT file if you want to partition and format the hard disk during the installation:

```

IF EXIST FDISK.KSF GOTO LB1
COPY CHECK.KSF FDISK.KSF
DEL CHECK.KSF
FORMAT C: < FORMAT.KSF
GOTO LB2
:LB1
COPY FDISK.KSF CHECK.KSF
DEL FDISK.KSF
FDISK < CHECK.KSF
:LB2

```

Figure 185. AUTOEXEC.BAT File for Preparing the Hard Disk

Make the following keystroke file to eliminate input from the keyboard during execution of the FDISK command:

```

1
1
Y
<new line>

```

Figure 186. FDISK.KSF File

The contents of the FDISK.KSF file must match the keys that you would enter when you interactively invoke the FDISK command. So this file may look different according to the configuration or requirement.

The FDISK.KSF file used here creates a Primary DOS partition which uses the entire hard disk. The answers and questions entered by the keystroke file are:

**1** Means Create DOS partition or Logical Drive.  
**1** Means Create Primary DOS Partition.  
**Y** Do you wish to use maximum available size?  
**<new line>** This is just a blank line.

Make the following keystroke file to eliminate input from the keyboard during execution of the FORMAT command:

```

Y
PCDOS_63
<new line>

```

Figure 187. FORMAT.KSF File

The contents of the FORMAT.KSF file must match the keys that you would enter when you interactively invoke the FORMAT command. So this file may look different according to the configuration or requirement.

The FORMAT.KSF file used here formats one disk drive. The answers and questions entered by the keystroke file are:

**Y** Proceed with format (y/n) ?  
**PCDOS\_63** Volume label?  
**<new line>** This is just a blank line.



Copy the FDISK.KSF and FORMAT.KSF files onto the boot diskette.

---

## 8.6 Preparing the BOOTP Server

The BOOTP command requests a BOOTP server for TCP/IP information such as an IP address or a host name. If you use this command, you do not have to set a TCP/IP host name or an address on the boot diskette. You can use the same diskette to install change files on the different pristine workstations.

To use the BOOTP command from a client, the TCP/IP service *bootps* must be running on the server. Enter the following command on the BOOTP server to determine if the bootp service is running:

```
lssrc -ls inetd
```

If you see a line like this in the output:

```
bootps bootpd # bootp server port active
```

It means, bootps is running. If it is not running, verify that the */etc/inetd.conf* file contains the following line:

```
bootps dgram udp wait root /etc/bootpd bootpd
```

This entry starts the BOOTP daemon every time *inetd* is started or refreshed.

To refresh *inetd* issue the command:

```
refresh -s inetd
```

This updates the configuration of the *inetd* daemon and makes BOOTP available.

You have to specify the client information in the */etc/bootptab* file. Add a line for each client that is similar to the following:

```
nvdma8:ip=9.24.104.174:hn:ht=tr:ha=10005a953b84:sm=255.255.255.0
```

Where:

- nvdma8** Is the host name of the client.
- ip** Specifies the ip address of the client.
- hn** Specifies that the host name should be sent to clients.
- ht** Specifies the hardware type of the client (tr for token-ring).
- ha** Specifies the hardware address of the client.
- sm** Specifies the subnet mask.

The BOOTP server sends an internet address, a subnet mask, and other information to the client if it finds its hardware address in the */etc/bootptab* file.

**Note:**

Don't put a domain name in the host name field. Neither FNDPRST.EXE nor CFG.BAT remove the domain name portion from the host name, and that causes problems during the creation of the directories in the CFG.BAT file.

---

## 8.7 Creating the Change Files

You can create a change file by building it from a change file profile. A change file profile is a text file that you can make using a DOS editor. If you want to use the graphical interface, you can use for example the NetView DM Agent/2 to create the DOS change files. See 7.8, "Working with the Graphical Interface" on page 211 for more information about the NetView DMA/2 graphical interface.

### 8.7.1 Creating the Change File Profiles

We have prepared the following change file profiles:

- DOS63.PRO
- TCPDOS.PRO
- NVDMADOS.PRO

In the following examples, the symbol ► at the end of a line means that the next line is a continuation of the string. All values following the keyword have to be written within one line.

### 8.7.2 Creating the DOS Change File Profile

Create the following change file profile for the DOS V6.3 installation. The USETUP.COM installation program is provided in the DOS V6.3 CID Utility diskette:

```
GLOBAL NAME: IBM.DOS63.INST.REF.1
DESCRIPTION: Installation Procedure for DOS 6.3
CHANGE FILE TYPE: DOSCID
COMPRESSION TYPE: NONE
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\DOS63\USETUP.COM
 PARAMETERS: /R:X:\RSP\DOS63\$(TARGET).RSP ►
 /L1:X:\LOG\DOS63\$(TARGET).LOG
```

Figure 188. DOS Change File Profile (DOS63.PRO)

### 8.7.3 Creating the NetView DM Agent/DOS Change File Profile

Create the following change file profile for the NetView DMA/DOS installation. Many response file parameters can be specified in the FNDRESP command, and the command line parameters overwrite the parameters specified in the response file:

```
GLOBAL NAME: IBM.NVDMADOS.INST.REF.1
DESCRIPTION: Installation Procedure for NetView DM Agent/DOS
CHANGE FILE TYPE: DOSCID
COMPRESSION TYPE: NONE
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\NVDMADOS\FNDRESP.EXE
 PARAMETERS: /R:X:\RSP\NVDMADOS\$(TARGET).RSP ►
 /L1:X:\LOG\NVDMADOS\$(TARGET).LOG
```

Figure 189. NetView DMA/DOS Change File Profile (NVDMADOS.PRO)

## 8.7.4 Creating the TCP/IP Change File Profile

The TCP/IP for DOS installation is not CID enabled. We will install it by using a DOS generic change file. The generic method usually copies files that become part of the change file from the preparation workstation to the target workstation. In order to know which files have to be installed we have to replicate a manually executed installation. So we have to install TCP/IP for DOS first at the preparation system. During the installation, the changes are recorded by the DiskCamera utility program.

We have prepared the change file by using *DiskCamera*. This process is described in 8.9, "Using DiskCamera" on page 238.

```
GLOBAL NAME: IBM.TCIPDOS.INST.REF.1
DESCRIPTION: Installation Procedur for TCP/IP V2.1.1 for DOS
CHANGE FILE TYPE: DOSGEN
COMPRESSION TYPE: NONE

POST-INSTALL: NVDMUPD.EXE $(tcipdosDir)NVDMTMP\TCPDOS.MOD ▶
 /T:$(tcipdosDir) /B:C

DEFAULT TOKEN: tcipdosDir=C:\

OBJECT:
SOURCE NAME: D:\TCPDOS*. *
TARGET NAME: $(tcipdosDir)TCPDOS*. *
TYPE: FILE_WITH_TOKENS
ACTION: COPY
INCLUDE SUBDIRS: YES

OBJECT:
SOURCE NAME: D:\NVDMTMP\TCPDOS.MOD
TARGET NAME: $(tcipdosDir)NVDMTMP\TCPDOS.MOD
TYPE: FILE
ACTION: COPY
```

Figure 190. TCP/IP Change File Profile (TCPDOS.PRO)

The POST-INSTALL keyword specifies the script (batch file) or command that is executed after the change file has been installed successfully. NVDMUPD is a utility program that modifies the system files based on the input from the modification file. This will be explained later in 8.7.4.2, "Creating the Modification File" on page 234.

### 8.7.4.1 Defining the Tokens

There are also some other considerations when you install software by using the generic change file.

When you use the generic change file, all files are copied from the preparation workstation to the change file. That also includes the system configuration file. In the TCP/IP configuration, the host name and the IP address are different for each workstation, and the router address or some other configuration may be different for each location. You can prepare the configuration files for each workstation but it is time consuming and error prone. You can use *tokens* to avoid such configuration problems.

We have set two tokens, namely HOSTNAME and IP\_ADDRESS, so that the same change file can be used for all pristine workstations. To use tokens, specify \$(HOSTNAME) or \$(IP\_ADDRESS) in place of the host name or the IP address in the TCP/IP files. For example, we have changed the lines in the following files:

- D:\TCPDOS\BIN\TCPSTART.BAT  
Old: ifconfig nd0 9.24.104.173 netmask 255.255.255.0 up  
New: ifconfig nd0 \$(IP\_ADDRESS) netmask 255.255.255.0 up
- D:\TCPDOS\BIN\TCPCHECK.BAT  
Old: ping -q -c 1 9.24.104.173 >nul  
New: ping -q -c 1 \$(IP\_ADDRESS) >nul
- D:\TCPDOS\ETC\TCPDOS.INI  
Old: HostName=nvdma7  
New: HostName=\$(HOSTNAME)

Because we have prepared TCP/IP on the preparation system (nvdma7), the values in these files were for nvdma7. Therefore they must be replaced by the correct values for each target.

The tokens must be resolved and replaced by the actual names during the installation. The tokens can be defined in the change file or in the target definition on the NetView DM/6000 server. We have defined them on the server. To add tokens to the existing target, enter the command:

```
nvdm updtg nvdma8 -i HOSTNAME=nvdma8 -i IP_ADDRESS=9.24.104.174
```

When you use tokens in the files, you also have to indicate it in the change file profile because the file contents must be examined during the installation and the tokens must be replaced by the defined values. Use *FILE\_WITH\_TOKENS* as the object type in the change file.

**Note:** In our example, we packed all files under the \TCPDOS directory into one object of the type FILE\_WITH\_TOKENS. Then all files in this object are examined to determine whether they contain tokens. This will degrade the performance. If it causes a problem, move the files which contain tokens into another directory and specify FILE\_WITH\_TOKENS type only for them, and specify FILE type for others.

#### 8.7.4.2 Creating the Modification File

During the TCP/IP installation, system files (CONFIG.SYS and AUTOEXEC.BAT) are modified. The changes are recorded in the DiskCamera utility and stored in the modification file at the preparation workstation. The modification file is part of the change file so that the NVDMUPD utility can apply these changes at the target workstation. The utility program NVDMUPD runs on the target workstation as a post-install script (command) and updates the system files. See 8.9, "Using DiskCamera" on page 238 for more information on how to run the DiskCamera and create the modification file. The following is the TCP/IP modification file we used:

```

[CONFIG.SYS]
InsertCommand(DEVICE,ANSI.SYS,BOTTOM)
DEVICE = C:\DOS\ANSI.SYS
InsertCommand(DEVICE,PROTMAN.DOS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\PROTMAN.DOS /I:$(TargetDir)TCPDOS\ETC
InsertCommand(DEVICE,DOSTCP.SYS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\DOSTCP.SYS
InsertCommand(DEVICE,IBMTOK.DOS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\IBMTOK.DOS
InsertCommand(LASTDRIVE,,BOTTOM)
LASTDRIVE=Z
[AUTOEXEC.BAT]
InsertToken(SET,ETC,LEFT)
$(TargetDir)TCPDOS\ETC
AddLine(TOP)
$(TargetDir)TCPDOS\BIN\NETBIND
AddLine(BOTTOM)
CALL TCPSTART
InsertToken(PATH,,RIGHT)
$(TargetDir)TCPDOS\BIN
AddLine(BOTTOM)
mount -c -lnvdmad1 -pnvdmad1 x: rs600012:/export/cid
AddLine(BOTTOM)
mount -c -lnvdmad1 -pnvdmad1 z: rs600012:/export/cid/pristine

```

Figure 191. TCP/IP Modification File (TCPDOS.MOD)

Use the NVDMUPD.MOD file that DiskCamera creates as a skeleton of your modification file.

The last two mount commands are added manually. Those two statements are necessary for NetView DMA/DOS to access the remote drives and complete the installation after the reboot. After the change files are installed successfully, you can remove those two lines from AUTOEXEC.BAT file, for example by using a POST-INSTALL script that is invoked at the end of the installation process.

For the meaning of the keywords in the modification file, see *NetView DMA/DOS V1R1 User's Guide*.

### 8.7.5 Building the Change Files

To build change files from change file profiles, issue the following commands:

```

nvdm bld DOS63.PRO
nvdm bld TCPIP.DOS.PRO
nvdm bld NVDMADOS.PRO

```

The change files are built and cataloged in the catalog at the CC Server.

## 8.8 Pristine System Installation Process

When you finish all the steps above, you can start the pristine system installation.

## 8.8.1 Booting the Pristine Workstation

To boot the pristine workstation, do the following:

- Step 1. Insert the boot diskette into drive A.
- Step 2. Turn the power on.
- Step 3. If you are not using the BOOTP command, enter the Hostname and IP address when prompted.
- Step 4. When the client successfully attached to the server, you see a message like this:

```
Task fndcmps has pid -15595
Attempting to connect to server rs600012 on port 729.
New connection 8 from client nvdma8 agent 2.
```

**Note:**

Do **not** remove the boot diskette at this point because during the installation process, the diskette will be accessed.

To confirm the client status issue the following command on the NetView DM/6000 server:

```
nvdn stattg nvdma8
```

You will see a message like this:

| Target | Status   |
|--------|----------|
| nvdma8 | Attached |

The attached status means that the target is attached to the server, but it is not processing a request.

**Note:** The nvdn stattg command is not supported at the current level of NetView DMA/DOS.

## 8.8.2 Submitting the Install Request

Now you can submit the installation request. Enter the following command:

```
NVDM INST IBM.DOS63.INST.REF.1 IBM.TCIPDOS.INST.REF.1 ►
IBM.NVDMADOS.INST.REF.1 -w nvdma8 -n
```

If the install request is successfully submitted, you will see messages like this:

Request scheduled with correlator.

```
Originator: nvdma7
Submit date: 11/10/94
Sequence number: 2
Destination target: nvdma8
```

**Notes:**

1. You have to specify all the change file names in one `nvdms inst` command. If you enter multiple commands, NetView DM/6000 does not ensure the correct installation.
2. You have to specify the change file names in this order. The NetView DM/6000 server installs the change files in this order so that the prerequisite software is installed before a certain change file is installed. If the preceding installation fails, none of the remaining installation is executed. This kind of change file group is called a *corequisite* group.  
  
If you install the change files as a corequisite group, even if each installation program asks for the reboot, NetView DM/6000 and NetView DMA/DOS keep this request until all change files in the group are installed. If the pristine workstation was rebooted with only DOS installed, it will lose the connectivity to the server.
3. You have to specify `-n`, which means non-removable. Because NetView DM/6000 and NetView DMA/DOS do not know what files are installed by the installation programs, they cannot be removed by NetView DM products unless you specify the `remove`, `backup` and `accept` program.

### 8.8.3 Examining the Status of the Change File

To see the status of the change file, issue the following command:

```
nvdms lscm * -w nvdms8
```

If the installation is running, you will see output like this:

```
Global File Name: IBM.DOS63.INST.REF.1
 Target: nvdms8
 Status: Install in progress.

Global File Name: IBM.NVDMADOS.INST.REF.1
 Target: nvdms8
 Status: Install in progress.

Global File Name: IBM.TCIPDOS.INST.REF.1
 Target: nvdms8
 Status: Install in progress.
```

If the installation ends successfully, you will see output like this:

```
Global File Name: IBM.DOS63.INST.REF.1
 Target: nvdms8
 Status: Installed, not removable, active.

Global File Name: IBM.NVDMADOS.INST.REF.1
 Target: nvdms8
 Status: Installed, not removable, active.

Global File Name: IBM.TCIPDOS.INST.REF.1
```

Target:            nvdma8  
Status:            Installed, not removable, active.

If you have any problem during the installation, look at the /usr/lpp/netviewdm/fndlog file on the NetView DM/6000 server and installation X:/log files under the /log directory on the NFS server.

After all change files are installed successfully, remove the boot diskette when a message appears asking you to do so. If you do not remove the diskette, the install request will fail. The workstation restarts automatically and activates all the changes.

---

## 8.9 Using DiskCamera

This section introduces the DiskCamera utility program and describes how we have used it.

### 8.9.1 DiskCamera Introduction

TCP/IP Version 2.1.1 for DOS is not a CID-enabled product. This means it does not provide an installation program or a response file that can be used by NetView DMA/DOS.

Non-CID enabled products must be installed using the DOS generic change file, which just copies files from the preparation workstation to the target workstation. This is called replication or cloning.

We have to know what files are installed during the installation to replicate the product from the preparation workstation to the target workstation. If the system files (CONFIG.SYS and AUTOEXEC.BAT) are modified during the installation, the same changes have to be applied to the target workstation. To help us such kind of installation, NetView DMA/DOS provides a utility program called *DiskCamera*.

DiskCamera monitors the installation at the preparation workstation, creates a change file profile, and a *modification file* that describes the changes in the CONFIG.SYS and AUTOEXEC.BAT files. At the target workstation, the modification file is used to change CONFIG.SYS and AUTOEXEC.BAT files.

There are two utility programs provided:

#### **NVDMDCAM**

The DiskCamera program records the installation at the preparation workstation.

#### **NVDM DUPD**

The system file update program that runs on the target workstation and modifies the system files based on the information in the modification file.



## 8.9.2 Preparation Activities Using DiskCamera

DiskCamera monitors the actual installation of the product. So we have to install TCP/IP for DOS on the preparation workstation to let DiskCamera monitor the installation, create the change file profile and the modification file. But we do not want the active system files modified by the TCP/IP installation or any kind of other preparation activities.

So we have configured the preparation workstation as a dual boot system using OS/2 boot manager, and created two DOS partitions. We have also created a logical drive to store the NetView DMA/DOS program and DOS applications to be distributed. Our preparation system configuration is as follows:

- C Drive    DOS V6.3 partition for NetView DMA/DOS. The active TCP/IP is also installed (Partition A).
- C Drive    DOS V6.3 partition for application preparation (Partition B).
- D Drive    Stores NetView DMA/DOS program and application programs to be distributed.

In our example, the active TCP/IP is installed on the C drive, and the TCP/IP to be distributed is installed on the D drive.

As an alternative, you may configure one DOS workstation for the preparation of applications and one CC Client (OS/2 or DOS) workstation for change management activities.

If you do not separate the application preparation system from the NetView DMA/DOS client, be careful that your active configuration is not affected by the preparation activities. You also have to remove the TCP/IP configuration from the CONFIG.SYS and AUTOEXEC.BAT files before you start DiskCamera.

To create the change file and the modification file for TCP/IP using DiskCamera, boot the DOS system from partition B and do the following:

- Step 1. Insert the TCP/IP Base diskette #1 into drive A and enter the command:

```
D:\IBMNVDM\BIN\NVDMDCAM A:\INSTALL D: /N:TCPDOS /P
```

Where:

- INSTALL** Is the TCP/IP for DOS installation program.
- D:** Is the installation target drive.
- /N** Specifies the token\_name. When DiskCamera creates a change file profile, the global name will become DiskCamera.<token\_name>.REF.1.0.
- /P** Specifies to present you with a DOS prompt before DiskCamera records the changes.

DiskCamera starts monitoring the installation.

- Step 2. The TCP/IP installation panel appears. Proceed with the normal TCP/IP installation.
- Step 3. The command prompt appears when you finish the installation.

**Note:**

Do **not** reboot the system at this point or DiskCamera cannot create the change file profile or modification file.

Step 4. Insert the TCP/IP NFS kit diskette into drive A and enter the command:

```
A:\INSTALL
```

Step 5. The command prompt appears when you finish the installation.

**Note:**

Do **not** reboot the system at this point.

Step 6. Enter the following commands:

```
SET ETC=D:\TCPDOS\ETC
PATH=C:\DOS;D:\TCPDOS\BIN
```

Step 7. Customize the TCP/IP configuration by using CUSTOM utility program.

Enter:

```
CUSTOM
```

Step 8. The command prompt appears when you finish the customization.

**Note:**

Do **not** reboot the system at this point.

Step 9. Change the system files as your requirements dictate. We added the following statement in the CONFIG.SYS file :

```
LASTDRIVE=Z
```

Step 10. When you finish all the modifications, enter the command:

```
EXIT
```

DiskCamera records all changes and creates a change file profile (NVDMUPD.PRO) and a modification file (NVDMUPD.MOD) under the \NVDMTMP directory on the installation target drive.

Use these files as skeletons to create the TCP/IP change file and TCP/IP modification file (see 8.7, "Creating the Change Files" on page 232). We have renamed NVDMUPD.PRO and NVDMUPD.MOD to TCPDOS.PRO and TCPDOS.MOD respectively.

---

## Chapter 9. NetView DM Agent for Windows

In this chapter, we show the Windows client running NetView Distribution Management Agent for Windows.

At the time the book was written we had only pre-GA code of CSD20461 that did not allow us to set up a stable pristine installation environment.

Therefore we will concentrate on an application scenario showing an example of how to install a CID-enabled Windows application using Software Installer.

---

### 9.1 Introducing the NetView DM Agent for Windows

The NetView Distribution Management Agent for Windows (NetView DMA for Windows) runs on DOS Windows workstations and provides change control and distribution functions to a client workstation in a TCP/IP network. NetView Distribution Manager/6000 (NetView DM/6000) controls and acts as a change control server (CC Server), and NetView DMA for Windows acts as a change control client (CC Client).

In a client/server relationship with NetView DM/6000, NetView DMA for Windows provides support for the installation and maintenance of the following:

- Operating system DOS
- MS Windows
- NetView DM Agent for Windows
- Other subsystems

The change management operations can be performed in two ways:

- Centrally initiated change control functions (push mode)
- User-initiated change control function (pull mode)

In both cases, NetView DM/6000 keeps track of what software packages are installed on the client workstation within the NetView DM/6000 domain (CC domain).

The software packages are installed in the form of change files. Some types of change files that are supported by NetView DMA for Windows/DOS:

- Windows Generic for installing non-CID-enabled Windows products
- Windows CID for installing CID-enabled Windows products
- DOS Generic for installing non-CID-enabled products
- DOS CID for installing CID-enabled DOS products
- NetWare Generic for installing non-CID-enabled products in the NetView DM for NetWare environment

CID (Configuration/Installation/Distribution) is a software installation process that enables the remote unattended installation of software. NetView DMA for Windows is a software distribution agent that supports installations of CID-enabled products.

---

## 9.2 Installation of a CID-Enabled Application

The purpose of this scenario is to show an example of a Windows CID installation. Some basic knowledge of building change files is assumed. We will explain how to install in an *unattended mode*, the Windows application BitCellular for Windows using:

- An installation procedure developed for Software Installer
- NetView DMA for Windows
- NetView DM/6000 on the server

We will keep the same environment that has been introduced at the beginning of the chapter.

### 9.2.1 Quick Introduction to Software Installer

Software Installer is a development tool for building customized *installation programs* for your applications. By using Software Installer you can reduce the time spent writing your own installation procedures, while still providing full function installation and maintenance services with your product.

It allows you to CID-enable your installation programs by providing many standard functions.

When using Software Installer you will be able to deal with the following operations that are often requested during the installation process:

- Create Configuration Installation and Distribution (CID)-enabled installations.
- Build your distribution diskettes using the *diskette generator utility*.
- Compress/decompress your product files using Software Installer's packing utility or one of your own.
- Run installation exits supplied by Software Installer during the installation of your product that can:
  - Set environment variables
  - Modify the user's CONFIG.SYS and STARTUP.CMD files
  - Add and/or delete information from system files or any application's configuration file
  - Modify the desktop environment by creating and deleting objects
- Include your own application-specific installation exits which could be:
  - Executable files
  - Command files
  - DLL files
- Prompt the user for directories as installation destinations
- Tailor the initial installation screen to:
  - Display several bitmaps
  - Animate them on the initial installation screen
  - Display an optional information window to the user during installation
- Replace product files that are in use

- Change the text in the help panels
- Maintain your product by:
  - Updating an installed product for corrective service or the next release of the product
  - Restoring a previous release of a product
  - Deleting a product from the workstation
- Selectively install components of a multiple-component product
- Install one product while using another (multitasking environment)

We have prepared an existing Windows application and have used Software Installer to control the installation and update process. For more information on how to use Software Installer refer to *Examples of Using Software Installer, GG24-2529*.

## 9.2.2 Building the Change File

We will store the package on the NFS server. Therefore we set up the following directory structure that has also been exported.

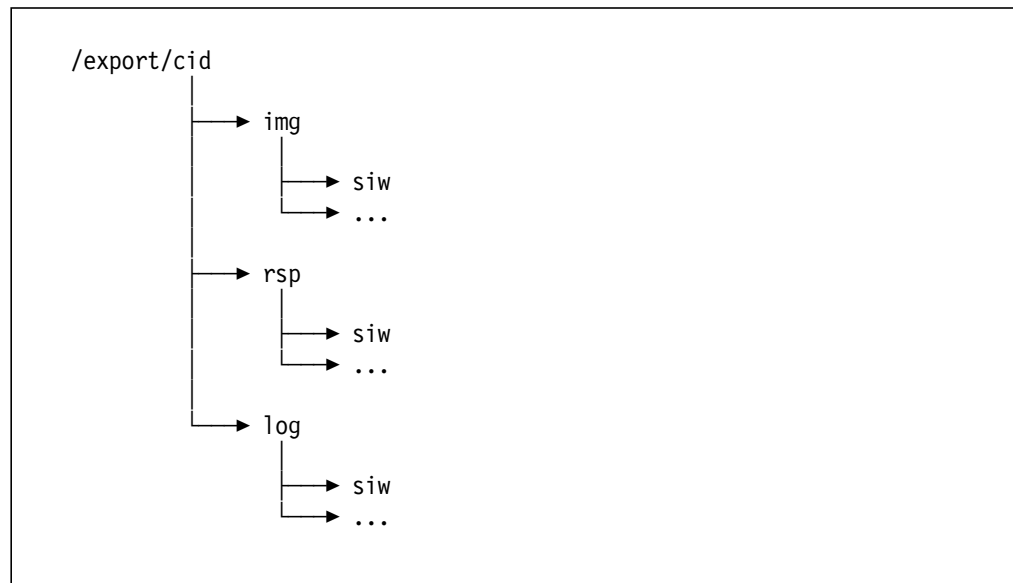


Figure 192. CID Directory Structure on the NFS Server

In this step we build the change file that we use to install BitCellular for Windows from the NetView DM/6000 server on the target workstation *nvdma8*. For this purpose we will create a new entry in the catalog by using the graphical interface:

1. From the Catalog window we select Catalog and New then Refresh from the pull-down menu.

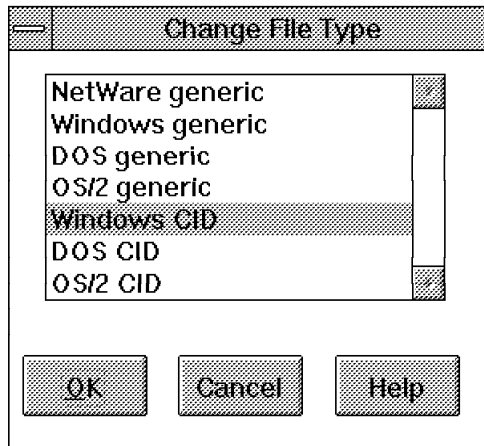


Figure 193. Change File Type Window

As the change file type we select Windows CID which leads us to the following panel:

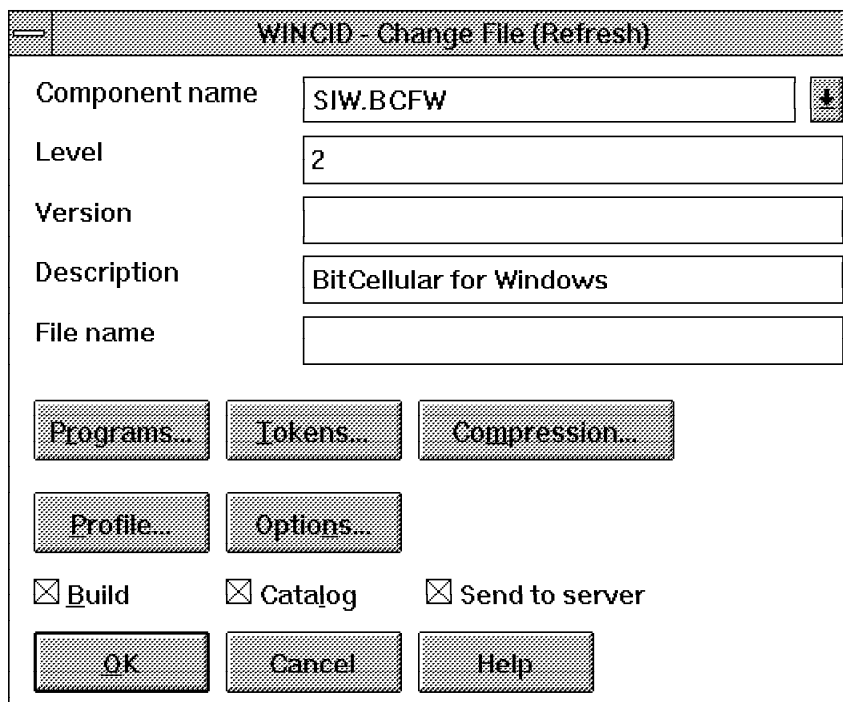


Figure 194. Change File Definition Window

2. We define the component name as well as the level of the package and push the **Programs...** push button:

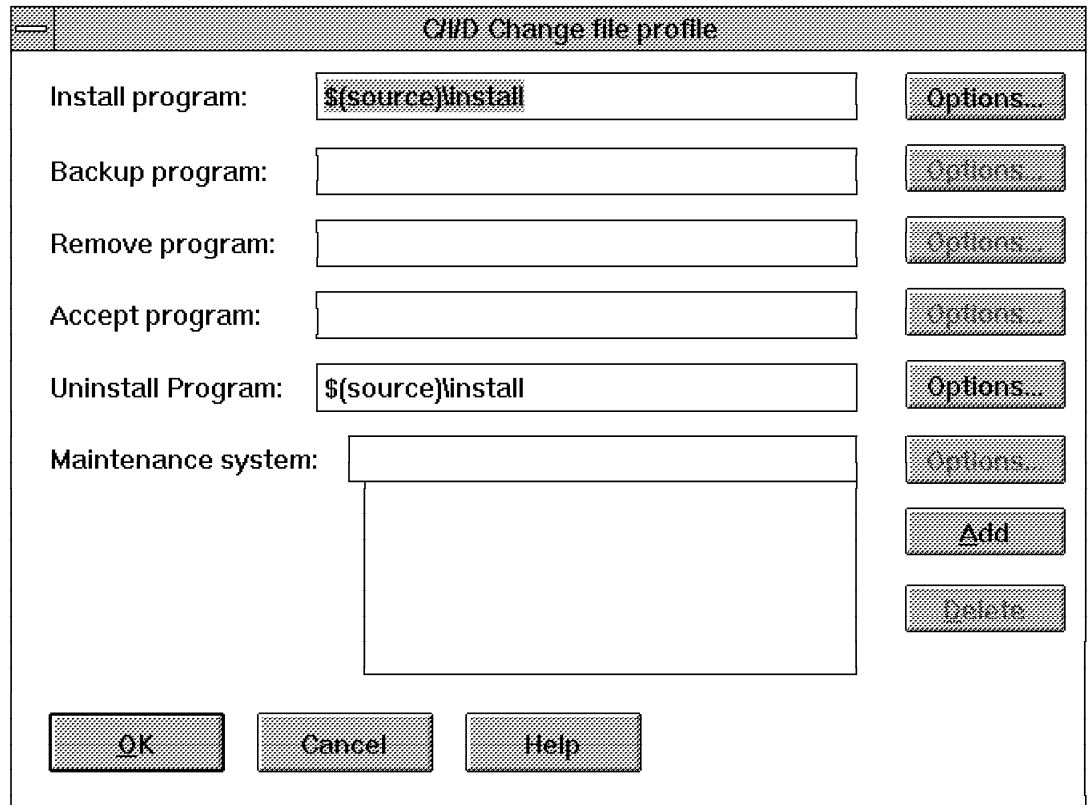


Figure 195. Programs Definition Window

3. We fill in the *Install program* and *Uninstall program* fields with our installation/deinstallation program name: `$(source)\install`. Software Installer uses the same executable file for all available functions like install, uninstall ...

The token "source" is set to `x:\img\siw` as we will see in a later window.

4. From this window we select the first **Options** push button, which is related to the Install program field.

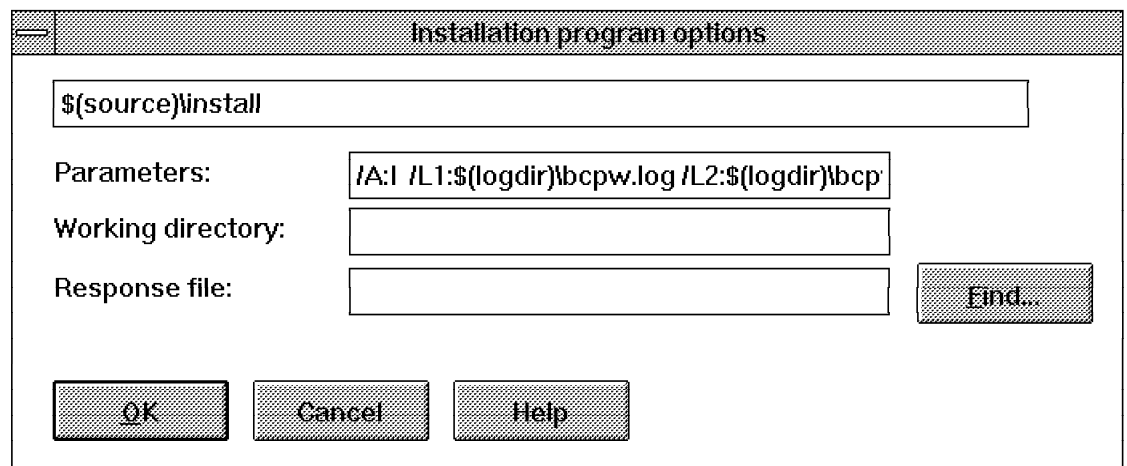


Figure 196. Installation Program Options Window

5. We fill in the Parameters field with the related parameters of the install command which are:

```
/A:I /L1:${logdir}\bcpw.log /L2:${logdir}\bcpw.hi ▶
/P:'BitCellular for Windows' /C:c:${source}\bf.icf ▶
/R:${rspdir}\inst.rsp /X
```

Software Installer requires or accepts the following parameters:

- /A: Action that has to be taken (install, delete or restore)
  - /L1: Log file
  - /L2: History file
  - /P: Name of the package
  - /C: Source directory
  - /R: Response file directory
  - /X: Indicator to process installation unattended
6. Once this entry has been made we make a similar entry for the Uninstall program:

```
/A:D /L1:${logdir}\bcpw.log /L2:${logdir}\bcpw.hi ▶
/P:'BitCellular for Windows' /C:c:${source}\bf.icf ▶
/R:${rspdir}\inst.rsp /X
```

The only difference is the value of the /A parameter, I for installation and D for deinstallation.

We will now define the tokens that we use within this change file. Therefore we push **Tokens...** in window Figure 194 on page 244 and define the tokens that we have already used in the previous windows.

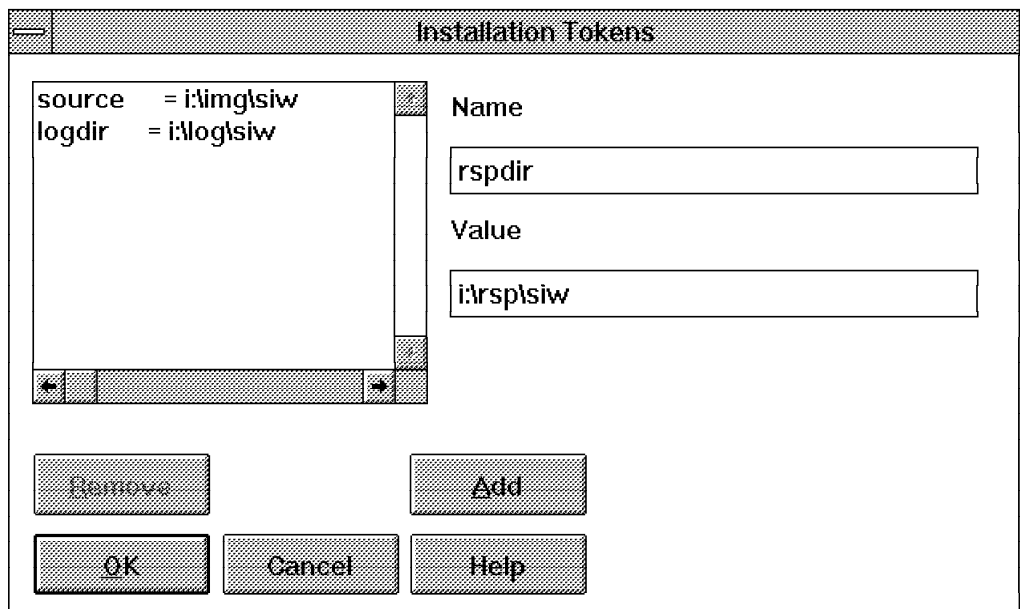


Figure 197. Installation Tokens Window

7. We fill in our variables which are:

- source for x:\img\siw
- logdir for x:\log\siw



- rspdir for x:\rsp\siw

8. We then select the **OK** push button to save these variables and return to the Change File Definition window.

We will now define the pre- and post-scripts that we use within this change file. Therefore we push **Options...** in Figure 194 on page 244 and select the change management command where we need the pre- and post-scripts for:

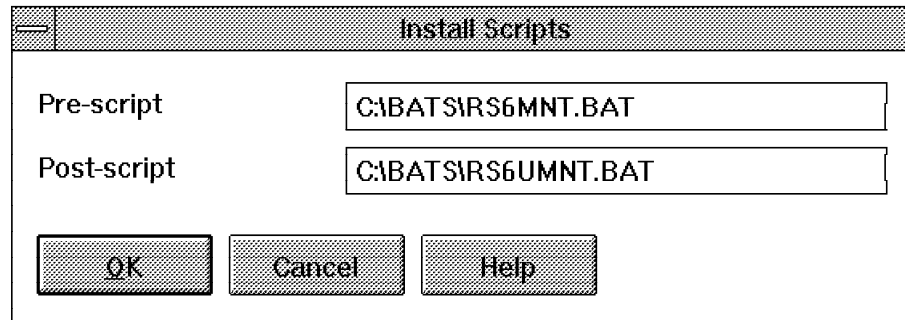


Figure 198. Install Scripts Definition Window

We fill the pre-install batch file name in the Pre-script field and the post-install batch file name in the Post-script field.

Figure 199 shows the command included in the pre-install batch file; it connects the workstation to the NFS server allowing it to access the server's shared file system /export/cid.

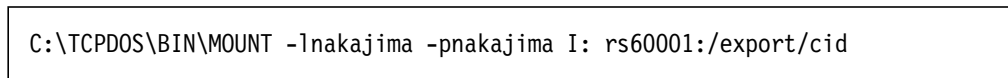


Figure 199. Content of the Pre-install Batch File

Figure 200 shows the command included in the post-install batch file; it releases the mounted file system /export/cid.



Figure 200. Content of the Post-install Batch File

**Read This**

In the version we had it was not possible to fill the Pre-script or the Post-script with any DOS command. We had to use batch files that included these commands.

9. Now the definitions are made and we can actually build and catalog the change file.
10. In the following figure you can see the change file profile that has been created from the definitions entered in the previous dialogs:

```

GLOBAL NAME: SIW.BCFW.REF.1
DESCRIPTION: BitCellular for Windows
CHANGE FILE TYPE: WINCID
COMPRESSION TYPE: LZW
DEFAULT TOKEN: source = i:\img\siw
DEFAULT TOKEN: logdir = i:\log\siw
DEFAULT TOKEN: rspdir = i:\rsp\siw
PRE-INSTALL: C:\BATS\RS6MNT.BAT
POST-INSTALL: C:\BATS\RS6UMNT.BAT
PRE-UNINSTALL: C:\BATS\RS6MNT.BAT
POST-UNINSTALL: C:\BATS\RS6UMNT.BAT
INSTALL PROGRAM:
 PROGRAM NAME: $(source)\install
 PARAMETERS: /A:I /L1:$(logdir)\bcpw.log
 /L2:$(logdir)\bcpw.his
 /P:"BitCellular for Windows"
 /C:$(source)\bf.icf
 /R:$(source)\inst.rsp /X
UNINSTALL PROGRAM:
 PROGRAM NAME: $(source)\install
 PARAMETERS: /A:D /L1:$(logdir)\bcpw.log
 /L2:$(logdir)\bcpw.his
 /P:"BitCellular for Windows"
 /C:$(source)\bf.icf
 /R:$(source)\inst.rsp /X

```

Figure 201. Change File Profile

In the same way as shown above you can also enhance your CID installation by making it removable. This requires that you specify a remove, accept and backup program that can be invoked by NetView DMA for Windows.

### 9.2.3 Change Management

We have tested the installation and the deinstallation of the package. The install "not removable" worked without any problems. Every time we tried to uninstall the component we received the following error message:

```

1995/02/11 17:49:42 nvdma8 37570 FNDCM190E: @nvdma8 1995/02/11
1 nvdma8: Internal change management driver error: Invalid recall
action 0.

1995/02/11 17:49:44 rs60001 31893 FNDSH026E: @nvdma8 1995/02/11 1
nvdma8 : Uninstall request failed on SIW.BCFW. Sense data 0838:0024.

```

Figure 202. Uninstall Error Message

The problem is known and should be fixed in the final CSD code.

## Chapter 10. NetView DM/6000 Remote Administrator and NetView DM/2

Since Release 1.1 NetView DM/6000 is capable of managing targets that belong to different domains. This feature is called remote administrator and is an installation option of the NetView DM/6000 server package.

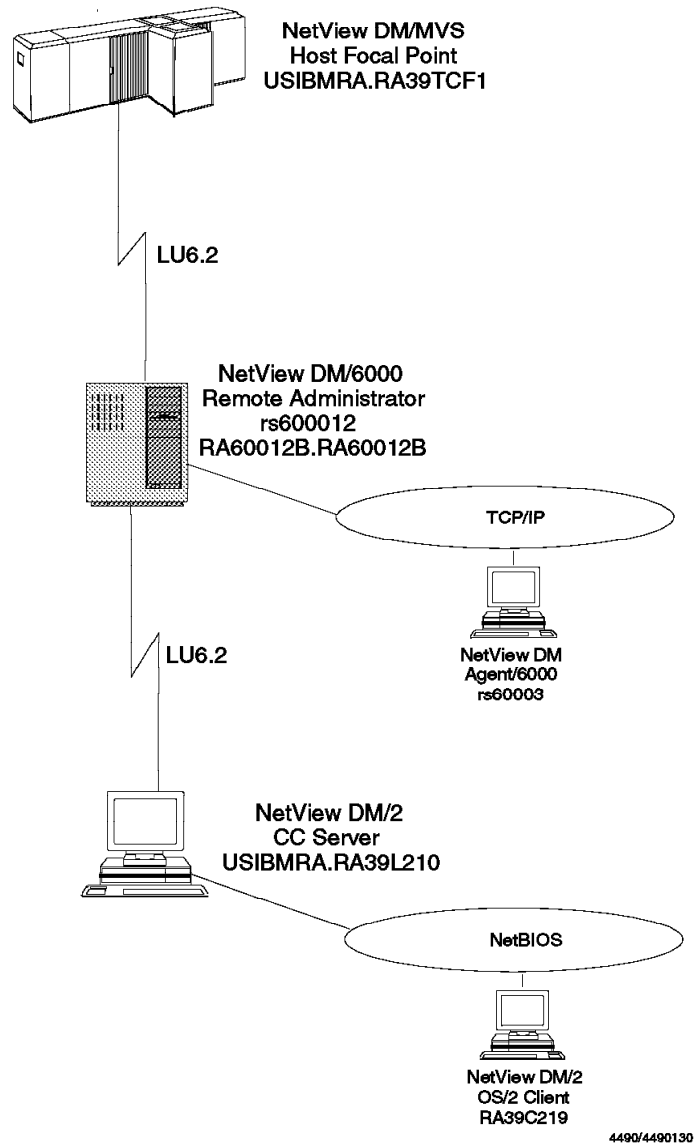


Figure 203. NetView DM/6000 Remote Administrator Connected to NetView DM/2 CC Server and NetView DM/MVS

The network managed by the remote administrator workstation is called the remote administrator domain. CC servers manage the CC clients in their CC domains, but both the CC servers and the CC clients defined in the remote administrator domain can be managed by the remote administrator workstation directly.

---

## 10.1 Objective and Overview

In this scenario we will show you the configuration of the NetView DM/6000 remote administrator in concert with a remote NetView DM/2 CC server and a NetView DM/MVS focal point.

Therefore we have installed the NetView DM/6000 node with the remote administrator, server and communication option. The NetView DM/2 node is installed as a normal remote CC server (without the remote administrator feature).

The chapter is written for people who want to connect the two NetView DM products and control the change management activities from a central site. We assume some basic knowledge about NetView DM/6000 and NetView DM/2 as well as about the underlying communication products. This includes that the reader knows how to configure communications on the different platforms.

The scenario is divided into the following sections:

- Setup of the communications
- NetView DM specific configurations on all platforms
- Practical change management example

For more detailed information and guidance about:

- NetView DM/6000, refer to *The NetView Distribution Manager/6000 Cookbook, GG24-4246*.
- NetView DM/2, refer to *The NetView Distribution Manager/2 V2.1 Remote Administrator and New Functions, GG24-4419*.

or the appropriate systems manuals.

---

## 10.2 Communication Definitions

We have configured SNA Server/6000 on the RISC System/6000 as a network node (NN) and Communications Manager/2 running on the PS/2 as an end node (EN).

The configuration of the communication is straightforward. You will find a complete listing of the SNA Server/6000 configuration in Figure 299 on page 359 and of the Communications Manager/2 part in Figure 300 on page 365.

---

## 10.3 NetView DM/6000 Specific Definitions

In this section we will show what has to be done on the NetView DM/6000 side to configure mainly the remote targets that reside on the other platforms.

### 10.3.1 Target Definitions on the NetView DM/6000 Remote Administrator

**Local Target Details**

Name

Description

Change Management

- ◆ Initiated from Focal Point or any target (push)
- ◆ Initiated from same target only (pull)

Short name

LAN address

Target OS

Figure 204. Local Target Definition of the Remote Administrator

The server as a local target has already been defined as rs600012 during installation. We set the Short name to RA60012B which means that the RGN and REN for this server is set to RA60012B. If you define this server on a remote destination the address would be RA60012B.RA60012B (RGN.REN).

In the next step we define the remote destination NetView DM/MVS:

| Remote Target Details                                                                                                                                 |                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Name                                                                                                                                                  | RA39TCF1                                                                 |
| Description                                                                                                                                           | NetView DM/MVS                                                           |
| Network ID                                                                                                                                            | USIBMRA                                                                  |
| Short name                                                                                                                                            | RA39TCF1                                                                 |
|                                                                                                                                                       | <input checked="" type="checkbox"/> Focal point                          |
|                                                                                                                                                       | <input checked="" type="checkbox"/> Send all reports to this Focal Point |
| <input type="button" value="OK"/> <input type="button" value="Details..."/> <input type="button" value="Cancel"/> <input type="button" value="Help"/> |                                                                          |

Figure 205. NetView DM/MVS as a Remote Destination

- The Network ID for our NetView DM/MVS system is USIBMRA - the network where this node belongs. The Short name is set to the LU name of the Transmission Control Program (TCP) of NetView DM/MVS.
- We indicate that this node is also a focal point for the remote administrator by marking the Focal point check box.
- We want all reports about change management activities to be sent to NetView DM/MVS. If you do not check the Send all reports... box in addition to the Focal point box NetView DM/6000 would accept change management requests from NetView DM/MVS but would not send the reports back to the host. That means the history in the NetView DM/MVS database will never be updated.

In the next step we define the remote NetView DM/2 CC server and the remote CC client as remote destinations:

| Remote Target Details                                                                                                                                 |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Name                                                                                                                                                  | RA39L210                                                      |
| Description                                                                                                                                           | NetView DM/2 Remote Server                                    |
| Network ID                                                                                                                                            | USIBMRA                                                       |
| Short name                                                                                                                                            | RA39L210                                                      |
|                                                                                                                                                       | <input type="checkbox"/> Focal point                          |
|                                                                                                                                                       | <input type="checkbox"/> Send all reports to this Focal Point |
| <input type="button" value="OK"/> <input type="button" value="Details..."/> <input type="button" value="Cancel"/> <input type="button" value="Help"/> |                                                               |

Figure 206. NetView DM/2 Server as a Remote Destination

- The Network ID for our NetView DM/2 server is USIBMRA - the network to which this node belongs. The Short name is set to the default LU name that is used as the server name in NetView DM/2.
- We leave both check boxes unselected because this is a remote CC server without any remote administrator function installed.

| Remote Target Details                                                                                                                                 |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Name                                                                                                                                                  | RA39C219                                                      |
| Description                                                                                                                                           | NetView DM/2 Client                                           |
| Network ID                                                                                                                                            | USIBMRA                                                       |
| Short name                                                                                                                                            | RA39C219                                                      |
|                                                                                                                                                       | <input type="checkbox"/> Focal point                          |
|                                                                                                                                                       | <input type="checkbox"/> Send all reports to this Focal Point |
| <input type="button" value="OK"/> <input type="button" value="Details..."/> <input type="button" value="Cancel"/> <input type="button" value="Help"/> |                                                               |

Figure 207. NetView DM/2 OS/2 Client as a Remote Destination

- The Network ID for our NetView DM/2 client is the same as its server, USIBMRA - this is the network to which these nodes belong. The Short name is set to the NetBIOS name of the client that is defined in the local domain of the NetView DM/2 server; see Figure 222 on page 265.
- We leave both check boxes unselected.

**Note:**

There is basically no difference in the definition of a remote server or a remote client. This means that you have all functions available for both node types even if they are not supported, like file service commands on NetView DM/2 clients. See also the example in Figure 217 on page 261.

### 10.3.2 Routing Table and Connection Configuration File

The SNA/DS connection configuration file specifies the details of an SNA or TCP/IP connection. In this example we have only two SNA connections:

```
PROTOCOL: APPC
SEND TP SYMBOLIC DESTINATION: NVDMSEDS
RECEIVE TP SYMBOLIC DESTINATION: NVDMSEDR
NEXT DSU: USIBMRA.RA39TCF1
TRANSMISSION TIME-OUT: 60
RETRY LIMIT: 3
SEND MU_ID TIME-OUT: 60
RECEIVE MU_ID TIME-OUT: 120
```

Figure 208. SNA/DS Connection Configuration File for NetView DM/MVS (RA39TCF1)

```
PROTOCOL: APPC
SEND TP SYMBOLIC DESTINATION: NDM2SEDS
RECEIVE TP SYMBOLIC DESTINATION: NDM2SEDR
NEXT DSU: USIBMRA.RA39L210
TRANSMISSION TIME-OUT: 60
RETRY LIMIT: 3
SEND MU_ID TIME-OUT: 60
RECEIVE MU_ID TIME-OUT: 120
```

Figure 209. SNA/DS Connection Configuration File for NetView DM/2 (RA39L210)

- In the PROTOCOL fields we set the values to APPC because only LU 6.2 connections are supported from NetView DM/6000 to NetView DM/MVS and NetView DM/2.
- In the fields SEND/RECEIVE TP SYMBOLIC DESTINATION we define the CPIC side information profile names that are defined in the communication products, SNA Server/6000 and Communications Manager/2.
- With NEXT DSU we specify the name of the node at the other end of this connection. The form of RGN.REN is used for this field.

All destinations and all connections that shall be used must be defined in the routetab:



```

SNA/DS Routing Table
#
NETWORK PROTOCOL: APPC
#
RGN.REN Priority Protection Capacity Security Connection Hop
#
USIBMRA.RA39TCF1 ANY ANY ANY ANY RA39TCF1 5
USIBMRA.RA39L210 ANY ANY ANY ANY RA39L210 5
USIBMRA.RA39C219 ANY ANY ANY ANY RA39L210 5

```

Figure 210. SNA/DS Routing Table

- In the RGN.REN column we define the address of a node or a group of nodes if using a wildcard in the name like "USIBMRA.\*". This address is the final destination for the traffic - not an intermediate node.
- The connection column defines the name of the connection file that includes the specifications for the connection to this node.
- In the columns Priority through Security you can define certain values that would limit the usage of this route. For example, if you set the value for capacity to 4MEGABYTES, only distributions of 4MB of data or less are allowed to use this route.
- Hop count specifies the maximum number of nodes that a distribution can pass before it gets rejected. This parameter prevents distributions from looping in case of contradictory route table entries on different nodes.

## 10.4 Customization of the NetView DM/2 Server

During the installation of the NetView DM/2 CC server we have set the following values:

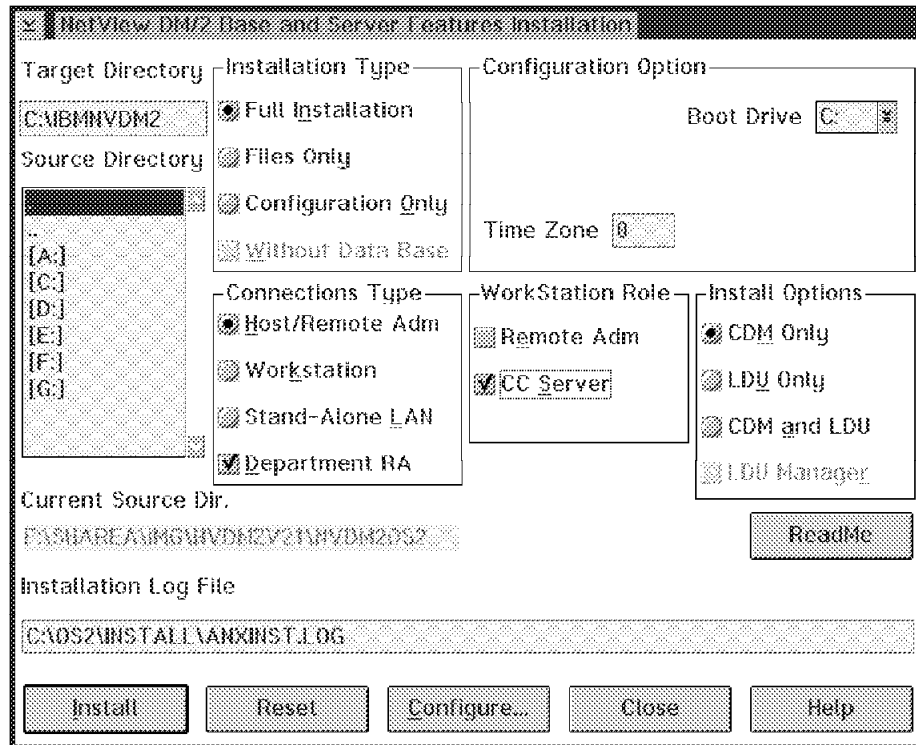


Figure 211. NetView DM/2 Features Selection Window

- In the Connections Type field we selected Host/Remote Adm and Department RA because we want to define NetView DM/MVS as the highest level remote administrator and NetView DM/6000 as the departmental remote administrator.
- For WorkStation Role we select CC Server only.

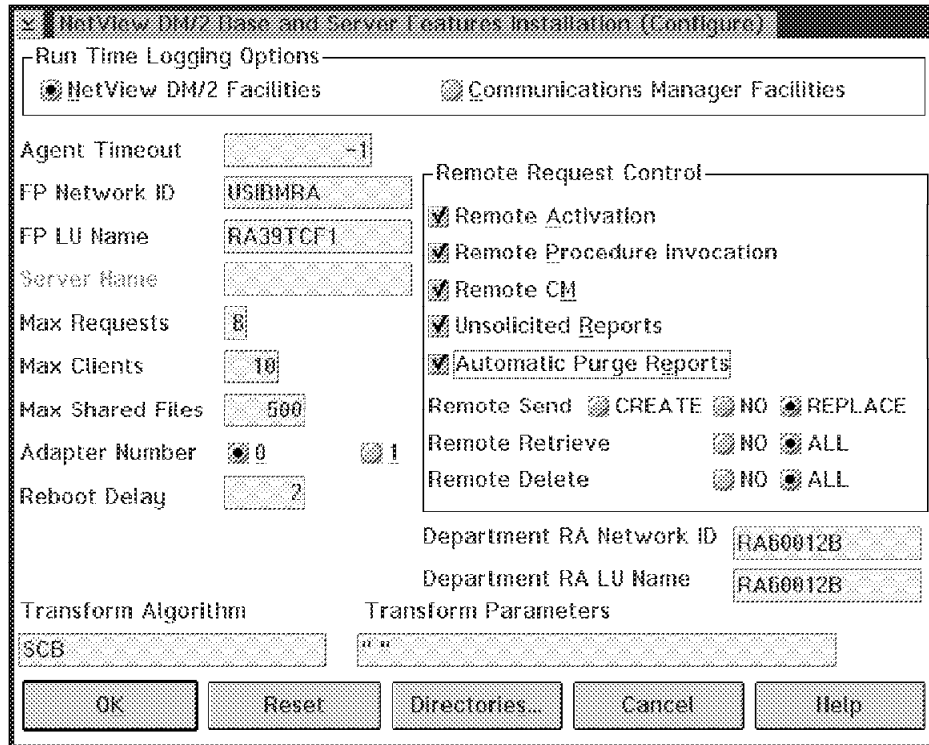


Figure 212. Configuration of the Selected Features

- In the FP Network ID and FP LU Name fields we set the values for NetView DM/MVS. USIBMRA and RA39TCF1 represent the address of the highest remote administrator, the NetView DM/MVS focal point.
- In the Department RA Network ID and Department LU Name we define the values for the NetView DM/6000 remote administrator. RA60012B for both values represent the RGN.REN address of the NetView DM/6000 server.

The entry fields for the departmental remote administrator will only be unprotected if you do select Department RA but do *not* select Remote Adm in Figure 211 on page 256.

On a CC server that is already installed you can also add the following lines to the NetView DM/2 configuration file:

```

FPNetworkID = USIBMRA
FPLUName = RA39TCF1
DFPNetworkID = RA60012B
DFPLUName = RA60012B

```

Figure 213. Excerpt of IBMNVDM2.INI File

You will find a complete listing of the IBMNVDM2.INI file in the appendix; see Figure 301 on page 367.

**Configuration Limitation:**

In NetView DM/2 you can only specify a maximum number of *two* remote administrators including NetView DM/MVS. That means:

- If you want to install the remote administrator feature on the NetView DM/2 CC server you can either define NetView DM/MVS or NetView DM/6000 but not both at the same time.
- If you have an additional level of remote administrators (NetView DM/2 or NetView DM/6000), you can either define, for example, two NetView DM/6000 remote administrators or NetView DM/MVS and one NetView DM/6000 remote administrator as focal points.

### 10.4.1 Node Definition for NetView DM/6000 Remote Administrator

After the installation and customization were successful we defined the remote nodes. Select **Windows** from the Catalog window and **Remote Destinations** from the pull-down menu. In the CDM Remote Destinations window select **Nodes** and **New** from the pull-down menu:

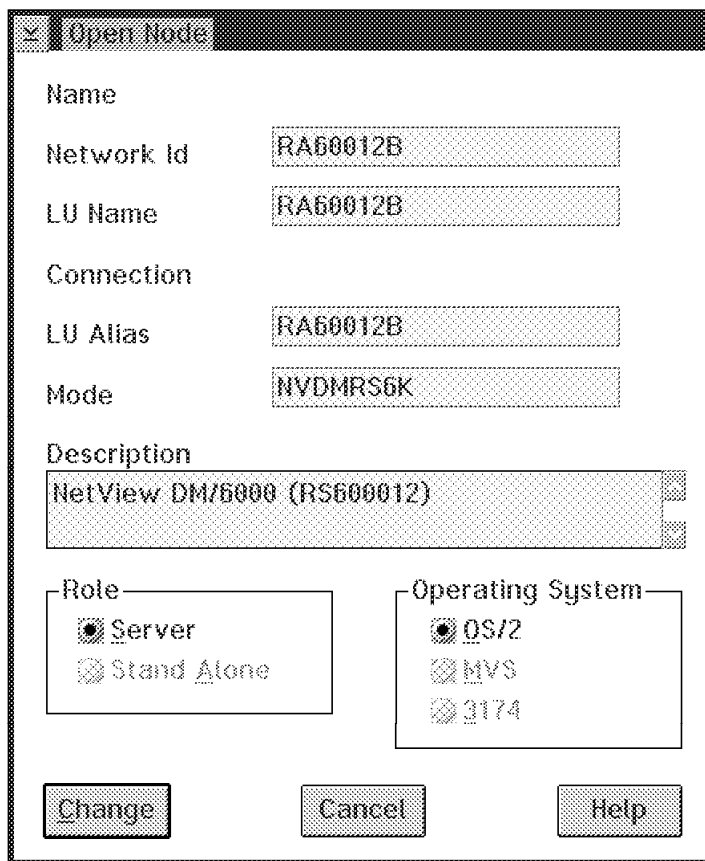


Figure 214. Definition of the NetView DM/6000 Remote Administrator

- The Network Id (RGN) for the NetView DM/6000 remote administrator is RA60012B (same as the server short name).
- In the LU Name field we specify the REN of the NetView DM/6000 remote administrator which is also the same as the short name of the NetView DM/6000 server.

**Note:**

This field has nothing to do with the LU name that we defined in Communications Manager/2 or SNA Server/6000, it just happens to be the same value.

- In the LU Alias field we specify the partner LU Alias name; see also Figure 300 on page 365.

**Note:**

The field description is misleading - it should read "Partner LU Alias" instead of LU Alias.

- Mode "NVDMRS6K" specifies the log mode that we defined for the connection to NetView DM/6000 servers.
- The Role of the remote system is Server and we treat it as an OS/2 system instead of an AIX server.

### 10.4.2 Node Definition for NetView DM/MVS

Now we define the NetView DM/MVS focal point as a remote destination and use the connection through the NetView DM/6000 remote administrator:

The screenshot shows a 'New Node' dialog box with the following fields and options:

- Name: (empty)
- Network Id: USIBMRA
- LU Name: RA39TCF1
- Connection: (empty)
- LU Alias: RA60012B
- Mode: NVDMRS6K
- Description: NetView DM/MVS Focal Point
- Role:  Server,  Stand Alone
- Operating System:  OS/2,  MVS,  3174
- Buttons: Create, Close, Help

Figure 215. Definition of the NetView DM/MVS as a Remote Node

- The Network Id (RGN) for the NetView DM/MVS focal point is USIBMRA.

- In the LU Name field we specify the LU name of the Transmission Control Program (TCP).
- In the LU Alias field we specify the partner LU alias name of the intermediate node through which this node is connected. In this case it is the NetView DM/6000 remote administrator.

**Note:**

The field description is misleading - it should read "Partner LU Alias" instead of LU Alias.

- Mode "NVDMRS6K" specifies the log mode that we defined for the connection to NetView DM/6000 servers.
- The Role of the remote system is Stand Alone and the operating system is MVS.

Both newly defined nodes show up in the list of remote destinations:

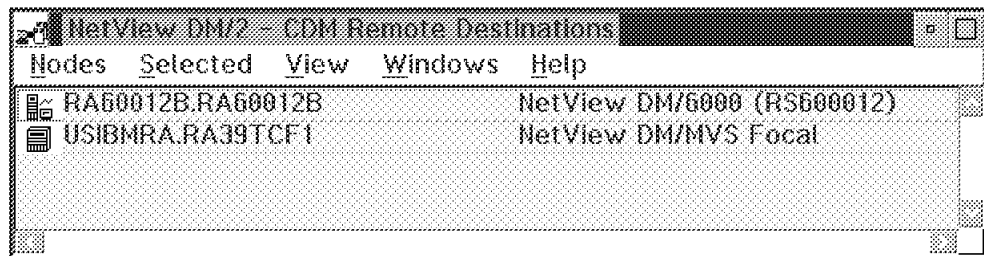


Figure 216. CDM Remote Destinations Window

### 10.4.3 Local Node Definition for NetView DM/2 Client

We will now define the local OS/2 client. Select **Windows** from the Catalog window and **CC Domain** from the pull-down menu. In the CDM Local CC Domain window select **Workstation** and **New** from the pull-down menu:

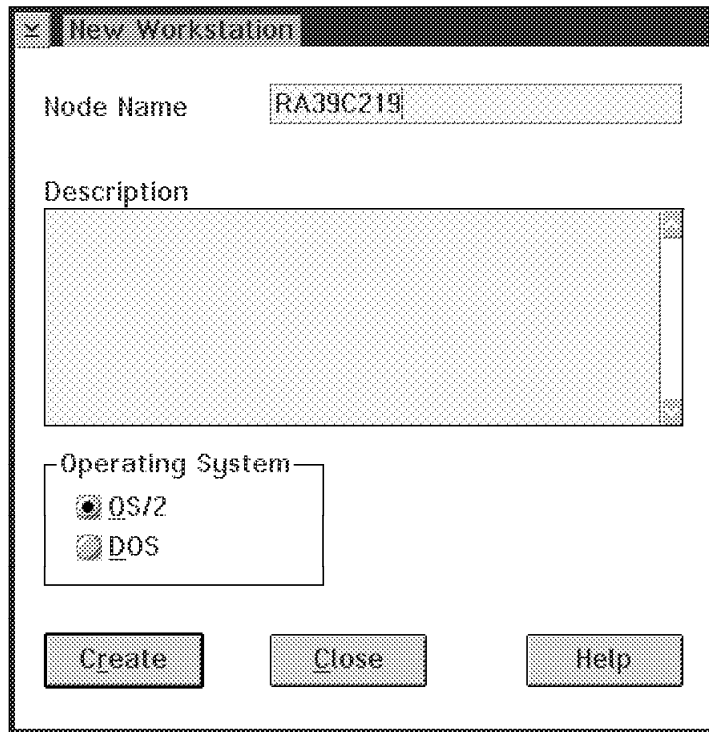


Figure 217. Definition of a Local Node

In the Node Name field we specify the NetBIOS name of the local client and check the OS/2 box for the operating system.

The newly defined local node shows up in the Local CC Domain together with the NetView DM/2 server entry:

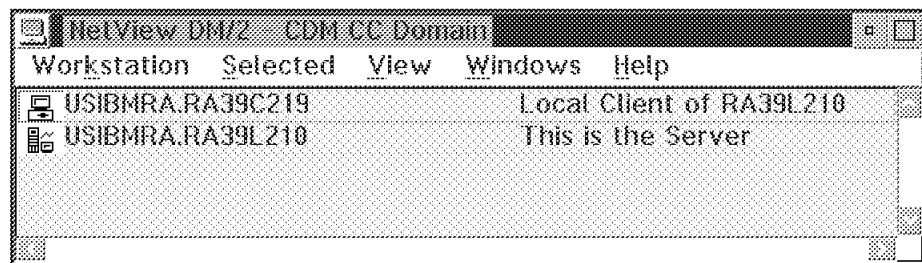


Figure 218. Local CC Domain Window

## 10.5 Node Definitions on NetView DM/MVS

In order to have all reports received by the focal point and have the history stored at the host we must also define all the nodes to NetView DM/MVS:

## 10.5.1 Definition for NetView DM/6000 Remote Administrator

```

 SPECIFY (NDM6) NODE ATTRIBUTES
Command ==>
 09:35

Enter desired values or accept the ones shown:

 1 Node class . A0 Required
 2 Status . . . 2 1 = Production 2 = Parallel 3 = Test
 3 Logical unit RA60012B Required (Logical unit name)
 4 Logon mode . NVDMNORM Logon mode name
 5 Linetype . . 1 1 = Leased 2 = Switched
 6 Rgn. RA60012B Network identification
 7 Ren. RA60012B CP Logical unit name
 8 Notes . . . 2 Enter 1 if you want additional node information
 9 Profile. . . 2 Enter 1 if you want to change node profile
10 Server name. RS600012 Server name
11 Timzoffs . . +00 Time Zone offset. Any value from -12 to 12

Tracking information:
Activity: CHANGE
Node . . : RS600012

PF 1=HELP 2=SPLIT 3=END 4=RETURN
 9=SWAP 10=PRINT 12=CURSOR
```

Figure 219. Definition of the NetView DM/6000 Remote Administrator

- The Logical unit name has to match the LU name that is defined for this server in VTAM.
- The Logon mode field we set to the log mode that is defined in VTAM and SNA Server/6000 for the communication between NetView DM/MVS and NetView DM/6000.
- Rgn and Ren have to match the short name of the NetView DM/6000 server; see Figure 204 on page 251.
- The server name must match the node name of the server defined at NetView DM/MVS.

## 10.5.2 Definition for NetView DM/2 Change Control Server

The NetView DM/2 change control server is connected to NetView DM/MVS through the remote administrator which acts as an intermediate node. There is no direct connection between the NetView DM/MVS system and the NetView DM/2 server:



```

 SPECIFY (DCCS) NODE ATTRIBUTES
Command ==>
 09:38

Enter desired values or accept the ones shown:

 1 Node class . A0 Required
 2 Status . . . 2 1 = Production 2 = Parallel 3 = Test
 3 Logical unit RA60012B Required (Logical unit name)
 4 Logon mode . NVDMNORM Logon mode name
 5 Linetype . . 1 1 = Leased 2 = Switched
 6 Rgn. USIBMRA_ Network identification
 7 Ren. RA39L210 CP Logical unit name
 8 Notes . . . 2 Enter 1 if you want additional node information
 9 Profile. . . 2 Enter 1 if you want to change node profile
10 Server name. RA39L210 Server name
11 Timzoffs . . +00 Time Zone offset. Any value from -12 to 12

Tracking information:
Activity: CHANGE
Node . . : RA39L210

PF 1=HELP 2=SPLIT 3=END 4=RETURN
 9=SWAP 10=PRINT 12=CURSOR

```

Figure 220. Definition of a CC Server through an Intermediate Node

- The Logical unit name is the LU name of the NetView DM/6000 server. The connection to the NetView DM/2 CC Server goes through the intermediate node rs600012.
- The Logon mode field we set to the log mode that is defined in VTAM and SNA Server/6000 for communication between NetView DM/MVS and NetView DM/6000.
- Rgn for the &nv2. CC Server is the network ID of the network to which it belongs. See the keyword "DEFINE\_LOCAL\_CP" in Figure 300 on page 365.
- Ren is set to the default LU name of the NetView DM/2 server that is specified in the DEFAULT\_LOCAL\_LU\_ALIAS keyword; see Figure 300 on page 365.
- The server name must match the node name of the server defined at NetView DM/MVS.

### 10.5.3 Definition for NetView DM/2 Change Control Client

We will now define the OS/2 client that belongs to the CC domain of NetView DM/2 CC server RA39L210:

```

 SPECIFY (CLNT) NODE ATTRIBUTES
Command ==>
 09:39

Enter desired values or accept the ones shown:

 1 Node class . A0 Required
 2 Status . . . 2 1 = Production 2 = Parallel 3 = Test
 3 Logical unit RA60012B Required (Logical unit name)
 4 Logon mode . NVDMNORM Logon mode name
 5 Linetype . . 1 1 = Leased 2 = Switched
 6 Rgn. USIBMRA Network identification
 7 Ren. RA39C219 CP Logical unit name
 8 Notes . . . 2 Enter 1 if you want additional node information
 9 Profile. . . 2 Enter 1 if you want to change node profile
10 Server name. RA39L210 Server name
11 Timzoffs . . +00 Time Zone offset. Any value from -12 to 12

Tracking information:
Activity: CHANGE
Node . . : RA39C219

PF 1=HELP 2=SPLIT 3=END 4=RETURN
 9=SWAP 10=PRINT 12=CURSOR

```

Figure 221. Definition of a CC Client through an Intermediate Node

- The Logical unit name is the LU name of the NetView DM/6000 server. The connection to the NetView DM/2 CC Server goes through the intermediate node rs600012.
- The Logon mode field we set to the log mode that is defined in VTAM and SNA Server/6000 for communication between NetView DM/MVS and NetView DM/6000.
- Rgn for the NetView DM/2 CC Client is the network ID of the network to which it and its CC Server belong. It must be the same value as for the server.
- Ren is set to the NetBIOS name that is used in the local domain definitions; see Figure 217 on page 261.
- The server name must match the NetView DM/MVS node name of the server to which this client belongs.

## 10.6 Examples of Using the Remote Administrator Function

In this section we will show some change management examples. It will include the following steps:

- Preparation of a change file
- Distribution of the object to the target environment
- Execution of some CM requests

## 10.6.1 Preparation of the Change File

We have prepared a very simple change file that can be installed on a NetView DM/2 CC Server as well as on a NetView DM/2 CC Client. It will only copy a CMD file into a newly created directory.

### Important:

You **must** build this change file on a NetView DM/2 CC Server. You cannot use, for example, the NetView DMA/2 to perform this task. The change file formats of NetView DM/2 and NetView DM/6000 are different and cannot be migrated by NetView DM/2.

## 10.6.2 Distribution of the Change File

We have sent the change file from the preparation site to the NetView DM/6000 server and will now send it to the target server:

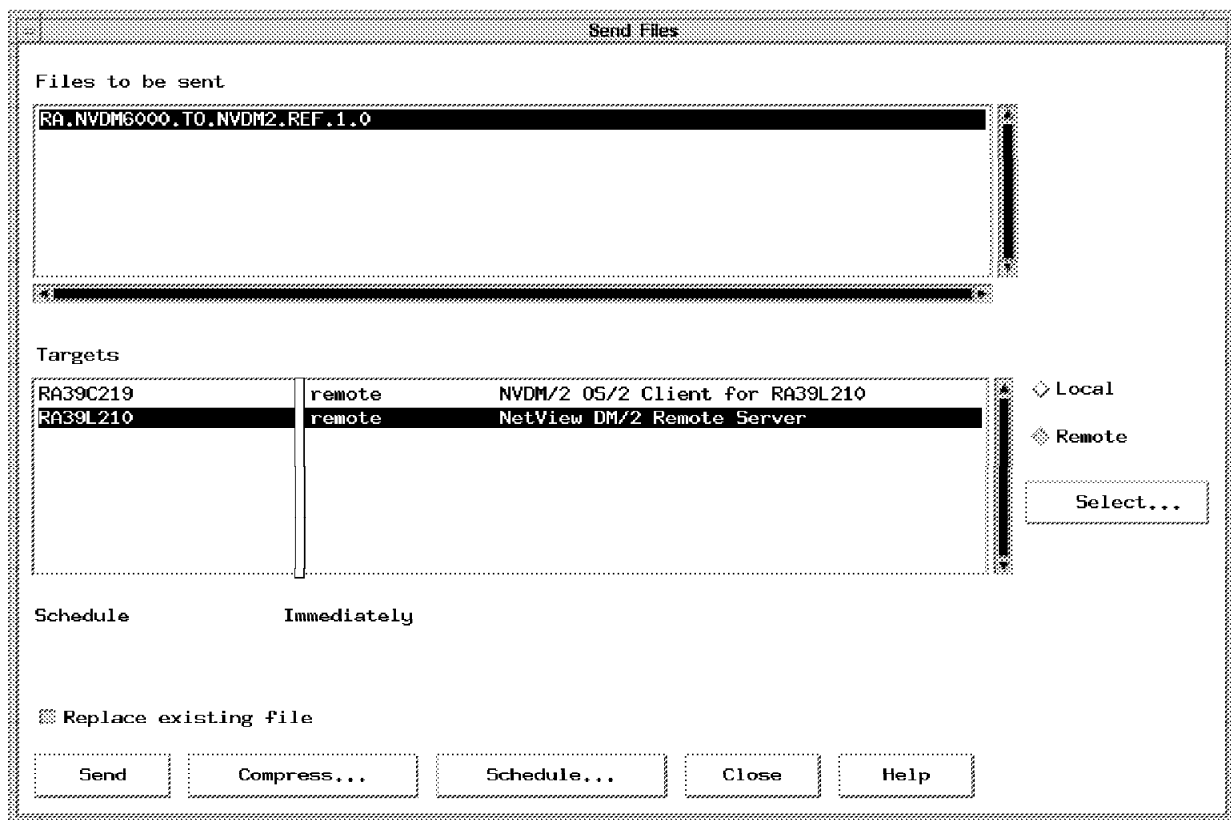


Figure 222. Send Files Window on NetView DM/6000 CC Server

We send the file only to the server. Other than on the NetView DM/6000 platform, in the NetView DM/2 product the file service commands (send, retrieve and delete) are not implemented for clients.

You can see the log entries on the NetView DM/6000 server in Figure 303 on page 369.

### 10.6.3 Change Management Example

The change file is now stored on the NetView DM/2 server so that we can submit the install request from the remote administrator (or from NetView DM/MVS if we wanted):

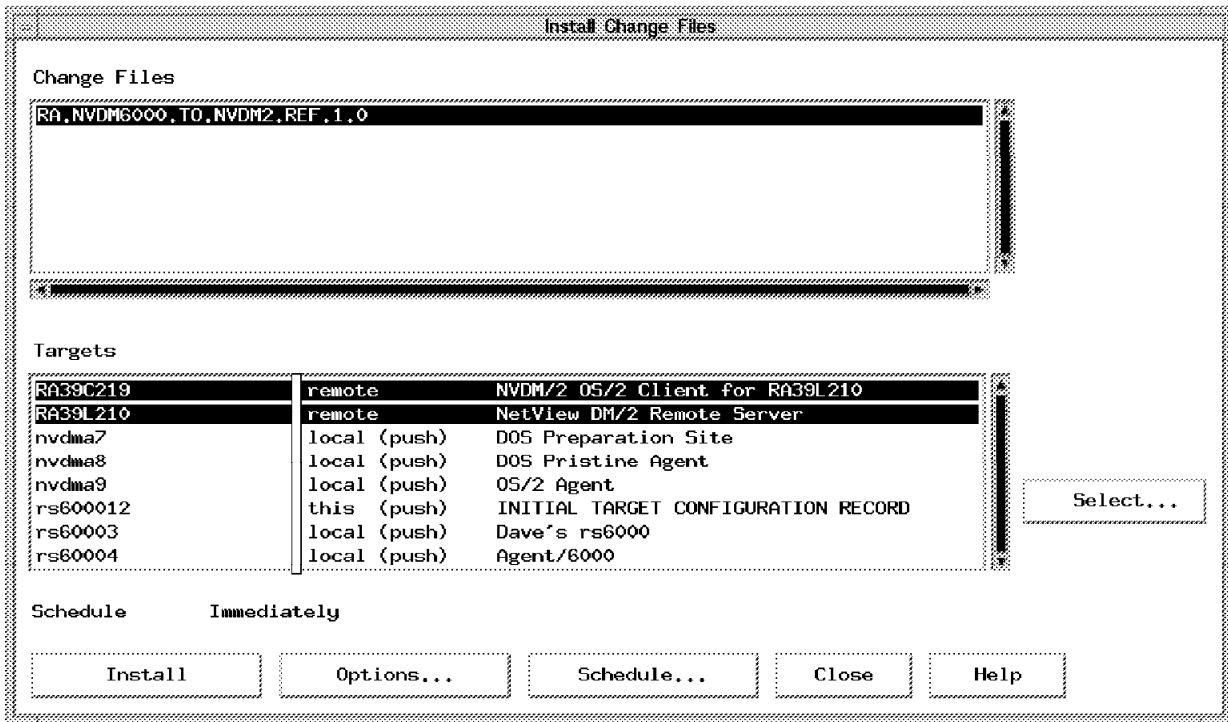


Figure 223. Install Change Files Window on NetView DM/6000 Remote Administrator

We install the change file on the remote server and on the client at the same time.

A look in the change file history shows that the request ended successfully:

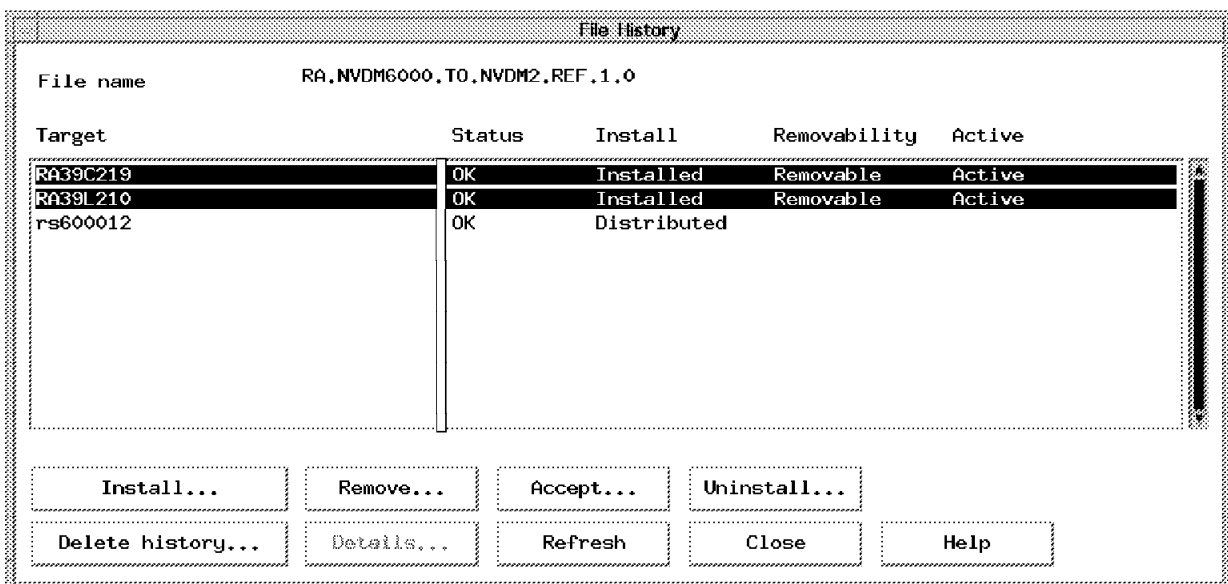


Figure 224. Installation History on NetView DM/6000 Remote Administrator

The object is installed removable in the active area of both target nodes.

We mark both entries and press the Accept... button and get the following panel:

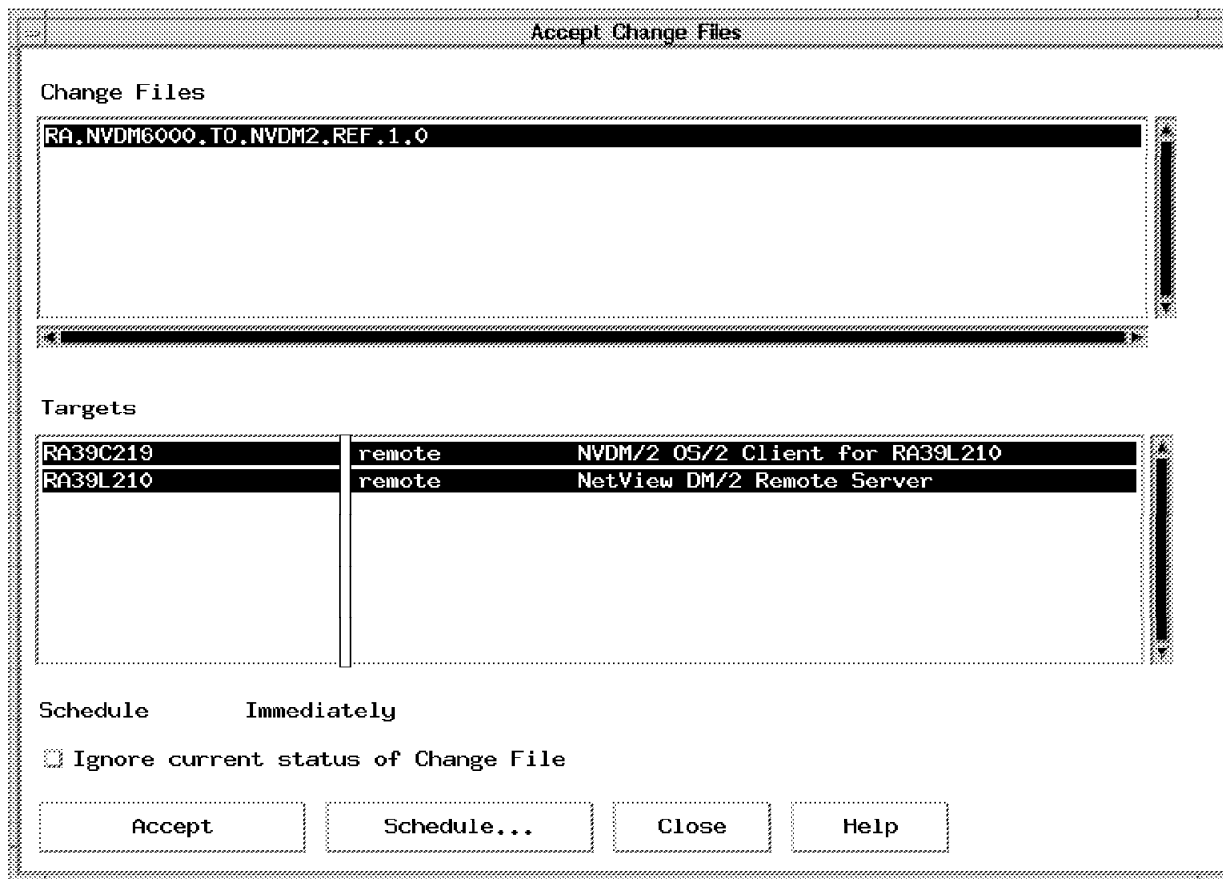


Figure 225. Accept Change File Window on NetView DM/6000 Remote Administrator

We press the Accept... button again to make this installation permanent. If you look at the history you will see that the values in the Removability column have changed from Removable to Non-Removable.

#### 10.6.4 Change Management History on NetView DM/2 Server

We will now examine as an example the target history of the client RA39C219. Mark the node name in the CDM CC Domain window and choose **Selected** and **Open Settings** from the pull-down menu:

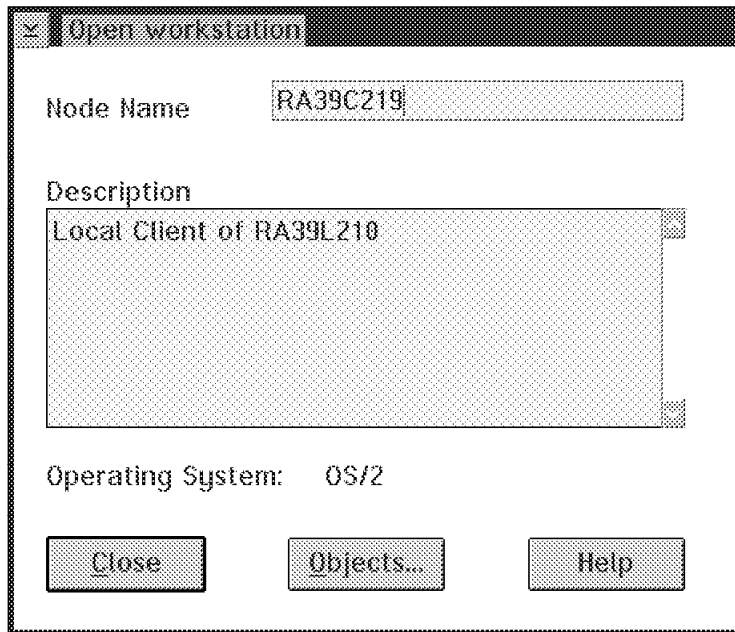


Figure 226. Open Workstation Window on NetView DM/2

Press the Objects... button to display the Installed objects window for this client:

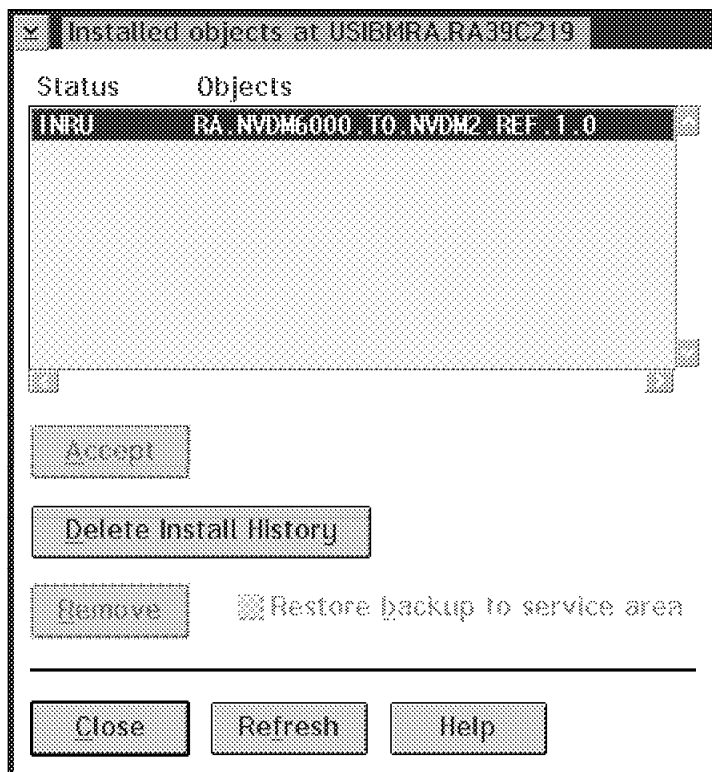


Figure 227. Open Workstation Window on NetView DM/2

We see the object has a status of "INRU" which stands for installed, non-removable in use.

## 10.6.5 Change Management History on NetView DM/MVS

We will now look at the target history of the NetView DM/2 CC Server at NetView DM/MVS. Therefore we select **2** Browse Network from the GIX Main Menu. We choose **1** Browse and type RA39L210 into the Node name field:

```
Command ==> BROWSE SELECTED INFORMATION Row 1 to 26 of 36
 Scroll ==> PAGE
 21:07

----- N O D E -----
Node name : RA39L210 Node class .: A0
Node type : DCCS Logical unit: RA60012B
Status . : PARALLEL Logon mode .: NVDMNORM
Linetype : LEASED Network id .: USIBMRA
CP lu name: RA39L210 Server name.: RA39L210
Timzoffs..: +00

***** LIST OF TRACKED / ASSIGNED RESOURCES *****

----- SOFTWARE -----
Node name . : RA39L210

Node type . : DCCS
Name . . . :
==> RA.NVDM6000.TO.NVDM2.REF.1.0

--- Assigned --- --- Stored --- --- Deleted ---

--- Installed --- --- Accepted --- --- Removed ---
94/11/26 20:50 94/11/26 20:54

--- Backed up --- ---Uninstalled---

***** Bottom of data *****

F1=HELP F2=SPLIT F3=END F4=RETURN F5=PF05/17 F6=PF06/18
F7=UP F8=DOWN F9=SWAP F10=PRINT F11=PF11/23 F12=CURSOR
```

Figure 228. Installation History of a NetView DM/2 Client on NetView DM/MVS

You can see the log entries of the NetView DM/6000 server and the NetView DM/MVS IOF log in Figure 303 on page 369 and Figure 302 on page 368.





---

## Chapter 11. Integrating NetView DM/6000 with NetView/6000

In this chapter we show how to integrate NetView DM/6000; with NetView/6000, that is we show how NetView DM/6000 functionality can be accessed from within NetView/6000 and how NetView DM/6000 can be tailored for use with NetView/6000.

This part is intended for system administrators who want to integrate NetView DM/6000 functionality with NetView/6000.

It is assumed that the reader is familiar with NetView DM/6000 and has a basic understanding of NetView/6000.

This chapter is not intended as an introduction to using NetView DM/6000 or NetView/6000. We will show examples of how both products can be integrated. You will have to adapt these examples to your own environment to use them.

### Note

When this book was written NetView/6000 Version 2.1 was only supported by NetView DM/6000. All attempts to use NetView/6000 Version 3.1 with NetView DM/6000 were unsuccessful.

---

### 11.1 Overview and Objective

NetView DM/6000 provides methods for integrating its functionality with NetView/6000. There are basically two ways to integrate NetView DM/6000 with NetView/6000:

- User interface integration
- Event configuration

The NetView DM/6000 functionality can be integrated into the NetView/6000 user interface. This means that you can access NetView DM/6000 functions directly from NetView/6000 by using for example the NetView/6000 action bar.

Further NetView DM/6000 also generates traps which can be used by NetView/6000. You can configure for which NetView DM/6000 event you want to send a trap to NetView/6000.

In this chapter we will perform the following steps:

- Set up NetView DM/6000 to be used from within NetView/6000.
- Show examples for using NetView DM/6000 from within NetView/6000.
- Show how to configure traps generated by NetView DM/6000. to be used in NetView/6000.
- Show an example of how to use traps to communicate between NetView DM/6000 and NetView/6000.

---

## 11.2 Setting Up NetView DM/6000 for Use with NetView/6000

Setting up NetView DM/6000 for use with NetView/6000 is very simple. You just have to run a configuration script which is delivered with NetView DM/6000.

Before you do this you must ensure that the following software products are installed and configured on your system:

- NetView DM/6000 Version 1.2
- NetView/6000 Version 2.1

To integrate NetView DM/6000 with NetView/6000 just run the following shell script:

```
/usr/lpp/netviewdm/script/nv6k.sh
```

This script is used to provide the necessary information to NetView/6000 which is used to integrate NetView DM/6000 functionality. It will modify the NetView/6000 database to contain additional menus for accessing NetView DM/6000 functions.

### 11.2.1 Accessing NetView DM/6000 from NetView/6000

When we start NetView/6000 after running the configuration script `nv6k.sh` additional functions for accessing NetView DM/6000 will be available in the NetView/6000 Tools menu.

You can use NetView DM/6000 functions on a node managed by NetView/6000 only if this node is known to NetView/6000 as a NetView DM/6000 target. All local targets which are defined on your NetView DM/6000 server at the time you run `nv6k.sh` will be known by NetView/6000 automatically.

If you have remote targets or if you add a new local target after running the `nv6k.sh` script you have to define this target in NetView/6000.

We want to define the remote target `rs60004` to NetView/6000.

To do so we perform the following steps:

- Step 1. Select the node `rs60004` from the NetView/6000 IP map using the left mouse button.
- Step 2. Select **Tools** from the NetView/6000 action bar.
- Step 3. Select **NetView DM/6000 for NetView/6000** from the pull-down menu.
- Step 4. Select **Define the node as NetView DM/6000 target** from the cascaded menu.
- Step 5. Select **Remote** from the next cascaded menu.

The following panel will appear:

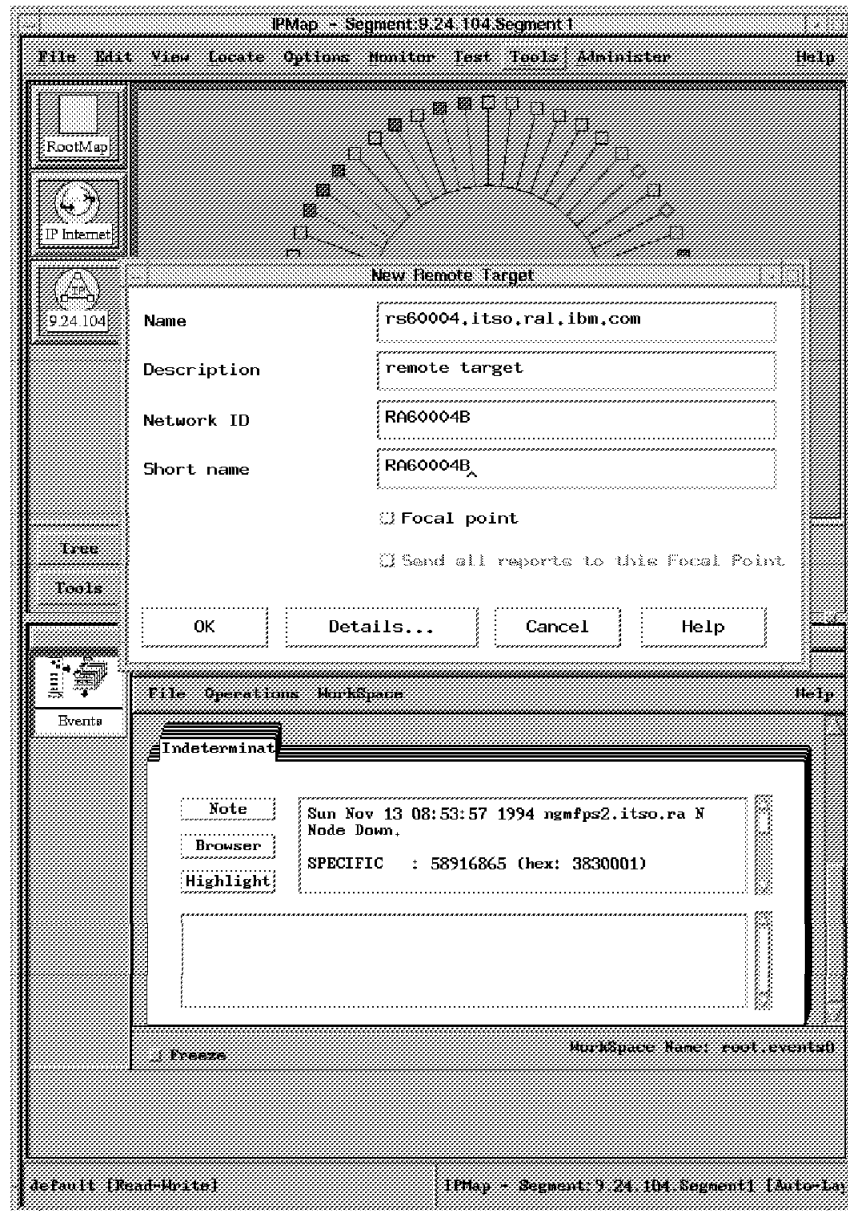


Figure 229. NetView DM/6000 New Remote Target Window

NetView/6000 will pop up the NetView DM/6000 panel to add a new remote target. We enter the values as shown above and then select **OK**. This will add the new remote target for use within NetView/6000.

**Warning**

As you see in the above panel NetView/6000 passes the full hostname of the target to NetView DM/6000, including the full domain. Normally you will not want the domain name included in the target name, so you have to shorten it to the hostname. In the above example we have to shorten the full name rs60004.itso.ra1.ibm.com to rs60004.

Once a target is known to NetView/6000 you can use NetView/6000 to perform NetView DM/6000 software distribution tasks. You can do this either by selecting

the corresponding sub-menu from the NetView/6000 Tools menu, or by selecting a node on the NetView/6000 map and pressing the right mouse button.

### 11.3 Sending Traps from NetView DM/6000 to NetView/6000

NetView DM/6000 can send traps to NetView/6000 whenever certain events occur in NetView DM/6000. For which events a trap should be sent can be configured by the NetView DM/6000 administrator.

By default NetView DM/6000 sends a trap for example for all error and warning conditions inside NetView DM/6000.

We will show a simple example of how you can configure the reaction of NetView/6000 to a trap generated by NetView DM/6000.

We submit a change management request which is not valid in order to cause NetView DM/6000 to send a trap to NetView/6000.

We select **NetView DM/6000 for NetView/6000** from the NetView/6000 Tools menu and then **Uninstall objects** from the cascaded menu.

The following panel will appear:

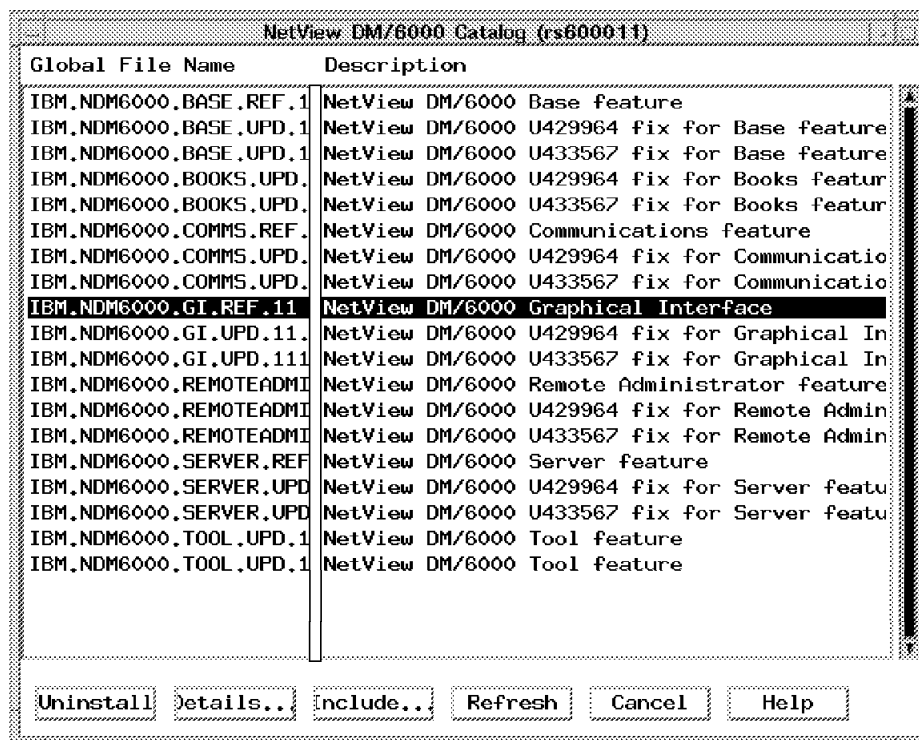


Figure 230. NetView DM/6000 Catalog Window

We select the change file **IBM.NDM6000.GI.REF.11** from the NetView DM/6000 catalog and then select the **Uninstall** push button.

Since this change file cannot be uninstalled an error message will be generated. This will also cause a trap to be sent to NetView/6000.

The following panel shows the NetView/6000 event card which was generated by the trap sent by NetView DM/6000.

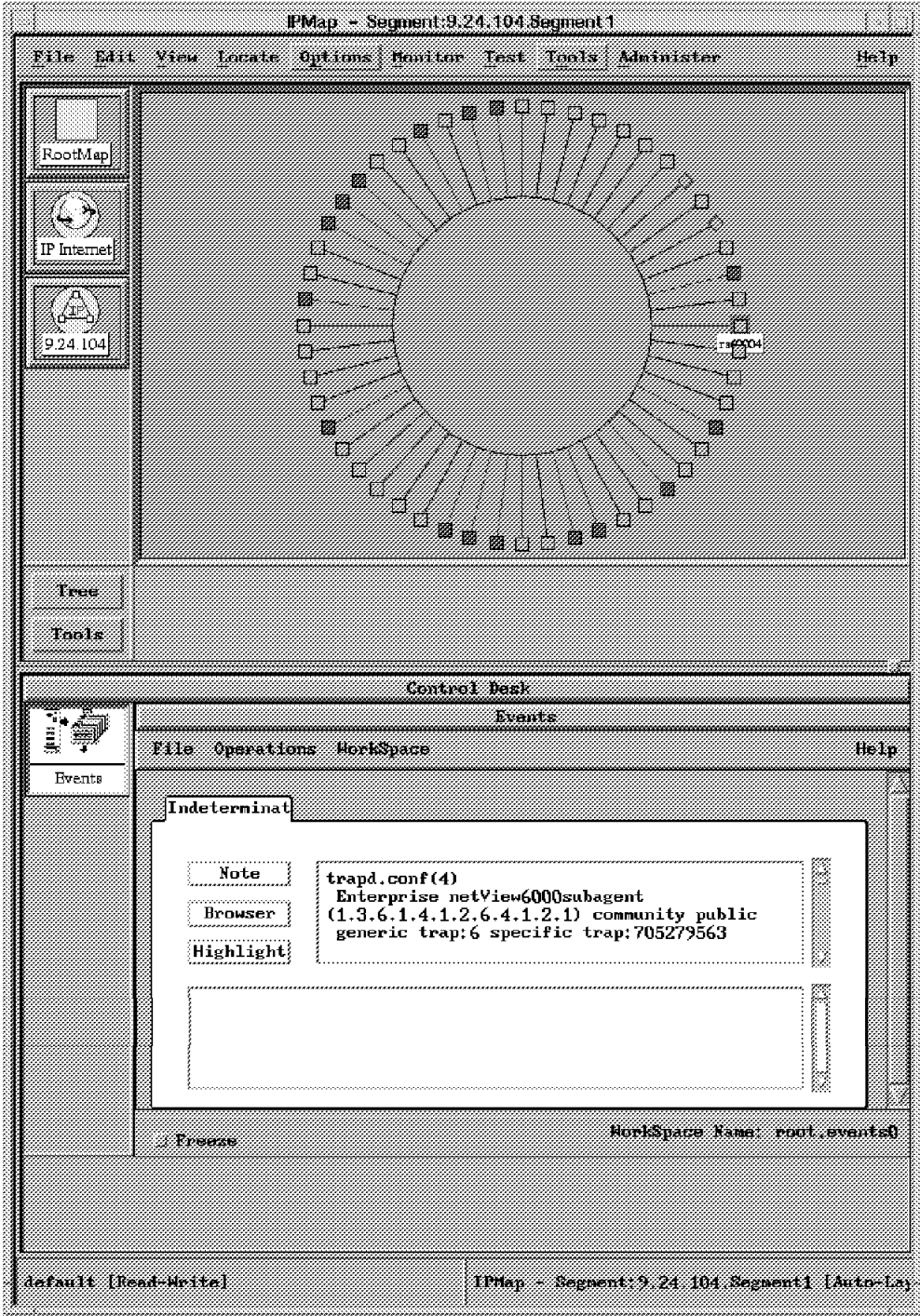


Figure 231. NetView/6000 Main Window

This trap is not yet known to NetView/6000 so no actions will be taken.

In order to configure an action to be taken when this trap occurs we select **Event Configuration** from the NetView/6000 Options menu and then **Trap Customization: SNMP** from the cascaded menu.

The following panel will appear:

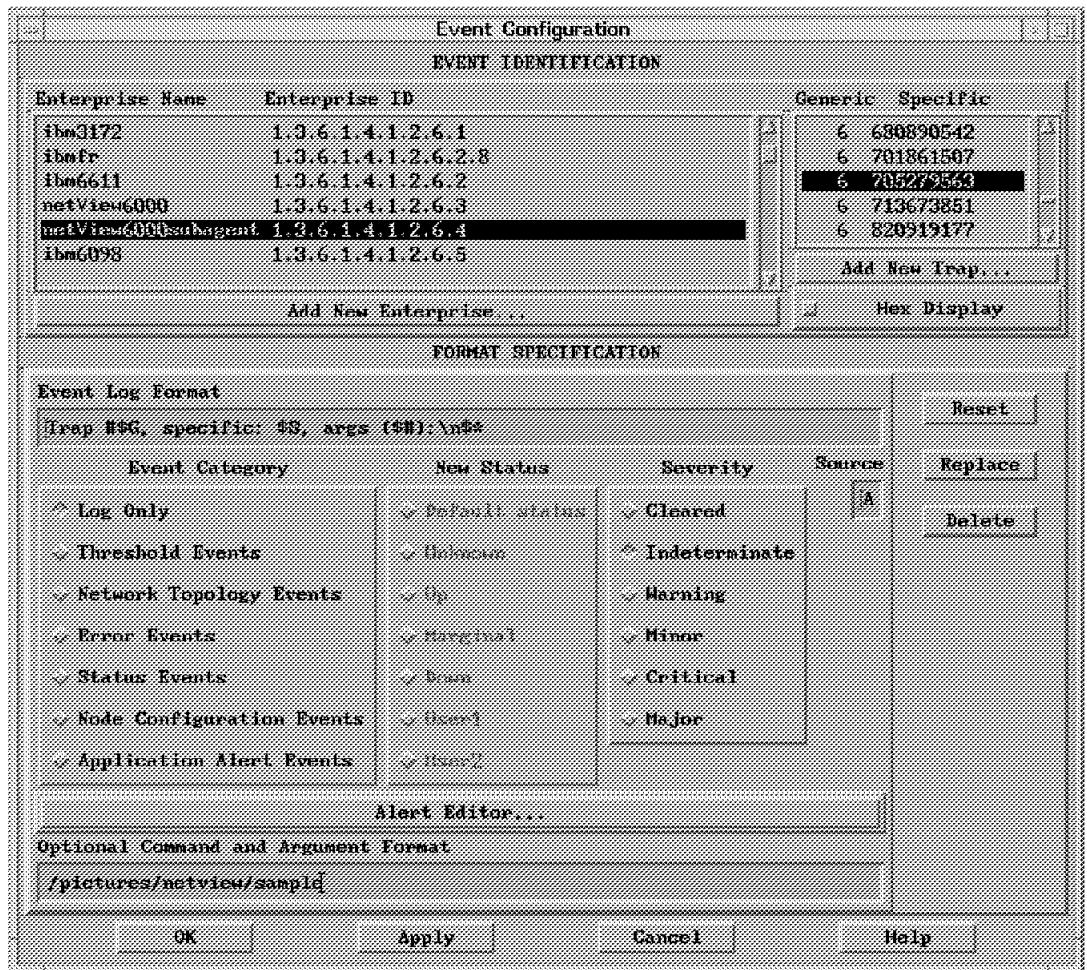


Figure 232. NetView/6000 Event Configuration Window

We do the following to configure a shell script being executed when this event occurs:

- Step 1. Select **netview6000subagent** as the Enterprise Name.
- Step 2. Select the **Add New Trap** push button.
- Step 3. In the Add New Trap window select **enterpriseSpecific** and enter **705279563** as the Specific Trap number.
- Step 4. Select the **Add** push button.
- Step 5. Select **Application Alert Events** from the Event Category field.
- Step 6. Enter **/pictures/netview/sample** in the Optional Command and Argument Format field.
- Step 7. Select the **Replace** push button.
- Step 8. Select the **OK** push button.

This will execute the shellscript **/pictures/netview/sample** every time the trap **705279563** occurs.

For example we can create a file `/pictures/netview/sample` with the following content:

```
#!/bin/ksh
echo "Hello"
```

Then every time the 705279563 trap occurs the message "Hello" will be printed in the window from which NetView/6000 has been started.

---

## 11.4 Configuring NetView DM/6000 Traps

NetView DM/6000 has a default setting for traps to be sent to NetView/6000 whenever a certain NetView DM/6000 event occurs.

The alerts and alert levels are described in the chapter "Customizing Message Alert Logging" in the *NetView DM/6000 User's Guide*.

The information about the trap configuration is stored in the message catalog file for NetView DM/6000. This is a standard UNIX message catalog which is held in the file `/usr/lib/nls/msg/En_US/fndcomsg.cat`.

If you want to change the trap configuration you therefore have to change the information in the message catalog file. To assist you in this task NetView DM/6000 provides two shell scripts, `fndupda1` and `fndlsa1` which can be used to update or display the information held in the message catalog.

To update the message catalog you have to edit the file `alerts.cfg` in the `/usr/lpp/netviewdm/script` directory and then invoke the script `fndupda1`. The `alerts.cfg` file is the standard output of the message catalog.

The following figure shows an excerpt of this file:

```
101 -d FNDCC001E: Failure allocating %1$s bytes of memory.
102 a 4 -m FNDCC002E: Bad signature in change file %1$s.\
Product signature = %2$s; change file signature = %3$s.
103 a 4 -m FNDCC003E: Bad Major Version number in change file\
%1$s. Product version number = %2$s; change file version number = %3$s.
104 -d FNDCC004E: Too few bytes (%1$s) read from the change\
file (%3$s) - expected %2$s bytes.
105 -d FNDCC005E: Error putting data to server (file %3$s):\
expected %1$s bytes; received %2$s bytes.
106 -n FNDCC006E: Could not copy file %1$s to server -\
could not create local file %2$s.
107 -m FNDCC007E: Not enough disk space to transfer %1$s\
from the server - required = %2$s, available = %3$s.
108 a 6 -m FNDCC008E: %1$s A disk full error occurred while\
transferring the contents of %2$s to %3$s, return code = %4$s.
109 a 6 -m FNDCC009E: %1$s A disk full error occurred while\
transferring the contents of %2$s to temporary work file %3$s\
return code = %4$s.

...
```

Figure 233. `/usr/lpp/netviewdm/script/alerts.cfg` File

For every message there is one line in the alerts.cfg file. If there is an a in the second column of the line a trap will be sent to NetView/6000 whenever this message occurs. If a trap is configured the number following the "a" determines the alert level to be used for this trap.

So if you want to configure a trap to be sent for a NetView DM/6000 message which has not been configured yet you just have to edit the alerts.cfg file in the following way:

- Put an a in the second column of the line where the message resides.
- Assign an alert level and put the level number in the third column.

After you have made the changes you can update the message catalog by typing:

```
/usr/lpp/netviewdm/script/fndupdal
```

The fndupdal script does the following:

- Step 1. Converts the message catalog /usr/lib/nls/msg/En\_US/fndcomsg.cat into its source code using the dspcat command and stores the result in /usr/lpp/netviewdm/script/fndcomsg.msg
- Step 2. Updates the file /usr/lpp/netviewdm/script/fndcomsg.msg with the alerts from /usr/lpp/netviewdm/script/alerts.cfg.
- Step 3. Rebuilds the message catalog /usr/lpp/netviewdm/script/fndcomsg.cat from the modified source file using the gencat command.
- Step 4. Moves /usr/lpp/netviewdm/script/fndcomsg.cat to /usr/lib/nls/msg/En\_US/fndcomsg.cat thus replacing the original message catalog.

If the fndupdal script fails this is normally due to an error in the alerts.cfg file. You can then use the following command to generate a new alerts.cfg file:

```
fndlsal >/usr/lpp/netviewdm/script/alerts.cfg
```

The fndupdal script calls the fndupd program to merge the content of alerts.cfg with /usr/lpp/netviewdm/script/fndcomsg.msg. If this program generates an error message you should check the file fndcomsg.msg for possible syntax errors.

**Warning**

Some older versions of the alerts.cfg delivered with NetView DM/6000 may contain an error.

If there is an error in alerts.cfg you will get a message similar to the following when calling fndupdal:

```
Line beginning 4901 a 5 too long
Error: Failed to update message catalog
```

When you get the above error message you can fix it by doing the following:



- Edit the file alerts.cfg.
- Remove all lines from the line where message number 4901 begins to the end of the file.
- Save the alerts.cfg file.

## 11.5 Example Using NetView DM/6000 Traps

We will now show a simple example of how to use a trap generated by NetView DM/6000 in NetView/6000.

We want to change the status of the NetView DM/6000 server node in NetView/6000 whenever NetView DM/6000 is started or stopped.

When NetView DM/6000 is started the status of the NetView DM/6000 server node in NetView/6000 shall be turned to Up which turns the color of the object in the NetView/6000 map to green.

When NetView DM/6000 is stopped the status of the NetView DM/6000 server node in NetView/6000 shall be turned to User1 which turns the color of the object in the NetView/6000 map to pink.

In order to change the status of a node managed by NetView/6000 we have to send a trap to NetView/6000 which tells NetView/6000 to change the status of the object.

The following script will perform this task:

```
#!/bin/ksh
#
Send Trap to NetView/6000 setting the status of NvDM server
S.Uelpenich
#
$1 hostname
$2 status (e.g. Up, Down, User1, User2)

echo "Sending trap..($1)"
/usr/OV/bin/snmptrap localhost\
.1.3.6.1.4.1.2.6.3.1 $1 6 58916871 1\
.1.3.6.1.4.1.2.6.3.1.1.2.0 Integer 14\
.1.3.6.1.4.1.2.6.3.1.1.3.0 OctetString
$1\
.1.3.6.1.4.1.2.6.3.1.1.4.0 OctetString
"Object Status is"\
.1.3.6.1.4.1.2.6.3.1.1.5.0 OctetString
$2
```

Figure 234. /pictures/netview/sample File

The above script uses a trap example which is explained in the NetView/6000 help facility. You can get the help text by pressing the **Help** push button in the NetView/6000 Event Configuration window.

The snmptrap command is used to send the SNMP (Simple Network Management Protocol) trap. The localhost parameter identifies the host where the trap shall

be sent. It is followed by the enterprise ID, the initiating host, the generic and specific trap ID and a time stamp.

The following parameters are variables passed with the traps where every variable consists of an identifier, a type and a value.

Refer to `man snmptrap` for further information about the `snmptrap` command.

In the next step we have to customize the `alerts.cfg` file to send a trap whenever NetView DM/6000 is started or stopped. In order to do so we change the following lines in `alerts.cfg`:

```
1271 a 6 -n FNDCL785I: NetView DM/6000 started successfully.
1272 a 6 -n FNDCL786I: NetView DM/6000 stopping.
```

*Figure 235. alerts.cfg File*

This will send a level 6 trap to NetView/6000 whenever NetView DM/6000 is started or stopped.

To customize the trap in NetView/6000 we select **Event Configuration** from the NetView/6000 Options menu and **Trap Customization: SNMP** from the cascaded menu.

The following panel will appear:

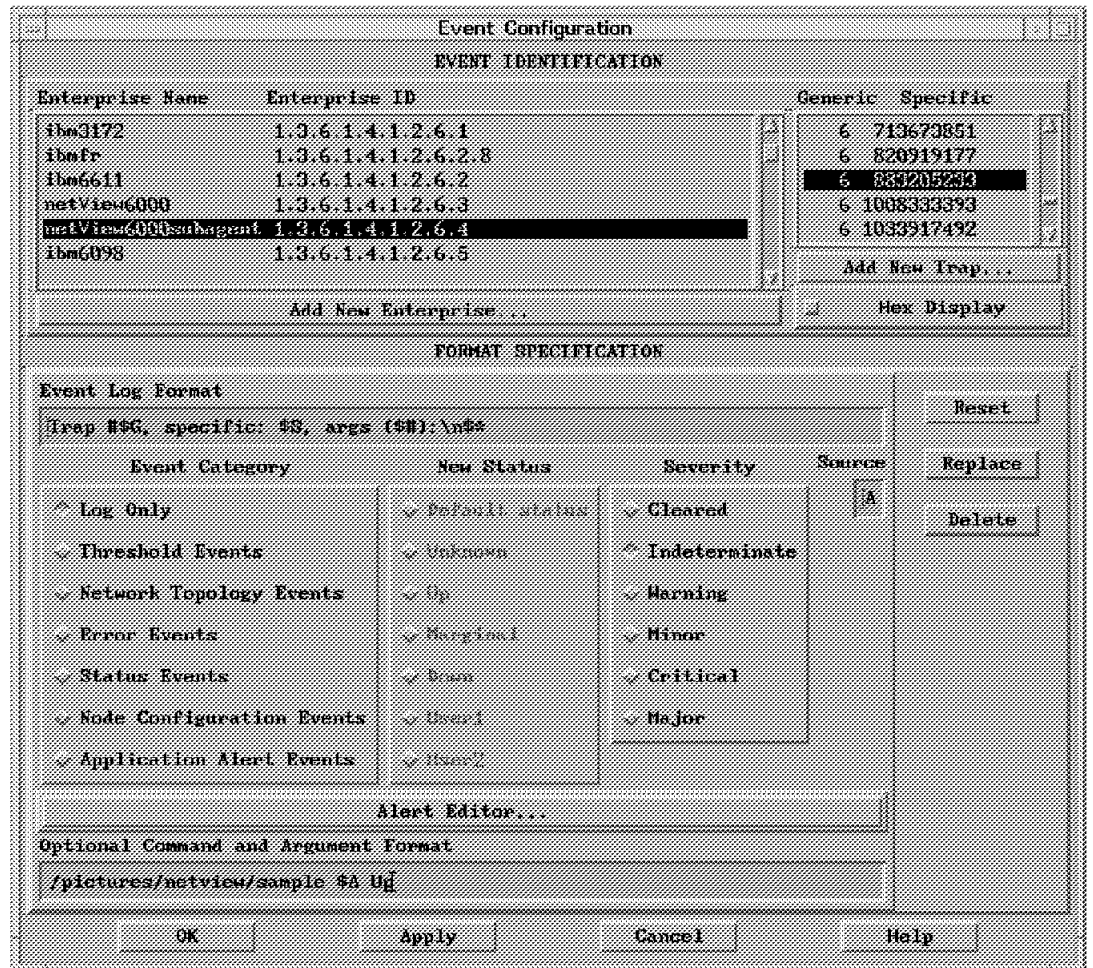


Figure 236. NetView/6000 Event Configuration Window

We do the following to configure the shell script that sends the trap to be executed when the trap occurs:

- Step 1. Select **netview6000subagent** as the Enterprise Name.
- Step 2. Select the **Add New Trap** push button.
- Step 3. In the Add New Trap Window select **enterpriseSpecific** and enter **883205233**. This is the trap number generated by NetView DM/6000 when the server is started.
- Step 4. Select the **Add** push button.
- Step 5. Select **Application Alert Events** from the Event Category field.
- Step 6. Enter **/pictures/netview/sample \$A Up** in the Optional Command and Argument Format field.
- Step 7. Select the **Replace** push button.
- Step 8. Select the **OK** push button.

This will send a trap to NetView/6000 that changes the status of the NetView DM/6000 server node to Up whenever the NetView DM/6000 server is started.

The above example covers the trap that is generated when NetView DM/6000 is started. When NetView DM/6000 is stopped, however, no trap is generated although we have configured it in the alerts.cfg file.

To change the status of the NetView DM/6000 server object when NetView DM/6000 is stopped we add a new script to stop the NetView DM/6000 server which looks like the following:

```
#!/bin/ksh
/pictures/netview/sample rs600011.itso.ral.ibm.com User1
nvdm stop
```

*Figure 237. /bin/nvdm\_stop File*

This shell script will use the script /pictures/netview/sample to generate a trap that changes the status of the NetView DM/6000 server node to User1.

If you want to stop NetView DM/6000 you now have to use nvdm\_stop instead of nvdm stop.

---

## Chapter 12. Writing Inventory Discovery Procedures for UNIX Based Agents

In this chapter we show how to write procedures to create inventory files on NetView DM/6000 targets.

This part is intended for NetView DM/6000 administrators who wish to write their own hardware and software discovery procedures.

It is assumed that the reader is familiar with NetView DM/6000 and the AIX operating system. Also some knowledge of shell programming is recommended.

If you want to write inventory discovery procedures for HP-UX or Solaris we also recommend that you be familiar with those operating systems.

This chapter consists of the following parts:

- Creating a sample hardware inventory for AIX
- Creating a sample software inventory for AIX
- Creating a sample hardware inventory for HP-UX
- Creating a sample software inventory for HP-UX
- Creating a sample hardware inventory for Solaris
- Creating a sample software inventory for Solaris

---

### 12.1 Overview and Objective

Although NetView DM/6000 provides a hardware and software inventory facility it does not contain procedures to automatically create these hardware and software inventories.

Normally you would have to enter the hardware and software installed on your targets manually, either by using the NetView DM/6000 graphical interface or by editing the hardware and software inventory files.

The intent of this chapter is to demonstrate how to create procedures to automatically collect information about the hardware and software installed on your system and put this information into the hardware and software inventory.

The advantages of having automatic inventory discovery procedures are:

- You do not have to provide information manually.
- It is very easy to keep inventory information up-to-date. You just need to run the procedure again.
- Automatic procedures will not produce errors that can occur when entering information manually, for example typographic errors.

---

## 12.2 Creating a Hardware and Software Inventory for AIX

In this part we will create a sample hardware inventory and a sample software inventory for AIX.

### 12.2.1 Creating a Sample Hardware Inventory

NetView DM/6000 provides a method of collecting information about the hardware installed on your target system. This information can then be used for example to check hardware prerequisites when installing a software product.

In this part we will create a shell script to obtain hardware information on our target system.

We will use the following AIX commands:

- ksh (the Korn shell)
- lsattr
- lsdev
- And some basic UNIX commands, like grep, cut and wc

If you are not familiar with these commands you can refer to the man pages for each command, for example `man lsattr`.

#### 12.2.1.1 The Hardware Inventory File

The hardware inventory file is stored at each target system in `/usr/lpp/netviewdm/fndhwinv`. The file format is very simple. Each line contains a keyword followed by a colon (:) and a value, for example:

```
diskspace: 300
```

Comments start with a # sign.

NetView DM/6000 provides no procedures to fill this file so you have to write your own shell scripts to do it.

The steps necessary to populate the hardware inventory file manually would be:

- Step 1. Select which information shall be included in the hardware inventory.
- Step 2. Determine how the information can be obtained on the target system, for example finding an AIX command that can be used to gather the information.
- Step 3. Invoke the command and write down the results.
- Step 4. Find a keyword to be used for every hardware component you wish to include in your inventory.
- Step 5. Put the information into the hardware inventory file, either by editing the file directly or by using the NetView DM/6000 graphical interface.
- Step 6. Update the server database with the new values.

If you do not have an automatic inventory discovery procedure you have to perform the above steps every time you want to update your hardware inventory.

### 12.2.1.2 Writing a Data Collection Procedure

We will create a Korn shell script to collect some hardware information at our system and put this information into the hardware inventory file.

This is just a sample script to show you how you can determine hardware information on your target systems. You may take it as an example and customize it for your own environment.

The script will:

- Determine the number of hard disks on the target system.
- Determine the capacity of each hard disk on the target system.
- Calculate the total hard disk capacity on the target system.
- Collect some information about the system planar including real memory.
- Determine the free space in the rootvg.
- Determine if an X.25 adapter is installed.
- Update the server database.

The sample shell script looks like the following:

```

#!/bin/ksh
#
Program Name:
hw_inv
#
Version:
1.0
#
Author:
Stefan Uelpenich
#
Purpose:
Demonstrate how to create a hardware inventory file
#
#
set up inventory file name
#
INV=/usr/lpp/netviewdm/fndhwin
#
write comment line into inventory file
#
print "#\n# inventory file generated by hw_inv script\n#" >$INV
#
get number of harddisks
use lsdev command to list all resources of type 'disk'
then do a word count on output to determine total number
#
print "\n#\n# Harddisks\n#" >>$INV
num_disk=lsdev -Cc disk | wc -l
print "num_disk: $num_disk" >>$INV
#
make an entry for each disk
list each disk and cut out the field containing the capacity
#
seq=1
for i in `lsdev -Cc disk | cut -f4 -d' '`
do
 print "disk_${seq}_capacity: $i" >>$INV
 seq=$((seq + 1))
done
#
calculate total capacity
#
cap=0
for i in `lsdev -Cc disk | cut -f4 -d' ' | cut -f1 -d'.'`
do
 cap=$((cap + $i))
done

```

Figure 238. Hardware Discovery Script (Part 1)



```

print "disk_capacity: $cap" >>$INV
#
get some things out of lsattr -OEL sys0
including real memory
#
print "#\n# System planar\n#" >>$INV
num=0
value="dummy"
while ["$value" != ""]
do
 num=expr $num + 1
 value=lsattr -OEL sys0 | cut -d':' -f$num
 if [$num -eq 1]
 then
 value=echo $value | cut -c2-20
 fi
 if ["$value" != ""]
 then
 keyword=echo $value | cut -f1 -d ' '
 if ["$keyword" = "dache" -o "$keyword" = "icache" -o "$keyword" \
= "autorestart" -o "$keyword" = "realmem" -o "$keyword" = "conslogin" \
-o "$keyword" = "maxbuf"]
 then
 print "echo $value | cut -f1 -d ' ': echo $valuei \
| cut -f2 -d ' ' >>$INV
 fi
 fi
done
#
get free space in rootvg
#
free=lsvg rootvg | grep FREE | cut -d':' -f3 | cut -f2 -d '(' \
| cut -f1 -d ' '
print "#\n# Free Space in rootvg\n#" >>$INV
print "freeroot: $free" >>$INV
#
check if there is an X.25 adapter installed
#
x25=lsdev -Cc adapter | grep "X.25"
print "#\n# X.25 adapter\n#" >>$INV
if ["$x25" = ""]
then
 print "x_25_adapter: no" >>$INV
else
 print "x_25_adapter: yes" >>$INV
fi
#
refresh server with new database
#
nvdm inv

```

Figure 239. Hardware Discovery Script (Part 2)

To start the script simply type its name, for example `hw_inv`. This will put the collected data into the `/usr/lpp/netviewdm/fndhwinv` file.

The hardware inventory file produced at our sample target looks like the following:

```

#
inventory file generated by hw_inv script
#
#
Harddisks
#
num_disk: 2
disk_1_capacity: 1.0
disk_2_capacity: 1.0
disk_capacity: 2
#
System planar
#
icache: 32K
autorestart: false
realmem: 131072
conslogin: enable
maxbuf: 20
#
Free Space in rootvg
#
freeroot: 412
#
X.25 adapter
#
x_25_adapter: no

```

Figure 240. /usr/lpp/netviewdm/fndhwinv File

### 12.2.1.3 Updating the Hardware Inventory at the Server

Updating the hardware inventory file at your client does not automatically update the hardware inventory kept at the CC Server. The hardware inventory information about the targets will only be updated when the CC Server or the CC Client is started or when you execute the following command at your CC Client:

```
nvdn inv
```

This will send the updated information to the server.

After you have updated the server database do the following to check if the server has received the new configuration:

- Step 1. Log in to the CC Server.
- Step 2. Start the NetView DM/6000 graphical interface.
- Step 3. From the action bar select **Windows**.
- Step 4. From the menu select **Targets**.
- Step 5. In the Targets window select your target.
- Step 6. From the menu bar select **Open**.
- Step 7. From the menu select **Details**.
- Step 8. Select the **Hardware** push button.

For our example target this produces the following output:

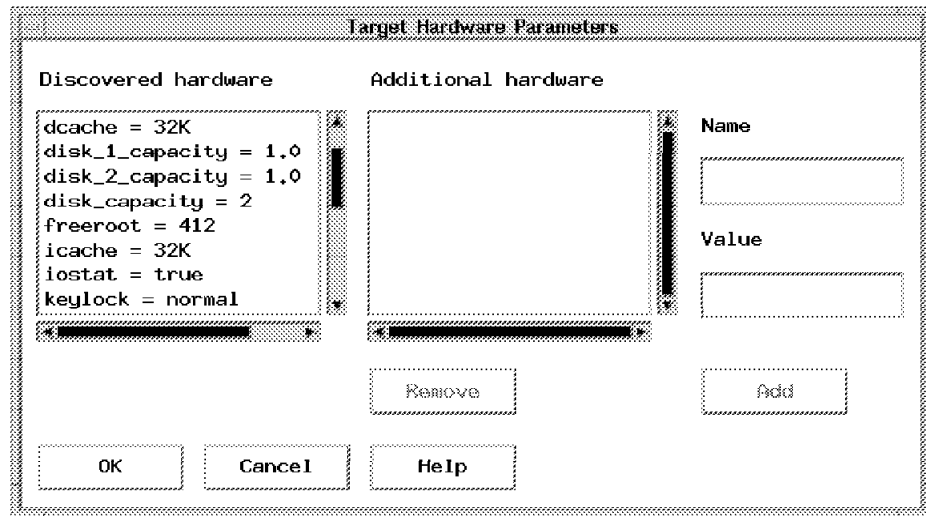


Figure 241. NetView DM/6000 Target Hardware Parameters Window

## 12.2.2 Creating a Sample Software Inventory

NetView Distribution Management Agent/6000 (NetView DMA/6000) provides a method of collecting information about the software installed on your target system. This information will be stored in the catalog at your NetView DM/6000 server.

In this part we will create a shell script to obtain software information on our target system.

We will use the following AIX commands:

- ksh (the Korn shell)
- ls1pp
- awk
- And some basic UNIX commands, like grep, cut and wc

If you are not familiar with these commands you can refer to the man pages for each command, for example `man ls1pp`.

### 12.2.2.1 The Software Inventory File

The software inventory is stored at each target system in the file:

```
/usr/lpp/netviewdm/fndswinv
```

Each product description contains two lines. The first, starting with the `PRODUCT:` keyword, contains the software product name which is identical to the global file name that will be stored in the catalog.

The second line, starting with the `DESCRIPTION:` keyword, contains a description of the software product. This description will also be displayed in the catalog.

Comments start with the `#` sign.

NetView DM/6000 provides no procedures to fill this file so you have to write your own shell scripts to do it.

The steps necessary to populate the software inventory file manually would be:

1. Select which information shall be included in the software inventory.
2. Determine how information can be obtained on the target system, for example by using the `ls1pp` command.
3. Write down the gathered information about the software installed at the target system.
4. Find a global name to be included in the catalog for every software product installed on the target system.
5. Put the information into the software inventory file, either by editing the file directly or by using the NetView DM/6000 graphical interface.
6. Update the server database with the new values.

If you do not have an automatic inventory discovery procedure you have to perform the above steps every time you want to update your software inventory.

### 12.2.2.2 Writing a Data Collection Procedure

If you install NetView DMA/6000 on a RISC System/6000 the `/usr/lpp/netviewdm/fndswinv` file will only contain information about the NetView DMA/6000 product.

If you want to include information about the other software products on your target system which have been installed before NetView DMA/6000 or which have not been installed using NetView DM/6000 you have to provide this information yourself.

For example there is no information in the inventory file about the base operating system or any other IBM products which have been installed without using NetView DM/6000.

#### Note

Even if you use NetView DM/6000 to install a pristine workstation, only information about NetView DMA/6000 will be included in the software inventory file of the target system.

In our example we will write a shell script which collects information about all software products on the target system which can be detected using the `ls1pp` command of AIX, that is products, maintenance levels and Program Temporary Fixes (PTFs).

#### **Naming Conventions:**

All objects to be managed by NetView DM/6000 have to be cataloged with a global name.

In order to create entries for the `fndswinv` file we have to assign a change file type to each of the different software types we wish to include.

These are conventions that we used for our purposes. They are just examples that need to be adapted to the conditions in your environment.

You can use any scheme that is convenient for you and follow the rules for creating NetView DM/6000 global names.

- AIX Licensed Program Products (LPPs) correspond to NetView DM/6000 Refresh files, so the Change Name assigned to them will be **Refresh File**.  
The change name will be *REF.level*.
- AIX maintenance levels correspond to Update files, so the Change Name assigned to them will be **Update File**.  
The change name will be *UPD.oldlevel.newlevel*.
- AIX PTFs correspond to Fix files, so the Change Name assigned to them will be **Fix File**.  
The change name will be *FIX.level.probid*.

The version and release format produced by the `lslpp` command will look like this:

```
03.02.00.00
```

We will only take the first two parts (version and release) to construct the NetView DM/6000 level, so in the above example we would create a level of 32.

For update files we use the AIX version and release as the *oldlevel* and the first three digits of the AIX maintenance level as the *newlevel*. For example if we have an AIX 3250 maintenance level the *oldlevel* would be 32 and the *newlevel* would be 325.

For PTFs we will use the PTF number, for example U423456 as the *probid*.

For the Component name we will use "IBM" followed by the LPP name of the product, for example "IBM.BOS.OBJ". The AIX LPP name will be converted to uppercase.

So, an example inventory entry should look like this:

```
IBM.BOS.OBJ.REF.32
```

The description to be put in the DESCRIPTION field will be taken from the output of the `lslpp` command.

#### **Removing Entries from the Catalog:**

If you create an inventory file on your target and update the server using the `nvdms inv` command the software inventory will be used to update the catalog at your server.

However, it is not easy to remove these new entries again. It will not be enough to remove them from the `/usr/lpp/netviewdm/fndswinv` file at your target and then update the server again. The files will still be in the catalog.

You would have to remove them from the catalog at the server manually which is very time consuming because there may be some hundred files added to the catalog.

Therefore the shell script can also be used to remove the software inventory from the server catalog. For that purpose you have to run it using the keyword `rem` as the command parameter.

In our example the shell script is called `sw_inv`, so you would use the following command to remove the entries:

```
sw_inv rem
```

***Discovering PTFs:***

There will be a lot of PTFs installed on your system, so you may only wish to include LPPs and maintenance levels in your catalog.

If you also want to include PTFs you have to specify the `ptf` keyword as the command parameter.

You would use the following command to include PTFs:

```
sw_inv ptf
```

**Note**

We only select LPPs, maintenance levels and PTFs that are in the state "committed". This is because in the catalog detected software is always marked as "discovered" and is treated in a similar way as software in the status "installed, non removable". So if we did include "applied" software the catalog would not reflect the real state.

```

#!/bin/ksh
#
Program Name:
sw_inv
#
Version:
1.1
#
Author:
Stefan Uelpenich
#
Purpose:
Demonstrate how to create a software inventory file
#
#
#
check command parameter
#
if [$# -gt 1]
then
 print "Syntax : $0 [ptf | rem]"
 exit 99
fi

if ["$1" = "ptf"]
then
 ptf=1
else
 ptf=0
fi

if ["$1" = "rem"]
then
 rem=1
else
 rem=0
fi

WORK_FILE=/tmp/fndswinv
#
make a backup of fndswinv
#
cp /usr/lpp/netviewdm/fndswinv /usr/lpp/netviewdm/fndswinv.$$
#
write workfile header
#
print "#AUTO" >$WORK_FILE

```

Figure 242. Software Discovery Script (Part 1)

```

print "\n#\n# the following lines were added by" >>$WORK_FILE
print "# the automatic software discovery procedure\n#" >>$WORK_FILE
#
get all the software products that are committed
#
first get all product names, descriptions and versions
and store them in /tmp/work

lslpp -cl | grep COMMITTED | cut -d':' -f2,4 >/tmp/work

#
generate an entry for each product (refresh file)
#
process every line in /tmp/work with awk:
First entry in each line is product name
Second is version information which is converted to
single character format to include just version and
release (e.g. 03.02.00.00 becomes 32)
then convert product name to uppercase and spit
out complete entry
#
print "Creating refresh file information..."

awk ' BEGIN { FS=":" ; }
 { split ($1, A, " ") ;
 split (A[2] , B , ".") ;
 version = substr (B[1], 2, 1) ;
 release = substr (B[2], 2, 1) ;
 print ("PRODUCT: IBM."\
toupper (A[1]) ".REF." version release) ;
 print ("DESCRIPTION: " $2) ;
 }
 ' /tmp/work >/tmp/work2

#
now get all maintenance levels
#
use lslpp -m to get maintenance levels
create update level (e.g. 3250 becomes .32.325)
#
print "Getting all maintenance levels. This will take a while..."
>/tmp/work6

lslpp -cm $i | grep C | grep U4 | awk ' BEGIN { FS=":" ; }
{
 version = substr ($4, 1, 2) ;
 level = substr ($4, 1, 3) ;
 desc = substr ($4, 6) ;
 split ($1, A, " ");

```

Figure 243. Software Discovery Script (Part 2)



```

print ("PRODUCT: IBM."\
toupper (A[1]) ".UPD." version "." level);
print ("DESCRIPTION: " desc);
}' >>/tmp/work2

>/tmp/work4
if [$ptf -eq 1 -o $rem -eq 1]
then

#
get all the fixes for each product
use lspp -ch to get history for each product
then cut out those who are committed and are IBM PTFs
#
print "Getting fix information. This will take a while ..."
for i in cat /tmp/work | cut -d' ' -f1
do
echo $i
get only committed fixes
IBM PTFs always start with U4
lspp -ch $i | grep COMMIT | grep U4 >/tmp/work3

if there are fixes then process them using awk

if [wc -l /tmp/work3 | cut -f1 -d'/' -ne 0]
then
awk ' BEGIN { FS=":" ; }
{
split ($4, A, ".") ;
version = substr (A[1], 2, 1) ;
release = substr (A[2], 2, 1) ;
print ("PRODUCT: IBM."\
toupper ($2) ".FIX." version release "." $3);
print ("DESCRIPTION: Selective FIX "\
$3 " for " $2) ;
}
' /tmp/work3 >>/tmp/work4
fi
done
fi

#
if selected, remove catalog entries
#
#

if [$rem -eq 1]
then
printf "Removing detected LPPs from catalog"
for i in grep "PRODUCT:" /tmp/work2 | cut -d':' -f2

```

Figure 244. Software Discovery Script (Part 3)

```

do
 print "Removing $i"
 nvdm delcm $i
 nvdm uncat -f $i
done

for i in grep "PRODUCT:" /tmp/work4 | cut -d':' -f2
do
 print "Removing $i"
 nvdm delcm $i
 nvdm uncat -f $i
done

rm /tmp/work 2>/dev/null
rm /tmp/work2 2>/dev/null
rm /tmp/work3 2>/dev/null
rm /tmp/work4 2>/dev/null
exit 0
fi

paste workfile into NVDM/6000 software inventory file
keep existing entries

search for AUTO keyword

lin=grep -n "#AUTO" /usr/lpp/netviewdm/fndswinv | cut -d':' -f1

if ["$lin" != ""]
then
 lin=expr $lin - 1
 head -$lin /usr/lpp/netviewdm/fndswinv >/tmp/orig
else
 cp /usr/lpp/netviewdm/fndswinv /tmp/orig
fi

cat /tmp/work2 >>$WORK_FILE
cat /tmp/work4 >>$WORK_FILE
cat $WORK_FILE >>/tmp/orig

cp /tmp/orig /usr/lpp/netviewdm/fndswinv

remove temporary work files

rm /tmp/work 2>/dev/null
rm /tmp/work2 2>/dev/null
rm /tmp/work3 2>/dev/null
rm /tmp/work4 2>/dev/null

```

Figure 245. Software Discovery Script (Part 4)

The /usr/lpp/netviewdm/fndswinv file generated by the script may be quite long, so we show only excerpts:

```

#
Entries generated at NVDMA/6000 installation
#
netviewdm6000 base feature software inventory discovery file
PRODUCT: IBM.NDM6000.BASE.REF.11
DESCRIPTION: NetView DM/6000 Base feature
nvd6000 server feature software inventory discovery file
PRODUCT: IBM.NDM6000.SERVER.REF.11
DESCRIPTION: NetView DM/6000 Server feature

...

#AUTO

#
the following lines were added by
the automatic software discovery procedure
#
PRODUCT: IBM.X11DEV.IM.REF.12
DESCRIPTION: AIXwindows Development Sample Input Method Servers
PRODUCT: IBM.X11DEV.MOTIF1.2.OBJ.REF.12
DESCRIPTION: AIXwindows Motif 1.2 Developer Support
PRODUCT: IBM.X11DEV.MOTIF1.2.SRC.REF.12
DESCRIPTION: AIXwindows Motif 1.2 Sample Programs

...

PRODUCT: IBM.X11DEV.IM.UPD.32.325
DESCRIPTION: X11dev X11-R5 Maintenance Level
PRODUCT: IBM.X11DEV.MOTIF1.2.OBJ.UPD.32.325
DESCRIPTION: X11dev X11-R5 Maintenance Level
PRODUCT: IBM.X11DEV.MOTIF1.2.SRC.UPD.32.325
DESCRIPTION: X11dev X11-R5 Maintenance Level
PRODUCT: IBM.X11DEV.OBJ.UPD.32.325
DESCRIPTION: X11dev X11-R5 Maintenance Level

...

```

Figure 246. /usr/lpp/netviewdm/fndswinv File

### 12.2.2.3 Updating the Catalog at the Server

Use the `nvd6000 inv` command at your CC Client to update the catalog at your CC Server.

The following panel shows the catalog at our server after we updated it with the new /usr/lpp/netviewdm/fndswinv from our target:

| NetView DM/6000 Catalog (rs600012)        |                                                   |
|-------------------------------------------|---------------------------------------------------|
| Catalog Selected View System Windows Help |                                                   |
| Global File Name                          | Description                                       |
| IBM.X11DEV.IM.REF.12                      | AIXwindows Development Sample Input Method Server |
| IBM.X11DEV.IM.UPD.32.325                  | X11dev X11-R5 Maintenance Level                   |
| IBM.X11DEV.MOTIF1.2.OBJ.RE                | AIXwindows Motif 1.2 Developer Support            |
| IBM.X11DEV.MOTIF1.2.OBJ.UF                | X11dev X11-R5 Maintenance Level                   |
| IBM.X11DEV.MOTIF1.2.SRC.RE                | AIXwindows Motif 1.2 Sample Programs              |
| IBM.X11DEV.MOTIF1.2.SRC.UF                | X11dev X11-R5 Maintenance Level                   |
| IBM.X11DEV.OBJ.REF.12                     | AIXwindows Development Libraries and Include File |
| IBM.X11DEV.OBJ.UPD.32.325                 | X11dev X11-R5 Maintenance Level                   |
| IBM.X11DEV.SRC.REF.12                     | AIXwindows Development Sample Programs Version    |
| IBM.X11DEV.SRC.UPD.32.325                 | X11dev X11-R5 Maintenance Level                   |
| IBM.X11DEVIEN_US.INFO.REF.                | User Interface Programming Information - US Engli |
| IBM.X11FNT.COREX.FNT.REF.1                | AIXwindows Core X11 Fonts                         |
| IBM.X11FNT.COREX.FNT.UPD.3                | X11fnt X11-R5 Maintenance Level                   |
| IBM.X11FNT.IBM850.PC.FNT.F                | AIXwindows Latin 1 (IBM-850) Fonts                |
| IBM.X11FNT.IBM850.PC.FNT.U                | X11fnt X11-R5 Maintenance Level                   |
| IBM.X11FNT.IS088591.AIX.FN                | AIXwindows Latin 1 (IS08859-1) Fonts              |
| IBM.X11FNT.IS088591.AIX.FN                | X11fnt X11-R5 Maintenance Level                   |
| IBM.X11FNT.IS088592.FNT.RE                | AIXwindows Latin 2 (IS08859-2) Fonts              |
| IBM.X11FNT.IS088592.FNT.UF                | X11fnt X11-R5 Maintenance Level                   |
| IBM.X11FNT.IS088593.FNT.RE                | AIXwindows Latin 3 (IS08859-3) Fonts              |
| IBM.X11FNT.IS088593.FNT.UF                | X11fnt X11-R5 Maintenance Level                   |

Figure 247. NetView DM/6000 Catalog Window

### 12.2.3 Example on Using Hardware and Software Inventory Files

In this part we demonstrate how to use the installed hardware and software on a target as prerequisites for a change file.

We will build a profile for an application which needs SNA Server as a software prerequisite and an X.25 adapter as a hardware prerequisite.

We will need the example hardware and software inventories that we have created previously.

The "application" is just a shell script which displays a message. The script is stored in the file /pictures/inventory/snatool.

It contains just the following line:

```
echo "I am a tool that needs SNA Server and X.25 !!!"
```

In order to create the change file we do the following:

- Step 1. Log into *rs600012* as CC administrator.
- Step 2. Start the NetView DM/6000 graphical interface using `nvdmg` &.
- Step 3. Select **Catalog** from the action bar.
- Step 4. Select **New** from the menu.
- Step 5. Select **Change File** from the cascaded menu.
- Step 6. Select **Refresh** from the next cascaded menu.
- Step 7. Select **Generic**.

The following panel will appear:

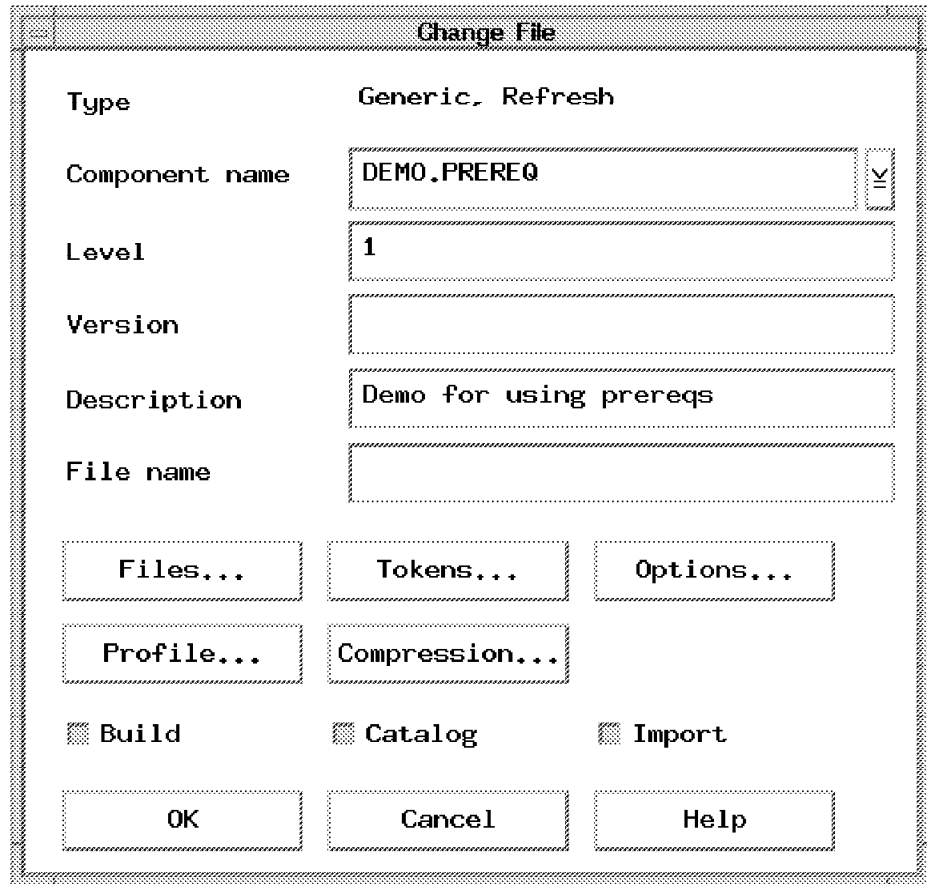


Figure 248. NetView DM/6000 New Change File Window

We do the following:

- Step 1. Enter DEMO.PREREQ as the Component name.
- Step 2. Enter 1 as the Level.
- Step 3. Select the **Files** push button.
- Step 4. Add the file /pictures/inventory/snato01 to the change file.
- Step 5. In the Files window select the **Options** push button.

The following panel will appear:

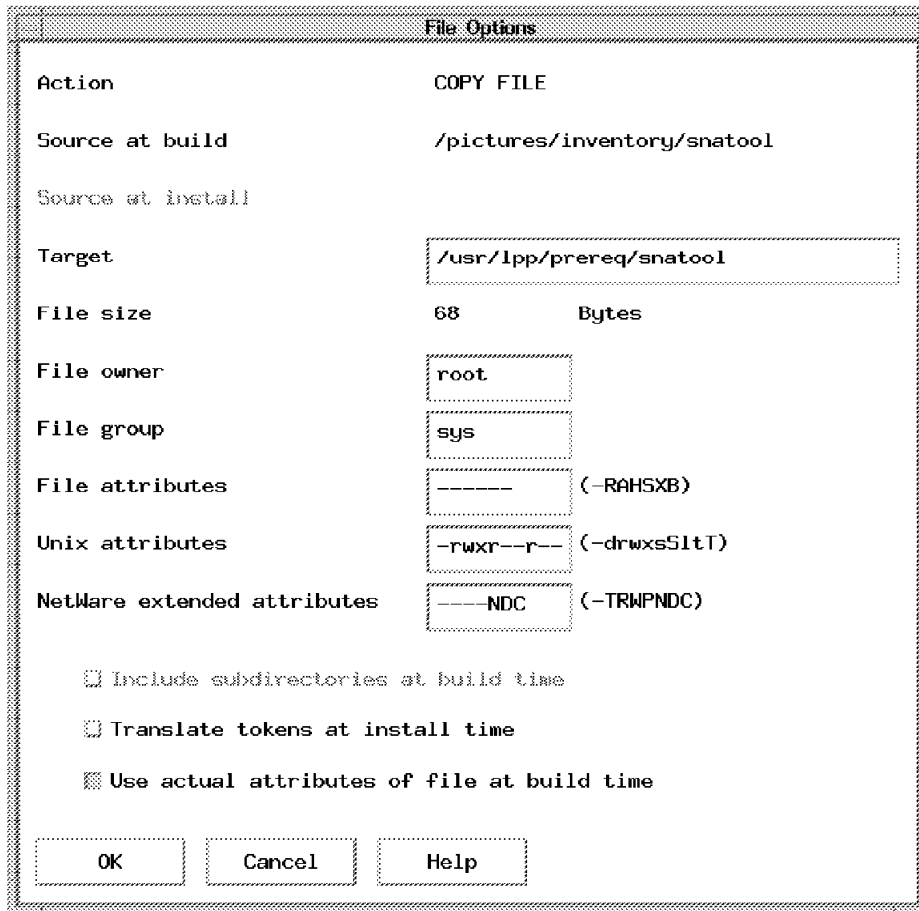


Figure 249. NetView DM/6000 File Options Window

We enter the values as shown and select the **OK** push button.

In the Change File window we select the **Options** push button. In the Options window we add /usr/lpp/prereq/snatoool as the post-install script. Then we select the **Software** push button.

The following panel will appear:

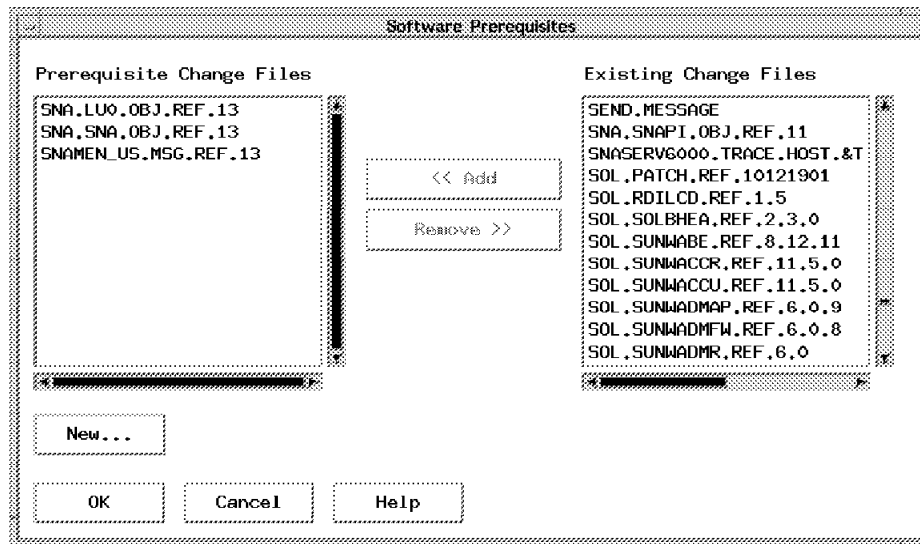


Figure 250. NetView DM/6000 Software Options Window

We add the three files shown above as software prerequisites and select the **OK** push button.

In the Options window we select the **Hardware** push button.

The following panel will appear:

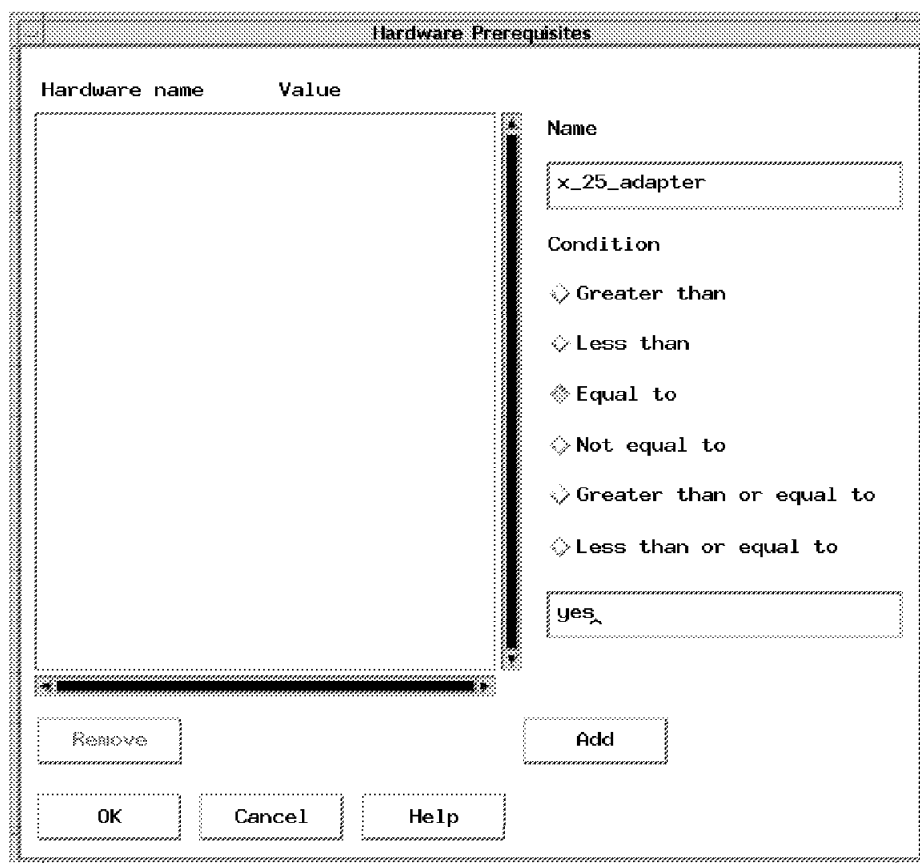


Figure 251. NetView DM/6000 Hardware Options Window

We add the X.25 adapter as a hardware prerequisite using the values shown above and select the **OK** push button.

We select the **OK** push button in the Options window and define /usr/lpp/prereq/snatoool as a post-install script. Then we press the **OK** push button in the Change File window to build and catalog the change file.

The change file profile for our change file looks like the following:

```
GLOBAL NAME: DEMO.PREREQ.REF.1
DESCRIPTION: Demo for using prereqs
CHANGE FILE TYPE: GEN
COMPRESSION TYPE: LZW
SOFTWARE PREREQUISITE: SNA.LUO.OBJ.REF.13
SOFTWARE PREREQUISITE: SNA.SNA.OBJ.REF.13
SOFTWARE PREREQUISITE: SNAMEN_US.MSG.REF.13
HARDWARE PREREQUISITE: x_25_adapter = yes
REBOOT REQUIRED: NO
PACK FILES: NO
SECURE PACKAGE: NO
POST-INSTALL: /usr/lpp/prereq/snatoool
OBJECT:
 SOURCE NAME: /pictures/inventory/snatoool
 TARGET NAME: /usr/lpp/prereq/snatoool
 TYPE: FILE
 ACTION: COPY
 INCLUDE SUBDIRS: NO
```

Figure 252. Change File Profile for Prerequisites Demo

When we try to install the change file on a target which does not have an X.25 adapter installed, the fndlog file will contain the following error messages:

```
FNDSH068E: @rs600012 1994/10/26 2 rs600012 : Install request failed.
Bad alphabetic hardware prerequisite.
Comparison of x_25_adapter == yes failed.
Current value is no.
FNDSH130E: @rs600012 1994/10/26 2 rs600012 : Install request failed.
Hardware prerequisite x_25_adapter on rs600012 for DEMO.PREREQ.REF.1
not satisfied.
```

Figure 253. fndlog File

If the installation succeeds, the request.out file on the target contains the following message:

I am a tool that needs SNA Server and X.25 !!!

The "tool" was started as the post-install script.



---

## 12.3 Creating a Hardware and Software Inventory for HP-UX

In this part we will create a sample hardware inventory and a sample software inventory for HP-UX.

### 12.3.1 Creating a Sample Hardware Inventory

NetView DM Agent for HP-UX provides the same method of collecting hardware information as NetView DMA/6000. Refer to 12.2.1.1, “The Hardware Inventory File” on page 284 for details.

In this part we will create a shell script to obtain hardware information on our target system.

We will use the following HP-UX commands:

- ksh (the Korn shell)
- And some basic UNIX commands, like grep, cut and wc

Also we will use the following HP-UX system files:

- /usr/samlib/kc/params.tx
- /usr/sam/bin/ioparser.sh

If you are not familiar with these commands or files you can refer to the man pages for each command, for example man ksh, and to the appropriate HP documentation.

#### 12.3.1.1 Writing a Data Collection Procedure

We will write a Korn shell script to collect some hardware information at our system and put this information into the hardware inventory file.

This is just a sample script to show how you can determine hardware information on your target systems. You may take it as an example and customize it for your own environment.

The script will:

- Determine the number of hard disks on the target system.
- Collect some information about configurable kernel parameters.
- Update the server database.

The sample script looks like the following:

```

#!/bin/ksh
HP sample hardware inventory
Version: 1.0
Author: Stefan Uelpenich
#
set up inventory file name
#
INV=/usr/lpp/netviewdm/fndhwinv
#
write comment line into inventory file
#
print "#\n# inventory file generated by hphw_inv script\n#" >$INV
#
get number of harddisks
use SAM script to do this
#
print "\n#\n# Harddisks\n#" >>$INV
num_disk=/usr/sam/bin/ioparser.sh DISK | wc -l
print "num_disk: $num_disk" >>$INV
#
get some configurable kernel parameters
#
print "#\n# configurable kernel parameters \n#" >>$INV

semmns=grep semmns /usr/sam/lib/kc/params.tx | cut -d':' -f5
print "\n# maximum number of semaphores \n" >>$INV
print "semmns: $semmns" >>$INV

nflocks=grep nflocks /usr/sam/lib/kc/params.tx | cut -d':' -f5
print "\n# maximum number of file locks \n" >>$INV
print "nflocks: $nflocks" >>$INV

iomemsize=grep iomemsize /usr/sam/lib/kc/params.tx | cut -d':' -f5
print "\n# input/output mem size \n" >>$INV
print "iomemsize: $iomemsize" >>$INV

mesg=grep mesg /usr/sam/lib/kc/params.tx | cut -d':' -f5
print "\n# SYSTEM V messages \n" >>$INV
if ["$mesg" = "1"]
then
 print "mesg: yes" >>$INV
else
 print "mesg: no" >>$INV
fi

nvdm inv

```

Figure 254. Hardware Discovery Script for HP-UX

To start the script simply type its name, for example `hphw_inv` at the HP workstation. This will put the collected data into the `/usr/lpp/netviewdm/fndhwinv` file.

The hardware inventory file produced at our sample target looks like the following:

```
#
inventory file generated by hphw_inv script
#
#
Harddisks
#
num_disk: 2
#
configurable kernel parameters
#
maximum number of semaphores
#
semms: 128
maximum number of file locks
#
nflocks: 200
input/output mem size
#
iomemsize: 40000
SYSTEM V messages
#
mesg: yes
```

Figure 255. `/usr/lpp/netviewdm/fndhwinv` File (HP Workstation)

### 12.3.1.2 Updating the Hardware Inventory at the Server

When you execute `hphw_inv` it will automatically update your CC Server with the new data, since it uses an `nvdv inv` call as the last command.

You can do the following to check if the server has received the new configuration:

- Step 1. Log in to the CC Server.
- Step 2. Start the NetView DM/6000 graphical interface.
- Step 3. From the action bar select **Windows**.
- Step 4. From the menu select **Targets**.
- Step 5. In the Targets window select your target.
- Step 6. From the menu select **Open**.
- Step 7. From the menu select **Details**
- Step 8. Select the **Hardware** push button.

For our example target this produces the following output:

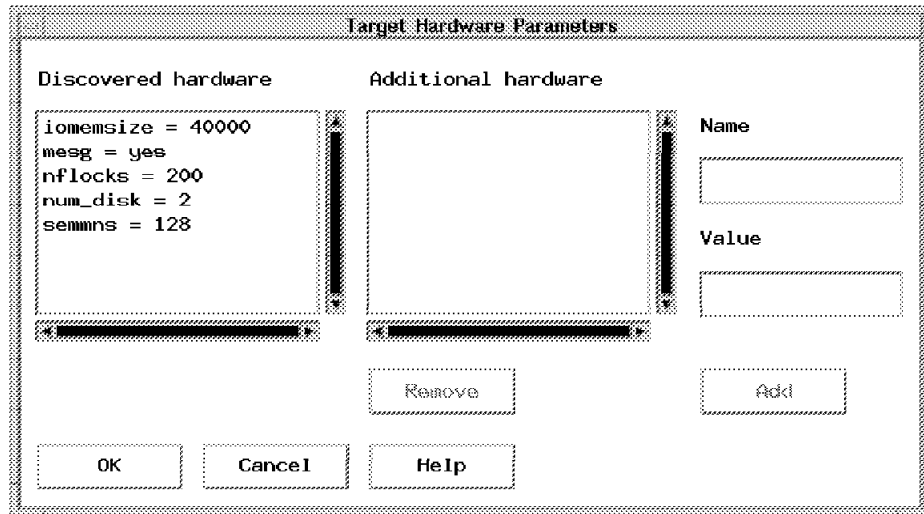


Figure 256. NetView DM/6000 Target Hardware Parameters Window

## 12.3.2 Creating a Sample Software Inventory

NetView DM Agent for HP-UX provides the same method of collecting information about the software installed on a target as NetView DMA/6000. Refer to 12.2.2.1, “The Software Inventory File” on page 289 for a description of the software inventory file.

In this part we will create a shell script to obtain software information on our target system.

We will use the following HP-UX commands:

- ksh (the Korn shell)
- sed
- awk
- And some basic UNIX commands, like grep, cut and wc

Also we will use information stored in the following directories to obtain software information:

- /etc/filesets
- /system

If you are not familiar with these commands and directories you can refer to the man pages for each command, for example man sed, and to the appropriate HP documentation.

### 12.3.2.1 Writing a Data Collection Procedure

If you install NetView DM Agent for HP-UX on an HP workstation the /usr/lpp/netviewdm/fndswinv file will only contain information about the NetView DM Agent for HP-UX product.

If you wish to include other information about the software installed on your HP workstation you have to write your own script to provide this information.

In HP-UX information about the installed software is held in the `/etc/filesets` directory.

HP-UX organizes the software into "filesets" where each fileset represents a product. Each fileset is represented by a file in the `/etc/filesets` directory. This file is an ASCII file which contains an entry for each file belonging to this fileset.

The following figure shows the file `/etc/filesets/SAM` as an example:

```
/usr/sam/lib/uucp/uu.LL
/usr/sam/lib/uucp/uu.da
/usr/sam/lib/uucp/uu.err
/usr/sam/lib/uucp/uu.mo
/usr/sam/lib/uucp/uu.sl
/usr/sam/lib/uucp/uu_comlib.sl

...
```

Figure 257. `/etc/filesets/SAM` File

There is another place in HP-UX where information about the version of each fileset is stored. This information is held in the `/system` directory where every fileset has a subdirectory with its name, for example `/system/SAM`. This subdirectory contains a file `index` which contains information about the product version, the product description, etc.

The following figure shows the file `/system/SAM/index` as an example:

```
INDEX: 1 A.B8.05 1

begin: SAM
mn: 1
fd: Easy-to-use Sys Admin Utility
pn: OS-ADMIN
pd: Recommended Administration Cnds
ff: C
fv: A.B9.05.1I
fs: 10095906
is: PA_RISC_1_0
sys: S700
end: SAM

ENDINDEX: 0x0
```

Figure 258. `/system/SAM/index` File

### 12.3.2.2 Naming Conventions

Unlike in AIX we have just one type of system software in HP-UX. This type corresponds to the Refresh file in NetView DM/6000. So all the entries we create for the software inventory will be of the form:

`HP.productname.REF.level`

The version number stored in the index file contains numbers as well as letters. NetView DM/6000 allows only numerical levels, so we will only use the middle part of this version string to create the NetView DM/6000 level.

Some of the HP filesets may contain plus (+) and minus (-) signs in the filename. NetView DM/6000 does not allow these characters in global names so we will substitute them with an underscore (\_) sign.

The script also provides a method for removing the HP entries from the catalog. If you want to remove the entries from the catalog you can use `rem` as the command parameter for the script, for example:

```
hpsw_inv rem
```

This will remove all entries from the catalog that start with "HP".

```

#!/bin/ksh
#
HP-UX software inventory example
Version 1.0
Author : Stefan Uelpenich
#
#
WORK_FILE=/tmp/fndswinv

if ["$1" = "rem"]
then
 print "Removing HP filesets from catalog..."
 for i in `nvdm lscm "HP*" | grep "Global File Name" \
| cut -d':' -f2`
 do
 print "Removing $i"
 nvdm delcm $i
 nvdm uncat -f $i
 done
 exit
fi

#
write header
#
print "#AUTO\n\n" >$WORK_FILE
print "#\n# the following lines were added by" >>$WORK_FILE
print "# the automatic software discovery script" >>$WORK_FILE
print "#\n" >>$WORK_FILE
#
make backup copy
#
cp /usr/lpp/netviewdm/fndswinv /usr/lpp/netviewdm/fndswinv.$$
#
For each installed product there is a
file in /etc/filesets
#
for i in `ls /etc/filesets 2>/dev/null`
do
 print $i

 #
 # The version,etc is stored in /system/FILESETNAME/index
 # refer to "man fpkg" to get the syntax of the index file
 #

 version=`grep "fv\:" /system/$i/index \
2>/dev/null | cut -d':' -f2`
 descrip=`grep "fd\:" /system/$i/index \

```

Figure 259. Software Discovery Script for HP-UX (Part 1)

```

2>/dev/null | cut -d':' -f2

#
create fndswinv entries
#

if ["$version" != "" -a "$descrip" != ""]
then

 # convert HP-UX Version (x.y.z.w) to level (xyzw)
 # then cut numeric part

 level=echo $version | awk '
BEGIN { FS="." }
 { print ($1 $2 $3 $4) }
 ' | cut -c3-6

 print "PRODUCT: HP.$i.REF.$level" >>$WORK_FILE
 print "DESCRIPTION: $descrip" >>$WORK_FILE
fi
done

#
paste workfile into fndswinv
#

lin=grep -n "#AUTO" /usr/lpp/netviewdm/fndswinv | cut -d':' -f1

if ["$lin" != ""]
then
 lin=expr $lin - 1
 head -$lin /usr/lpp/netviewdm/fndswinv >/tmp/orig
else
 cp /usr/lpp/netviewdm/fndswinv /tmp/orig
fi

cat $WORK_FILE >>/tmp/orig
sed "s/\-/_/g" /tmp/orig >/tmp/orig2
sed "s/\+/_/g" /tmp/orig2 >/usr/lpp/netviewdm/fndswinv

rm $WORK_FILE
rm /tmp/orig
rm /tmp/orig2

```

Figure 260. Software Discovery Script for HP-UX (Part 2)

The /usr/lpp/netview/fndswinv file generated by the script may be quite long, so we show only excerpts:



```

NetView DMA for HP_UX client feature software inventory discovery file
PRODUCT: IBM.NDMHP9K.CLIENT.REF.11
DESCRIPTION: NetView DMA for HP_UX Client Feature
NetView DMA for HP_UX graphical interface software inventory discovery file
PRODUCT: IBM.NDMHP9K.CLGI.REF.11
DESCRIPTION: NetView DMA for HP_UX Graphical Interface
#AUTO

#
the following lines were added by
the automatic software discovery script
#

PRODUCT: HP.ACCOUNTNG.REF.9031
DESCRIPTION: System Accounting
PRODUCT: HP.ACCOUNTNG_MAN.REF.9002
DESCRIPTION: System Accounting Reference
PRODUCT: HP.AGRM.REF.9031
DESCRIPTION: Graphics Resource Manager
PRODUCT: HP.ALLBASE_MAN.REF.9002
DESCRIPTION: Allbase Reference
PRODUCT: HP.AMERICAN.REF.9002
DESCRIPTION: American Language
PRODUCT: HP.ARABIC.REF.9002
DESCRIPTION: Arabic Language
PRODUCT: HP.ARABICW.REF.9002
DESCRIPTION: Western Arabic Language
PRODUCT: HP.ARPA_AUX.REF.9002
DESCRIPTION: DTC Device File Access
PRODUCT: HP.ARPA_AUX_MAN.REF.9002
DESCRIPTION: DDFA Reference
PRODUCT: HP.ARPA_INC.REF.9002
DESCRIPTION: Arpa Protocol Header Files

...

```

Figure 261. /usr/lpp/netviewdm/fndswinv File (HP-UX)

### 12.3.2.3 Updating the Catalog at the Server

Use the `nvdms inv` command at your CC Client to update the catalog at your CC Server.

The following panel shows the catalog at our server after we updated it with the new /usr/lpp/netviewdm/fndswinv file from our target:

| NetView DMA for HP-UX Catalog (rs600012)  |                                  |
|-------------------------------------------|----------------------------------|
| Catalog Selected View System Windows Help |                                  |
| Global File Name                          | Description                      |
| HP.ACCOUNTNG.REF.9031                     | System Accounting                |
| HP.ACCOUNTNG_MAN.REF.9031                 | System Accounting Reference      |
| HP.AGRM.REF.9031                          | Graphics Resource Manager        |
| HP.ALLBASE_MAN.REF.9002                   | Allbase Reference                |
| HP.AMERICAN.REF.9002                      | American Language                |
| HP.ARABIC.REF.9002                        | Arabic Language                  |
| HP.ARABICW.REF.9002                       | Western Arabic Language          |
| HP.ARPA_AUX.REF.9002                      | DTC Device File Access           |
| HP.ARPA_AUX_MAN.REF.9002                  | DDFA Reference                   |
| HP.ARPA_INC.REF.9002                      | Arpa Protocol Header Files       |
| HP.ARPA_MAN.REF.9031                      | Arpa/Berkeley Services Reference |
| HP.ARPA_RUN.REF.9031                      | Arpa Services                    |
| HP.AUDIO.REF.9031                         | Audio client/server subsystem    |
| HP.AUDIO_MAN.REF.9002                     | Audio Subsystem Reference        |
| HP.AUDIT.REF.9002                         | HP Security Monitoring Utility   |
| HP.AUDIT_MAN.REF.9002                     | Auditing Reference               |
| HP.BIF_CMDS_MAN.REF.9002                  | BIF Utilities Reference          |
| HP.BMS.REF.2000                           | Broadcast Message Server         |
| HP.BOOTLIF_DIAG.REF.9002                  | OFFLINE DIAGNOSTICS LIF          |

Figure 262. NetView DM/6000 Catalog Window

## 12.4 Creating a Hardware and Software Inventory for Solaris

In this part we will create a sample hardware inventory and a sample software inventory for Solaris.

### 12.4.1 Creating a Sample Hardware Inventory

NetView DM Agent for Solaris provides the same method of collecting hardware information as NetView DMA/6000. Refer to 12.2.1.1, "The Hardware Inventory File" on page 284 for details.

In this part we will create a shell script to obtain hardware information on our target system.

We will use the following Solaris commands:

- sh (the Bourne shell)
- sysdef
- And some basic UNIX commands, like grep, cut and wc

If you are not familiar with these commands you can refer to the man pages for each command, for example man sysdef.

#### Note

We do not use the Korn shell like on HP-UX and AIX. Instead we use the Bourne shell. The main difference in our scripts is that we use the echo command for output instead of the print command.

### 12.4.1.1 Writing a Data Collection Procedure

We will write a Bourne shell script to collect some hardware information at our system and put this information into the hardware inventory file.

This is just a sample script to show you how you can determine hardware information on your target systems. You may take it as an example and customize it for your own environment.

The script will:

- Determine the stack size on the target system.
- Determine the heap size on the target system.
- Determine the maximum number of file descriptors on the target system.
- Determine the stream message size on the target system.
- Update the server database.

The sample script looks like the following:

```
#!/bin/ksh
Solaris sample hardware inventory
Version: 1.0
Author: Stefan Uelpenich
#
set up inventory file name
#
INV=/usr/lpp/netviewdm/fndhwinv
#
write comment line into inventory file
#
print "#\n# inventory file generated by solhw_inv scriptn#\n" >$INV

#
get some kernel parameters from sysdef command
#

stacksz=sysdef | grep "stack size" | cut -d':' -f1
echo "# stack size\nstacksz: $stacksz" >>$INV
heapsz=sysdef | grep "heap size" | cut -d':' -f1
echo "# heap size\nheapsz: $heapsz" >>$INV
filedesc=sysdef | grep "file descriptors" | cut -d':' -f1
echo "# file descriptors\nfiledesc: $filedesc" >>$INV
strmmsg=sysdef | grep "stream message" | cut -c1-7
echo "# stream message size\nstrmmsg: $strmmsg" >>$INV

nvdn inv
```

Figure 263. Hardware Discovery Script for Solaris

To start the script simply type its name, for example `solhw_inv` at the SUN workstation. This will put the collected data into the `/usr/lpp/netviewdm/fndhwinv` file.

The hardware inventory file produced at our sample target looks like the following:

```
#
inventory file generated by solhw_inv script
#

stack size
stacksz: 800000
heap size
heapsz: 7ffff000
file descriptors
filedesc: 40
stream message size
strmmsg: 65536
```

Figure 264. /usr/lpp/netviewdm/fndhwinv File (SUN Workstation)

### 12.4.1.2 Updating the Hardware Inventory at the Server

When you execute solhw\_inv it will automatically update your CC Server with the new data, since it uses an nvdm inv call as its last command.

You can do the following to check if the server has received the new configuration:

- Step 1. Log in to the CC Server.
- Step 2. Start the NetView DM/6000 graphical interface.
- Step 3. From the action bar select **Windows**.
- Step 4. From the menu select **Targets**.
- Step 5. In the Targets window select your target.
- Step 6. From the action bar select **Open**.
- Step 7. From the menu select **Details**.
- Step 8. Select the **Hardware** push button.

For our example target this produces the following output:

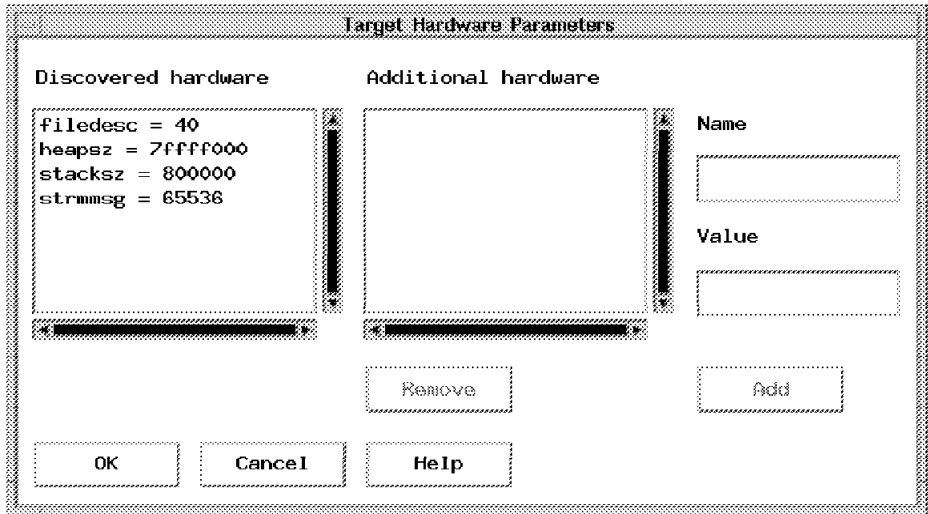


Figure 265. NetView DM/6000 Target Hardware Parameters Window

## 12.4.2 Creating a Sample Software Inventory

NetView DM Agent for Solaris provides the same method of collecting information about the software installed on your target as NetView DMA/6000. Refer to 12.2.2.1, “The Software Inventory File” on page 289 for a description of the software inventory file.

In this part we will create a shell script to obtain hardware information on our target system.

We will use the following Solaris commands:

- sh (the Bourne shell)
- nawk
- pkginfo
- And some basic UNIX commands, like grep, cut and wc

If you are not familiar with these commands you can refer to the man pages for each command, for example man pkginfo.

### Note

On Solaris we have to use the nawk command to perform the same functions for which we use the awk command on AIX and HP-UX.

### 12.4.2.1 Writing a Data Collection Procedure

If you install NetView DM Agent for Solaris on a SUN workstation the /usr/lpp/netviewdm/fndswinv file will only contain information about the NetView DM Agent for Solaris product.

If you wish to include other information about the software installed on your SUN workstation you have to write your own script to provide this information.

Solaris organizes the software into “packages,” where each package represents a product. Information about the products installed on the SUN workstation can be obtained by using the pkginfo command. If you use pkginfo without parameters it will display all installed packages. If you supply a product name as the command parameter it will display detailed information about this package, including a description and the version number.

The following figure shows the output for the command pkginfo -l SUNWtoo:

```
PKGINST: SUNWtoo
NAME: Programming Tools
CATEGORY: system
ARCH: sparc
VERSION: 11.5.0,REV=2.0.18
BASEDIR: /
VENDOR: Sun Microsystems, Inc.
DESC: Programming Tools
PSTAMP: tenstar930927093700
INSTDATE: Sep 30 1994 11:27
HOTLINE: Please contact your local service provider
STATUS: completely installed
FILES: 18 installed pathnames
 5 shared pathnames
 5 directories
 12 executables
 649 blocks used (approx)
```

Figure 266. Output from pkginfo Command

**12.4.2.2 Naming Conventions**

Unlike in AIX we have just one type of system software in Solaris. This type corresponds to the Refresh file in NetView DM/6000. So all entries we create for the software inventory will be of the form:

```
SOL.productname.REF.level
```

The script also provides a method of removing the Solaris entries from the catalog. If you want to remove the entries from the catalog you can use rem as the command parameter for the script, for example:

```
solsw_inv rem
```

This will remove all entries from the catalog that start with "SOL".

```

#!/bin/sh
#
Solaris software inventory example
Version 1.0
Author : Stefan Uelpenich
#
#
WORK_FILE=/tmp/fndswinv

if ["$1" = "rem"]
then
 echo "Removing HP filesets from catalog..."
 for i in `nvdm lscm "SOL*" | grep "Global File Name" \
| cut -d':' -f2`
 do
 echo "Removing $i"
 nvdm delcm $i
 nvdm uncat -f $i
 done
 exit
fi

#
write header
#
echo "#AUTO\n\n" >$WORK_FILE
echo "#\n# the following lines were added by" >>$WORK_FILE
echo "# the automatic software discovery script" >>$WORK_FILE
echo "#\n" >>$WORK_FILE
#
make backup copy
#
cp /usr/lpp/netviewdm/fndswinv /usr/lpp/netviewdm/fndswinv.$$
#
get all installed products
#
for i in `pkginfo -x | cut -d' ' -f1`
do
 echo $i

 #
 # The version and description
 # can be obtained using the pkginfo -l command
 #

 descrip=`pkginfo -l $i | grep DESC: | cut -d':' -f2`
 level=`pkginfo -l $i | grep VERSION: | cut -d':' -f2 \
| cut -d',' -f1`

```

Figure 267. Software Discovery Script for Solaris (Part 1)

```

product=echo $i | nawk '{ print (toupper ($0)) }'

rip off blanks

level=echo $level

#
create fndswinv entries
#
echo "PRODUCT: SOL.$product.REF.$level" >>$WORK_FILE
echo "DESCRIPTION: $descrip" >>$WORK_FILE

done

#
paste workfile into fndswinv
#

lin=grep -n "#AUTO" /usr/lpp/netviewdm/fndswinv | cut -d':' -f1

if ["$lin" != ""]
then
 lin=expr $lin - 1
 head -$lin /usr/lpp/netviewdm/fndswinv >/tmp/orig
else
 cp /usr/lpp/netviewdm/fndswinv /tmp/orig
fi

cat $WORK_FILE >>/tmp/orig
sed "s/\-/_/g" /tmp/orig >/tmp/orig2
sed "s/\+/_/g" /tmp/orig2 >/usr/lpp/netviewdm/fndswinv

rm $WORK_FILE
rm /tmp/orig
rm /tmp/orig2

```

Figure 268. Software Discovery Script for Solaris (Part 2)

**Note**

The pkginfo command we use in the script to obtain software information takes a pretty long time to run. So it may take some minutes to run the script.

The /usr/lpp/netviewdm/fndswinv file generated by the script may be quite long, so we show only excerpts:



```

NetView DMA for SOLARIS client feature software inventory discovery file
PRODUCT: IBM.NDMSOLARIS.CLIENT.REF.110
DESCRIPTION: NetView DMA for SOLARIS Client Feature
#AUTO

#
the following lines were added by
the automatic software discovery script
#

PRODUCT: SOL.RDILCD.REF.1.5
DESCRIPTION: Britelite LCD Driver
PRODUCT: SOL.SOLBHEA.REF.2.3.0
DESCRIPTION: Solbourne Architecture_Dependent Header Files
PRODUCT: SOL.SUNWABE.REF.8.12.11
DESCRIPTION: Solaris 2.3 User AnswerBook Online System Documentation
PRODUCT: SOL.SUNWACCR.REF.11.5.0
DESCRIPTION: System Accounting, (Root)
PRODUCT: SOL.SUNWACCU.REF.11.5.0
DESCRIPTION: System Accounting, (Usr)
PRODUCT: SOL.SUNWAPPPR.REF.11.5.0
DESCRIPTION: PPP/IP Asynchronous PPP daemon configuration files
PRODUCT: SOL.SUNWAPPPU.REF.11.5.0
DESCRIPTION: PPP/IP Asynchronous PPP daemon and PPP login service
PRODUCT: SOL.SUNWARC.REF.11.5.0
DESCRIPTION: Archive Libraries
PRODUCT: SOL.SUNWAST.REF.11.5.0
DESCRIPTION: Automated Security Enhancement Tools

...

```

Figure 269. /usr/lpp/netviewdm/fndswinv File (Solaris)

### 12.4.2.3 Including Patches in the Software Inventory

In our sample script we include only products in our software inventory file.

If there are patches installed on your system, you can use the following command to obtain patch information:

```
showrev -p
```

You can then use the output of this command to generate entries for the software inventory.

### 12.4.2.4 Updating the Catalog at the Server

Use the `nvd m inv` command at your CC Client to update the catalog at your CC Server.

The following panel shows the catalog at our server after we have updated it with the new /usr/lpp/netviewdm/fndswinv file from our target:

| NetView DM/6000 Catalog (rs600012)        |                                                        |
|-------------------------------------------|--------------------------------------------------------|
| Catalog Selected View System Windows Help |                                                        |
| Global File Name                          | Description                                            |
| SOL.RDILCD.REF.1.5                        | Britelite LCD Driver                                   |
| SOL.SOLBHEA.REF.2.3.0                     | Solbourne Architecture Dependent Header Files          |
| SOL.SUNWABE.REF.8.12.1                    | Solaris 2.3 User AnswerBook Online System Documentatio |
| SOL.SUNWACCR.REF.11.5.                    | System Accounting. (Root)                              |
| SOL.SUNWACCU.REF.11.5.                    | System Accounting. (Usr)                               |
| SOL.SUNWADMAP.REF.6.0.                    | This package contains tools for performing system and  |
| SOL.SUNWADMFW.REF.6.0.                    | This package contains the developer tools required to  |
| SOL.SUNWADMR.REF.6.0                      | Root programs and scripts for initializing system inst |
| SOL.SUNWAPPPR.REF.11.5                    | PPP/IP Asynchronous PPP daemon configuration files     |
| SOL.SUNWAPPPU.REF.11.5                    | PPP/IP Asynchronous PPP daemon and PPP login service   |
| SOL.SUNWARC.REF.11.5.0                    | Archive Libraries                                      |
| SOL.SUNWAST.REF.11.5.0                    | Automated Security Enhancement Tools                   |
| SOL.SUNWAUDCR.REF.11.6                    | This package contains the device driver for the CS4231 |
| SOL.SUNWAUDCU.REF.11.6                    | CS4231 header files and man pages                      |
| SOL.SUNWAUDIO.REF.3.0                     | Audio binaries for SunOS 5.3                           |
| SOL.SUNWAUDMO.REF.3.0                     | Audio demo programs, libraries, and sounds for SunOS 5 |
| SOL.SUNWBCP.REF.11.5.0                    | Binary Compatibility                                   |
| SOL.SUNWBMAC.REF.1.5                      | SunFastEthernet                                        |
| SOL.SUNWBNUR.REF.11.5.                    | Networking UUCP Utilities, (Root)                      |
| SOL.SUNWBNUU.REF.11.5.                    | Networking UUCP Utilities, (Usr)                       |
| SOL.SUNWBT00L.REF.11.5                    | Bundled CCS tools                                      |

Figure 270. NetView DM/6000 Catalog Window

## 12.5 General Rules for Writing Inventory Discovery Procedures

In the previous sections we have shown examples of how to write hardware and software inventory discovery procedures for AIX, HP-UX and Solaris.

In this part we try to define some general rules for writing inventory discovery procedures:

- If you write an inventory discovery procedure for a UNIX system this will normally be a shell script. Since the default shell differs between the different UNIX systems we recommend that you define the shell you want to use at the beginning of the script.
- Depending on which shell you want to use, include one of the following statements as the first line in your script:

```
#!/bin/ksh for the Korn Shell
#!/bin/bsh or #!/bin/sh for the Bourne Shell
#!/bin/csh for the C Shell
```

### Note

Not all of the above shells will be available on every UNIX system. For example in SunOS there is no Korn Shell. That means, if you want to use generalized procedures for several UNIX systems, you have to choose the appropriate shell.

- If you write software inventory discovery procedures you have to produce global names to be included in the /usr/lpp/netviewdm/fndswinv file.

Make sure that the names you produce obey the following rules:

- Global names consist of uppercase letters.

- Global names may only contain allowed letters, for example no plus (+) or minus (-) signs.
- Software levels must not contain any non-numeric characters.

**Note**

If you generate global names which are not allowed to be included in your software inventory file, NetView DM/6000 will refuse to add those entries to the catalog. The inventory update will fail.

- When you plan to write a software inventory discovery procedure you should first determine if the platform you write for supports software version control. You can then use this method to generate the input for the software inventory file.

For example in AIX we used the `lslpp` command to display the AIX system software packages and used the output to generate the software inventory file.

If there is no software version control integrated in your operating system, you have to supply your own method to detect the versions of products.

For example in DOS or OS/2 you can use the DATE field in the output of the DIR command to differentiate between different versions of a product. Or you may use directory names to detect different versions.

For example Version 2.0 of a product may be stored in a directory C:\PROD20 while Version 3.1 is stored in a directory C:\PROD31.

- The procedures we developed in previous sections will only detect software which was installed using the corresponding installation tool, for example `installp` on AIX and `update` on HP-UX.

If there is software installed on your system which was not installed using these tools, you have to extend your discovery scripts. For example most databases provide their own installation script.

- Hardware inventory discovery procedures are generally easier to write than software discovery procedures because of the following reasons:
  - You do not need to care about global names.
  - Hardware information can be obtained on every operating system.

To generate an entry for the hardware inventory file you just need to give a name to the hardware resource and provide a script to detect the specific hardware component.

As an interim solution you could scan the file C:\CONFIG.SYS on a DOS target for a specific device driver to determine if a certain graphics adapter or hard disk card is installed.

The hardware inventory file may also be used for example to provide information on how much disk space there is left on the target system. On AIX this can be detected using the `lsvg` command while in DOS you might use the free space left on the C: drive.

- When you use components in your hardware inventory file which change their value rapidly you have to ensure that the server is updated before you use that value as a prerequisite for a request.

For example the number of hard disks on your target system may not change very often while the free disk space could change very frequently.

**We recommend:**

When writing hardware discovery procedures you should limit the gathering of information only to the components you actually need. Many of the commands used to get information about installed hardware produce a lot of output. To avoid confusion you should filter this output and get only the information that is really useful.

---

## Chapter 13. Writing User Exits

In this part we will show how to write user exits and integrate them into NetView DM/6000.

---

### 13.1 Overview and Objective

We will demonstrate some examples of how user exits can be used to include your own functions into NetView DM/6000.

The variety of user exits that are available is described in Appendix F of the *NetView DM/6000 User's Guide*.

You can tailor the examples to fit to your needs.

It is assumed that the reader is familiar with the AIX operating system, with NetView DM/6000 and with the C programming language. It is intended that you read 13.2, "Introduction to User Exits" through 13.4, "Writing a Sample User Exit for `sx_server_report`" on page 326 to understand the basics.

---

### 13.2 Introduction to User Exits

User exits are functions that are called by the NetView DM/6000 code. When NetView DM/6000 is installed these functions contain no code, but they are called by the NetView DM/6000 program every time certain functions are started or completed.

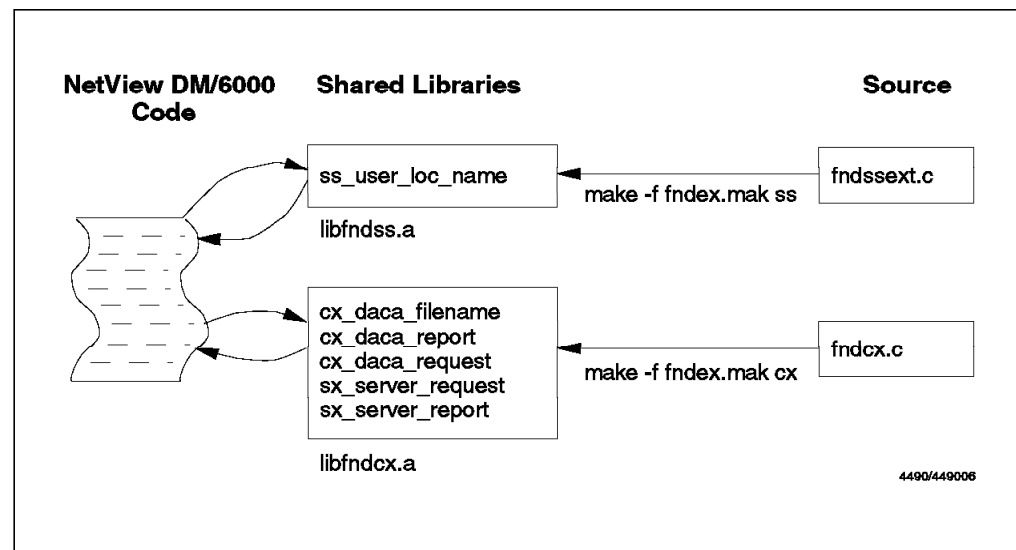


Figure 271. NetView DM/6000 User Exits

Since the source code of the function definitions is delivered with NetView DM/6000 you have the chance to fill the functions with your own code and influence the behavior of NetView DM/6000 to a certain degree.

In order to be accessed by NetView DM/6000, the functions are compiled into two shared library files (`libfndss.a` and `libfndcx.a`). A make file (`fndex.mak`) is

delivered with the product which performs all necessary steps to compile the functions and link them into the shared libraries.

Refer to Appendix F of the *NetView DM/6000 User's Guide* for a detailed description of user exits.

---

### 13.3 Compiling the Sample User Exits

There are samples for the use of every user exit included in NetView DM/6000.

All files you need reside in the directory:

```
/usr/lpp/netviewdm/src
```

Some user exits are only available on NetView DM/6000 servers while others are also available on NetView DMA/6000. In our examples we will demonstrate all user exits on a NetView DM/6000 server.

In this part we will build the shared libraries to contain the user exit samples delivered with the product. The sample user exits write a report message for every function call into a file on your system.

Before we can compile and link the examples, the source files have to be modified to include the sample code.

All function definitions for the user exits are stored in the files `fndcx.c` and `fndsxt.c`. We will use the user exits in `fndcx.c` to demonstrate the sample user exits delivered with NetView DM/6000.

The source file `fndcx.c` contains the following lines:

```
/*
define DVA_TEST_USER_EXITS
*/
```

Replace these lines with the following line:

```
#define DVA_TEST_USER_EXITS
```

This will include the sample code for all user exit examples in `fndcx.c`.

We can now build the shared libraries. For that purpose we use the make file `fndex.mak` by typing the following command:

```
make -f fndex.mak
```

This will compile the source files and build the shared libraries.

To activate the user exits for NetView DM/6000 we have to stop and restart NetView DM/6000.

First we stop NetView DM/6000 using the command:

```
nvdn stop
```

Before we restart NetView DM/6000 we have to set the environment variable `fnduex_trc`. This variable contains the full path name of the file where the sample user exit code saves its messages.

To set the environment variable we type:

```
fnduex_trc=/tmp/trace
export fnduex_trc
```

Now we can start NetView DM/6000 again, using the following command:

```
nvdn start
```

When NetView DM/6000 is started we start the graphical interface using `nvdmg` & and submit some requests. The sample user exit code will place a comment for each request in the file `/tmp/trace`.

The following figure shows some messages generated by the sample user exits:

```
Hallo, I'm the sx_server_request user exit!

Sequence Number is: 5
Originator is: rs600012
Destination is: hpitso
Source is:
User is: root

Bye!

Hallo, I'm the sx_server_report user exit!

Sequence Number is: 6
Originator is: rs600012
Destination is: hpitso
Source is:
User is: root

Bye!
```

Figure 272. `/tmp/trace` File

---

## 13.4 Writing a Sample User Exit for `sx_server_report`

In this part we will write a sample program for the `sx_server_report` user exit. This user exit is called every time the server receives a report from a target.

We will write the C code to pop up a window on your desktop every time the `sx_server_report` user exit is called.

This window shall contain the message:

Request # xxx has completed.

Where xxx is the sequence number of the request.

**Note**

Before you make any changes to the source files, like `fndcx.x` or `fndssex.c` you should make a backup copy of those files.

If you are not really experienced with C and how to access data structures we recommend that you read 13.8, "Accessing Report and Request Information" on page 335 before you continue. We replace the function `sx_server_report` in the file `fndcx.c` with the following code:



```

DC_VOID sx_server_report(RR_INFO *report_ptr)
/*
 User Exit Example 1
 A window will pop up, whenever a
 request is completed.

 Author: S.Uelpenich
*/

{
 char window_buffer[256]; /* Buffer for window data */
 char exec_buffer[512]; /* Buffer for executing command */
 char *disp; /* DISPLAY name */
 FILE *trcfile;

 /* check if DISPLAY variable is set */

 disp = getenv ("DISPLAY");

 /* if not set, set it to unix:0 */

 if (!strcmp(disp,"")) disp=(char *)strdup("unix:0");

 /* prepare message */

 sprintf(window_buffer,"Request # %ld has completed.",\
report_ptr->seq_no);

 /* prepare command */
 /* we use the X-Windows command mfyi to display message on desktop */

 sprintf(exec_buffer,"/usr/bin/X11/mfyi -title \"User Exit\"\
-display %s -center \"%s\"",disp,window_buffer);
 system(exec_buffer);

 /* write command line to /tmp/trace for debugging */

 trcfile=fopen("/tmp/trace","w+");
 if(trcfile!=NULL) {
 fprintf(trcfile,"%s",exec_buffer);
 fclose(trcfile);
 }
}

```

Figure 273. Sample Code for User Exit `sx_server_report`

Our sample function will use the X-Windows program `mfyi` to display a window on the screen, whenever a request completes.

To compile our source file and build the libraries we type the following:

```
make -f fndex.mak
```

In order for the new user exit to become effective we stop NetView DM/6000 and then restart it again.

After NetView DM/6000 has been started we start the graphical interface using the `nvdmg` & command. Then we submit, for example an install request.

After a while the following window will pop up on the desktop, indicating that the request has been completed:

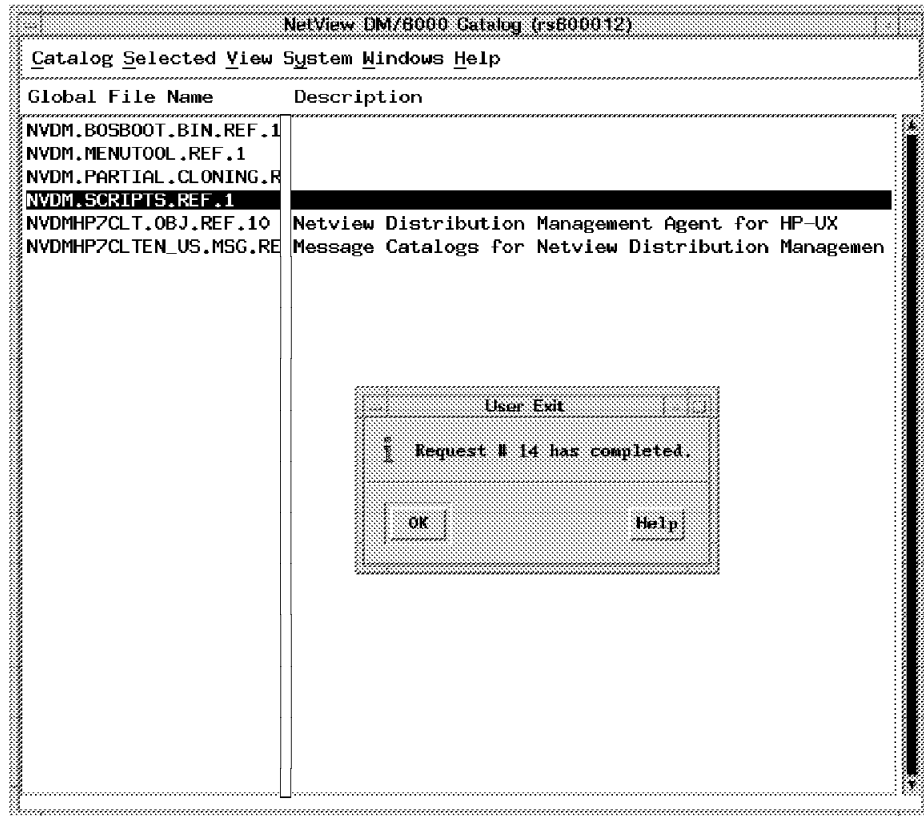


Figure 274. User Exit Example `sx_server_report`

To remove the user exit code again, you can rebuild the shared libraries using the empty user exit functions delivered with NetView DM/6000.

This user exit might be used to:

- Prepare your log file, for example, for controlling uses.
- Start another command dependent on the return status of the report.

## 13.5 Writing a Sample User Exit for `ss_user_loc_name`

In this part we will write a sample program for the `ss_user_loc_name` user exit. This user exit is called whenever a local name is needed. For example it is called when you build a new change file without supplying a local name.

Unlike the other user exits `ss_user_loc_name` is not passed a pointer to a request structure when it is called. Instead it has a pointer to a character array as its parameter.

This character array contains a default local name which NetView DM/6000 generates by concatenating the `$(REPOSITORY)` token and the global file name. If

you want to change this name, you just need to change the character array which is passed to the function.

We will write a sample program which will ask the user for a local file name, whenever NetView DM/6000 requests a local file name. The user will be prompted by a window that pops up at the desktop to enter the local file name. The default name shall be the name which is generated by NetView DM/6000.

We replace the function `ss_user_loc_name` in the file `fndssect.c` with the following code:

```

#include <fndhdr.h>
#include <fndssect.h>
#include <stdio.h>
#include <stdlib.h>

DC_SHORT ss_user_loc_name(DC_CHAR * local_name)
{
/*
 User Exit Example 2
 A window will pop up,
 asking user for local name

 Author: S.Uelpenich
*/

char buffer[256]; /* Buffer for string */
char exec_buffer[512]; /* Buffer for executing command */
char *disp; /* DISPLAY name */
FILE *trcfile;

/* check if DISPLAY variable is set */

disp = getenv ("DISPLAY");

/* if not set, set it to unix:0 */

if (!strcmp(disp,"")) disp=(char *)strdup("unix:0");

/* prepare command */
/* we use the X-Windows command mgti to get name */

sprintf(exec_buffer, "/usr/bin/X11/mgti -title \"User Exit 2\" \"\
-display %s -center -prompt \"Enter local name\" \"%s\" \"\
>/tmp/work\", disp, local_name);
system(exec_buffer);

/* after execution answer is stored in /tmp/work file */

trcfile=fopen("/tmp/work", "r");
if(trcfile!=NULL) {
 fscanf(trcfile, "%s", local_name);
 fclose(trcfile);
}
return(0);
}

```

Figure 275. Sample Code for User Exit `ss_user_loc_name`

Our sample function will use the X-Windows program `mgti` to pop up a window at the desktop and ask the user for a local file name.

To compile the source file and build the shared libraries we type the following:

```
make -f fndex.mak ss
```

In order for the new user exit to become effective we stop NetView DM/6000 and then restart it again.

After NetView DM/6000 has been started we start the graphical interface using `nvdmg` & and build a dummy change file. When we select the **OK** button in the Change File window, we will be asked to enter the local file name:

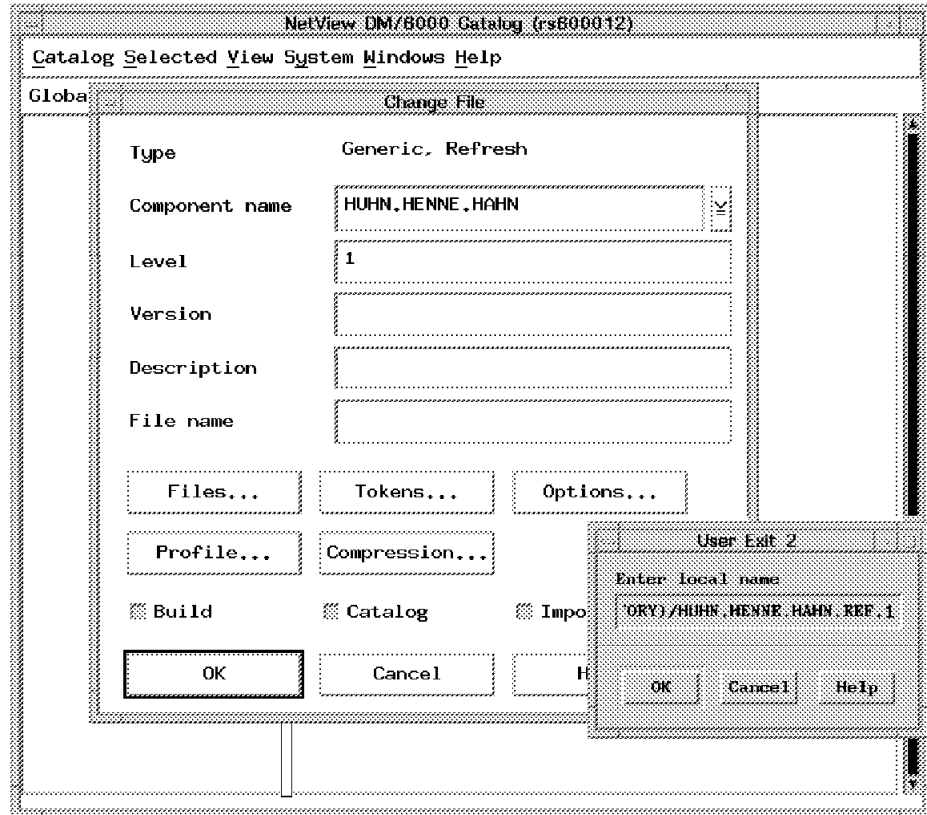


Figure 276. User Exit Example `ss_user_loc_name`

We enter a local name `/tmp/HUHN.HENNE.HAHN.REF.1` which is different from the default name `$(REPOSITORY)/HUHN.HENNE.HAHN.REF.1` proposed by NetView DM/6000 and then build the change file. The new change file will then be stored under that name.

This user exit might be used to:

- Implement new naming conventions for change file names.
- Use only certain directories to store change files.

## 13.6 Writing a Sample User Exit for `cx_daca_report`

In this part we will write a sample program for the `cx_daca_report` user exit. This user exit is called on a target before a report is sent to the server.

We will write a sample program which will send some of the report data which is sent to the server to the root user at the target.

For that purpose we replace the `cx_daca_report` function in `fndcx.c` with the following code:

```

DC_VOID cx_daca_report(RR_INFO *report_ptr)
/*
 User Exit Example 3
 Mail is sent to root for
 every report
*/
{
 FILE *trcfile ;

 trcfile = fopen("/tmp/work","w+") ;
 if (trcfile != NULL) {

 /* generate report file */

 fprintf(trcfile, "**** The following report has been sent ****\n");
 fprintf(trcfile, "Sequence Number is: %u\n", report_ptr->seq_no) ;
 fprintf(trcfile, "Originator is: %s\n", report_ptr->originator) ;
 fprintf(trcfile, "Destination is: %s\n", report_ptr->destination) ;
 fprintf(trcfile, "User is: %s\n", report_ptr->user) ;
 if(report_ptr->type == Q_INSTALL_RPT) {
 fprintf(trcfile, "Request type: INSTALL\n");
 fprintf(trcfile, "-> Return Code : %d\n",\
 report_ptr->type_data.install_rpt.result.status);
 }
 if(report_ptr->type == Q_REMOVE_RPT) {
 fprintf(trcfile, "Request type: REMOVE\n");
 fprintf(trcfile, "-> Return Code : %d\n",\
 report_ptr->type_data.remove_rpt.result.status);
 }

 fclose(trcfile) ;

 /* execute mail command */

 system("/bin/mail root </tmp/work");
 }
}

```

Figure 277. Sample Code for User Exit cx\_daca\_report

Our sample function will use the AIX mail command to send a message to the root user containing report information.

If the report is either an install report or a remove report we will include the return code of the request in the mail.

To compile our source file and build the libraries we type:

```
make -f fndex.mak
```

In order for the new user exit to become effective we stop NetView DM/6000 and then restart it again.

After NetView DM/6000 has been started we start the graphical interface using the nvmdgi & command. Then we submit a sample install request.

As soon as the request has finished the following mail is in the in-basket of the root user:

```
From root Sun Oct 30 12:07:42 1994
Received: by rs600012.itso.ral.ibm.com (AIX 3.2/UCB 5.64/4.03)
 id AA25810; Sun, 30 Oct 1994 12:07:41 -0500
Date: Sun, 30 Oct 1994 12:07:41 -0500
From: root
Message-Id: <9410301707.AA25810@rs600012.itso.ral.ibm.com>
To: root
Status: 0

**** The following report has been sent ****
Sequence Number is: 12
Originator is: rs600012
Destination is: rs600012
User is: root
Request type: INSTALL
-> Return Code : 0
```

Figure 278. Sample Mail for User `cx_daca_report`

This user exit might be used to:

- Inform users that a change management request has finished.
- Forward a message depending on the result of a request, for example generate an alert.

---

## 13.7 Writing a Sample User Exit for `sx_server_request`

In this part we will write a sample program for `sx_server_request`. This user exit is called on the server whenever a change request is submitted.

We will write a sample program which will send some of the request data to the root user. This is basically the same as in the example for `cx_data_report`.

In addition we will include information about the schedule time and the execution time in the mail. This information is available only in a request structure, not in a report structure.

Refer to 13.8, “Accessing Report and Request Information” on page 335 on how to access request and report structure information.

Although `cx_data_report` and `sx_server_request` are both passed a pointer to the same kind of structure (`RR_INFO`), only in a request structure are the time fields filled.

The following code will replace the `sx_server_request` function in `fndcx.c`:

```

DC_VOID sx_server_request(RR_INFO *request_ptr,
 CX_USER_RESPONSE *puserrsp)
{
 FILE *trcfile ;

 trcfile = fopen("/tmp/work","w+") ;
 if (trcfile != NULL) {

 /* generate report file */

 fprintf(trcfile, "**** The following request was performed ****\n");
 fprintf(trcfile, "Sequence Number is: %u\n", request_ptr->seq_no) ;
 fprintf(trcfile, "Originator is: %s\n", request_ptr->originator) ;
 fprintf(trcfile, "Destination is: %s\n", request_ptr->destination) ;
 fprintf(trcfile, "User is: %s\n", request_ptr->user) ;
 fprintf(trcfile, "Submit Time was: %02d.%02d.%02d\n",\
 request_ptr->submit_time.time.hour,
 request_ptr->submit_time.time.minute,
 request_ptr->submit_time.time.second);
 fprintf(trcfile, "Exec Time was: %02d.%02d.%02d\n",\
 request_ptr->exec_time.time.hour,
 request_ptr->exec_time.time.minute,
 request_ptr->exec_time.time.second);

 fclose(trcfile) ;

 /* execute mail command */

 system("/bin/mail root </tmp/work");
 }
}

```

Figure 279. Sample Code for User Exit `sx_server_request`

To compile the source file and build the libraries we type:

```
make -f fndex.mak
```

In order for the new user exit to become effective we stop NetView DM/6000 and then restart it again.

After NetView DM/6000 has been started we start the graphical interface using the `nvdmg` & command. Then we submit a sample install request.

The following mail will be in the in-basket of the root user:



```
From root Sun Oct 30 12:58:45 1994
Received: by rs600012.itso.ra1.ibm.com (AIX 3.2/UCB 5.64/4.03)
 id AA21404; Sun, 30 Oct 1994 12:58:44 -0500
Date: Sun, 30 Oct 1994 12:58:44 -0500
From: root
Message-Id: <9410301758.AA21404@rs600012.itso.ra1.ibm.com>
To: root

**** The following request was performed ****
Sequence Number is: 21
Originator is: rs600012
Destination is: rs600012
User is: root
Submit Time was: 12.58.44
Exec Time was: 12.58.44
```

*Figure 280. Sample Mail for User Exit sx\_server\_request*

This user exit might be used to:

- Keep track of pending requests.
- Inform users that a change management request has been submitted.

---

## 13.8 Accessing Report and Request Information

Most of the user exits are passed a pointer to an RR\_INFO data structure.

This structure is defined in the header file `fnctx.h` and is used to access:

- Report data
- Request data

The number of fields that will be filled in the RR\_INFO structure depend on whether you are processing a request or report.

You can determine of which type your RR\_INFO structure is by using the `type` field in this structure. The possible values of the `type` field are defined in the header file `fnshrr.h`:

```

...

/*****
/* Values for type field
/*****
#define Q_INSTALL_REQ 1 /* install request */
#define Q_REMOVE_REQ 2 /* remove request */
#define Q_ACCEPT_REQ 3 /* accept request */
#define Q_ACTIVATE_REQ 4 /* activate request */
#define Q_INITIATE_REQ 5 /* initiate request */
#define Q_DELETE_REQ 8 /* delete request */
#define Q_STORE_REQ 9 /* Store request */
#define Q_FETCH_REQ 10 /* Fetch request */
#define Q_SINSTALL_REQ 11 /* Send and Install request */
#define Q_SINITIATE_REQ 12 /* Send and Initiate request */
#define Q_UNINSTALL_REQ 13 /* Uninstall request */
#define Q_RET_INV_REQ 14 /* Retrieve Inventory request */
#define Q_CANCEL_REQ 15 /* Cancel request */

#define Q_INSTALL_RPT 17 /* install report */
#define Q_REMOVE_RPT 18 /* remove report */
#define Q_ACCEPT_RPT 19 /* accept report */
#define Q_ACTIVATE_RPT 20 /* activate report */
#define Q_INITIATE_RPT 21 /* initiate report */
#define Q_TRANSFER_RPT 22 /* send/retrieve report (from SNA/DS) */
#define Q_DISTRIB_RPT 23 /* distribution report */
#define Q_DELETE_RPT 24 /* delete report */
#define Q_STORE_RPT 25 /* Store report (to SNA/DS) */
#define Q_FETCH_RPT 26 /* Fetch report (to SNA/DS) */
#define Q_SINSTALL_RPT 27 /* Send and Install report */
#define Q_SINITIATE_RPT 28 /* Send and Initiate report */
#define Q_UNINSTALL_RPT 29 /* Uninstall report */
#define Q_RET_INV_RPT 30 /* Retrieve Inventory report */
#define Q_REBOOT_COMP 31 /* Reboot Completed report */
#define Q_VAGUE_CM_RPT 32 /* Report of failed Change $P5 A3 */
 /* Management request - request */
 /* type unknown */

#define Q_BAD_REQ_TYPE 255 /* Report to an unrecognized request */

```

Figure 281. Possible Values for RR\_INFO type Field

### 13.8.1 Selecting between Report and Request Structures

We used the type field in the cx\_daca\_report user exit example to check if it was an install report or a remove report:

```

if(report_ptr->type == Q_INSTALL_RPT) {

 ...

}

```

Depending on what type your RR\_INFO structure is, you can access more detailed information about a request or a report in the `type_data` field of RR\_INFO.

The `type_data` field is a union of structures which means that the structures share the same address space and you have to ensure that you use the correct data structure to access the data.

### 13.8.2 How to Access Request Information

For example if your `type` field is set to `Q_ACTIVATE_REQ` you can access information about the activate request using the `type_data` field. The structure `ACTIVATE_REQ` which is used in the `type_data` field is also defined in the `fnshrr.h` include file:

```
typedef struct activate_req
{
 DC_USHORT force;
 DC_USHORT activation_use;
} ACTIVATE_REQ;
```

The `force` field in the `ACTIVATE_REQ` structure can have the values `FO_NO` or `FO_YES` which are also defined in `fnshrr.h`.

For example if you want to determine if the activation request is forced you can use the following command:

```
if (request_ptr->type_data.activate_req.force == FO_YES) {
 ...
}
```

### 13.8.3 How to Access Report Information

If your `type` field is set to one of the report types like `Q_INSTALL_RPT` or `Q_REMOVE_RPT`, you can access status information in the `result` structure of the corresponding report structure, for example:

```
report_ptr->type_data.install_rpt.result
```

The `result` field is included in all report structures and of the type `DC_STATUS` which is defined in the header file `fnshrr.h`:

```
typedef struct dc_status
{
 DC_USHORT status;
 DC_USHORT destructive;
 DC_USHORT sense_code1;
 DC_USHORT sense_code2;
} DC_STATUS;
```

The `status` field indicates the status of the request where a value of 0 means that the request has succeeded.

The destructive field is used to indicate that a request has failed, but has already performed destructive disk operations.

The fields `sense_code1` and `sense_code2` contain the sense code for the request which is included in your `fndlog` file.

You can examine the file `fndshrr.h` to get more detailed descriptions of all data structures and fields.

## Appendix A. Sample Files for NetView DM Agent/2 Scenario

All the response files and the change file profiles used as examples in Chapter 7, "NetView DM Agent/2" on page 191 are listed in this appendix. The installation command file, INSTALL.COMD, is also listed here.

### A.1 OS/2 V2.11 Response File

```

*
* Advance Power Management
*
* Specifies whether or not to install APM.
*
* Valid Params:
*
* 0=Don't install
* 1=Autodetect (DEFAULT)
* 2=Install
*

APM=1

*
* AlternateAdapter
*
* Specifies secondary adapter for two display systems.
* This should be a lower or equal resolution display since
* the highest resolution display will be primary for PM.
*
* Valid Params:
*
* 0=None (DEFAULT)
* 1=Other than following (DDINSTALL will handle)
* 2=Monochrome/Printer Adapter
* 3=Color Graphics Adapter
* 4=Enhanced Graphics Adapter
* 5=PS/2 Display Adapter
* 6=Video Graphics Adapter
* 7=8514/A Adapter
* 8=XGA Adapter
* 9=SVGA Adapter
*

AlternateAdapter=0

*
* BaseFileSystem
*
* Specifies which file system should be used to format
* the install partition
*
* Valid Params:
*
* 1=HPFS (DEFAULT)
* 2=FAT
*

BaseFileSystem=1

*
* CDROM
*
* Specifies which, if any, CD ROM devices you wish to
* install support for.
*
* Valid Params:
*
* 0 = None
* 1 = Autodetect
* 2=CDTechnology T3301, T3401
* 3=Chinon431, 435
* 4=Chinon535
* 5=CreativeLabs OmniCD
* 6=Hitachi1650,1750S,3650
* 7=Hitachi1950S,3750,6750
* 8=IBMCD-ROM I
```

Figure 282 (Part 1 of 13). OS/2 V2.11 Response File

```
*
* 9=IBMCD-ROM II, Enhanced CD-ROM II
* 10=IBMSA CD-ROM
* 11=MitsumiCRMC-LU002S
* 12=MitsumiCRMC-LU005S
* 13=MitsumiCRMC-FX001
* 14=MitsumiCRMC-FX001D
* 15=NECIntersect 25,36,37,72,73,74,82,83,84
* 16=NECMultiSpin 3Xi,3Xe,3Xp,38,74-1,84-1
* 17=Panasonic501,LK-MC501S
* 18=Panasonic521,522,523
* 19=Panasonic562,563
* 20=PhilipsLMS CM-215
* 21=PioneerDRM-600
* 22=PioneerDRM-604X
* 23=SonyCDU-31A,33A,7305
* 24=Sony541,561,6211,7211,7811
* 25=Sony6111
* 26=Texel3021,5021
* 27=Texel3024,3028,5024,5028
* 28=Toshiba3201
* 29=Toshiba3301,3401,4101
* 30=OTHER
*
* NOTE: Autodetection is enabled only when all scsi
* device drivers are loaded.
*

CDROM=0

*
* CountryCode
*
* Specifies which country should be installed. This
* causes all country information to be installed.
*
* Valid Params:
*
* 3 digit country code (DEFAULT shipped version)
*

CountryCode=001

*
* CountryKeyboard
*
* Specifies which country keyboard should be installed.
* This causes all keyboard information to be installed.
*
* Valid Params:
*
* 2-5 character keyboard code (DEFAULT="US")
*

CountryKeyboard=US

*
* DefaultPrinter
*
* Specifies which default printer to install
*
* Valid Params:
*
* 0=None
* or
*
* Keyvalue=printer driver index (DEFAULT=line # of
* 42XX) in PRDESC.LST shipped on first printer diskette*
*
* NOTE: the driver index is the same as the line *
```

Figure 282 (Part 2 of 13). OS/2 V2.11 Response File

```

* number in the ASCII PRDESC.LST file that *
* the desired printer name appears on *
* * *

DefaultPrinter=0

* * *
* DiagnosticAids *
* * *
* Specifies whether or not to install certain RAS *
* utilities. *
* * *
* Valid Params: *
* * *
* 0=Don't install *
* 1=Install (DEFAULT) *
* * *

DiagnosticAids=1

* * *
* DisplayAdapter *
* * *
* Specifies which adapter should override the primary *
* adapter detected by the install process *
* * *
* Valid Params: *
* * *
* 0=Accept as correct (DEFAULT) *
* 1=Other than following (DDINSTALL will handle) *
* 2=Color Graphics Adapter *
* 3=Enhanced Graphics Adapter *
* 4=Video Graphics Adapter *
* 5=8514/A Adapter *
* 6=XGA Adapter *
* 7=SVGA Adapter *
* * *

DisplayAdapter=0

* * *
* Documentation *
* * *
* Specifies which documentation should be installed *
* * *
* Valid Params: *
* * *
* 0=None *
* 1=All (DEFAULT) *
* 2=OS/2 Command Reference *
* 3=OS/2 Tutorial *
* 4=Rexx Documentation *
* * *

Documentation=1

* * *
* DOSSupport *
* * *
* Specifies whether or not to install DOS Box. *
* * *
* Valid Params: *
* * *
* 0=Don't install DOS *
* 1=Install DOS (DEFAULT) *
* * *

DOSSupport=1

* * *
* WIN-OS/2Support *
* * *
* Specifies whether or not to install WIN-OS/2 *
* Environment. If do, select WIN-OS/2 groups or *
* other components. This option is valid only *
* when option 1 (DOSSupport) is selected for *
* the DOSSupport keyvalue. *
* * *
* Valid Params: *
* * *
* 0=Do NOT install WIN-OS/2 *
* ---- Followings INSTALL WIN-OS/2 ----- *

```

Figure 282 (Part 3 of 13). OS/2 V2.11 Response File

```

* 1=All available groups and components (DEFAULT) *
* 2=WIN-OS/2 Readme File *
* 3=WIN-OS/2 Accessories Group *
* 4=WIN-OS/2 Screen Save Utility *
* 5=WIN-OS/2 Sound Utility *
* 6=WIN-OS/2 Main and Startup Group ONLY (Minimum support)*
* * *
* Note: *
* * WIN-OS/2 Main Group and StartUp Group will be *
* installed mandatorily when WIN-OS/2 supported *
* (case 1,2,3,4,5). *
* * Case 6 is minimum WIN-OS/2 support. *
* * *
* Example: *
* * *
* WIN-OS/2Support=3,4 *
* would install WIN-OS/2 Main Group, StartUp Group and *
* WIN-OS/2 Accessories and Screen Save Utility. *
* * *

WIN-OS/2Support=1

* * *
* WindowedWIN-OS/2 *
* * *
* Specifies whether Windows** applications should run in *
* windowed sessions on the Presentation Manager desktop *
* or in Full Screen sessions. This option is valid only *
* when option 1 (WIN-OS/2 Support) is selected for the *
* DOSSupport keyvalue. *
* * *
* Valid Params: *
* * *
* 0=Windowed WIN-OS/2 sessions *
* 1=Full Screen WIN-OS/2 sessions *
* * *

*WindowedWIN-OS/2=1

* * *
* WIN-OS/2Desktop *
* * *
* Specifies what the WIN-OS/2 desktop should look like. *
* This option is valid only when option 1 (WIN-OS/2 *
* Support) is selected for the DOSSupport keyvalue. *
* Option 1 should be selected only if Windows** currently *
* exists (two related options follow this one). *
* Option 2 should be selected only if WIN-OS/2 has *
* previously been installed. *
* * *
* Valid Params: *
* * *
* 0=Install standard WIN-OS/2 desktop (DEFAULT) *
* 1=Copy existing Windows** desktop and use as the *
* WIN-OS/2 desktop (two related options follow) *
* 2=Preserve WIN-OS/2 desktop currently installed *
* * *

*WIN-OS/2Desktop=0

* * *
* ExistingWindowsPath *
* * *
* Specifies the path to an existing Windows** system. *
* This option is valid only when option 1 is selected *
* for the WIN-OS/2Desktop keyvalue. *
* * *
* Valid Params: *
* * *
* A string that specifies the path to the existing *
* Windows** system (Example: C:\WINDOWS) *
* * *

*ExistingWindowsPath=

* * *
* ShareDesktopConfigFiles *
* * *
* Specifies that the desktop configuration files should *
* be shared between an existing Windows** system and the *
* WIN-OS/2 system being installed. If this option is *
* selected, the Windows** desktop will be updated when *
* changes are made to the WIN-OS/2 desktop. This *
* option is valid only when option 1 is selected for the *

```

Figure 282 (Part 4 of 13). OS/2 V2.11 Response File

```

* WIN-OS/2Desktop keyvalue. *
* Valid Params: *
* 0=Do not share the Windows** desktop configuration *
* files *
* 1=Share the Windows** desktop configuration files *
*

*ShareDesktopConfigFiles=1

*
* DPMI *
* Specifies which DPMI options to install. *
* Valid Params: *
* 0=none *
* 1=All (DEFAULT) *
* 2=Virtual DOS Protect Mode Interface *
* 3=Virtual Expanded Memory Management *
* 4=Virtual Extended Memory Support *
*

DPMI=1

*
* ExitOnError *
* Specifies if the install program should exit with an *
* error code if an error occurs. This also determines *
* whether the installation process will exit with a return*
* code when it completes rather than the C-A-D panel. *
* Valid Params: *
* 0 = Do not exit when error occurs; display panel *
* (DEFAULT) *
* 1 = Exit quietly with a return code *
*

ExitOnError=1

*
* Fonts *
* Specifies which fonts should be installed *
* Valid Params: *
* 0 = None *
* 1 = All (DEFAULT) *
* 2 = Courier (Bitmap) *
* 3 = Helvetica (Bitmap) *
* 4 = System Mono-spaced (Bitmap) *
* 5 = Times Roman (Bitmap) *
* 6 = Courier (Outline) *
* 7 = Helvetica (Outline) *
* 8 = Times New Roman (Outline) *
*

Fonts=1

*
* FormatPartition *
* Specifies whether or not to format the install *
* partition *
* Valid Params: *
* 0=Do not format (DEFAULT) *
* 1=Format *
*

FormatPartition=0

*
* Include *
* For a description of the function of this keyword, *

```

Figure 282 (Part 5 of 13). OS/2 V2.11 Response File

```

* see IncludeAtEnd which is functionally equivalent *
* to this keyword. *
* Valid Params: *
* KEYWORD = valid filename *
*

* Include=include.rsp

*
* IncludeAtEnd *
* Specifies another response file to process along *
* with the current one. There may be multiple *
* occurrences of this keyword. The "included" *
* response file is appended to the end of all *
* response files that have been processed before *
* this one. *
* eg. *
* File1.RSP Processing *
* +-----+ *
* | IncludeAtEnd=File2.RSP | Mouse=1 *
* | IncludeAtEnd=File4.RSP | Mouse=2 *
* | Mouse=1 | Mouse=4 *
* +-----+ *
* File2.RSP *
* +-----+ *
* | IncludeAtEnd=File3.RSP | *
* | Mouse=2 | *
* +-----+ *
* File3.RSP *
* +-----+ *
* | Mouse=3 | *
* +-----+ *
* File4.RSP *
* +-----+ *
* | Mouse=4 | *
* +-----+ *
* No validity checking is done. *
* Valid Params: *
* KEYWORD = valid filename *
*

* IncludeAtEnd=atend.rsp

*
* IncludeInLine *
* Specifies another response file to process along *
* with the current one. There may be multiple *
* occurrences of this keyword. The "included" *
* response file is processed immediately when the *
* keyword is found. *
* No validity checking is done. *
* eg. *
* File1.RSP Processing *
* +-----+ *
* | IncludeInLine=File2.RSP | Mouse=3 *
* | IncludeInLine=File4.RSP | Mouse=2 *
* | Mouse=1 | Mouse=4 *
* +-----+ *
* File2.RSP *
* +-----+ *
* | IncludeInLine=File3.RSP | *
* | Mouse=2 | *
* +-----+ *
* File3.RSP *
* +-----+ *
* | Mouse=3 | *
* +-----+ *
* File4.RSP *
* +-----+ *
* | Mouse=4 | *
* +-----+ *
* Valid Params: *
* KEYWORD = valid filename *
*

* IncludeInLine=inline.rsp

```

Figure 282 (Part 6 of 13). OS/2 V2.11 Response File

```

*
* MigrateConfigFiles
*
* Specifies whether or not to migrate configuration files
* from a previous release of the operating system.
*
* Valid Params:
*
* 0=Don't migrate
* 1=Migrate files (DEFAULT)
*

MigrateConfigFiles=1

*
* MigrateApplications
*
* Specifies whether or not to migrate existing DOS,
* Windows** and OS/2 applications. Only those
* applications listed in the database specified will
* be migrated.
*
* Valid Params:
*
* Drives to search, database to use for search
* (Example: C:D:,C:\OS2\INSTALL\DATABASE.DAT)
*

*MigrateApplications=

*
* MoreBitmaps
*
* Specifies whether or not to install more bitmaps.
*
* Valid Params:
*
* 0=Don't install More Bitmaps
* 1=Install More Bitmaps (DEFAULT)
*

MoreBitmaps=1

*
* Mouse
*
* Specifies which mouse device driver, if any, to
* install
*
* Valid Params:
*
* 0 = No pointing device support
* 1 = PS/2 Style Pointing Devicee (DEFAULT)
* 2 = Bus Version
* 3 = Serial Version
* 4 = InPort Version
* 5 = Logitech (tm) 'C' Series Serial Mouse
* 6 = IBM PS/2 Touch Display
* 7 = Logitech 'M' Series Mouse
* 8 = PC Mouse Systems (tm) Mouse
* 9 = Other Pointing Device for Mouse Port
*

Mouse=1

*
* MousePort
*
* Specifies to which port a serial-type mouse should
* be attached (valid for serial or Logitech(tm) mice)
*
* Valid Params:
*
* 0 = No port necessary (DEFAULT)
* 1 = COM1
* 2 = COM2
* 3 = COM3
* 4 = COM4
*

MousePort=0

```

Figure 282 (Part 7 of 13). OS/2 V2.11 Response File

```

*
* OptionalFileSystem
*
* Specifies whether or not to install optional file
* system(s) i.e. HPFS
*
* Valid Params:
*
* 0=Do Not Install Optional File System(s)
* 1=Install Optional File System (DEFAULT)
*

OptionalFileSystem=1

*
* OptionalSystemUtilities
*
* Specifies whether or not to install the following
* system utilities.
*
* Valid Params:
*
* 0=Install none
* 1=Install all (DEFAULT)
* 2=Backup Hard Disk
* 3=Change File Attributes
* 4=Display Directory Tree
* 5=Manage Partitions
* 6=Label Diskettes
* 7=Link Object Modules
* 8=Picture Utilities
* 9=PMREXX
* 10=Recover Files
* 11=Restore Backed-up Files
* 12=Sort Filter
* 13=Installation Aid
*
* Example:
* OptionalSystemUtilities=2,9,4
* would install Backup, PMREXX and Tree utilities.
*

OptionalSystemUtilities=1

*
* OS2IniData
*
* Specifies a profile string to be written to the
* user configuration file OS2.INI. There may be
* multiple occurrences of this keyword.
*
* Valid Params:
*
* KEYWORD = /AppName/KeyName/KeyValue/
*
* NOTE: Since each of these names can contain
* imbedded blanks and whitespace, the "slash"
* character must be used as a delimiter. There
* must be three tokens delineated on all sides or
* this keyword will be ignored.
*

OS2IniData=/AppName/KeyName/KeyValue/

*
* PCMCIA
*
* Specifies whether or not to install PCMCIA.
*
* Valid Params:
*
* 0=Don't install
* 1=Install (DEFAULT)
*

PCMCIA=1

*
* PrimaryCodePage
*
* Specifies whether "national" or "multi-lingual" code
* page is primary (first active code page before

```

Figure 282 (Part 8 of 13). OS/2 V2.11 Response File



```

* switching). *
* *
* Valid Params: *
* *
* 1=National (DEFAULT) *
* 2=Multilingual *
* *

PrimaryCodePage=1

* *
* PrinterPort *
* *
* Specifies to which printer port the default printer *
* should be attached *
* *
* Valid Params: *
* *
* 1=LPT1 (DEFAULT) *
* 2=LPT2 *
* 3=LPT3 *
* 4=COM1 *
* 5=COM2 *
* 6=COM3 *
* 7=COM4 *
* *

PrinterPort=1

* *
* ProcessEnvironment *
* *
* Each of the Keyword/Keyvalue statements specified in *
* this response file may be added to the environment as *
* environment variables. *
* This makes it possible for user programs, batch files, *
* etc. (UserExit) to access response file settings. *
* *
* Valid Params: *
* *
* 0 - Do not add keyword/keyvalue statements specified *
* in this response file to environment. *
* 1 - Add all keyword/keyvalue statements specified *
* in this response file to environment (DEFAULT). *
* *

ProcessEnvironment=1

* *
* ProgressIndication *
* *
* Specifies whether or not to display progress indicators *
* during the installation. Disabling this will allow a *
* frontend program to display something else while we do *
* our job in an unattended environment. *
* *
* Valid Params: *
* *
* 0 - No progress indication *
* 1 = Progress indication (DEFAULT) *
* *

ProgressIndication=1

* *
* RebootRequired *
* *
* Specifies if the machine should be automatically *
* warm booted when installation is complete. This is *
* ignored if the ExtendedInstall response is specified. *
* *
* Valid Params: *
* *
* 0=Ask user to reboot (DEFAULT) *
* 1=Auto-reboot *
* *

RebootRequired=0

* *
* REXX *
* *

```

Figure 282 (Part 9 of 13). OS/2 V2.11 Response File

```

* Specifies whether or not to install REXX *
* *
* Valid Params: *
* *
* 0=Don't Install REXX *
* 1=Install REXX (DEFAULT) *
* *

REXX=1

* *
* SCSI *
* *
* Specifies which, if any, CD ROM adapter support you *
* wish to install support for. *
* *
* Valid Params: *
* *
* 0 = None *
* 1 = Autodetect *
* 2=Adaptec1510, 1520, 1522 *
* 3=Adaptec1540, 1542 *
* 4=Adaptec1640 *
* 5=Adaptec1740, 1742, 1744 *
* 6=BusLogicBusMaster SCSI Adapters *
* 7=DPTPM2011, PM2012 *
* 8=FutureDomain 845,850,8501BM,860,875,885 *
* 9=FutureDomain 1650,1660,1670,1680,MCS700 *
* 10=FutureDomain 7000EX *
* 11=IBMP5/2 SCSI Adapter *
* 12=IBM16-Bit AT Fast SCSI Adapter *
* *

SCSI=1

* *
* SerialDeviceSupport *
* *
* Specifies whether or not to install the serial *
* device driver. *
* *
* Valid Params: *
* *
* 0=Don't install *
* 1=Install (DEFAULT) *
* *

SerialDeviceSupport=1

* *
* SourcePath *
* *
* Specifies a single media (no disk switching) that should *
* be used as a source drive and directory from which to *
* install. *
* *
* Valid Params: *
* *
* KEYVALUE=drive and optional path (D:\OS2SE20\...) *
* DEFAULT=A:\ *
* *

* SourcePath=D:\os2se20

* *
* TargetDrive *
* *
* Specifies the target drive to which OS/2 should be *
* installed. This drive is assumed to be a valid *
* partition. If a partition other than C: is specified, *
* it is assumed that MOST support is already installed to *
* enable booting an operating system from any partition. *
* *
* Valid Params: *
* *
* KEYVALUE=d: *
* *
* where "d:" is a valid partition that OS/2 may be *
* installed to. *
* DEFAULT=first acceptable partition *
* *

TargetDrive=C:

```

Figure 282 (Part 10 of 13). OS/2 V2.11 Response File

```

*
* WIN-OS/2TargetDrive
*
* Specifies which valid partition drive to install
* WIN-OS/2.
*
* Valid Params: any valid FORMATTED partition.
*
* C: (DEFAULT)
* D:
* .
* .
*
* Z:
*
* Example:
*
* WIN-OS/2TargetDrive=D:
* would install WIN-OS/2 to partition D: located in
* \OS2\MDOS\WINOS2
*

*WIN-OS/2TargetDrive=C:

*
* ToolsAndGames
*
* Specifies whether or not to install tools and games
* such as editors and jigsaw.
*
* Valid Params:
*
* 0=Install none
* 1=Install all (DEFAULT)
* 2=Enhanced Editor
* 3=Search and Scan Tool
* 4=Terminal Emulator
* 5=Chart Maker
* 6=Personal Productivity
* 7=Solitaire - Klondike
* 8=Reversi
* 9=Scramble
* 10=Cat and Mouse
* 11=Pulse
* 12=Jigsaw
* 13=Chess
*
* Example:
*
* ToolsAndGames=2,8,13
* would install the Enhanced Editor, Reversi and
* Chess.
*

ToolsAndGames=1

*
* ConfigSysLine
*
* Specifies a text line to be appended to CONFIG.SYS.
* There may be multiple occurrences of this keyword.
* No validity checking is done.
*
* Valid Params:
*
* KEYWORD = a valid CONFIG.SYS statement
*

* ConfigSysLine=REM This is a CONFIG.SYS remark line.

*
* Copy
*
* Specifies a source file and destination directory
* of a file to be copied during install. Errors are
* ignored, though they will be logged. Packed files
* are acceptable since UNPACK will do the copy.
* There may be multiple occurrences of this keyword.
* No validity checking is done.
*
* Valid Params:
*
* KEYWORD= source file destination
*
* where source file = valid filename
*

```

Figure 282 (Part 11 of 13). OS/2 V2.11 Response File

```

*
* and destination = valid directory name
*
* ex: Copy = readme.dat c:\os2
*

* Copy=vga c:\ /n:ini.rc

*
* EarlyUserExit
*
* Specifies the name of a program that Install will
* DosExec after the target drive is prepared. Install
* waits for the program to return. This keyword may occur
* more than once. Each will be executed in the order that
* they appear at the end of OS/2 Install. The only
* difference between this keyword and the UserExit keyword
* is that this one is executed early in the installation
* process while the latter is executed at the very end.
*
* Valid Params:
*
* KEYVALUE=user exit program name (DEFAULT=none)
*

* EarlyUserExit=T c:\config.sys

*
* ExtendedInstall
*
* Specifies program to be run asynchronously while SE
* Install DosExits
*
* Valid Params:
*
* KEYVALUE=full pathname of program
* (DEFAULT=none)
*

* ExtendedInstall=PROGRAM.EXE

*
* ID
*
* Specifies some identification string which may be
* used by install or UserExit to identify the
* response file(s) used for this installation
*
* Valid Params:
*
* KEYWORD = ASCII string
*

*ID=OS2SE20 Sample Response File

*
* SeedConfigSysLine
*
* Specifies a text line to be appended to the CONFIG.SYS
* written to the seed system from which PM Install boots.
* This will allow device drivers (that may be required) to
* become part of that seed system.
* There may be multiple occurrences of this keyword.
* No validity checking is done.
*
* Valid Params:
*
* KEYWORD = a valid CONFIG.SYS statement
*

* SeedConfigSysLine=REM This is a remark line in the seed CONFIG.SYS.

*
* UserExit
*
* Specifies the name of a program that Install will
* DosExec before exiting memory. Install waits for the
* program to return. This keyword may occur more than
* once. Each will be executed in the order that they
* appear at the end of OS/2 Install.
*
* Valid Params:
*

```

Figure 282 (Part 12 of 13). OS/2 V2.11 Response File

```

* KEYVALUE=user exit program name (DEFAULT=none) *
* *

* UserExit=T.EXE C:\OS2\INSTALL\INSTALL.LOG

*
* Version
*
* Specifies specific version of the operating system for
* which this file is intended. The file can be used for
* future versions, though some keywords may no longer
* be valid.
*
* Valid Params:
*
* KEYWORD = some version string (determined later)
*

*Version=OS2SE20

*
* DDInstall
* Use OS/2 Device Driver Installation to install external
* loadable device drivers. A Device Driver Profile (a
* text file with a .DDP file name extension) must be
* provided by the device driver author to control the
* installation of the device driver.
*
* Valid Params:
* DDISrc = Directory where the .DDP files are.
* DDIDest = Directory where to copy the device driver
* files.
* DDIDDP = List of .DDP files to install.
* (example: file1.DDP,file2.DDP)
*

*DDISrc = Z:\DDP
*DDIDest = C:\
*DDIDDP = *.DDP

```

Figure 282 (Part 13 of 13). OS/2 V2.11 Response File

## A.2 LAPS Response File

```
* Response file example to create a PROTOCOL.INI file. The PROTOCOL.INI
* file will be created using the PROTOCOL.INI file specified in the
* PROTOCOL section

INST_SECTION = (
 UPGRADE_LEVEL = NEW
 INSTALL = PRODUCT
)

PROTOCOL = (

 [PROT_MAN]
 DRIVERNAME = PROTMAN$

 [IBMLXCFG]
 LANDD_NIF = LANDD.NIF
 NETBEUI_NIF= NETBEUI.NIF
 IBMTOK_NIF = IBMTOK.NIF
 TCPIP_NIF = TCPIP.NIF

 [LANDD_nif]
 DRIVERNAME = LANDD$
 BINDINGS = IBMTOK_nif
 MAX_SAPS = 5
 MAX_G_SAPS = 0
 LINKS = 68
 T1_TICK_G1 = 15
 T2_TICK_G1 = 3
 T1_TICK_G1 = 255
 T1_TICK_G2 = 25
 T2_TICK_G2 = 10
 T1_TICK_G2 = 255
 USERS = 5
 ELEMENTS = 0800
 GDTS = 30

 [NETBEUI_nif]
 DRIVERNAME = NETBEUI$
 BINDINGS = IBMTOK_nif
 MAXIN = 1
 MAXOUT = 2
 SESSIONS = 50
 NCBS = 95
 NAMES = 32

 [TCPIP_nif]
 DRIVERNAME = TCPIP$
 BINDINGS = IBMTOK_nif

 [IBMTOK_nif]
 DRIVERNAME = IBMTOK$
)
```

Figure 283. LAPS Response File

### A.3 TCP/IP V2.0 for OS/2 Response File

```
// Response file for GA code, CSD UN57064 and UN64092 installation

CONFIGURE = Y
BOOT_DRIVE = C:
TARGET_PATH = C:\TCP/IP
INSTALL_LAPS = N
TCP_SERVICES = nfsstart
STARTUP_FOLDER = N

INSTALL_NAME = BASE 7.39 1 4 "Base Kit" Base TCP/IP for OS/2
INSTALL_NAME = NFS 1.10 1 1 "Network File System Kit" NFS Kit

INSTALL_NAME = BASEC 5.68 1 3 "Base Kit" UN64092 Base TCP/IP for OS/2
INSTALL_NAME = NFSC 0.99 1 1 "CSD UN57064, NFS Kit" CSD UN57064 for NFS Kit

// LINK_NAME: Defines a linked kit. Linked kits are not displayed
// for selection. Linked kits are selected when the INSTALL_NAME
// kit is selected.
LINK_NAME = BASEOC 0.66 4 4 "Base Kit" Base only kit

// LINK_INFO: Establishes link between kits. Selecting the INSTALL_NAME kit
// selects the LINK_NAME kit also.
// Place the LINK_INFO statement AFTER the INSTALL_NAME and
// LINK_NAME statements. In this case, the LINK_INFO specifies that
// both Base and Applications kits are selected when the Base kit
// is selected from the TCPINST menu.
// INSTALL_NAME and LINK_NAME statements must precede the
// LINK_INFO statement in the response file.
//
// INSTALL_NAME LINK_NAME
LINK_INFO = BASEC BASEOC

// DEPENDENCY: Defines a dependency for kit installation. Dependency
// are 1) a file, and 2) a selected kit.
// INSTALL_NAME and LINK_NAME statements must precede the
// DEPENDENCY statement in the response file.
//
// KIT Installed File Selected Kit
DEPENDENCY = BASEOC syslevel.tcp BASE

// EXEC: Kit exit program. Do not modify parameters. TCPINST
// substitutes the proper values in the call.
// Kit Exit program Parameters
EXEC = BASE call basext BOOT_DRIVE TARGET_PATH MPTN_INSTALLED NTS2_DIR ▶
 HOSTNAME IP_ADDR NETMASK ROUTE DNSDOMAIN NAMESERVER ▶
 STARTUP_FOLDER TCP_SERVICES
EXEC = NFS call nfsxt BOOT_DRIVE TARGET_PATH

// EXEC = BASEOC call basext BOOT_DRIVE TARGET_PATH MPTN_INSTALLED NTS2_DIR ▶
 HOSTNAME IP_ADDR NETMASK ROUTE DNSDOMAIN NAMESERVER ▶
 STARTUP_FOLDER TCP_SERVICES
EXEC = NFSC call nfscxt TARGET_PATH
```

Figure 284. TCP/IP V2.0 for OS/2 Response File

---

## A.4 NetView DM Agent/2 Response File

```
* NetView DM Agent/2 Response File

* Common Parameters

BootDrive = C:\
TargetDir = C:\IBMNVDM

* Specific Parameters

AutoAgentStartup = YES
MessageLogLevel = N
```

Figure 285. NetView DM Agent/2 Response File

---

## A.5 OS/2 Change File Profile

```
GLOBAL NAME: IBM.OS2V211.INST.REF.2.11
DESCRIPTION: Installation Procedure for OS/2 V2.11
LOCAL NAME: $(REPOSITORY)\IBM.OS2V211.INST.REF.2.11
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvdmad1 -pnvdmad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
PROGRAM NAME: X:\IMG\OS2V211\SEINST.EXE
PARAMETERS: /S:X:\IMG\OS2V211 /B:C: ▶
 /R:X:\RSP\OS2V211\$(TARGET).RSP ▶
 /L1:X:\LOG\OS2V211\$(TARGET).LOG
```

Figure 286. OS/2 Change File Profile

---

## A.6 LAPS Change File Profile

```

GLOBAL NAME: IBM.LAPS.INST.REF.2.2
DESCRIPTION: Installation Procedure for LAPS
LOCAL NAME: $(REPOSITORY)\IBM.LAPS.INST.REF.2.2
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvmdad1 -pnvmdad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\LAPS\LAPS.EXE
 PARAMETERS: /E:MAINT /S:X:\IMG\LAPS /T:C:\ /TU:C:\ ►
 /R:X:\RSP\LAPS\$(TARGET).RSP ►
 /L1:X:\LOG\LAPS\$(TARGET).LOG

```

Figure 287. LAPS Change File Profile

## A.7 TCP/IP Change File Profile

```

GLOBAL NAME: IBM.TCPIP20.INST.REF.2.0
DESCRIPTION: Installation Procedure for TCP/IP for OS/2 V2
LOCAL NAME: $(REPOSITORY)\IBM.TCPIP20.INST.REF.2.0
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvmdad1 -pnvmdad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\TCPIP20\TCPINST2.EXE
 PARAMETERS: /A- /S:X:\IMG\TCPIP20 /LP:X:\IMG\LAPS ►
 /R:X:\RSP\TCPIP20\$(TARGET).RSP ►
 /L1:X:\LOG\TCPIP20\$(TARGET).LOG

```

Figure 288. TCP/IP Change File Profile

## A.8 NetView DM Agent/2 Change File Profile

```

GLOBAL NAME: IBM.NVDMA2.INST.REF.1.0
DESCRIPTION: Installation Procedure for NetView DM Agent/2
LOCAL NAME: $(REPOSITORY)\IBM.NVDMA2.INST.REF.1.0
CHANGE FILE TYPE: OS2CID
COMPRESSION TYPE: LZW
PREREQ COMMAND: mount -lnvmdad1 -pnvmdad1 x: rs600011:/export/cid
POSTREQ COMMAND: umount x:
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\NVDMA2\FNDRESP.EXE
 PARAMETERS: /S:X:\IMG\NVDMA2 /WN:$(TARGET) /SN:$(SERVER) ►
 /R:X:\RSP\NVDMA2\$(TARGET).RSP ►
 /L1:X:\LOG\NVDMA2\$(TARGET).LOG

```

Figure 289. NetView DMA/2 Change File Profile

## A.9 INSTALL.CMD File

```
@echo off
REM host-name ip-addr nvdm-server boot-drive nvdma-image
REM %1 %2 %3 %4 %5

REM Command line arguments defaults
REM The administrator can customize the following 5 lines.
REM
set hostname=
set ipaddr=
set nvdmserver=nvdmserver
set bootdrive=c:
set nvdmaimage=imgsvr:d:\cid\img\fnrdimg

if not "%1" == "" set hostname=%1
if not "%2" == "" set ipaddr=%2
if not "%3" == "" set nvdmserver=%3
if not "%4" == "" set bootdrive=%4
if not "%5" == "" set nvdmaimage=%5

echo ** Chosen values **
echo [host-name] : %hostname%
echo [ip-addr] : %ipaddr%
echo [nvdm-server] : %nvdmserver%
echo [boot-drive] : %bootdrive%
echo [nfs-fqpath] : %nvdmaimage%

if "%hostname%" == "" goto usage
if "%ipaddr%" == "" goto usage
if "%nvdmserver%" == "" goto usage
if "%bootdrive%" == "" goto usage
if "%nvdmaimage%" == "" goto usage

set netmask=255.255.255.0
set route=9.24.104.1
rem set netmask=255.255.254.0 *** original ***
rem set route=9.87.230.5 *** original ***
set comspec=%bootdrive%\service\cmd.exe
set etc=%bootdrive%\tcpip\etc
set tmp=%bootdrive%\tcpip\tmp
set fndcfg=%bootdrive%\ibmnvdma

rem goto endcopy

echo Building service directory...
md %bootdrive%\service >NUL 2>NUL
copy a:\nfsctl.exe %bootdrive%\service

echo Starting NFS Client ...
detach %bootdrive%\service\nfsctl.exe -i

copy a:\arp.exe %bootdrive%\service
copy a:\ifconfig.exe %bootdrive%\service
copy a:\mount.exe %bootdrive%\service
copy a:\nfsbiobd.exe %bootdrive%\service
copy a:\route.exe %bootdrive%\service
copy a:\rpcdll.dll %bootdrive%\service
copy a:\tcpipdll.dll %bootdrive%\service
copy a:\cmd.exe %bootdrive%\service

echo Building TCP/IP 'etc' directory...
md %bootdrive%\tcpip >NUL 2>NUL
md %bootdrive%\tcpip\etc >NUL 2>NUL
copy a:\etc*. * %bootdrive%\tcpip\etc

echo Building TCP/IP 'tmp' directory...
md %bootdrive%\tcpip\tmp >NUL 2>NUL
```

Figure 290. INSTALL.CMD File (Part 1 of 2)



```

echo Building NetView DMA/2 directories...
md %bootdrive%\ibmnvdma >NUL 2>NUL
md %bootdrive%\ibmnvdma\backup >NUL 2>NUL
md %bootdrive%\ibmnvdma\backup\uninst >NUL 2>NUL
md %bootdrive%\ibmnvdma\repos >NUL 2>NUL
md %bootdrive%\ibmnvdma\service >NUL 2>NUL
md %bootdrive%\ibmnvdma\uicfg >NUL 2>NUL
md %bootdrive%\ibmnvdma\work >NUL 2>NUL

:endcopy

echo Writing NetView DMA/2 configuration file...
echo WORKSTATION NAME: %hostname% > %bootdrive%\ibmnvdma\nvdm.cfg
echo SERVER: %nvdmserver% >> %bootdrive%\ibmnvdma\nvdm.cfg
echo TCP/IP PORT: 729 >> %bootdrive%\ibmnvdma\nvdm.cfg
echo MESSAGE LOG LEVEL: D >> %bootdrive%\ibmnvdma\nvdm.cfg
echo LOG FILE SIZE: 524288 >> %bootdrive%\ibmnvdma\nvdm.cfg
echo API TRACE FILE SIZE: 524288 >> %bootdrive%\ibmnvdma\nvdm.cfg
echo TRACE FILE SIZE: 524288 >> %bootdrive%\ibmnvdma\nvdm.cfg
echo REPOSITORY: %bootdrive%\ibmnvdma\repos >> %bootdrive%\ibmnvdma\nvdm.cfg
echo WORK AREA: %bootdrive%\ibmnvdma\work >> %bootdrive%\ibmnvdma\nvdm.cfg
echo BACKUP AREA: %bootdrive%\ibmnvdma\backup >> %bootdrive%\ibmnvdma\nvdm.cfg
echo SERVICE AREA: %bootdrive%\ibmnvdma\service >> %bootdrive%\ibmnvdma\nvdm.cfg

%bootdrive%
cd %bootdrive%\service

echo Configuring TCP/IP
route -fh
arp -f
ifconfig lan0 %ipaddr% netmask %netmask% metric 2
route add default %route% 2

echo Mounting NetView DMA/2 image directory...
mount -lnvdmad1 -pnvdmad1 z: %nvdmimage%
rem mount -u0 -g0 z: %nvdmimage% *** original ***
z:

echo Starting NetView DMA/2 Agent...
fndcmps.exe
goto end

:usage
echo usage: install [host-name] [ip-addr] [nvdm-server]
[boot-drive] [nvdma-image]

:end

```

Figure 291. INSTALL.CMD File (Part 2 of 2)



## Appendix B. Sample Files for NetView DM Agent/DOS Scenario

All the response files and the change file profiles used as examples in Chapter 8, "NetView DM Agent/DOS" on page 219 are listed in this appendix. The TCP/IP modification file (TCPDOS.MOD) and the installation command file (CFG.BAT) are also listed here.

### B.1 DOS V6.3 Response File

```

* AntiVirus
*
* Specifies whether or not to install IBM AntiVirus/DOS.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

AntiVirus=N

* AntiVirusforWindows
*
* Specifies whether or not to install IBM AntiVirus/DOS for
* Windows.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

AntiVirusforWindows=N

* Compression
*
* Specifies whether or not to copy the SuperStor/DS files to the
* target drive.
*
* Valid parameters
*
* N = Don't copy the files (DEFAULT)
* Y = Copy the files
*

Compression=N

* CountryCode
*
* Specifies which country should be installed. This
* causes all country information to be installed.
*
* Valid parameters:
*
* 1 = Albania
* 2 = Australia
* 3 = Belgium
* 4 = Bosnia/Herzegovina
* 5 = Brazil
* 6 = Bulgaria
* 7 = Canada (French)
* 8 = Croatia
* 9 = Czech
* 10 = Denmark
* 11 = Finland
* 12 = France
* 13 = Germany
* 14 = Greece
* 15 = Hungary
* 16 = Iceland
* 17 = International English
* 18 = Italy
* 19 = Japan
```

Figure 292 (Part 1 of 6). DOS V6.3 Response File

```
* 20 = Latin America
* 21 = Macedonian FYR
* 22 = Netherlands
* 23 = Norway
* 24 = Poland
* 25 = Portugal
* 26 = Romania
* 27 = Serbia/Montenegro
* 28 = Slovakia
* 29 = Slovenia
* 30 = Spain
* 31 = Sweden
* 32 = Switzerland
* 33 = Turkey
* 34 = United Kingdom
* 35 = USA (DEFAULT)
* 36 = Yugoslavia
*

*CountryCode=35

* CountryKeyboard
*
* Specifies which country keyboard should be installed.
* This causes all keyboard information to be installed.
*
* Valid parameters:
*
* 1 = Albanian
* 2 = Australian
* 3 = Belgian
* 4 = Bosnian
* 5 = Brazilian
* 6 = Bulgarian
* 7 = Canadian French
* 8 = Croatia
* 9 = Czech
* 10 = Danish
* 11 = Dutch
* 12 = Finnish
* 13 = French (120)
* 14 = French (189)
* 15 = German
* 16 = Greek
* 17 = Hungarian
* 18 = Icelandic
* 19 = Italian (141)
* 20 = Italian (142)
* 21 = Japanese (English)
* 22 = Latin American
* 23 = Macedonian FYR
* 24 = Norwegian
* 25 = Polish
* 26 = Portuguese
* 27 = Romanian
* 28 = Serbian
* 29 = Slovak
* 30 = Slovenian
* 31 = Spanish
* 32 = Swedish
* 33 = Swiss (French)
* 34 = Swiss (German)
* 35 = Turkish (179)
* 36 = Turkish (440)
* 37 = UK English
* 38 = US Default (DEFAULT)
* 39 = US English
```

Figure 292 (Part 2 of 6). DOS V6.3 Response File

```

* 40 = Yugoslavian
*

*CountryKeyboard=38

* CPBackup
*
* Specifies whether or not to install Central Point Backup.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

CPBackup=N

* CPBackupforWindows
*
* Specifies whether or not to install Central Point Backup for
* Windows.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

CPBackupforWindows=N

* CPUndeleteforWindows
*
* Specifies whether or not to install Central Point Undelete for
* Windows.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

CPUndeleteforWindows=N

* DOSSHELL
*
* Specifies whether or not to install the IBM DOSShell.
*
* Valid parameters:
*
* N = Don't install utility
* Y = Install utility (DEFAULT)
*

DOSSHELL=Y

* ErrorLogFile
*
* Specifies the file name, which could include drive and path,
* where USETUP will log any errors that occur.
* The DEFAULT is that an error log file will not be created.
*
* Valid parameters:
*
* valid filename
*

*ErrorLogFile=dos61.err

* ExitIfCompression
*
* Specifies if the install program should exit when
* disk compression is detected on the target machine.
* This should be used if the code server directory is the
* PC DOS 6.1 code dated 6/29/93 and the coupon compression
* diskettes were not used.

```

Figure 292 (Part 3 of 6). DOS V6.3 Response File

```

*
* NOTE: USETUP is not able to detect all possible compression
* programs that are available.
*
* Valid parameters:
*
* N = Do not exit when disk compression detected (DEFAULT)
* Y = Exit when disk compression detected
*

ExitIfCompression=N

* HistoryLogFile
*
* Specifies the file name, which could include drive and path,
* where SETUP will log a complete history of the install.
* The DEFAULT is that a history log file will not be created.
*
* Valid parameters:
*
* valid filename
*

*HistoryLogFile=dos61.his

* Include
*
* Specifies another response file to process along with the
* current one. There may be multiple occurrences of this keyword.
*
* Valid parameters:
*
* valid filename
*

*Include=include.rsp

* ISOFonts
*
* Specifies whether to install ISO font support.
*
* Valid parameters:
*
* N = Don't install ISO fonts (DEFAULT)
* Y = Install ISO fonts
*

ISOFonts=N

* PCMCIA
*
* Specifies whether or not to install the Phoenix PCMCIA Support.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

PCMCIA=N

* PenDOS
*
* Specifies whether or not to install the IBM PenDOS Support.
* If this keyword is set to Y, then the PenDOSDriver keyword
* must be specified.
*
* Valid parameters:
*
* N = Don't install utility (DEFAULT)
* Y = Install utility
*

PenDOS=N

```

Figure 292 (Part 4 of 6). DOS V6.3 Response File

```

* PenDOSDriver
*
* Specifies the digitizing tablet the user has connected to the system.
* This keyword is only valid if the PenDOS=Y keyword is specified.
*
* Valid parameters:
*
* 1 = AceCAD Acecat Opaque
* 2 = CalComp DisplayPad
* 3 = Dauphin
* 4 = Digitizing Pad Emulation via Mouse
* 5 = IBM ThinkPad 710T
* 6 = IBM ThinkPad 700T
* 7 = Kurta XTG Opaque
* 8 = NCR 3125
* 9 = NCR 3130
* 10 = Samsung PenMaster
* 11 = Seiko D-SCAN
* 12 = Wacom 510C Opaque
* 13 = Wacom HD648A
* 14 = Wacom PL100V
*

*PenDOSDriver=4

* PreviousDOSPath
*
* Specifies the drive and directory of the previous version of DOS.
* This path is used to access the files that contain the configuration
* information used to migrate the system to the new version of DOS.
* The install will migrate any configuration files that are found.
*
* Valid parameters:
*
* Drive and path (DEFAULT=C:\DOS)
*

*PreviousDOSPath=C:\DOS

```

Figure 292 (Part 5 of 6). DOS V6.3 Response File

```

* ProgressIndication
*
* Specifies whether or not to display screens during the
* installation. Disabling this will cause a blank screen to be
* displayed while USETUP is executing.
*
* Valid parameters:
*
* N = No progress indication
* Y = Progress indication (DEFAULT)
*

ProgressIndication=Y

* TargetPath
*
* Specifies the target path to which DOS should be
* installed. If a partition other than C: is specified,
* the system files will still be installed to C:\.
*
* Valid parameters:
*
* Drive and path (DEFAULT=C:\DOS)
*

TargetPath=C:\DOS

* WindowsPath
*
* Specifies the drive and directory of where Windows files are
* located.
*
* Valid parameters:
*
* Drive and path (DEFAULT=C:\WINDOWS)
*

*WindowsPath=C:\WINDOWS

```

Figure 292 (Part 6 of 6). DOS V6.3 Response File

## B.2 NetView DM Agent/DOS Response File

```

TargetDir = C:\IBMNVDM
BootDrive = C:\
WorkstationName = nvdma8
ServerName = rs600012 TCP 729
Pristine = YES

```

Figure 293. NetView DM Agent/DOS Response File

## B.3 DOS V6.3 Change File Profile

```

GLOBAL NAME: IBM.DOS63.INST.REF.1
DESCRIPTION: Installation Procedure for DOS 6.3
CHANGE FILE TYPE: DOSCID
COMPRESSION TYPE: NONE
INSTALL PROGRAM:
 PROGRAM NAME: X:\IMG\DOS63\USETUP.COM
 PARAMETERS: /R:X:\RSP\DOS63\$(TARGET).RSP ►
 /L1:X:\LOG\DOS63\$(TARGET).LOG

```

Figure 294. DOS V6.3 Change File Profile

---

## B.4 TCP/IP Change File Profile

```
GLOBAL NAME: IBM.TCPIP.DOS.INST.REF.1
DESCRIPTION: Installation Procedure for TCP/IP V2.1.1 for DOS
CHANGE FILE TYPE: DOSGEN
COMPRESSION TYPE: NONE

POST-INSTALL: NVDMPD.EXE $(tcipdosDir)\NVDMPD\TCPDOS.MOD ▶
 /T:$(tcipdosDir) /B:C

DEFAULT TOKEN: tcipdosDir=C:\

OBJECT:
SOURCE NAME: D:\TCPDOS*. *
TARGET NAME: $(tcipdosDir)\TCPDOS*. *
TYPE: FILE_WITH_TOKENS
ACTION: COPY
INCLUDE SUBDIRS: YES

OBJECT:
SOURCE NAME: D:\NVDMPD\TCPDOS.MOD
TARGET NAME: $(tcipdosDir)\NVDMPD\TCPDOS.MOD
TYPE: FILE
ACTION: COPY
```

Figure 295. TCP/IP Change File Profile

---

## B.5 NetView DM Agent/DOS Change File Profile

```
GLOBAL NAME: IBM.NVDMADOS.INST.REF.1
DESCRIPTION: Installation Procedure for NetView DM Agent/DOS
CHANGE FILE TYPE: DOSCID
COMPRESSION TYPE: NONE
INSTALL PROGRAM:
PROGRAM NAME: X:\IMG\NVDMADOS\FNDRESP.EXE
PARAMETERS: /R:X:\RSP\NVDMADOS\$(TARGET).RSP ▶
 /L1:X:\LOG\NVDMADOS\$(TARGET).LOG
```

Figure 296. NetView DM Agent/DOS Change File Profile

## B.6 TCP/IP Modification File

```
[CONFIG.SYS]
InsertCommand(DEVICE,ANSI.SYS,BOTTOM)
DEVICE = C:\DOS\ANSI.SYS
InsertCommand(DEVICE,PROTMAN.DOS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\PROTMAN.DOS /I:$(TargetDir)TCPDOS\ETC
InsertCommand(DEVICE,DOSTCP.SYS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\DOSTCP.SYS
InsertCommand(DEVICE,IBMTOK.DOS,BOTTOM)
DEVICE = $(TargetDir)TCPDOS\BIN\IBMTOK.DOS
InsertCommand(LASTDRIVE,,BOTTOM)
LASTDRIVE=Z
[AUTOEXEC.BAT]
InsertToken(SET,ETC,LEFT)
$(TargetDir)TCPDOS\ETC
AddLine(TOP)
$(TargetDir)TCPDOS\BIN\NETBIND
AddLine(BOTTOM)
CALL TCPSTART
InsertToken(PATH,,RIGHT)
$(TargetDir)TCPDOS\BIN
AddLine(BOTTOM)
mount -c -lnvdmad1 -pnvdmad1 x: rs600012:/export/cid
AddLine(BOTTOM)
mount -c -lnvdmad1 -pnvdmad1 z: rs600012:/export/cid/pristine
```

Figure 297. TCP/IP Modification File (TCPDOS.MOD)

## B.7 CFG.BAT File

```
@echo off
REM host-name ip-addr
REM %1 %2

set hostname=%1
set ipaddr=%2
set netmask=255.255.255.0
set route=9.24.104.1

echo Configuring TCP/IP
route -fnq
arp -dan
ifconfig nd0 %ipaddr% netmask %netmask% up
route add -mtu 1496 default %route%
dosnfs
mount -c -lnvdmad1 -pnvdmad1 x: rs600012:/export/cid
mount -c -lnvdmad1 -pnvdmad1 z: rs600012:/export/cid/pristine
md z:\%hostname%
md z:\%hostname%\work
md z:\%hostname%\uicfg
del z:\%hostname%\nvdm.cfg
del a:\cfg.out

echo Writing NetView DMA/DOS configuration file...
echo WORKSTATION NAME: %hostname% > z:\%hostname%\nvdm.cfg
echo SERVER: rs600012 TCP 729 >> z:\%hostname%\nvdm.cfg
echo MESSAGE LOG LEVEL: D >> z:\%hostname%\nvdm.cfg
echo LOG FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo API TRACE FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo TRACE FILE SIZE: 524288 >> z:\%hostname%\nvdm.cfg
echo REPOSITORY: z:\ibmnvdma\repos >> z:\%hostname%\nvdm.cfg
echo WORK AREA: z:\%hostname%\work >> z:\%hostname%\nvdm.cfg
echo BACKUP AREA: z:\ibmnvdma\backup >> z:\%hostname%\nvdm.cfg
echo SERVICE AREA: z:\ibmnvdma\service >> z:\%hostname%\nvdm.cfg
echo QUERY TIMESLICE: 5 >> z:\%hostname%\nvdm.cfg
echo DISPLAY TIMEOUT: -1 >> z:\%hostname%\nvdm.cfg
echo REDISPLAY TIMEOUT: 10 >> z:\%hostname%\nvdm.cfg
echo UNATTENDED ACTION: A >> z:\%hostname%\nvdm.cfg
set FNDCFG=z:\%hostname%
z:\IBMNVDMA\BIN\FNDCMPS.EXE
```

Figure 298. CFG.BAT File



---

## Appendix C. Appendix Heading Text

---

### C.1 SNA Server Definition

```
sna:
 prof_name = "sna"
 max_sessions = 200
 max_conversations = 200
 restart_action = once
 rrm_enabled = no
 dynamic_inbound_partner_lu_definitions_allowed = yes
 standard_output_device = "/dev/console"
 standard_error_device = "/var/sna/sna.stderr"
 nmvt_action_when_no_nmvt_process = reject
 comments = ""

control_pt:
 prof_name = "node_cp"
 xid_node_id = "*"
 network_name = "USIBMRA"
 control_pt_name_alias = "RA6012CP"
 control_pt_name = "RA6012CP"
 control_pt_node_type = appn_network_node
 max_cached_trees = 500
 max_nodes_in_topology_database = 500
 route_addition_resistance = 128
 comments = ""

local_lu_lu6.2:
 prof_name = "RA60012B"
 local_lu_name = "RA60012B"
 local_lu_alias = "RA60012B"
 local_lu_dependent = no
 local_lu_address =
 sscp_id = *
 link_station_prof_name = ""
 conversation_security_list_profile_name = ""
 comments = "LU for NVDM/6000"

partner_lu6.2:
 prof_name = "RA39TCF1"
 fq_partner_lu_name = "USIBMRA.RA39TCF1"
 partner_lu_alias = ""
 session_security_supp = no
 parallel_session_supp = no
 conversation_security_level = none
 comments = "NVMD/MVS LU "
```

Figure 299 (Part 1 of 6). SNA Server Configuration Profile for RS600012

```

partner_lu6.2:
 prof_name = "RA39L210"
 fq_partner_lu_name = "USIBMRA.RA39L210"
 partner_lu_alias = "RA39L210"
 session_security_supp = no
 parallel_session_supp = yes
 conversation_security_level = none
 comments = ""

side_info:
 prof_name = "NVDMSIDS"
 local_lu_or_control_pt_alias = "RA60012B"
 partner_lu_alias = ""
 fq_partner_lu_name = "USIBMRA.RA39TCF1"
 mode_name = "NVDMNORM"
 remote_tp_name_in_hex = yes
 remote_tp_name = "21F0F0F7"
 comments = "Send Side Info"

side_info:
 prof_name = "NVDMSIDR"
 local_lu_or_control_pt_alias = "RA60012B"
 partner_lu_alias = ""
 fq_partner_lu_name = "USIBMRA.RA39TCF1"
 mode_name = "NVDMNORM"
 remote_tp_name_in_hex = yes
 remote_tp_name = "21F0F0F8"
 comments = "Receive Side Info"

side_info:
 prof_name = "NDM2SIDS"
 local_lu_or_control_pt_alias = "RA60012B"
 partner_lu_alias = ""
 fq_partner_lu_name = "USIBMRA.RA39L210"
 mode_name = "NVDMRS6K"
 remote_tp_name_in_hex = yes
 remote_tp_name = "21F0F0F7"
 comments = ""

side_info:
 prof_name = "NDM2SIDR"
 local_lu_or_control_pt_alias = "RA60012B"
 partner_lu_alias = ""
 fq_partner_lu_name = "USIBMRA.RA39L210"
 mode_name = "NVDMRS6K"
 remote_tp_name_in_hex = yes
 remote_tp_name = "21F0F0F8"
 comments = ""

```

Figure 299 (Part 2 of 6). SNA Server Configuration Profile for RS600012

```

local_tp:
 prof_name = "NVMSND"
 tp_name = "21f0f7"
 tp_name_in_hex = yes
 pip_data_present = no
 pip_data_subfields_number = 0
 conversation_type = basic
 sync_level = none
 resource_security_level = none
 resource_access_list_profile_name = ""
 full_path_tp_exe = "/usr/lpp/netviewdm/bin/fndts"
 multiple_instances = yes
 user_id = 0
 server_synonym_name = ""
 restart_action = once
 communication_type = signals
 ipc_queue_key = 0
 standard_input_device = "/dev/console"
 standard_output_device = "/dev/console"
 standard_error_device = "/dev/console"
 comments = "Send TP for NVDM/6000"

local_tp:
 prof_name = "NVMDRCV"
 tp_name = "21f0f8"
 tp_name_in_hex = yes
 pip_data_present = no
 pip_data_subfields_number = 0
 conversation_type = basic
 sync_level = none
 resource_security_level = none
 resource_access_list_profile_name = ""
 full_path_tp_exe = "/usr/lpp/netviewdm/bin/fndtr"
 multiple_instances = yes
 user_id = 0
 server_synonym_name = ""
 restart_action = once
 communication_type = signals
 ipc_queue_key = 0
 standard_input_device = "/dev/console"
 standard_output_device = "/dev/console"
 standard_error_device = "/dev/console"
 comments = "Receive TP for NVDM/6000"

link_station_token_ring:
 prof_name = "RAK"
 use_control_pt_xid = yes
 xid_node_id = "*"
 sna_dlc_profile_name = "tok0"
 stop_on_inactivity = no
 time_out_value = 0
 LU_registration_supported = no
 LU_registration_profile_name = ""

```

Figure 299 (Part 3 of 6). SNA Server Configuration Profile for RS60012

```

link_tracing = no
trace_format = long
access_routing_type = link_address
remote_link_name = ""
remote_link_address = 0x400001240000
remote_sap = 0x04
verify_adjacent_node = no
net_id_of_adjacent_node = ""
cp_name_of_adjacent_node = ""
xid_node_id_of_adjacent_node = "*"
node_type_of_adjacent_node = learn
solicit_sscp_sessions = yes
call_out_on_activation = yes
activate_link_during_system_init = no
activate_link_on_demand = no
cp_cp_sessions_supported = yes
cp_cp_session_support_required = no
adjacent_node_is_preferred_server = no
initial_tg_number = 0
restart_on_normal_deactivation = no
restart_on_abnormal_deactivation = no
restart_on_activation = no
TG_effective_capacity = 4300800
TG_connect_cost_per_time = 0
TG_cost_per_byte = 0
TG_security = nonsecure
TG_propagation_delay = lan
TG_user_defined_1 = 128
TG_user_defined_2 = 128
TG_user_defined_3 = 128
comments = "Token Ring Link Station to SA39"

```

```

link_station_token_ring:
 prof_name = "RA39P210"
 use_control_pt_xid = yes
 xid_node_id = "*"
 sna_dlc_profile_name = "tok0"
 stop_on_inactivity = no
 time_out_value = 0
 LU_registration_supported = no
 LU_registration_profile_name = ""
 link_tracing = no
 trace_format = long
 access_routing_type = link_address
 remote_link_name = ""
 remote_link_address = ""
 remote_sap = 0x04
 verify_adjacent_node = yes
 net_id_of_adjacent_node = "USIBMRA"
 cp_name_of_adjacent_node = "RA39P210"
 xid_node_id_of_adjacent_node = "*"
 node_type_of_adjacent_node = learn
 solicit_sscp_sessions = no
 call_out_on_activation = no
 activate_link_during_system_init = no
 activate_link_on_demand = no

```

Figure 299 (Part 4 of 6). SNA Server Configuration Profile for RS600012

```

cp_cp_sessions_supported = yes
cp_cp_session_support_required = no
adjacent_node_is_preferred_server = no
initial_tg_number = 0
restart_on_normal_deactivation = yes
restart_on_abnormal_deactivation = yes
restart_on_activation = no
TG_effective_capacity = 4300800
TG_connect_cost_per_time = 0
TG_cost_per_byte = 0
TG_security = nonsecure
TG_propagation_delay = lan
TG_user_defined_1 = 128
TG_user_defined_2 = 128
TG_user_defined_3 = 128
comments = ""

sna_dlc_token_ring:
 prof_name = "tok0"
 data_link_device_name = "tok0"
 force_timeout = 120
 user_defined_max_i_field = no
 max_i_field_length = 30729
 max_active_link_stations = 100
 num_reserved_inbound_activation = 0
 num_reserved_outbound_activation = 0
 transmit_window_count = 16
 dynamic_window_increment = 1
 retransmit_count = 8
 receive_window_count = 8
 priority = 0
 inact_timeout = 48
 response_timeout = 4
 acknowledgement_timeout = 1
 link_name = ""
 local_sap = 0x04
 retry_interval = 60
 retry_limit = 20
 dynamic_link_station_supported = no
 trace_base_listen_link_station = no
 trace_base_listen_link_station_format = long
 dynamic_lnk_solicit_sscp_sessions = yes
 dynamic_lnk_cp_sessions_supported = yes
 dynamic_lnk_cp_cp_session_support_required = no
 dynamic_lnk_TG_effective_capacity = 4300800
 dynamic_lnk_TG_connect_cost_per_time = 0
 dynamic_lnk_TG_cost_per_byte = 0
 dynamic_lnk_TG_security = nonsecure
 dynamic_lnk_TG_propagation_delay = lan
 dynamic_lnk_TG_user_defined_1 = 128
 dynamic_lnk_TG_user_defined_2 = 128
 dynamic_lnk_TG_user_defined_3 = 128
 comments = ""

```

Figure 299 (Part 5 of 6). SNA Server Configuration Profile for RS60012

```

mode:
 prof_name = "NVDMNORM"
 mode_name = "NVDMNORM"
 max_sessions = 1
 min_conwinner_sessions = 0
 min_conloser_sessions = 0
 auto_activate_limit = 0
 max_adaptive_receive_pacing_window = 16
 receive_pacing_window = 7
 max_ru_size = 3840
 min_ru_size = 256
 class_of_service_name = "#CONNECT"
 comments = "Mode for NVDM/MVS"

mode:
 prof_name = "NVDMRS6K"
 mode_name = "NVDMRS6K"
 max_sessions = 8
 min_conwinner_sessions = 4
 min_conloser_sessions = 0
 auto_activate_limit = 0
 max_adaptive_receive_pacing_window = 16
 receive_pacing_window = 7
 max_ru_size = 4096
 min_ru_size = 256
 class_of_service_name = "#INTER"
 comments = ""

```

Figure 299 (Part 6 of 6). SNA Server Configuration Profile for RS600012

## C.2 Communication Manager/2 Configuration

```
DEFINE_LOCAL_CP FQ_CP_NAME(USIBMRA.RA39P210)
 CP_ALIAS(RA39P210)
 NAU_ADDRESS(INDEPENDENT_LU)
 NODE_TYPE(EN)
 NODE_ID(X'05DCC210')
 NW_FP_SUPPORT(NONE)
 HOST_FP_SUPPORT(YES)
 HOST_FP_LINK_NAME(HOST$1)
 MAX_COMP_LEVEL(NONE)
 MAX_COMP_TOKENS(0);

DEFINE_LOGICAL_LINK LINK_NAME(RS600012)
 ADJACENT_NODE_TYPE(NN)
 PREFERRED_NN_SERVER(NO)
 DLC_NAME(IBMTRNET)
 ADAPTER_NUMBER(0)
 DESTINATION_ADDRESS(X'10005AB14FCB04')
 ETHERNET_FORMAT(NO)
 CP_CP_SESSION_SUPPORT(YES)
 ACTIVATE_AT_STARTUP(YES)
 LIMITED_RESOURCE(NO)
 LINK_STATION_ROLE(USE_ADAPTER_DEFINITION)
 SOLICIT_SSCP_SESSION(NO)
 MAX_ACTIVATION_ATTEMPTS(USE_ADAPTER_DEFINITION)
 USE_PUNAME_AS_CPNAME(NO)
 EFFECTIVE_CAPACITY(USE_ADAPTER_DEFINITION)
 COST_PER_CONNECT_TIME(USE_ADAPTER_DEFINITION)
 COST_PER_BYTE(USE_ADAPTER_DEFINITION)
 SECURITY(USE_ADAPTER_DEFINITION)
 PROPAGATION_DELAY(USE_ADAPTER_DEFINITION)
 USER_DEFINED_1(USE_ADAPTER_DEFINITION)
 USER_DEFINED_2(USE_ADAPTER_DEFINITION)
 USER_DEFINED_3(USE_ADAPTER_DEFINITION);

DEFINE_LOCAL_LU LU_NAME(RA39L210)
 DESCRIPTION(Loca1 LU)
 LU_ALIAS(RA39L210)
 NAU_ADDRESS(INDEPENDENT_LU);

DEFINE_PARTNER_LU FQ_PARTNER_LU_NAME(USIBMRA.RA60012B)
 PARTNER_LU_ALIAS(RA60012B)
 PARTNER_LU_UNINTERPRETED_NAME(RA60012B)
 MAX_MC_LL_SEND_SIZE(32767)
 CONV_SECURITY_VERIFICATION(NO)
 PARALLEL_SESSION_SUPPORT(YES);
```

Figure 300 (Part 1 of 2). Communications Manager/2 NDF File

```

DEFINE_MODE MODE_NAME(NVDMRS6K)
 DESCRIPTION(LU6.2 Mode - NVDM6K)
 COS_NAME(#INTER)
 DEFAULT_RU_SIZE(NO)
 MAX_RU_SIZE_UPPER_BOUND(4096)
 RECEIVE_PACING_WINDOW(4)
 MAX_NEGOTIABLE_SESSION_LIMIT(32767)
 PLU_MODE_SESSION_LIMIT(8)
 MIN_CONWINNERS_SOURCE(0)
 COMPRESSION_NEED(PROHIBITED)
 PLU_SLU_COMPRESSION(NONE)
 SLU_PLU_COMPRESSION(NONE);

DEFINE_DEFAULTS IMPLICIT_INBOUND_PLU_SUPPORT(NO)
 DEFAULT_MODE_NAME(BLANK)
 DEFAULT_LOCAL_LU_ALIAS(RA39L210)
 MAX_MC_LL_SEND_SIZE(32767)
 DIRECTORY_FOR_INBOUND_ATTACHES(*)
 DEFAULT_TP_OPERATION(NONQUEUED_AM_STARTED)
 DEFAULT_TP_PROGRAM_TYPE(BACKGROUND)
 DEFAULT_TP_CONV_SECURITY_RQD(NO)
 MAX_HELD_ALERTS(10);

DEFINE_TP SNA_SERVICE_TP_NAME(X'21',007)
 DESCRIPTION(Send TP)
 PIP_ALLOWED(NO)
 FILESPEC(C:\IBMNVD2\BIN\ANXSNADS.EXE)
 CONVERSATION_TYPE(ANY_TYPE)
 CONV_SECURITY_RQD(NO)
 SYNC_LEVEL(EITHER)
 TP_OPERATION(QUEUED_OPERATOR_STARTED)
 PROGRAM_TYPE(BACKGROUND)
 INCOMING_ALLOCATE_QUEUE_DEPTH(255)
 INCOMING_ALLOCATE_TIMEOUT(INFINITE)
 RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

DEFINE_TP SNA_SERVICE_TP_NAME(X'21',008)
 DESCRIPTION(Receive TP)
 PIP_ALLOWED(NO)
 FILESPEC(C:\IBMNVD2\BIN\ANXSNADS.EXE)
 CONVERSATION_TYPE(ANY_TYPE)
 CONV_SECURITY_RQD(NO)
 SYNC_LEVEL(EITHER)
 TP_OPERATION(QUEUED_OPERATOR_STARTED)
 PROGRAM_TYPE(BACKGROUND)
 INCOMING_ALLOCATE_QUEUE_DEPTH(255)
 INCOMING_ALLOCATE_TIMEOUT(INFINITE)
 RECEIVE_ALLOCATE_TIMEOUT(INFINITE);

START_ATTACH_MANAGER;

```

Figure 300 (Part 2 of 2). Communications Manager/2 NDF File



### C.3 IBMNVDM2.INI

```

//*****
//*
//* IBM NetView DM/2 Ver. 2 INI File
//*
//*****
FileserviceDir = D:\FSDATA
SharedDirA = F:\SHAREA
SharedDirB = F:\SHAREB
MaxRequests = 8
MaxClients = 10
MaxShrFiles = 500
AdapterNum = 0
AgentTimeOut = -1
FPNetworkID = USIBMRA
FLPName = RA39TCF1
DFPNetworkID = RA60012B
DFPLName = RA60012B
RemoteActivation = YES
RemoteProcInvoc = YES
RemoteCM = YES
RemoteSend = REPLACE
PollingInterval = 0
UnsolicitedReports = YES
MessageLogFile = C:\IBMNVD2\MESSAGE.DAT
ErrorLogFile = C:\IBMNVD2\ERROR.DAT
LogOption = NVDM
TransformAlgor = SCB
TransformParam = " "
TimeZone = 0
RemoteRetrieve = ALL
RemoteDelete = ALL
RebootDelay = 10
AutomaticPurgeReport = NO
//*****

```

Figure 301. NetView DM/2 Change Control Server Configuration File

## C.4 NetView DM/MVS IOF Log

```
NDMOC050 HANDLE UNSOLICITED MESSAGES

SEQN TIME MSG NO. MESSAGE TEXT
0022 20:50 NDM0834I THE NSR FROM NODE RA39C219, SEQUENCE 4, ORIGIN DATE/TIME
 941126205039, STARTED.
0023 20:50 NDM0124I FUNCTION INS ENDED FOR LOGICAL UNIT RA60012B. NSR FROM NO
 DE RA39C219, SEQUENCE 4, ORIGIN DATE/TIME 941126205039, R
 ETURN CODE 0, TRANSMISSION BYTES 0, FUNCTION STATUS COMPL
 ETED.
0024 20:50 NDM0835I NSR FROM NODE RA39C219, SEQUENCE 4, ORIGIN DATE/TIME 9411
 26205039, HAS ENDED.
0025 20:50 NDM0834I THE NSR FROM NODE RA39L210, SEQUENCE 21, ORIGIN DATE/TIME
 941126205021, STARTED.
0026 20:50 NDM0124I FUNCTION INS ENDED FOR LOGICAL UNIT RA60012B. NSR FROM NO
 DE RA39L210, SEQUENCE 21, ORIGIN DATE/TIME 941126205021,
 RETURN CODE 0, TRANSMISSION BYTES 0, FUNCTION STATUS COMP
 LETED.
0027 20:50 NDM0835I NSR FROM NODE RA39L210, SEQUENCE 21, ORIGIN DATE/TIME 941
 126205021, HAS ENDED.
0028 20:54 NDM0834I THE NSR FROM NODE RA39C219, SEQUENCE 5, ORIGIN DATE/TIME
 941126205418, STARTED.
0029 20:54 NDM0124I FUNCTION ACC ENDED FOR LOGICAL UNIT RA60012B. NSR FROM NO
 DE RA39C219, SEQUENCE 5, ORIGIN DATE/TIME 941126205418, R
 ETURN CODE 0, TRANSMISSION BYTES 0, FUNCTION STATUS COMPL
 ETED.
0030 20:54 NDM0835I NSR FROM NODE RA39C219, SEQUENCE 5, ORIGIN DATE/TIME 9411
 26205418, HAS ENDED.
0031 20:55 NDM0834I THE NSR FROM NODE RA39L210, SEQUENCE 22, ORIGIN DATE/TIME
 941126205421, STARTED.
0032 20:55 NDM0124I FUNCTION ACC ENDED FOR LOGICAL UNIT RA60012B. NSR FROM NO
 DE RA39L210, SEQUENCE 22, ORIGIN DATE/TIME 941126205421,
 RETURN CODE 0, TRANSMISSION BYTES 0, FUNCTION STATUS COMP
 LETED.
0033 20:55 NDM0835I NSR FROM NODE RA39L210, SEQUENCE 22, ORIGIN DATE/TIME 941
 126205421, HAS ENDED.

Command ==> _

PF= __ 1/13=HELP 3/15=END 4/16=RETURN 7/19=BACK
 8/20=FORW 9/21=PRINT 10/22=TOP 11/23=LAST_VIEWED 12/24=BOT

M= 0 STATUS=WAITING TRANSM= 0 PRINTER=UNAVAIL
```

Figure 302. IOF Log CM Request Initiated from Remote Administrator

## C.5 NetView DM/6000 fndlog

```
1994/11/26 20:46:53 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 10 RA39L210 :
Fetch request scheduled for later execution.
1994/11/26 20:46:53 rs600012 38709 FNDRB025I: @rs600012 1994/11/26 10 RA39L210 :
Fetch request was successfully placed on the scheduler input queue.
1994/11/26 20:46:54 rs600012 24655 FNDSH058I: @rs600012 1994/11/26 10 RA39L210 :
Fetch request is being processed.
1994/11/26 20:46:54 rs600012 24655 FNDSH045I: @rs600012 1994/11/26 10 RA39L210 :
Fetch request started for file RA.NVDM6000.TO.NVDM2.REF.1.0 from rs600012.
1994/11/26 20:46:54 rs600012 40279 FNDCM130I: @rs600012 1994/11/26 10 RA39L210 :
Received a Fetch request for data file RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:46:55 rs600012 40279 FNDCM131I: @rs600012 1994/11/26 10 RA39L210 :
RA.NVDM6000.TO.NVDM2.REF.1.0 fetched to the server successfully.
1994/11/26 20:46:55 rs600012 24655 FNDSH072I: @rs600012 1994/11/26 10 RA39L210 :
Changing request from Fetch Report to Store Request (to RA39L210).
1994/11/26 20:46:55 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 10 RA39L210 :
Store request scheduled for later execution.
1994/11/26 20:46:55 rs600012 24655 FNDSH074I: @rs600012 1994/11/26 10 RA39L210 :
Store request passed to the network gateway for remote routing.
1994/11/26 20:46:55 rs600012 42068 FNDEN025I: Send request sent to
USIBMRA.RA39L210, from rs600012, with file RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:47:26 rs600012 42686 FNDCO022I: Initializing trace and logging.
1994/11/26 20:47:26 rs600012 42686 FNDCO015I: Task fndts has pid 42686.
1994/11/26 20:47:26 rs600012 42686 FNDCO079I: transmission controller Send task
started on connection RA39L210. Count is now 1. Context is 1.
1994/11/26 20:47:26 rs600012 42686 FNDCO121I: Allocated new conversation on
connection RA39L210.
1994/11/26 20:47:26 rs600012 42686 FNDCO191I: Send MU_ID 13 assigned on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:47:27 rs600012 42686 FNDCO221I: MU_ID 13 on connection RA39L210
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:47:28 rs600012 42686 FNDCO201I: @rs600012 1994/11/26 10 RA39L210 :
Sent to remote target.
1994/11/26 20:47:29 rs600012 42686 FNDCO231I: MU_ID 13 on connection RA39L210
direction 0 state changed to PURGED.
1994/11/26 20:47:29 rs600012 42686 FNDCO123I: Deallocated conversation on
connection RA39L210.
1994/11/26 20:47:29 rs600012 42686 FNDCO081I: Transmission controller Send task
ended on connection RA39L210. Count is now 0. Context is 1.
1994/11/26 20:47:29 rs600012 42686 FNDCO016I: Task fndts has returned with return
code 0.
1994/11/26 20:47:31 rs600012 42687 FNDCO022I: Initializing trace and logging.
1994/11/26 20:47:31 rs600012 42687 FNDCO015I: Task fndtr has pid 42687.
1994/11/26 20:47:31 rs600012 42687 FNDCO119I: Accepted new conversation on
connection RA39L210.
1994/11/26 20:47:31 rs600012 42687 FNDCO080I: Transmission controller Receive
task started on connection RA39L210. Count is now 1. Context is 2.
1994/11/26 20:47:31 rs600012 42687 FNDCO201I: Receive MU_ID 13 received on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
```

Figure 303 (Part 1 of 7). NetView DM/6000 fndlog

```

1994/11/26 20:47:32 rs600012 42687 FNDC022I: MU_ID 13 on connection RA39L210
direction 1 state changed to COMPLETED.
1994/11/26 20:47:33 rs600012 43094 FNDE012I: File action report received for
rs600012.
1994/11/26 20:47:33 rs600012 42687 FNDC023I: MU_ID 13 on connection RA39L210
direction 1 state changed to PURGED.
1994/11/26 20:47:33 rs600012 42687 FNDC160I: Remote target deallocated
conversation on connection RA39L210.
1994/11/26 20:47:33 rs600012 42687 FNDC082I: Transmission controller Receive
task ended on connection RA39L210. Count is now 0. Context is 2.
1994/11/26 20:47:33 rs600012 42687 FNDC0016I: Task fnldr has returned with
return code 0.
1994/11/26 20:47:33 rs600012 24655 FNDSH076I: @rs600012 1994/11/26 10 RA39L210 :
File action request succeeded.
1994/11/26 20:47:33 rs600012 24655 FNDSH078I: @rs600012 1994/11/26 10 RA39L210 :
Completed database updates for File action report.
1994/11/26 20:47:33 rs600012 24655 FNDSH060I: @rs600012 1994/11/26 10 RA39L210 :
File action RA.NVDM6000.TO.NVDM2.REF.1.0 report received. Result was 0,
sense data 0000:0000.
1994/11/26 20:48:53 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 11 RA39C219 :
Install request scheduled for later execution.
1994/11/26 20:48:53 rs600012 38709 FNDRB025I: @rs600012 1994/11/26 11 RA39C219 :
Install request was successfully placed on the scheduler input queue.
1994/11/26 20:48:53 rs600012 38709 FNDRB025I: @rs600012 1994/11/26 12 RA39L210 :
Install request was successfully placed on the scheduler input queue.
1994/11/26 20:48:53 rs600012 24655 FNDD001I: Added or changed Change Management
Status record.
1994/11/26 20:48:53 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 12 RA39L210 :
Install request scheduled for later execution.
1994/11/26 20:48:53 rs600012 24655 FNDD001I: Added or changed Change Management
Status record.
1994/11/26 20:48:53 rs600012 42068 FNDE075I: Install request sent to
USIBMRA.RA39C219, from rs600012, requesting installation of change file
RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:48:54 rs600012 42068 FNDE075I: Install request sent to
USIBMRA.RA39L210, from rs600012, requesting installation of change file
RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:49:06 rs600012 44232 FNDC0022I: Initializing trace and logging.
1994/11/26 20:49:06 rs600012 44232 FNDC0015I: Task fndts has pid 44232.
1994/11/26 20:49:06 rs600012 44232 FNDC079I: transmission controller Send
task started on connection RA39L210. Count is now 1. Context is 1.
1994/11/26 20:49:06 rs600012 44232 FNDC121I: Allocated new conversation on
connection RA39L210.
1994/11/26 20:49:06 rs600012 44232 FNDC019I: Send MU_ID 14 assigned on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:49:06 rs600012 44232 FNDC022I: MU_ID 14 on connection RA39L210
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:49:06 rs600012 44232 FNDC201I: @rs600012 1994/11/26 11 RA39C219
: Sent to remote target.
1994/11/26 20:49:07 rs600012 44232 FNDC023I: MU_ID 14 on connection RA39L210
direction 0 state changed to PURGED.
1994/11/26 20:49:07 rs600012 44232 FNDC019I: Send MU_ID 15 assigned on
connection RA39L210. MU_ID state changed to IN_TRANSIT.

```

Figure 303 (Part 2 of 7). NetView DM/6000 fndlog

```

1994/11/26 20:49:07 rs600012 44232 FNDC022I: MU_ID 15 on connection RA39L210
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:49:08 rs600012 44232 FNDC201I: @rs600012 1994/11/26 12 RA39L210 :
Sent to remote target.
1994/11/26 20:49:09 rs600012 44232 FNDC023I: MU_ID 15 on connection RA39L210
direction 0 state changed to PURGED.
1994/11/26 20:49:09 rs600012 44232 FNDC123I: Deallocated conversation on
connection RA39L210.
1994/11/26 20:49:09 rs600012 44232 FNDC081I: Transmission controller Send
task ended on connection RA39L210. Count is now 0. Context is 1.
1994/11/26 20:49:09 rs600012 44232 FNDC0016I: Task fndts has returned with
return code 0.
1994/11/26 20:49:14 rs600012 44233 FNDC0022I: Initializing trace and logging.
1994/11/26 20:49:14 rs600012 44233 FNDC0015I: Task fndtr has pid 44233.
1994/11/26 20:49:14 rs600012 44233 FNDC119I: Accepted new conversation on
connection RA39L210.
1994/11/26 20:49:14 rs600012 44233 FNDC080I: Transmission controller Receive
task started on connection RA39L210. Count is now 1. Context is 2.
1994/11/26 20:49:14 rs600012 44233 FNDC020I: Receive MU_ID 14 received on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:49:15 rs600012 44233 FNDC022I: MU_ID 14 on connection RA39L210
direction 1 state changed to COMPLETED.
1994/11/26 20:49:16 rs600012 43094 FNDC081I: Install report for primary
change file RA.NVDM6000.TO.NVDM2.REF.1.0 file received from RA39L210.
1994/11/26 20:49:16 rs600012 44233 FNDC023I: MU_ID 14 on connection RA39L210
direction 1 state changed to PURGED.
1994/11/26 20:49:16 rs600012 44233 FNDC160I: Remote target deallocated
conversation on connection RA39L210.
1994/11/26 20:49:16 rs600012 44233 FNDC082I: Transmission controller Receive
task ended on connection RA39L210. Count is now 0. Context is 2.
1994/11/26 20:49:16 rs600012 44233 FNDC0016I: Task fndtr has returned with
return code 0.
1994/11/26 20:49:17 rs600012 24655 FNDCSH010I: @rs600012 1994/11/26 12 RA39L210
: Install succeeded on RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:49:17 rs600012 24655 FNDCDB001I: Added or changed Change
Management Status record.
1994/11/26 20:49:17 rs600012 24655 FNDCSH078I: @rs600012 1994/11/26 12 RA39L210 :
Completed database updates for Install report.
1994/11/26 20:49:17 rs600012 24655 FNDCSH060I: @rs600012 1994/11/26 12 RA39L210 :
Install RA.NVDM6000.TO.NVDM2.REF.1.0 report received. Result was 0,
sense data 0000:0000.
1994/11/26 20:49:32 rs600012 44237 FNDC0022I: Initializing trace and logging.
1994/11/26 20:49:32 rs600012 44237 FNDC0015I: Task fndtr has pid 44237.
1994/11/26 20:49:32 rs600012 44237 FNDC119I: Accepted new conversation on
connection RA39L210.
1994/11/26 20:49:32 rs600012 44237 FNDC080I: Transmission controller Receive
task started on connection RA39L210. Count is now 1. Context is 2.
1994/11/26 20:49:32 rs600012 44237 FNDC020I: Receive MU_ID 15 received on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:49:33 rs600012 44237 FNDC022I: MU_ID 15 on connection RA39L210
direction 1 state changed to COMPLETED.
1994/11/26 20:49:34 rs600012 43094 FNDC081I: Install report for primary change
file RA.NVDM6000.TO.NVDM2.REF.1.0 file received from RA39C219.

```

Figure 303 (Part 3 of 7). NetView DM/6000 fndlog

```

1994/11/26 20:49:34 rs600012 24655 FNDSH010I: @rs600012 1994/11/26 11 RA39C219 :
Install succeeded on RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:49:34 rs600012 24655 FNDDB001I: Added or changed Change Management
Status record.
1994/11/26 20:49:34 rs600012 44237 FNDC023I: MU_ID 15 on connection RA39L210
direction 1 state changed to PURGED.
1994/11/26 20:49:34 rs600012 44237 FNDC016I: Remote target deallocated
conversation on connection RA39L210.
1994/11/26 20:49:34 rs600012 44237 FNDC082I: Transmission controller Receive
task ended on connection RA39L210. Count is now 0. Context is 2.
1994/11/26 20:49:34 rs600012 44237 FNDC0016I: Task fnctr has returned with
return code 0.
1994/11/26 20:49:34 rs600012 24655 FNDSH078I: @rs600012 1994/11/26 11 RA39C219 :
Completed database updates for Install report.
1994/11/26 20:49:34 rs600012 24655 FNDSH060I: @rs600012 1994/11/26 11 RA39C219 :
Install RA.NVDM6000.TO.NVDM2.REF.1.0 report received. Result was 0,
sense data 0000:0000.
1994/11/26 20:49:39 rs600012 42710 FNDC0022I: Initializing trace and logging.
1994/11/26 20:49:39 rs600012 42710 FNDC0015I: Task fndts has pid 42710.
1994/11/26 20:49:39 rs600012 42710 FNDC079I: transmission controller Send task
started on connection RA39TCF1. Count is now 1. Context is 1.
1994/11/26 20:49:39 rs600012 42710 FNDC121I: Allocated new conversation on
connection RA39TCF1.
1994/11/26 20:49:39 rs600012 42710 FNDC019I: Send MU_ID 6 assigned on connection
RA39TCF1. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:49:39 rs600012 42710 FNDC022I: MU_ID 6 on connection RA39TCF1
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:49:41 rs600012 42710 FNDC023I: MU_ID 6 on connection RA39TCF1
direction 0 state changed to PURGED.
1994/11/26 20:49:41 rs600012 42710 FNDC019I: Send MU_ID 7 assigned on connection
RA39TCF1. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:49:41 rs600012 42710 FNDC022I: MU_ID 7 on connection RA39TCF1
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:49:43 rs600012 42710 FNDC023I: MU_ID 7 on connection RA39TCF1
direction 0 state changed to PURGED.
1994/11/26 20:49:44 rs600012 42710 FNDC123I: Deallocated conversation on
connection RA39TCF1.
1994/11/26 20:49:44 rs600012 42710 FNDC081I: Transmission controller Send task
ended on connection RA39TCF1. Count is now 0. Context is 1.
1994/11/26 20:49:44 rs600012 42710 FNDC0016I: Task fndts has returned with
return code 0.
1994/11/26 20:52:33 rs600012 38709 FNDRB025I: @rs600012 1994/11/26 13 RA39C219 :
Accept request was successfully placed on the scheduler input queue.
1994/11/26 20:52:33 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 13 RA39C219 :
Accept request scheduled for later execution.
1994/11/26 20:52:34 rs600012 38709 FNDRB025I: @rs600012 1994/11/26 14 RA39L210 :
Accept request was successfully placed on the scheduler input queue.
1994/11/26 20:52:34 rs600012 24655 FNDDB001I: Added or changed Change Management
Status record.
1994/11/26 20:52:34 rs600012 24655 FNDSH008I: @rs600012 1994/11/26 14 RA39L210 :
Accept request scheduled for later execution.
1994/11/26 20:52:34 rs600012 42068 FNDEN077I: Accept request sent to
USIBMRA.RA39C219, from rs600012, requesting acceptance of change file

```

Figure 303 (Part 4 of 7). NetView DM/6000 fndlog

```

RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:52:34 rs600012 24655 FNDDB001I: Added or changed Change Management
Status record.
1994/11/26 20:52:35 rs600012 42068 FNDEN077I: Accept request sent to
USIBMRA.RA39L210, from rs600012, requesting acceptance of change file
RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:53:06 rs600012 44253 FNDC0022I: Initializing trace and logging.
1994/11/26 20:53:06 rs600012 44253 FNDC0015I: Task fndts has pid 44253.
1994/11/26 20:53:06 rs600012 44253 FNDC0079I: transmission controller Send task
started on connection RA39L210. Count is now 1. Context is 1.
1994/11/26 20:53:06 rs600012 44253 FNDC121I: Allocated new conversation on
connection RA39L210.
1994/11/26 20:53:07 rs600012 44253 FNDC019I: Send MU_ID 16 assigned on connection
RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:53:07 rs600012 44253 FNDC022I: MU_ID 16 on connection RA39L210
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:53:07 rs600012 44253 FNDC201I: @rs600012 1994/11/26 13 RA39C219
: Sent to remote target.
1994/11/26 20:53:07 rs600012 44253 FNDC023I: MU_ID 16 on connection RA39L210
direction 0 state changed to PURGED.
1994/11/26 20:53:08 rs600012 44253 FNDC019I: Send MU_ID 17 assigned on connection
RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:53:08 rs600012 44253 FNDC022I: MU_ID 17 on connection RA39L210
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:53:09 rs600012 44253 FNDC201I: @rs600012 1994/11/26 14 RA39L210
: Sent to remote target.
1994/11/26 20:53:10 rs600012 44253 FNDC023I: MU_ID 17 on connection RA39L210
direction 0 state changed to PURGED.
1994/11/26 20:53:10 rs600012 44253 FNDC123I: Deallocated conversation on
connection RA39L210.
1994/11/26 20:53:10 rs600012 44253 FNDC081I: Transmission controller Send
task ended on connection RA39L210. Count is now 0. Context is 1.
1994/11/26 20:53:10 rs600012 44253 FNDC0016I: Task fndts has returned with
return code 0.
1994/11/26 20:53:11 rs600012 44254 FNDC0022I: Initializing trace and logging.
1994/11/26 20:53:11 rs600012 44254 FNDC0015I: Task fndtr has pid 44254.
1994/11/26 20:53:12 rs600012 44254 FNDC119I: Accepted new conversation on
connection RA39L210.
1994/11/26 20:53:12 rs600012 44254 FNDC080I: Transmission controller Receive
task started on connection RA39L210. Count is now 1. Context is 2.
1994/11/26 20:53:12 rs600012 44254 FNDC020I: Receive MU_ID 16 received on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:53:12 rs600012 44254 FNDC022I: MU_ID 16 on connection RA39L210
direction 1 state changed to COMPLETED.
1994/11/26 20:53:13 rs600012 43094 FNDEN083I: Accept report for primary change
file RA.NVDM6000.TO.NVDM2.REF.1.0 file received from RA39C219.
1994/11/26 20:53:14 rs600012 24655 FNDSH016I: @rs600012 1994/11/26 13 RA39C219
: Accept succeeded on RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:53:14 rs600012 24655 FNDDB001I: Added or changed Change
Management Status record.
1994/11/26 20:53:14 rs600012 44254 FNDC023I: MU_ID 16 on connection RA39L210
direction 1 state changed to PURGED.
1994/11/26 20:53:14 rs600012 44254 FNDC160I: Remote target deallocated

```

Figure 303 (Part 5 of 7). NetView DM/6000 fndlog

```

conversation on connection RA39L210.
1994/11/26 20:53:14 rs600012 44254 FNDC082I: Transmission controller Receive
task ended on connection RA39L210. Count is now 0. Context is 2.
1994/11/26 20:53:14 rs600012 44254 FNDC0016I: Task fndtr has returned with
return code 0.
1994/11/26 20:53:14 rs600012 24655 FNDSH078I: @rs600012 1994/11/26 13 RA39C219 :
Completed database updates for Accept report.
1994/11/26 20:53:14 rs600012 24655 FNDSH060I: @rs600012 1994/11/26 13 RA39C219 :
Accept RA.NVDM6000.TO.NVDM2.REF.1.0 report received. Result was 0,
sense data 0000:0000.
1994/11/26 20:53:14 rs600012 44258 FNDC0022I: Initializing trace and logging.
1994/11/26 20:53:14 rs600012 44258 FNDC0015I: Task fndtr has pid 44258.
1994/11/26 20:53:14 rs600012 44258 FNDC119I: Accepted new conversation on
connection RA39L210.
1994/11/26 20:53:14 rs600012 44258 FNDC080I: Transmission controller Receive
task started on connection RA39L210. Count is now 1. Context is 2.
1994/11/26 20:53:15 rs600012 44258 FNDC020I: Receive MU_ID 17 received on
connection RA39L210. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:53:15 rs600012 44258 FNDC022I: MU_ID 17 on connection RA39L210
direction 1 state changed to COMPLETED.
1994/11/26 20:53:16 rs600012 43094 FNDC083I: Accept report for primary change
file RA.NVDM6000.TO.NVDM2.REF.1.0 file received from RA39L210.
1994/11/26 20:53:17 rs600012 24655 FNDSH016I: @rs600012 1994/11/26 14 RA39L210
: Accept succeeded on RA.NVDM6000.TO.NVDM2.REF.1.0.
1994/11/26 20:53:17 rs600012 24655 FNDCB001I: Added or changed Change Management
Status record.
1994/11/26 20:53:17 rs600012 44258 FNDC023I: MU_ID 17 on connection RA39L210
direction 1 state changed to PURGED.
1994/11/26 20:53:17 rs600012 44258 FNDC160I: Remote target deallocated
conversation on connection RA39L210.
1994/11/26 20:53:17 rs600012 44258 FNDC082I: Transmission controller Receive
task ended on connection RA39L210. Count is now 0. Context is 2.
1994/11/26 20:53:17 rs600012 44258 FNDC0016I: Task fndtr has returned with
return code 0.
1994/11/26 20:53:17 rs600012 24655 FNDSH078I: @rs600012 1994/11/26 14 RA39L210 :
Completed database updates for Accept report.
1994/11/26 20:53:17 rs600012 24655 FNDSH060I: @rs600012 1994/11/26 14 RA39L210 :
Accept RA.NVDM6000.TO.NVDM2.REF.1.0 report received. Result was 0,
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1994/11/26 20:53:41 rs600012 42728 FNDC0022I: Initializing trace and logging.
1994/11/26 20:53:41 rs600012 42728 FNDC0015I: Task fndts has pid 42728.
1994/11/26 20:53:41 rs600012 42728 FNDC079I: transmission controller Send
task started on connection RA39TCF1. Count is now 1. Context is 1.
1994/11/26 20:53:41 rs600012 42728 FNDC121I: Allocated new conversation on
connection RA39TCF1.
1994/11/26 20:53:42 rs600012 42728 FNDC019I: Send MU_ID 8 assigned on connection
RA39TCF1. MU_ID state changed to IN_TRANSIT.
1994/11/26 20:53:42 rs600012 42728 FNDC022I: MU_ID 8 on connection RA39TCF1
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:53:44 rs600012 42728 FNDC023I: MU_ID 8 on connection RA39TCF1
direction 0 state changed to PURGED.
1994/11/26 20:53:44 rs600012 42728 FNDC019I: Send MU_ID 9 assigned on connection
RA39TCF1. MU_ID state changed to IN_TRANSIT.

```

Figure 303 (Part 6 of 7). NetView DM/6000 fndlog



```
1994/11/26 20:53:44 rs600012 42728 FNDTC022I: MU_ID 9 on connection RA39TCF1
direction 0 state changed to TRANSFER PENDING.
1994/11/26 20:53:46 rs600012 42728 FNDTC023I: MU_ID 9 on connection RA39TCF1
direction 0 state changed to PURGED.
1994/11/26 20:53:46 rs600012 42728 FNDTC123I: Deallocated conversation on
connection RA39TCF1.
1994/11/26 20:53:46 rs600012 42728 FNDTC081I: Transmission controller Send
task ended on connection RA39TCF1. Count is now 0. Context is 1.
1994/11/26 20:53:46 rs600012 42728 FNDC0016I: Task fndts has returned with
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```

*Figure 303 (Part 7 of 7). NetView DM/6000 fndlog*



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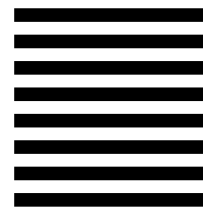
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