

Release Notes

AIXlink/X.25 Version 2.0.1
Release Notes

Document Number GI10-0733-01

Note
Before using this information and the product it supports, read the information in Appendix A, Notices .

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AIXlink/X.25 Version 2.0.1

The following information applies to AIXlink/X.25 Version 2.0.1 or later. A README file for AIXlink/X.25 is written to **/usr/lpp/sx25** during the AIXlink/X.25 installation. Some of the Release Notes information related to runtime is contained in the README. Any README information not part of the body of the Release Notes will be found at the end of these Release Notes.

Prerequisites

The AIXlink/X.25 LPP Version 2.0.1 requires a minimum base release of AIX 5L Version 5.1 with the 5100-01 Recommended Maintenance package or later, which is included on the 09/2001 or later AIX Update CD.

In addition, if the following filesets are installed on a system running AIX Version 5.1, they must be at the following levels or higher before the AIXlink/X.25 LPP will install:

- **bos.rte** must be at 5.1.0 or higher
- **bos.rte.tty** must be at 5.1.0 or higher
- **devices.sys.pci.rte** must be at 5.1.0.0 or higher

If using the IBM ARTIC960 MCA Adapter, the **devices.artic960.rte** fileset must be at 1.3.3 or later fileset.

If using the IBM ARTIC960Hx 4-Port PCI Adapter, the **devices.artic960.rte** fileset must be at 1.4.3 or later.

Note that the **devices.artic960add.rte** fileset is not compatible with running the AIXlink/X.25 LPP over the IBM ARTIC960Hx 4-Port Selectable PCI Adapter or the IBM ARTIC960 MCA Adapter. If this fileset is installed on the system, it automatically configures a **ric960add** device driver over each **ddriciop** device driver in the system when **cfgmgr** is run. Adding AIXlink/X.25 LPP ports to adapters with this device driver configured will fail. Therefore, the **devices.artic960add.rte** fileset may not be installed on a system if use of the AIXlink/X.25 LPP over the IBM ARTIC960Hx 4-Port Selectable PCI Adapter or the IBM ARTIC960 MCA Adapter is desired.

Note:

The **devices.artic960.rte** fileset ships with the adapter. The **devices.artic960.rte** fileset may also be downloaded from the Radisys website. As of August 2001, the procedure is as follows:

1. Access the Radisys download site at:

http://www.radisys.com/service_support/artic/ibm

2. If using the ARTIC960 MCA adapter, under IBM RS/6000 ARTIC Features, select **IBM ARTIC960 4-Port MultiInterface Adapter**. Under **Development Software & Manuals** locate **ARTIC960 Support for AIX V1.3.x** to access the installation/file creation instructions and the program file, which is the download file.

If using the ARTIC960Hx 4-Port PCI adapter, under IBM RS/6000 ARTIC Features, select **IBM ARTIC960Hx 4-Port Selectable PCI Adapter**. Under **Development Software & Manuals** locate **AIX**, then locate **ARTIC960 Support for AIX V1.4.x** to access the installation/file creation instructions and the program file, which is the download file.

Note:

Install only the **devices.artic960** fileset. Do not install the **devices.artic960add** fileset.

Note:

If **devices.artic960add.rte** was inadvertently installed, run **rmdev -1 ric960add** and remove fileset **devices.artic960add.rte** by using **smitty/install/maint/remove/name=devices.artic960add.rte**.

Packaging Information

The following packages are available on this media.

Base X.25 Functionality (sx25)

The **sx25** package provides the base X.25 function, including the protocol stack, device drivers, and adapter microcode. It also includes support for TCP/IP, NPI, DLPI, SNMP, PAD and COMIO. COMIO is provided only in a compatibility mode for customers migrating from earlier versions of AIXlink/X.25 or the X.25 functionality provided in the AIX Version 3 base. The number of virtual circuits allowed per system is based on the license purchased.

Filesets included in this package are as follows:

sx25.rte AIXlink/X.25 Run-Time Environment

This fileset provides the base X.25 device drivers, configuration methods, and applications necessary to use the other AIXlink/X.25 options. This fileset must be installed. This fileset is a prerequisite for all other filesets in the package.

sx25.npi AIXlink/X.25 NPI and DLPI Support

This fileset provides the device driver necessary to run NPI (Network Provider Interface) applications. The **sx25.npi** fileset requires that the **sx25.rte** fileset be installed before or with this fileset.

sx25.comio AIXlink/X.25 COMIO Compatibility Support and Applications

This fileset provides the device driver and applications for the COMIO compatibility interface. This interface provides compatibility with the AIX Version 3 base X.25 product. The **sx25.comio** fileset requires that the **sx25.rte** fileset be installed before or with this fileset.

sx25.tcpip AIXlink/X.25 TCP/IP Support

This fileset provides support for the TCP/IP protocol running over X.25. The **sx25.tcpip** fileset requires that the **sx25.rte** fileset be installed before or with this fileset. The **sx25.tcpip** fileset also requires that **bos.net.tcp.client** at level 5.1.0.10 or later be installed before or with this fileset.

sx25.pad AIXlink/X.25 Triple-X (PAD)

This fileset provides PAD software supporting the X.3, X.28 and X.29 standards. The **sx25.pad** fileset requires that the **sx25.rte** fileset be installed before or with this fileset.

sx25.server AIXlink/X.25 Server Support

This fileset provides an increased number of available virtual circuits based on the customer licensing agreement. The **sx25.server** fileset must be installed in order to get more than 4 virtual circuits available on the system. The **sx25.server** fileset requires that the **sx25.rte** fileset be installed before or with this fileset.

AIXlink/X.25 Application Development Toolkit (sx25.adt)

This package provides libraries, include files, and sample programs that can be used in developing NPI, DLPI, and COMIO applications for X.25.

Any new application development should use NPI. COMIO is supplied as a compatibility interface for existing COMIO applications from AIXlink/X.25 Version 1.1 or the AIX Version 3 base X.25 product.

AIXlink/X.25 Version 2.0.1 supports 32-bit applications only.

Filesets included in this package are as follows:

sx25.adt.rte AIXlink/X.25 Application Development Toolkit Run-Time Environment

This fileset provides include files, libraries, and sample programs for base X.25 program development. This fileset is a prerequisite for all other filesets in the package. The **sx25.adt.rte** requires the **sx25.rte** fileset to be installed before or with this fileset.

sx25.adt.npi AIXlink/X.25 Application Development Toolkit for NPI/DLPI

This fileset provides include files, libraries and sample programs for NPI and DLPI program development. The **sx25.adt.npi** fileset requires **sx25.adt.rte** and **sx25.npi** filesets to be installed before or with this fileset.

sx25.adt.comio AIXlink/X.25 Application Development Toolkit for COMIO

This fileset provides include files, libraries, and sample programs for COMIO compatibility program development. This fileset is provided to allow for compatibility with previously written applications written to the COMIO interface on Version 1.1 or for the X.25 support in the base AIX Version 3. New program development should use the NPI interface. The **sx25.adt.comio** requires the **sx25.adt.rte** and **sx25.comio** filesets be installed before or with this fileset.

X.25 User Guide (sx25.html.en_US)

This package provides the HTML documentation on using, managing, and programming AIXlink/X.25.

This fileset can be installed on AIX 5.1 or later. No requisite software is required to install this package.

The main addition to the documentation for Version 2.0 is listed below in *NPI Enhancements for AIXlink/X.25 Version 2.0.0*.

The **sx25.html** package also provides a PDF file that can be used for printing the documentation.

The **x25usrgd.pdf** file is installed in:

```
/usr/share/man/info/en_US/a_doc_lib/aixlnk25/x25usrgd
```

AIXlink/X.25 Electronic License (sx25.license)

This package contains the electronic license for the AIXlink/X.25 software.

Approximate Disk Space Required For Each of the Packages

- sx25 - 6.4 MB of disk space if the entire package is installed
- sx25.adt - 1.1 MB of disk space if the entire package is installed
- sx25.html - 7 MB of disk space

Migration to AIXlink/X.25 Version 2.0.1

Before migrating the AIXlink/X.25 LPP software to version 2.0.1, stop all applications using the X.25 software, and remove all ports and drivers down to the "Defined" state. In addition, we recommend that you back up the configuration by using the **backupx25** command. After the software migration is complete, reboot to reload all the latest code into the system.

Electronic Licensing for AIXlink/X.25 Version 2.0.1

Electronic license acceptance has been added to AIXlink/X.25 in Version 2.0.1. To install the sx25 filesets you must accept the license agreement. The SMIT option *Accept New License Agreement* must be *yes* for the software to install.

NPI Enhancements for AIXlink/X.25 Version 2.0.0

AIXlink/X.25 Version 2.0 enhances Network Provider Interface (NPI) support by supplying CCITT cause-and-diagnostic codes for X.25 to the user's NPI applications.

Existing applications can still continue to run on this new version without any modification. Customers who wish to receive the cause-and-diagnostic codes must recompile their X.25 applications to take advantage of the modified functions.

The following NPI structures contained in the **/usr/include/sys/npi_20.h** file have been changed to allow users to use the cause-and-diagnostic codes (the additions are marked by "<"):

```
/*
 * NC Reset Request
 */
typedef struct {
    att_ulong PRIM_type;      /* always N_RESET_REQ*/
    att_ulong RESET_reason;  /* the reason for reset */
```

```

    uchar cause;                /* Cause value of the reset */ <

    uchar diagnostic;          /* Diagnostic reason of the reset */ <
} N_reset_req_t;

/*
 * NC Reset Indication
 */

typedef struct {
    att_ulong PRIM_type;       /* always N_RESET_IND*/
    att_ulong RESET_orig;     /* the reset originator */
    att_ulong RESET_reason;   /* the reason for reset */
    uchar cause;              /* Cause value of the reset */ <

    uchar diagnostic;        /* Diagnostic reason of the reset */ <
} N_reset_ind_t;

/*
 * NC Disconnection Request
 */

typedef struct {
    att_ulong PRIM_type;       /* always N_DISCON_REQ*/
    att_ulong DISCON_reason;   /* reason for disconnection*/
    att_ulong RES_length;     /* responding address length */
    att_ulong RES_offset;     /* the offset of the responding address from the
                               beginning of the M_PROTO message block */
    att_ulong SEQ_number;     /* sequence number used by the NS provider to
                               * associate the N_DISCON_RES message with an
                               * unacknowledged N_CONN_IND that is to be
                               * rejected */
    uchar cause;              /* Cause value of the disconnect */ <

    uchar diagnostic;        /* Diagnostic reason of the disconnect */ <
} N_discon_req_t;

/*
 * NC Disconnection Indication
 */

typedef struct {
    att_ulong PRIM_type;       /* always N_DISCON_IND*/
    att_ulong DISCON_orig;    /* the originator for disconnection */
    att_ulong DISCON_reason;  /* reason for disconnection*/
    att_ulong RES_length;     /* responding address length */
    att_ulong RES_offset;     /* the offset of the responding address from
                               the beginning of the M_PROTO message block */
    att_ulong SEQ_number;     /* when its value is non_zero, it identifies
                               sequence number associated with the N_CON_IN
                               that is being aborted */
    uchar cause;              /* Cause value of the disconnect */ <

```

```
    uchar diagnostic;          /* Diagnostic reason of the disconnect */ <
} N_discon_ind_t;
```

The cause-and-diagnostic codes can be used for NPI APIs in the same way they were used for COMIO APIs. See the *AIXlink/X.25 for AIX: Guide and Reference* manual for more information.

Additional Information From the README

The README is written to `/usr/lpp/sx25` during installation.

Note to AIXlink/X.25 LPP Version 1 Customers

For migration installations from AIXlink/X.25 Version 1, run the following script:

```
/usr/lpp/sx25/bin/backupx25
```

and save the files that it produces to tape, or diskette, or another AIX system before performing a migration installation.

After the AIXlink/X.25 LPP has been migrated, reboot to reload all the latest code into the system.

If there is a problem, change directory into the directory where your X.25 backup is, and run the following:

- `removex25 -q`
- `restorex25 -v`

This reloads your original X.25 configuration.

Note on Utilities Provided for Backing Up and Restoring X.25 Port Configuration

Scripts contained in `/usr/bin` can be run by the system administrator to back up, restore, or delete the AIXlink/X.25 LPP configuration if so desired. These scripts are as follows:

```
backupx25
removex25
restorex25
```

To view the usage for each command type a `-?` as the parameter. For example:

```
$ /usr/bin/backupx25 -?
Usage: backupx25 [-f] [-d dirname] [-v]
Generates backup configuration files for the X.25 LPP
```

The following flags are available:

f	Force removal of existing backup files if they are already present in the save directory
d	Name of save directory. Defaults to current directory

Attention: Ensure that you have backed up your X.25 configuration *before* using the `removex25` script. It is recommended that you reboot your system before restoring your X.25 configuration to ensure that the new drivers are loaded.

Note to All X.25 users

Never configure or unconfigure any of the X.25 LPP product from the `/usr/lib/drivers/pse` directory on your system. Failure to do so may result in your inability to unconfigure or configure ports on your system.

Note about "non-default" PVCs

When configuring and unconfiguring ports with non-default PVC definitions, the following commands *must* be used (instead of the `mkdev` or `rmdev` commands):

```
mksx25  
rmsx25
```

The syntax for the `mksx25` and `rmsx25` commands is the same as for `mkdev` and `rmdev`. If you configure using SMIT, this will be handled automatically.

Note about X.25 TCP/IP and PVC Use

If you are using a PVC between two hosts configured to use the TCP/IP protocols to communicate between them and data is not flowing between them properly, run the following:

```
arp -a
```

Examine the output for the PVC remote host. There should be an entry with that hostname and IP address and the word *permanent*. If it does not appear, run:

```
x25ip
```

This will re-establish PVC connections.

Note About X.25 NPI and COMIO Usage

For customers who want to write threaded applications involving AIXlink/X.25, the NPI programming interface should be used. NPI was implemented in AIXlink/X.25 to provide the user with the ability to write multi-threaded applications for X.25.

The COMIO programming interface cannot be used for threaded applications because the COMIO programming interface is not thread-safe.

The COMIO library API is provided for existing applications that were written to the user space COMIO API provided with the base AIX Version 3 X.25 support. The COMIO API is not intended for new program development.

IBM will not provide any support for problems concerning COMIO running in a threaded environment.

The NPI programming interface should be used for all new program development.

For Customers using the IBM ARTIC960Hx 4-Port Selectable PCI Adapter and the IBM ARTIC960 MCA Adapters

To use the IBM ARTIC960Hx 4-Port Selectable PCI Adapter or the IBM ARTIC960 MCA Adapter, you must have the **devices.artic960.rte** fileset installed.

Note that the **devices.artic960add.rte** fileset is not compatible with running the AIXlink/X.25 LPP over the IBM ARTIC960Hx 4-Port Selectable PCI Adapter or the IBM ARTIC960 MCA Adapter. If this fileset is installed on the system, it automatically configures a ric960add device driver over each ddriciop device driver in the system when cfgmgr is run. Adding AIXlink/X.25 LPP ports to adapters with this device driver configured will fail. Therefore, the devices.artic960add.rte fileset may not be installed on a system if use of the AIXlink/X.25 LPP over the IBM ARTIC960Hx 4-Port Selectable PCI adapter or the IBM ARTIC960 MCA Adapter is desired.

Notes About Collecting X.25 Testcase for IBM Support

This section guides you in collecting the data that IBM requires to be able to determine the cause of the problem you have reported.

Note:

Customers should not send testcases containing confidential material and should keep a copy of the testcase in case retransmission is necessary.

Collect traces as follows:

1. Start the trace(s).
2. Re-create the problem.
3. Stop the trace(s).
4. Gather the trace data.

It is important that you start *all* the traces before you re-create the problem. Then stop all the traces at the same time immediately after re-creating the problem to ensure that the traces are synchronized with respect to when the problem occurs.

Create a directory to contain the trace data. For example:

```
mkdir /tmp/traces
```

The **/tmp/traces** directory is used in all examples that follow, but you can replace that directory with any empty directory.

1. Clear the system error log, as follows:

```
# errclear 0
```

2. Start the X25mon trace, as follows:

```
# x25mon -fpct -n sx25a# > /tmp/traces/xmonitor &
```

Where # is the port number in question.

If you want additional packet data in the trace, run:

```
# x25mon -fpct -d 2048 -n sx25a# > /tmp/traces/xmonitor &
```

3. Start the device driver trace. For example:

```
# trace -a -j <trace hook>, <trace hook>
```

If more than one trace hook is needed, the trace hooks must be separated with commas, with no spaces between the the trace hooks and the comma. To keep the trace to a manageable size, select only the trace hook(s) relevant to the problem.

The possible trace hooks for AIXLink/X.25 are:

```
25C Packet layer
    329 X.25 TCP/IP interface
    32A NPI
    32B X.25 system utilities
    32C Triple-X PAD
    33B COMIO emulation
    33C Adapter driver (twd0)
    2D8 Frame layer
```

The following is a possible tracehook for the ARTIC960 MCA and ARTIC960Hx PCI adapters only:

```
29F ddricio
```

The following is a possible tracehook for the 2-port multiprotocol PCI adapter only:

```
3A9 - HKWD_DPMP_PCI_XMIT
3AA - HKWD_DPMP_PCI_RECV
3AB - HKWD_DPMP_PCI_OTHER
41E Physical layer (for ports using the hdlc driver)
```

If it takes too long to reproduce the problem, add the following flags to the **trace** command. Otherwise, the trace may fill up the systems **/var** directory. With these flags, the trace is restricted to a certain size and wraps. For example:

```
# trace -a -j 25C,33B -T 1000000 -L 4000000
```

4. Re-create the problem.
5. Stop the trace, as follows:

```
# trcstop
```

6. Stop the X25MON trace, as follows:

```
# kill -9 <pid of x25mon>
```

Note:

The following steps are the instructions on how to collect the data that you have just gathered.

7. Create a **/tmp/traces/README.PROBLEM** file that describes the problem.

What happens?

What do you expect to happen?

8. List customer and SE contacts with phone numbers.
9. Describe your network. Provide as much detail as possible, to make it easier to determine the problem. Include any information that would help isolate the problem.
10. TCP/IP

If the problem occurs while using TCP/IP, include the TCP/IP configuration data. Run the following:

```
# x25ip -s
```

For each host shown, run the following:

```
# x25ip -s -h host_name > /tmp/traces/config.host_name
```

Where `host_name` is one of the hosts returned by `x25ip -s`.

11. SNMPD

If the problem occurs while using `snmpd -x25smuxd` sessions, include the following:

```
# cp /usr/tmp/x25smuxd.log /tmp/traces/x25smuxd.log
# cp /usr/tmp/snmpd.log /tmp/traces/snmpd.log
# cp /etc/mib.defs /tmp/traces/mib.defs
# cp /usr/sbin/x25smuxd.defs /tmp/traces/x25smuxd.defs
```

12. PAD

If the problem occurs while using **x29d pad** daemon, include the following:

```
# mkdir /tmp/traces/pad
# cp /etc/sx25pad/* /tmp/traces/pad
```

13. X.25 Program

If the problem occurs while using an X.25 program that you wrote (or purchased), include the **SOURCE** program or that segment of the program where you think the problem occurs. Also include any application logs that were generated during problem creation.

14. Get a system error report:

```
# errpt -a > /tmp/traces/errlog
```

15. Get a device driver trace file:

```
# cp -p /usr/adm/ras/trcfile /tmp/traces
```

Format the **trcfile** on the system where it was taken so that the timestamps are easy to correlate.

```
# trcrpt > /tmp/traces/trcfile.out
```

16. Get the system levels:

```
# lslpp -h > /tmp/traces/lslpp.out
```

17. Get the X.25 configuration:

```
# snap -r  
# snap -Xc  
# cp /tmp/ibmsupt/snap.pax.Z /tmp/traces
```

18. Get X25STATUS

```
# x25status > /tmp/traces/x25status.out
```

19. Get SX25DEBUG status for the twd driver.

If appropriate for your system's configuration, gather the X.25 microcode information by running `sx25debug`.

```
# sx25debug -b # > /tmp/traces/sx25debug.b#
```

Where # is the numeric instance of the port board (such as 0).

Use `lsx25` to find board number for drivers `twd0`, `twd1`, and so on.

20. Get HDLCSTAT status for HDLC drivers:

If appropriate for your system's configuration, get the HDLC statistics maintained by the HDLC driver.

```
# hdlcstat hdlc# > /tmp/traces/hdlcstat.hdlc0
```

Where # is the numeric instance of the HDLC driver. For drivers `hdlc0`, `hdlc1`, and so on.

21. Get X.25 Network Subscription:

Provide a copy of the Network Subscription. This document (usually 1 or 2 pages in length) describes exactly what the customer has purchased from the Network Provider.

22. Send in the testcase data:

Tar the data files together and compress them, as follows:

```
# cd /tmp/traces
```

```
# tar -cvf item#.tar *
# compress item#.tar
Where item# is your actual item number.
```

Verify the compressed file. The following command provides a listing of the files that were compressed into the *.Z file.

```
# uncompress < item#.tar.Z | tar -tvf-
```

FTP it to the IBM testcase repository:

```
ftp testcase.boulder.ibm.com
login: anonymous
password: <your email address>
cd aix
put pmr#.branch#.country#.tar.Z    (for example)
ls -l
quit
```

Note:

To ensure that IBM is aware of your testcase, call the IBM AIX Support Line to confirm that the testcase has been submitted.

Appendix A. Notices

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