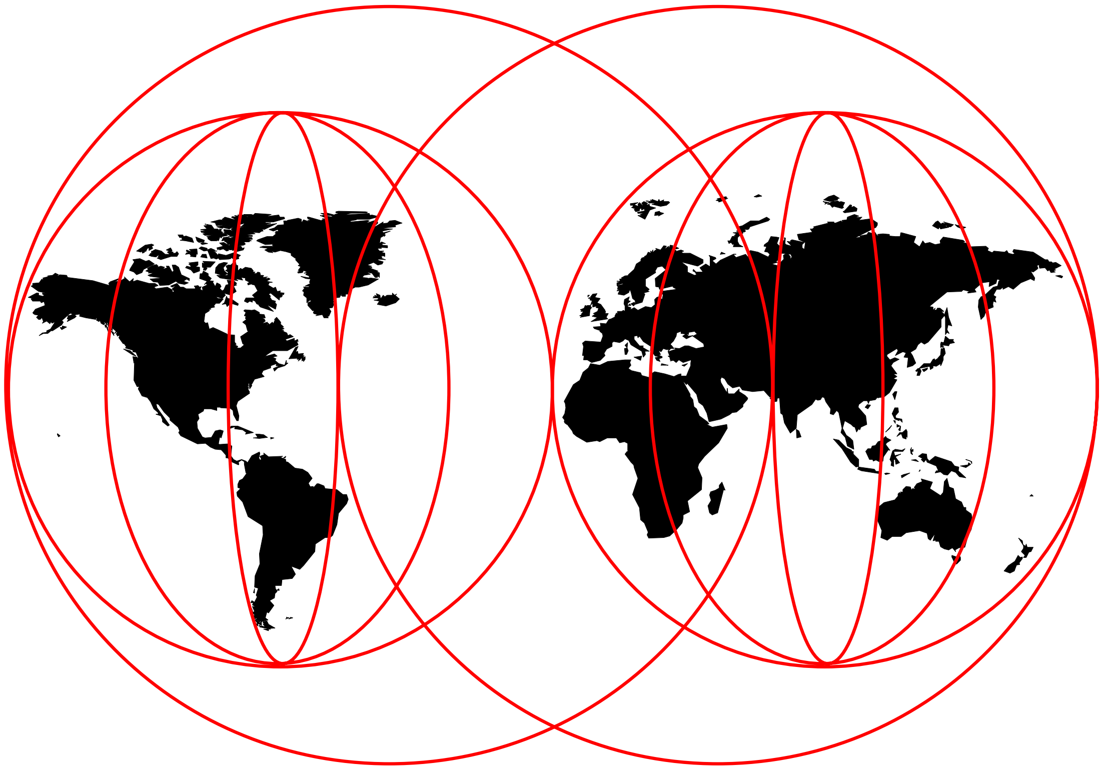
Publishing Tools in the Network Computing Framework

Barry D. Nusbaum, Uve Loeser, Angel Rodrigo San Jose



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Publishing Tools in the Network Computing Framework

April 1998

Take Note!

Before using this information and the product it supports, be sure to read the general information in Chapter 6, “Special Notices” on page 217.

First Edition (April 1998)

This edition applies to Version 4.6 of Lotus Domino Go Webserver and Version 1.0 of IBM ServletExpress for use with the NT operating systems.

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Preface

This redbook provides an overview of the various tools that are available to help with Web publishing within the context of the Network Computing Framework. For example, there are samples and scenarios that show how to use NetObjects Fusion, Lotus BeanMachine, ServletExpress and the Beans Development Kit. In addition, there are several examples of non-IBM tools that are provided. The nature of technology in Web years makes it critical to stay on top of new tools. While it is possible that there will be new versions of the tools used in this book within a short period of time, the examples provided will provide a good framework for understanding how to use the tools. This will make the upgrade to the next version much easier.

The Team That Wrote This Redbook

This redbook was produced by a team of specialists from around the world working at the Systems Management and Networking ITSO Center, Raleigh.

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Chapter 1. NCF Tools Overview

The phenomenal pace that the Internet is growing is creating many challenges for the technologies that are used to create Web sites. In Web publishing the most significant trends are:

- Dynamic content - From the static HTML pages when the technology first came out to the current state of Web publishing, which requires Web content to be live and dynamic, there has been an evolution of tools to help support the technology. Some of the tools are JavaScript, Dynamic HTML, and ServletExpress. The pressure to widen the scope of Web publishing is behind the continued success of Java.

  On the server side, the pressure for dynamic content caused the evolution from CGI-BIN scripts to servlets. With the addition of ServletExpress and such functions as page compilation, dynamic content becomes a real possibility. In addition, there have been significant performance enhancements with the migration to servlets.

- Write once, run anywhere - This is a big requirement that most Web developers have and Java is the only technology today that can provide this.
- Time to market - This may lead to sacrificing functions or a loss of business momentum unless powerful tools and technology are available.

On the other side of the picture are site developers, a diverse group of professionals. They include: graphic artists, usability experts, content creators and business experts. All these people are responsible for producing results and they need powerful tools not only to carry out their individual work but to properly coordinate all of the activities.

There are tools to help perform many different Web publishing functions. In addition to vendor products, there are many freeware and shareware products that are useful. Many of the freeware and shareware products are useful on small sites for simple publishing efforts, but when the site grows, the tools that are able to manage it must expand their scope as well. When it comes to a fully integrated environment for teamwork, we find that only a few tools are able to meet the challenge.

1.1 NCF and Publishing Tools

The NCF programming model supports a dynamic Web application model in which browser requests for HTML pages trigger the dynamic assembly of those pages.

Dynamic Web applications are made up of a wide variety of elements: HTML, scripts, applets, images, audio, video, database items and calculations, that are dynamically assembled according to the logic of the e-business application.

The NCF tools environment includes a broad range of tools targeted to the creation, deployment and maintenance of e-business applications. This environment is broken into three categories, summarized below:

1. Content authoring tools - Which addresses the creation and manipulation of multimedia elements for page content.

2. Integrated application development - Addresses the creation of Web applications that seamlessly combine page contents with existing business infrastructures and applications.

   Java and JavaBeans are at the heart of this model. NCF provides wizards to facilitate programming application-specific JavaBeans and promote the use of JavaBeans as wrappers for existing non-Java elements. The standard interfaces in Java allow the usage of JavaBeans from different application providers.

3. Content assembly and management tools - These tools take active content, such as AppletBeans and ServletBeans, and compose and script them together with other active or static elements to form a complete and cohesive NCF application. An interactive Web page can be visually constructed from components by selecting from a library of page layouts and then filling the layout template with multimedia, applet and servlet content.

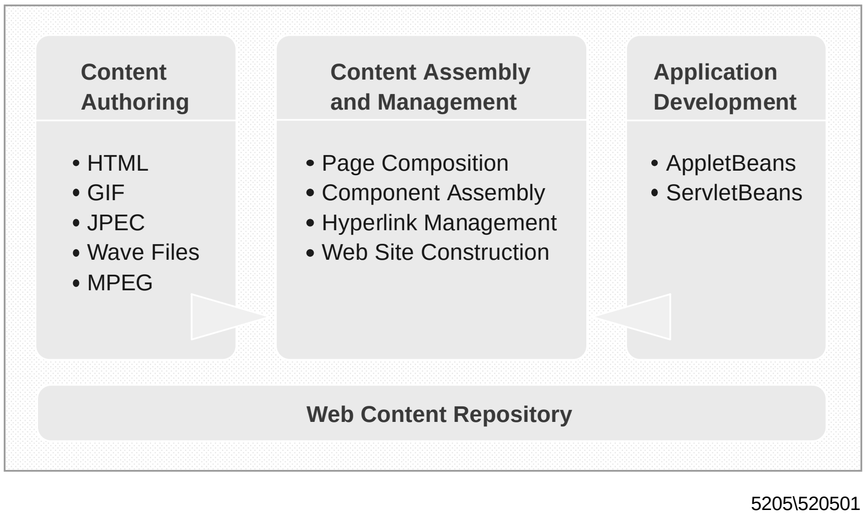


Figure 1. NCF Programming Model

1.2 NetObjects Fusion

NetObjects Fusion is an award-winning design environment that offers designers an unparalleled level of design and management capability of entire Web sites. NetObjects Fusion integrates a set of tools to support almost every task related to the creation and maintenance of Web sites:

- The Site view manages the hierarchical structure of your site. Adding, deleting, renaming and rearranging pages is done by dragging and dropping them. You also can import existing Web sites to the NetObjects Fusion environment. When importing a Web site you may choose to convert the existing pages to NetObjects Fusion format.
- Once the site structure is created you can design pages using the Page view, which provides all the tools needed to add text, images, sound, video, animation, Java applets, JavaBeans, ActiveX controls, data lists, tables, forms, and NetObjects Fusion Components.

  You can organize all these elements with pixel level accuracy, creating frames, layouts and the MasterBorders. MasterBorders are a flexible and powerful feature to hold banners, navigation buttons, images, text and every other element available in the NetObjects Fusion palette around the page border. When a MasterBorder is modified in a page, NetObjects Fusion updates all the pages that use it.

- The Style view is where you view, apply, edit, and create the look and feel of your entire site. SiteStyles are sets of thematic elements that are included with NetObjects Fusion. Some style elements are graphical and others affect the text and colors used in your Web pages. NetObjects Fusion includes 50 SiteStyles predefined sets, and you can also create your own.
- The Assets view gives you a way to see and manage the critical assets associated with your Web site and navigate to the pages on which they appear. It lets you delete unused assets and verify the location of assets that are in use. NetObjects Fusion uses aliases for files and external links, so you can globally replace a link in all the Web pages in which it appears by replacing it once in this view. The same procedure is applicable to other assets such as variables or data objects. Links are verified by NetObjects Fusion, thus assuring the integrity of the application.
- Once your site is completed you can proceed to publish it. This is done through the Publish view. NetObjects Fusion allows for two types of publishing: test staging and final Web server publishing. NetObjects Fusion generates all the HTML and the directory structure on the destination local or remote server, and places all the elements there. You can publish all of the site or only some of the components.
- With NetObjects Fusion, it is easy to include lists of information in your paper. To publish your data, you specify its source and create a master layout for data-based pages. Then NetObjects Fusion uses your layout to create a separate page for each record, and automatically provides your site visitor with buttons to navigate among them.

1.3 Lotus BeanMachine

Lotus BeanMachine is an assembly product that is used to create Java applets using JavaBeans without much effort. This product offers non-programmers a 100% Java user-oriented tool to create rich content in the Web. For programmers, it can dramatically shorten the time to get the pages ready.

Creating a Java applet is a very easy task with Lotus BeanMachine. All you need to do is drag and drop the JavaBeans into the applet and then use a dialog box to specify their properties and actions. Optional wizards guide you step-by-step in the process of creating the applet. You can then preview your applet's appearance and functions using the tool provided by Lotus BeanMachine or using your favorite Web browser as the previewing tool.

An extensive list of actions and effects is available for you to incorporate in your applets: text, sound, animation, ticker tapes, rollovers, nervous text, links, labels, lists, buttons, text entry fields, check boxes and JDBC database access.

Adding your own beans is also very easy. Drag and drop them into the palette and they are immediately integrated into the Lotus BeanMachine environment. An editor is also available for you to develop your own Java classes.

Lotus BeanMachine comes with Sun Microsystems Java compiler. However, you can define another compiler of your choice.

When publishing is required, BeanMachine generates and compiles the Java code for the applets and sends it to the destination server.

1.4 Sun Beans Development Kit

As the product documentation states:

- The Beans Development Kit is intended to support the early development of JavaBeans and to act as a standard reference base for both bean development and tool vendors.

The package can be downloaded from the Java site and it consist of the following:

- A set of .java reference API sources.
- The tool itself, BeanBox test container, with two main purposes:
  1. To allow you to test your beans against a reference container.
  2. To act as an example of how to build a bean container.
- Sample beans that can run in the BeanBox test container.
- A variety of source code.
- Makefiles to rebuild the Beans Development Kit and all the examples.

Although it is not a tool intended for application development, the Beans Development Kit provides an easy way for non-professionals to get familiar with JavaBeans and it is an essential reference for professional programmers.

1.5 ServletExpress

ServletExpress is a plug-in for your Web server that provides a servlet execution and servlet building environment. It acts as a Java-based servlet engine that is independent of your Web server. That assures full portability of your servlets in different Web servers and platforms. ServletExpress transforms an ordinary Web server into a Java-enabled Web server.

ServletExpress is built on the licensed JavaServer Toolkit from JavaSoft and leverages the advanced features available in the Java Web server. ServletExpress also includes the latest Java Servlet Development Kit APIs.

ServletExpress provides:

- Full support for the latest session-tracking APIs. Using the session tracking framework your server can maintain state information by coordinating server requests coming from an individual user into a session.
- A graphical interface for servlet management. You can easily set options for loading local and remote servlets, set initialization parameters, specify servlet aliases, create servlet chains and filters and log servlet messages.
- Web-based remote administration.
- Security features, including a servlet sandbox, which is a controlled execution environment to protect access to Java Web server environment resources. It

uses access control lists to define and control user access to the server resources such as servlets, files or directories.

- Support for dynamic page content, which enables you to easily embed Java as well as servlet and NCSA tags.
- Advanced functions:
  - Security for remotely loaded servlets.
  - Servlet chaining. You can invoke one more servlets in sequence by creating a servlet chain. Every servlet in a chain passes its response to the next in the sequence, and the last server in the chain sends its response to the user.
  - MIME-based data filtering. You can invoke a servlet by requesting a file with a MIME type that you associated with the servlet.
  - Loading from Jar files.
  - Dynamic reloading of modified servlets.
- A set of servlets and application examples.

1.6 Page Compilation

Page compilation is similar to server-side scripting. It can be defined in two ways:

1. As the process of generating HTML pages from hybrid code consisting of Java and HTML.
2. As the process of generating simple servlets with a basic knowledge of Java.

The source file is basically a mix of Java and HTML, but it can include in the non-Java sections any data that a browser is able to understand (for example, JavaScript and dynamic HTML). The result is a servlet that is executed when the page is requested and sends the output to the browser.

These hybrid files and the resulting servlets are managed by a servlet included in the ServletExpress package: pageCompile. It takes care of the servlet to be executed and keeps it properly updated. pageCompile generates Java code from the hybrid file and compiles it. Whenever the source file is changed the process of generating and compiling is recreated.

pageCompile is invoked by means of the filtering functions in ServletExpress. Java/HTML hybrid code files are assigned a jhmtl extension. Whenever a *.jhtml page is invoked, ServletExpress starts pageCompile to process it.

1.7 Netscape Page Composer

Netscape Page Composer is one of the tools that make up Netscape Communicator. It is a simple yet powerful tool for editing and publishing Web pages. It is intended both for experienced and beginner content creators.

Netscape Page Composer characteristics are:

- WYSIWYG - allows you to view the final look while you are composing, and with more complex designs it is very fast to preview the page in your browser of choice.

- Text treatment is very close to a text processor, adding, changing and formatting paragraph styles.
- Drag and drop of hyperlinks and images from the bookmark, mail, news or browser windows to the document in the editor.
- Easy insertion of tables, images, lines and hyperlinks.
- Insertion of your own HTML code, to complement the functions of Page Composer.
- Easy editing of existing Web pages, which is a good way to learn page composition.

1.8 Wallop Build-IT

The Wallop Build-IT product builds and maintains reliable Web applications. It reinforces application integrity all along the application life cycle.

Build-IT provides a visual working environment that offers, through integrated views for component, relation and deployment management, a comprehensive tool for development and assembly of Web applications.

Build-IT does not provide tools for editing components such as text or image editors, but integrates external tools in its environment. For version control purposes, Build-IT needs to rely on other tools that also integrate into its working environment.

Although Build-IT is not a client/server product, with different components for clients and servers it offers some team development features such as check-in/check-out of components, access and version control, when it is integrated with version control tools.

Chapter 2. Fusion, BeanMachine and Beans Development Kit Examples

This chapter shows how to set up and use NetObjects Fusion as part of Domino, as well as how to do it separately. The main focus of this chapter is the actual usage of the product with servlets.

2.1 NetObjects Fusion

NetObjects Fusion is a Web site production application that combines automated site building, quality design, and data publishing features. A site is defined as a series of HTML pages that belong together (see Figure 4 on page 9).

NetObjects Fusion gives users the option to:

- Conceive and plan the site structure (see 2.1.4.1, “Constructing a New Site” on page 14).
- Build and organize pages.
- Design and author the page content (see 2.1.4.2, “Designing a Page” on page 16).
- Design the graphic style of the site (see 2.1.4.3, “Changing SiteStyle” on page 17).
- Collect and manage site assets (see 2.1.4.9, “Managing Assets” on page 25).
- Publish the site to local or remote servers.
- Update and maintain the site.

2.1.1 Installing, Uninstalling and Upgrading

The following sections show how to install and uninstall the product.

2.1.1.1 Installing NetObjects Fusion

In order to install NetObjects Fusion from CD-ROM, you can perform the following steps:

1. Insert the NetObjects Fusion 2.0 CD-ROM into the drive.
2. Open Windows Explorer or use the Windows File Manager function.
3. Double-click on the **CD-ROM** icon.
4. Double-click on **setup.exe** to start the installation program.
5. Click on **Next** in the NetObjects Fusion install screen.
6. Read the License Agreement and click on **Yes** to continue.
7. Read the Installation Warnings and click on **Next**.
8. Select the location to install the software and click on **Next** to continue.
9. If you have a previous version of NetObjects Fusion installed, select the styles you would like to copy and click on **Next.**
10. Choose **Typical**, **Compact**, or **Custom** installation and then click on **Next** to finish the install.

Choosing Custom brings up the selection panel, from which you choose the following elements:

- Program Files - These are the NetObjects Fusion program files. They need to be installed at least once. If some other modules are reinstalled the user has the option to de-select the NetObjects Fusion program files.
- Styles - Elements for backgrounds, banners, buttons, icons, fonts, lines, and text colors. The following window shows you some samples of this:

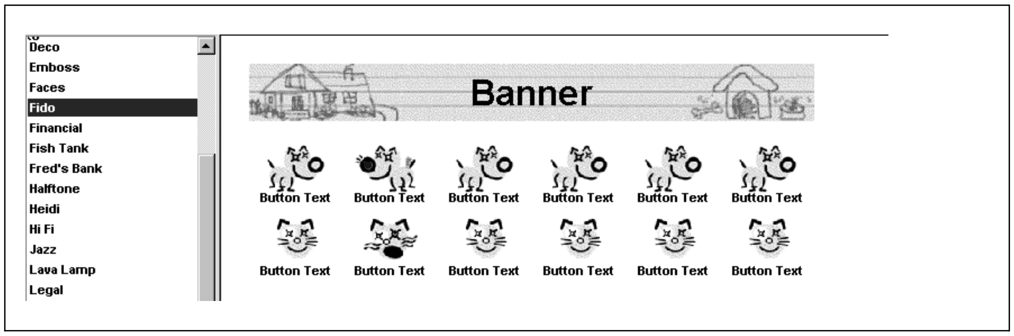
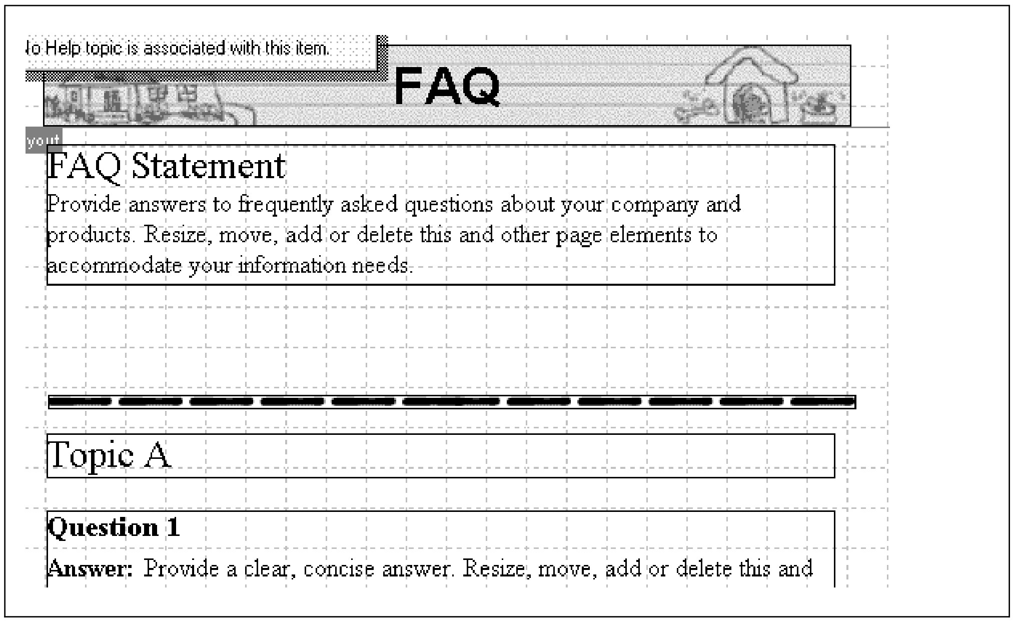


Figure 2. Some Styles

- AutoSites and Page Templates - NetOjects Fusion includes pre-built templates (AutoSites and Page templates) to make the construction of your site easier.

  There are templates for:

  – Multicolumn - Multiimage pages
  – Archives
  – Billing Forms
  – Calendars for events
  – Employees
  – FAQs (see Figure 3 on page 9)
  – Feedback forms
  – Guestbooks
  – Order forms
  – Press releases
  – Product support forms



FAQ Statement

Provide answers to frequently asked questions about your company and products. Resize, move, add or delete this and other page elements to accommodate your information needs.

Topic A

Question 1

Answer: Provide a clear, concise answer. Resize, move, add or delete this and

Figure 3. Template - Frequently Asked Questions

Notice that the template FAQ has been imported into the user's Web site.

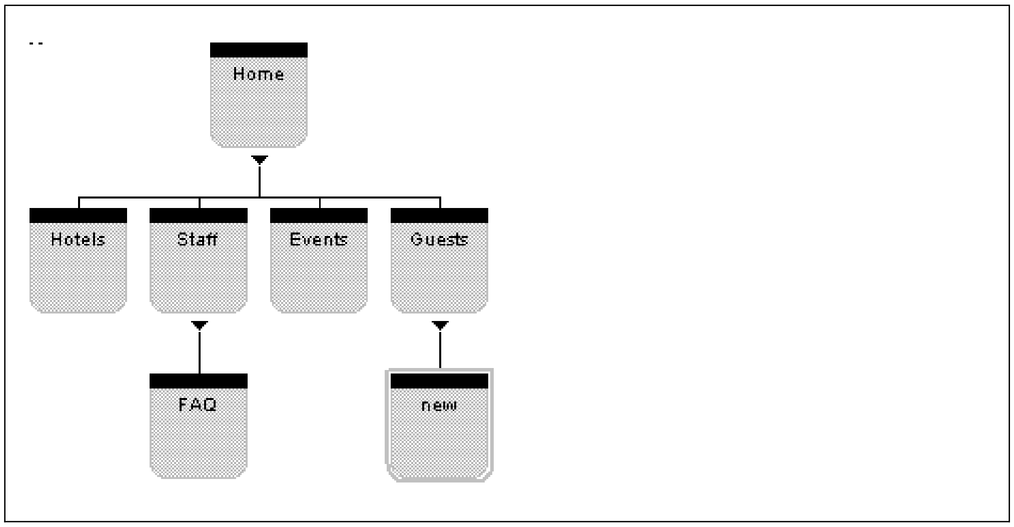


Figure 4. Template FAQ in the User's Site

- Parts - Contains design parts, plug-parts and Smart Objects Design parts including a collection of animated GIFs, arrows, alphanumerics, flourishes, motif shapes, navigation buttons, textures and symbols. Plug-in parts are interactive media.

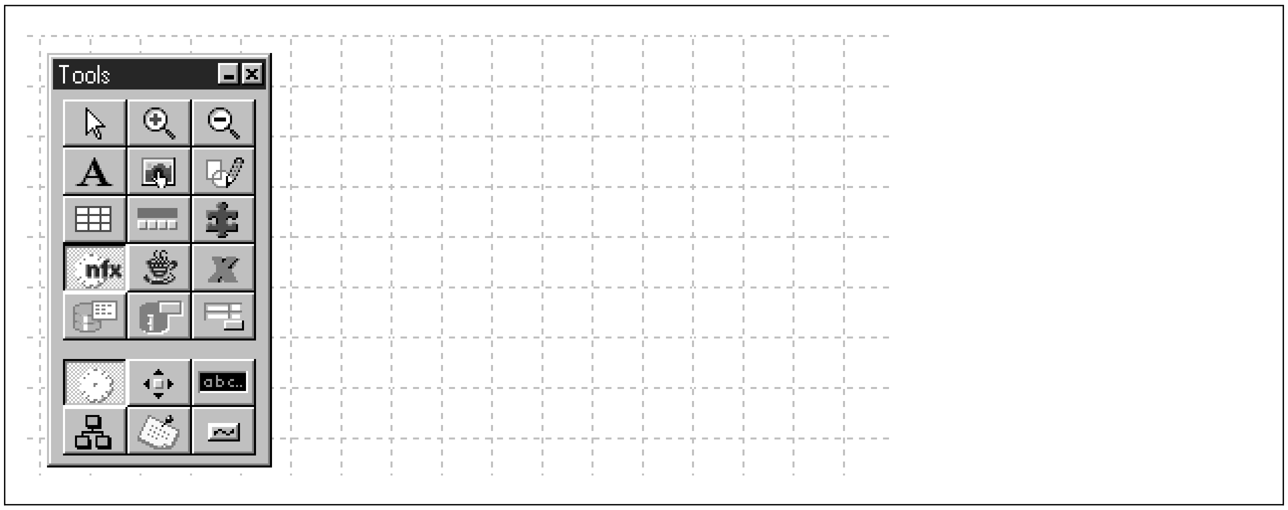
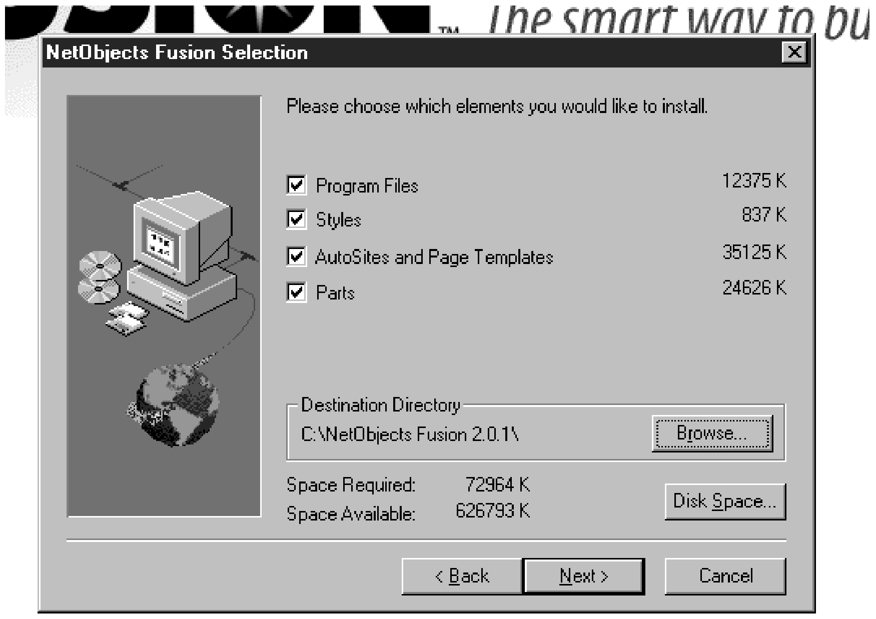


Figure 5. Tools for Parts

11. After you click on **Next**, NetObjects Fusion will be installed. You have the option of reading the readme file right away or you can view it later on.



Please choose which elements you would like to install.

☑ Program Files	12375 K
☑ Styles	837 K
☑ AutoSites and Page Templates	35125 K
☑ Parts	24626 K

Destination Directory
C:\NetObjects Fusion 2.0.1\

Space Required: 72964 K
Space Available: 626793 K

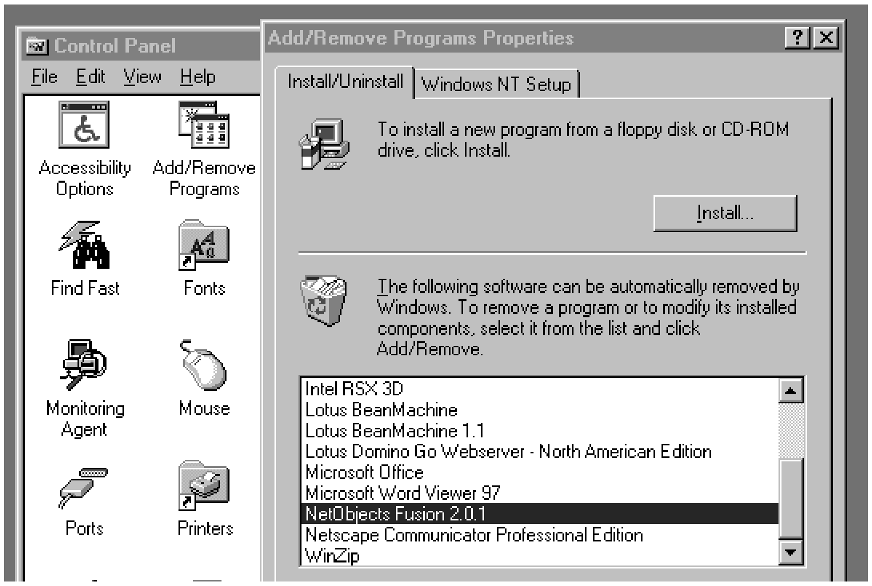
Figure 6. Installing NetObjects Fusion (Custom Selection Panel)

2.1.1.2 Uninstalling a Previous Version of NetObjects Fusion

The following shows how to uninstall NetObjects Fusion.

- For Windows 95 and NT 4.0 Users:

  To uninstall NetObjects Fusion, launch Add/Remove Programs from your control panel and select the version of NetObjects Fusion (V1.0 or V2.0) that was already installed on your system.



To install a new program from a floppy disk or CD-ROM drive, click Install.

The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.

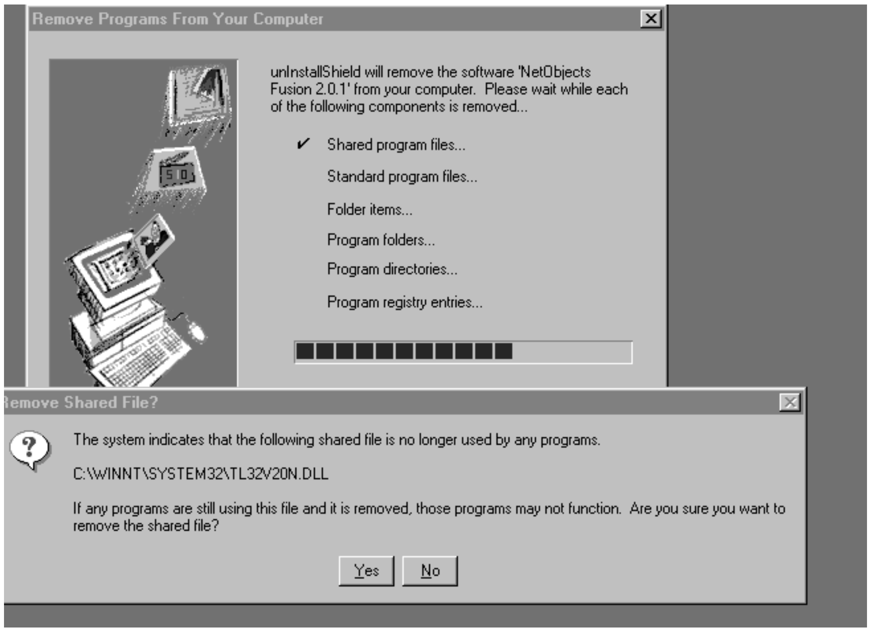
Intel RSX 3D
Lotus BeanMachine
Lotus BeanMachine 1.1
Lotus Domino Go Webserver - North American Edition
Microsoft Office
Microsoft Word Viewer 97
NetObjects Fusion 2.0.1
Netscape Communicator Professional Edition
WinZip

Figure 7. Uninstalling NetObjects Fusion

During uninstallation, you may encounter a message asking to confirm the removal of the file:

`tl32v20n.dll in lib x:\WINNT\System32`,

where x is the location of your system installation. We recommend that you select **Yes** in response to the prompt for permission to delete the file.



unInstallShield will remove the software 'NetObjects Fusion 2.0.1' from your computer. Please wait while each of the following components is removed...

✓ Shared program files...
Standard program files...
Folder items...
Program folders...
Program directories...
Program registry entries...

The system indicates that the following shared file is no longer used by any programs.

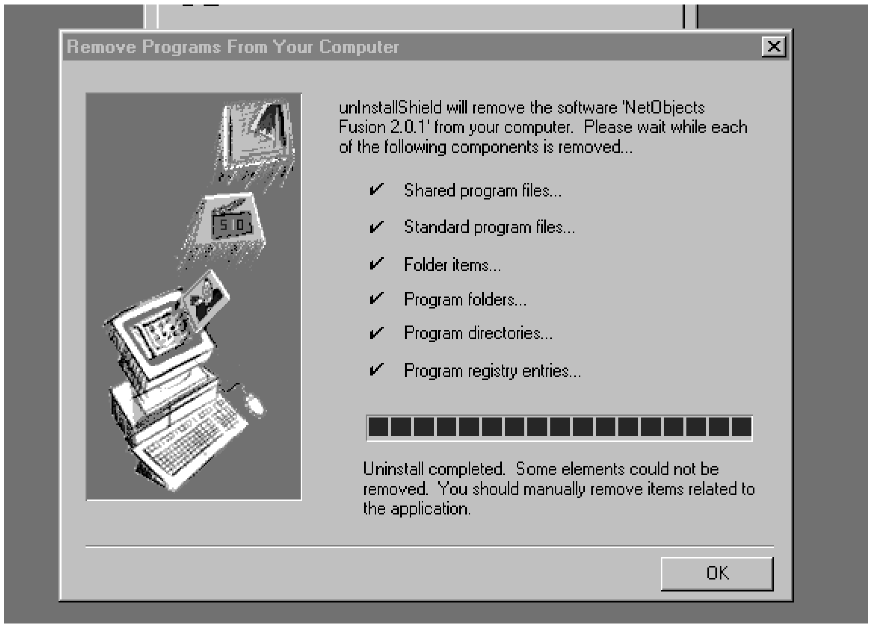
C:\WINNT\SYSTEM32\TL32V20N.DLL

If any programs are still using this file and it is removed, those programs may not function. Are you sure you want to remove the shared file?

Figure 8. DLL to be Removed (Warning Panel)

The uninstaller will not delete any site files (.nod) that you have created. It assumes that .nods are in user sites.

See 2.1, “NetObjects Fusion” on page 7 for a definition of user sites.


Remove Programs From Your Computer

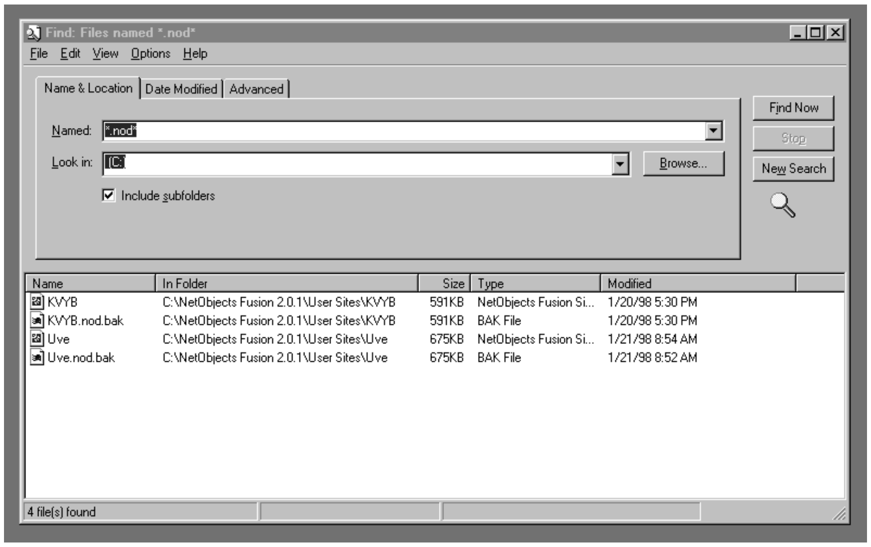
unInstallShield will remove the software 'NetObjects Fusion 2.0.1' from your computer. Please wait while each of the following components is removed...

- ✓ Shared program files...
- ✓ Standard program files...
- ✓ Folder items...
- ✓ Program folders...
- ✓ Program directories...
- ✓ Program registry entries...

Uninstall completed. Some elements could not be removed. You should manually remove items related to the application.

Figure 9. Not All Elements Have Been Removed

The following image shows the remaining files after NetObjects Fusion has been uninstalled. You may need them for importing into another version of NetObjects Fusion or to use them in your user site. That's why they have not been deleted when uninstalling the NetObjects Fusion programs. In case you do not need them any longer, they have to be removed manually. Since they are not in use you do not need to reboot the system to remove them.


Find: Files named *.nod*

File Edit View Options Help
Name & Location | Date Modified | Advanced
Find Now
Stop
New Search
Browse...

Named: *.nod*

Look in: [C:]

☑ Include subfolders

Name	In Folder	Size	Type	Modified
KVYB	C:\NetObjects Fusion 2.0.1\User Sites\KVYB	591KB	NetObjects Fusion Si...	1/20/98 5:30 PM
KVYB.nod.bak	C:\NetObjects Fusion 2.0.1\User Sites\KVYB	591KB	BAK File	1/20/98 5:30 PM
Uve	C:\NetObjects Fusion 2.0.1\User Sites\Uve	675KB	NetObjects Fusion Si...	1/21/98 8:54 AM
Uve.nod.bak	C:\NetObjects Fusion 2.0.1\User Sites\Uve	675KB	BAK File	1/21/98 8:52 AM

4 file(s) found

Figure 10. Remaining Site Files

- For NT 3.51 users:

  If you have made custom styles and wish to reuse them, please make a backup of them. If you do not, they will be deleted during the uninstall process.

2.1.1.3 Upgrading from a Previous Release of NetObjects Fusion

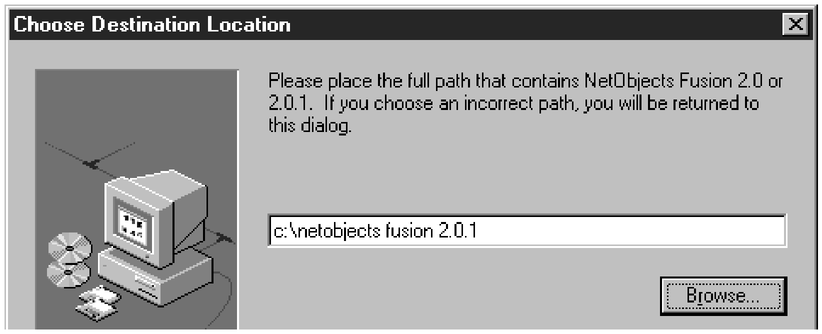
In this book, the update was done for NetObjects Fusion Version 2.01. The update file was nof202update.exe, downloaded from http://www.netobjects.com.

Upgrading means two things:

1. Upgrading the version itself to the new level.
2. Migrating sites files from the older version.

Before you upgrade from a previous release, carefully read the hints and tips for NetObjects Fusion 2.0.2 for Windows 95/NT (Release Notes and the Readme File). Then perform the following steps:

1. Double-click on **upgrade file**.
2. Read the Installer page and click on **Next** to begin.
3. Read the License page and click on **Yes** to continue.
4. Read the warning to close other Windows programs and click on **Exit** to stop or **Next** to continue.
5. Select **Destination** folder and click on **Next** to continue.



Please place the full path that contains NetObjects Fusion 2.0 or 2.0.1. If you choose an incorrect path, you will be returned to this dialog.

c:\netobjects fusion 2.0.1

Figure 11. Destination Folder for the Upgrade Programs

For new releases, downloading, training, prices, and the reseller partner program, see http://www.netobjects.com.

2.1.2 When to Use NetObjects Fusion

NetObjects Fusion is designed for users with a broad range of experience levels who need an efficient, reliable way to construct, maintain, and upgrade Internet and Intranet sites.

Experienced site builders will appreciate the reduced time required to create, import, and update large sites. Graphic designers will be able to create new sites without needing to know HTML statements. Site directors and sponsors appreciate the rapid prototyping when using this product. People who have never created Web pages don't need to have HTML and other technical skills.

All of these people may appreciate the open architecture of NetObjects Fusion.

2.1.3 How to Use NetObjects Fusion

For all users, either skilled or beginners, the easiest way to get to know what NetObjects Fusion can do, is to work through the tutorial chapter. It takes you through:

- Constructing a site
- Designing a page
- Changing the site style
- Previewing the site
- Creating an image map
- Creating a new MasterBorder
- Importing an existing HTML site
- Inserting a NetObjects Fusion page template
- Adding a form element
- Adding a text link
- Managing assets
- Database publishing
- Staging and publishing the site

Once you have finished this introduction you can start developing your own Web sites.

2.1.4 Examples of Using NetObjects Fusion

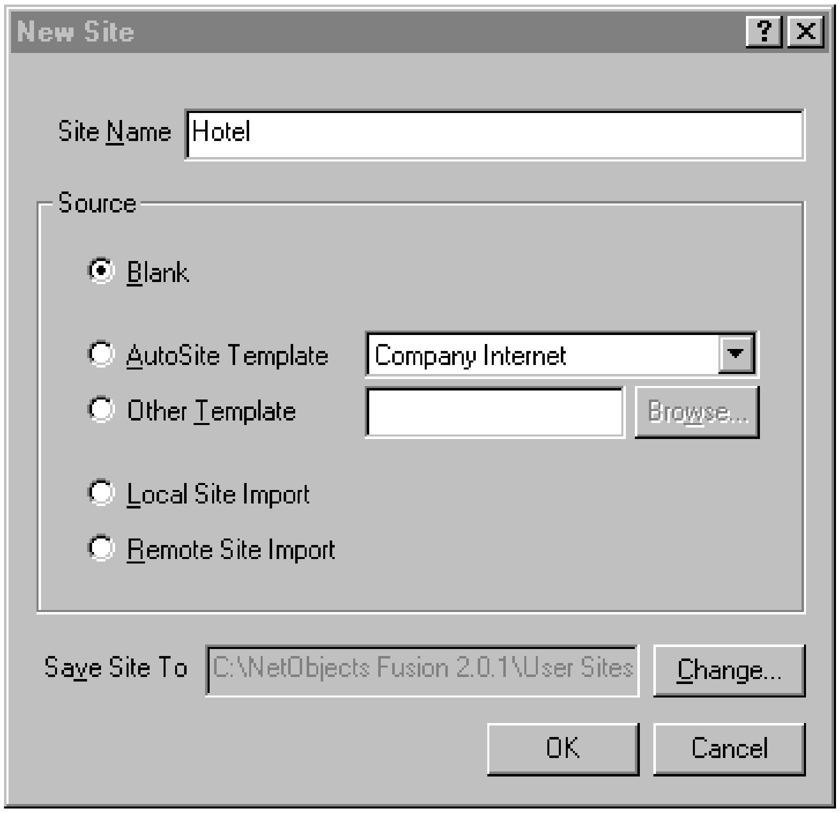
This is a sample of information provided to hotel guests. This is not a real application. The purpose of this example is to show how information can be put together and the tools used to do this.

The first step is done by creating a new site.

2.1.4.1 Constructing a New Site

The New Site dialog box comes up automatically at the first start of NetObjects Fusion or by choosing **New Site...** from the File menu.

The New Site dialog box gives you several options. You can open a blank site, create a new site based on templates, or import an existing site.



New Site

Site Name: Hotel

Source

[✓ Blank]

AutoSite Template: Company Internet

Other Template:

Local Site Import

Remote Site Import

Save Site To: C:\NetObjects Fusion 2.0.1\User Sites

Figure 12. Start a New Site

When the site view comes up it also displays the Tools palette and the Properties palette (see Figure 15 on page 17).

You can add new pages by clicking on the **New Page** button. You can also rename them and move them to the location where you want them.

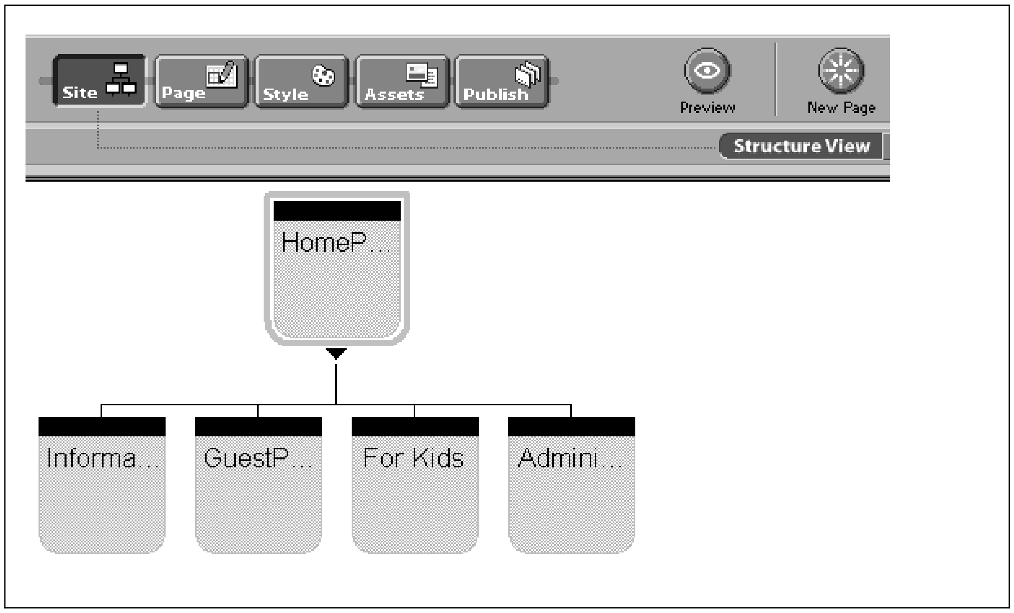
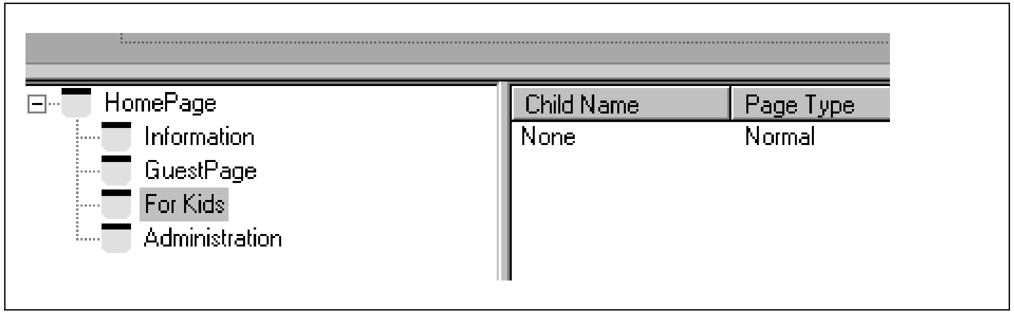


Figure 13. Construct a Site

In addition, you can also click on the **Outline View** button to display an outline version of your site. This provides you with additional information about each child page.



Child Name	Page Type
None	Normal

Figure 14. Outline View

2.1.4.2 Designing a Page

Users designing a page should always keep in mind that the reader of their page should not be confused by too many things being written, too many pictures being shown and too many colors. Designing several pages means also not changing the style, background color, foreground color or fonts from page to page. It would be helpful if the program supporting the designer followed these rules.

On the Site panel select the page you want to work with (see Figure 13 on page 15) and click on the **Page** button to get to the Page side. This is the tool to add text, graphics and more. You can place items on the page exactly where they will appear in the browser.

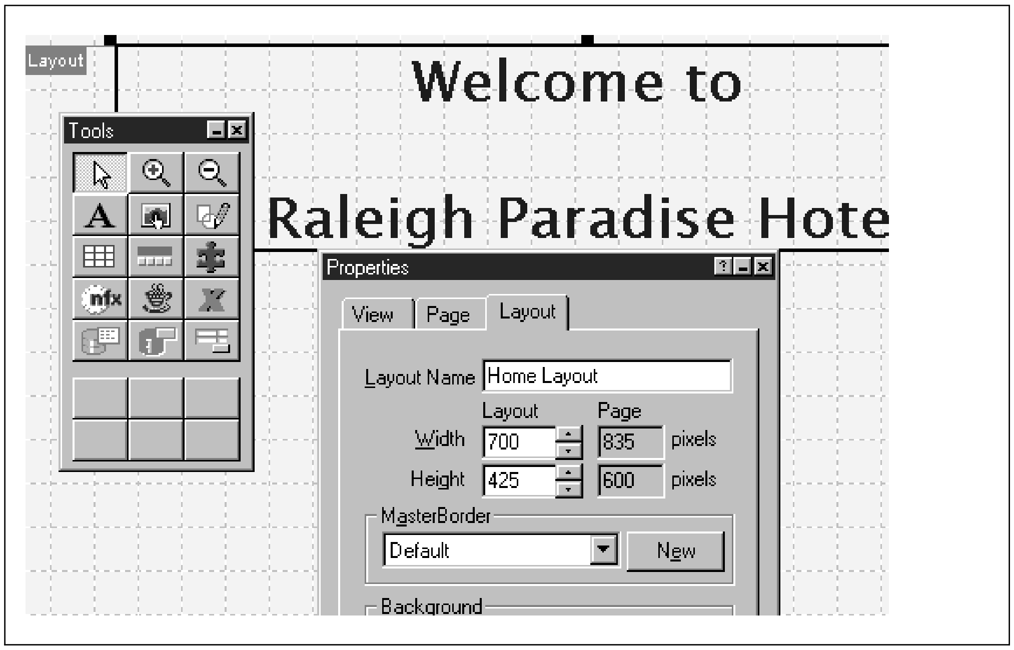
The tools palette lets you add any content to your pages, including:

- Text
- Pictures
- Image maps
- Drawn shapes
- Tables
- Rich media such as sound, video and QuickTime files
- Java applets
- Shockwave files
- ActiveX controls
- NetObjects Fusion Components
- Database information
- Forms

To add some text we can use the tools palette to do the following:

- Select the text tool.
- Drag the text bouncing box anywhere in the layout area.
- Type in some sample text.

- Move the text box to the location you desire.
- Use the Properties palette to change the view, page and layout.



Layout Name: Home Layout

	Layout	Page	
Width	700	835	pixels
Height	425	600	pixels

MasterBorder: Default
New
Background

Figure 15. Designing a Page (Adding Text)

2.1.4.3 Changing SiteStyle

You may not be satisfied with the appearance of your page. You can change it by selecting one of the SiteStyles available in NetObjects Fusion.

Open the Style view by clicking on the **Style** button on the main menu. Look through the different styles available in the list and select a style that meets your needs. Then click on **Set Style** to apply this style consistently for all the pages in your site.

In this example, the Simple style was selected (see also Figure 2 on page 8).

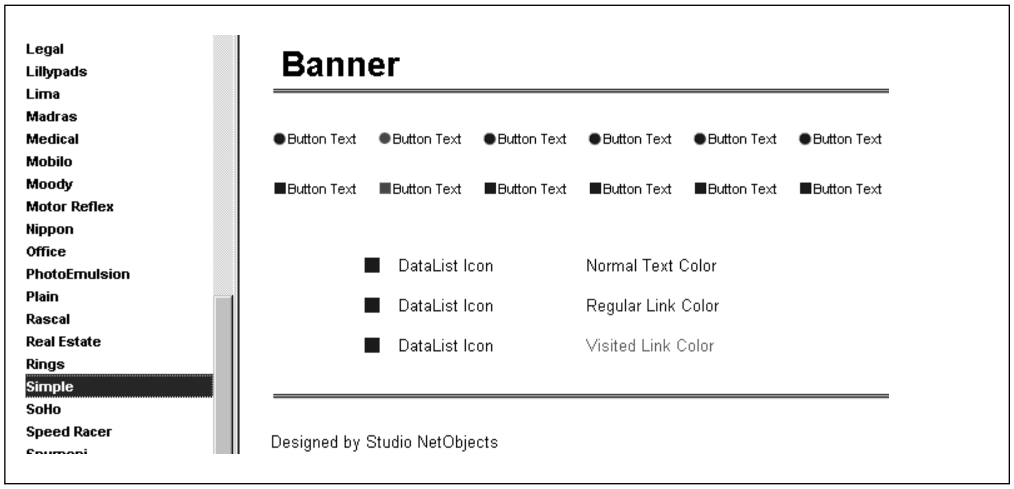


Figure 16. Some Styles

Notice how the design of the page changes:

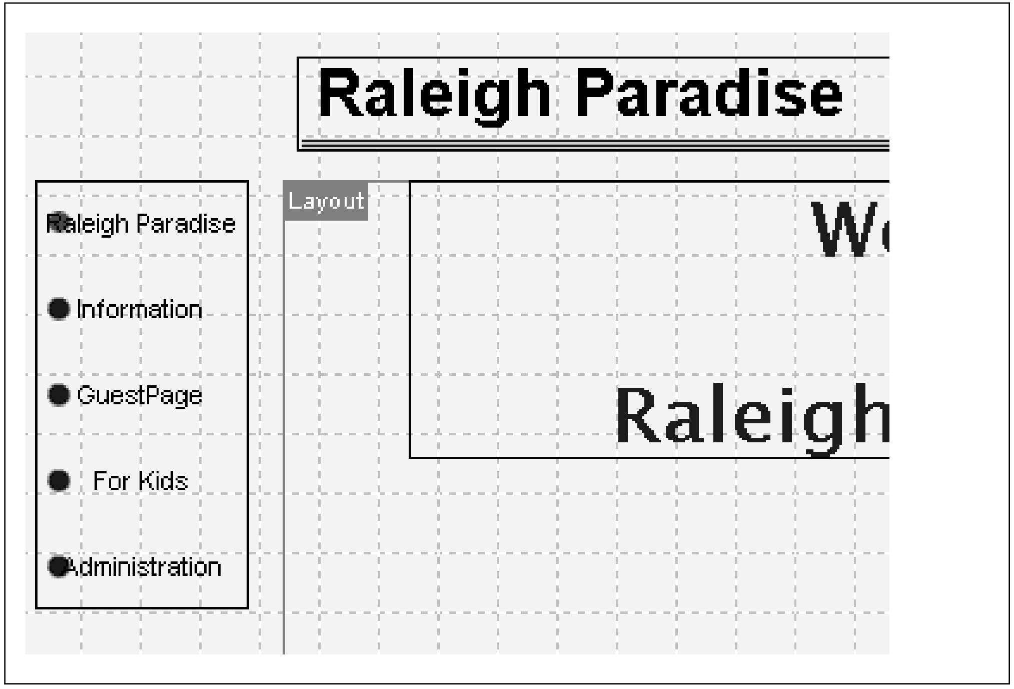


Figure 17. Designing Page (Changing Style)

You can always use the Preview button on the main menu to take a look at the way your entire site or your current page will be displayed in a Web browser.

2.1.4.4 Creating an Image Map

For this next step, you would have already decided to place an image on the home page, which can be used as an additional navigation tool to point to some other informational pages. An image map is a picture that contains one or more hot areas. These hotspots have links to other Web pages. They can either be local pages or out on the Internet.

Click on the picture tool in the Tools palette. Draw a picture box in the middle of the page and select a picture from the File Open Dialog box.

To add a hotspot, use the hotspot tool in the tools palette. Click on the picture and notice the secondary tool palette. Click on the **Hotspot Rectangle Tool** (bottom line left) and draw a rectangle over the hotel picture.

A window comes up that lets you define the link to another page.

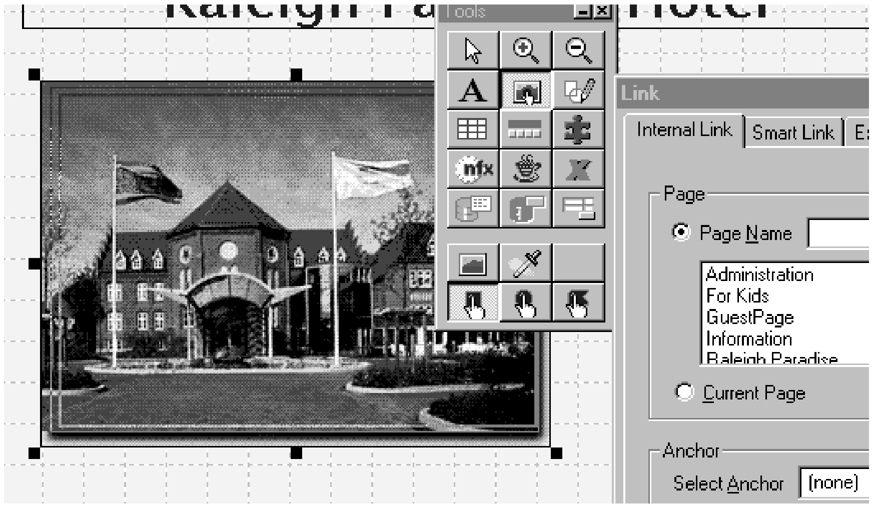


Figure 18. Designing Page (Creating Image Map)

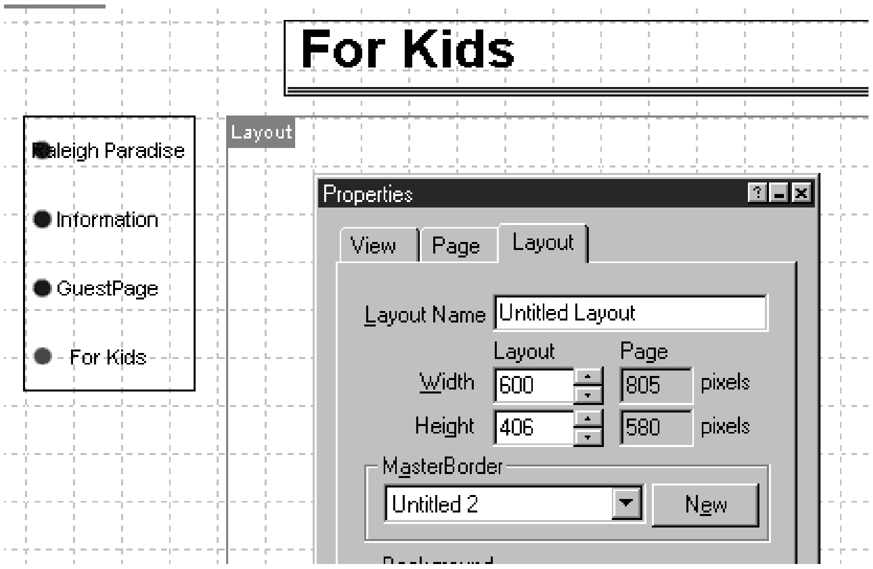
2.1.4.5 Creating a New MasterBorder

MasterBorders are one of NetObject Fusion's new features (since Version 2.x) for designing master elements that appear on the outer sides of your pages. As with headers and footers, these master elements automatically repeat in all the pages that use this MasterBorder. See Figure 20 on page 20 where the MasterBorder, KidsBorder, contains its own style and a text element Hi. Every page using the MasterBorder KidsBorder will have these elements.

You can have multiple MasterBorders throughout your site. In our example only the MasterBorder on the Kids page has been changed. All other pages use the default MasterBorder.

Create a new MasterBorder with the following steps:

1. Choose the Kids page for Page design.
2. Deselect **Layout Only** from the View page.
3. Click anywhere in the Layout box of the page.
4. Click on the **Layout** tab in the Properties palette.
5. The word Untitled appears in the MasterBorder field. Rename it by clicking within the MasterBorder itself (for example, the margins of the page) and select the **MasterBorders** tab in the Properties palette. Then rename it.



Layout Name: Untitled Layout

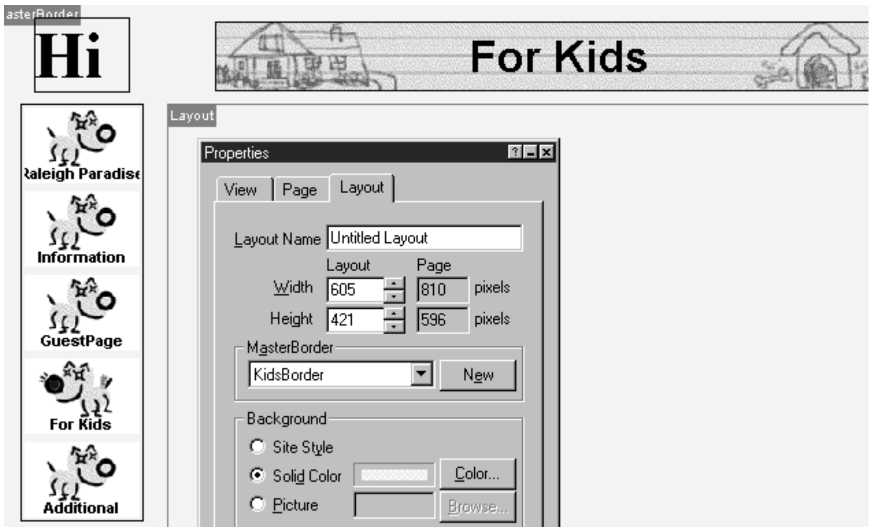
	Layout	Page	
Width	600	805	pixels
Height	406	580	pixels

MasterBorder: Untitled 2 [New]

Figure 19. Creating a New MasterBorder

6. Choose the banner for the Kids page. Click on the right mouse button and select **Element Properties**. Click on **Banner** and then **Browse** to select another banner style for this page. Figure 20 shows the result of this process.

   Select the **Tools** box to add some text (as was done in this example) or you can perform other modifications to this page.



Layout Name: Untitled Layout

	Layout	Page	
Width	605	810	pixels
Height	421	596	pixels

MasterBorder: KidsBorder [New]

Background: ( ) Site Style (•) Solid Color [Color...] ( ) Picture [Browse...]

Figure 20. MasterBorder for the Kids Page

You can now use this new MasterBorder on any page you want.

2.1.4.6 Inserting a Page Template

If you want to use an existing NetObjects Fusion Page template it is very easy to import it. Template files take on the style of the site into which they are inserted. All files created with NetObjects Fusion and saved as templates are completely transferable.

How to insert an existing page:

1. Go to the Site view and select a page that you want to add the template to.
2. Choose **Import Section** from the File menu.
3. Select **Other Template** and browse to the NetObjects Fusion template file you want to insert.

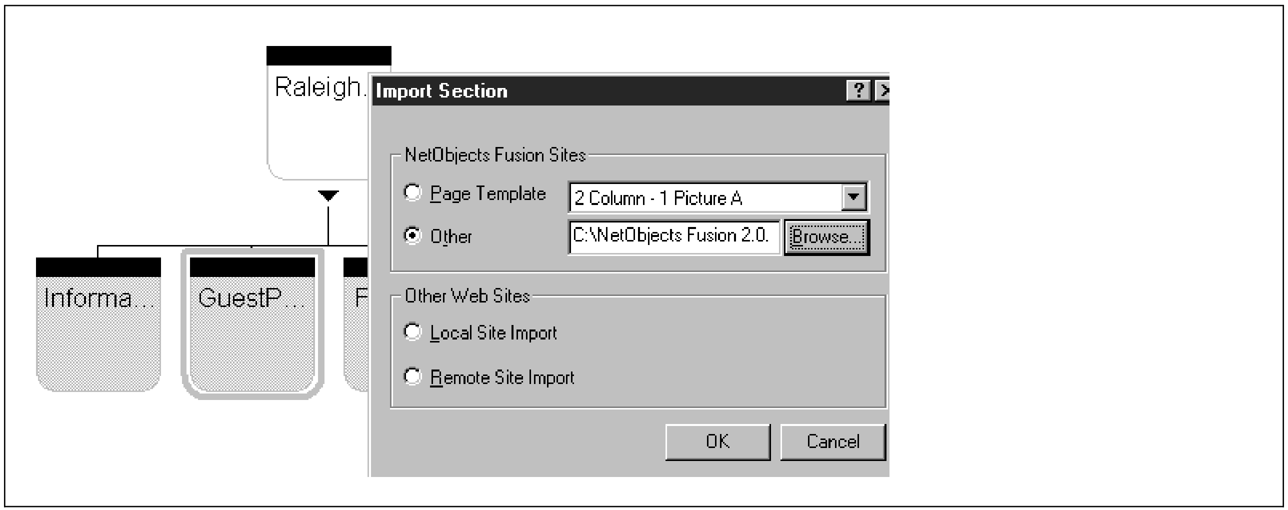


Figure 21. Add Template

4. You see that the selected page Feedback has been added to your site.

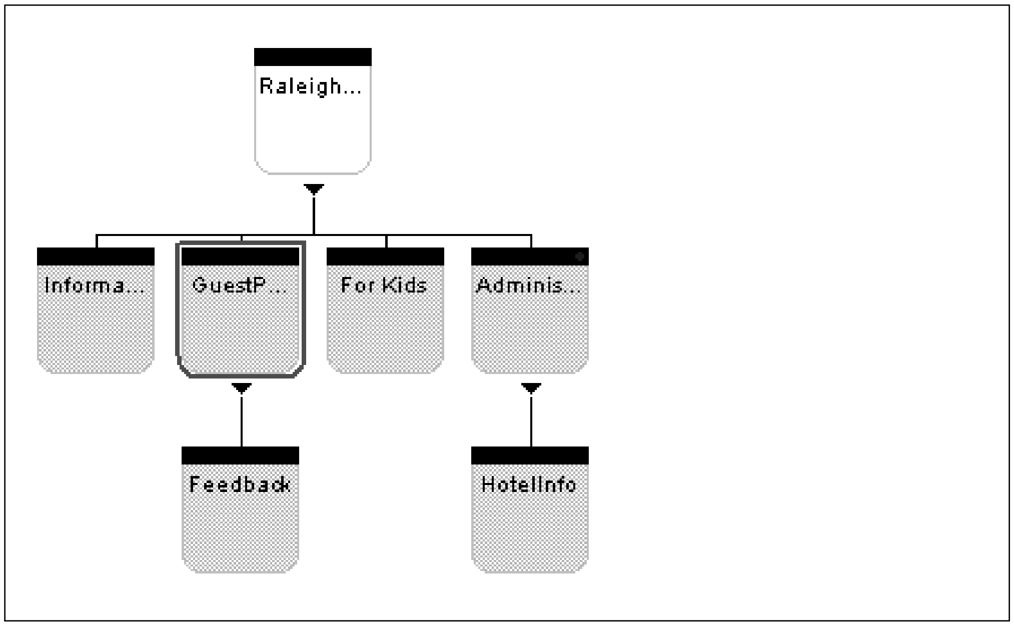
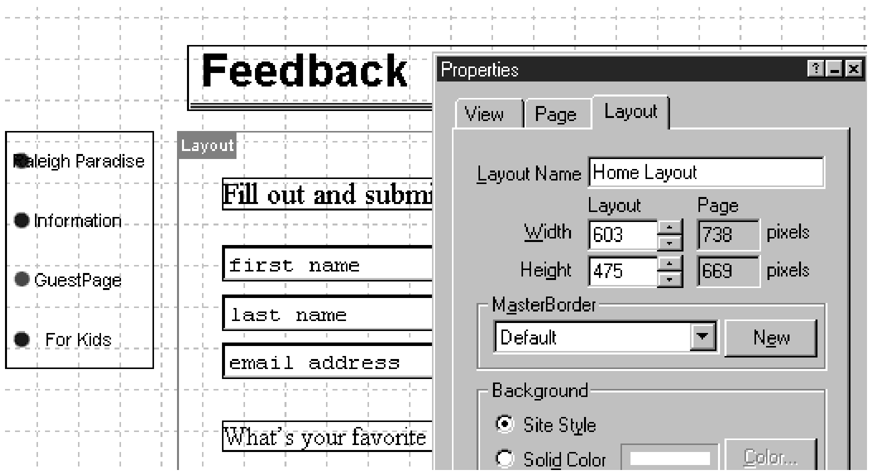


Figure 22. New Site with Page FAQ

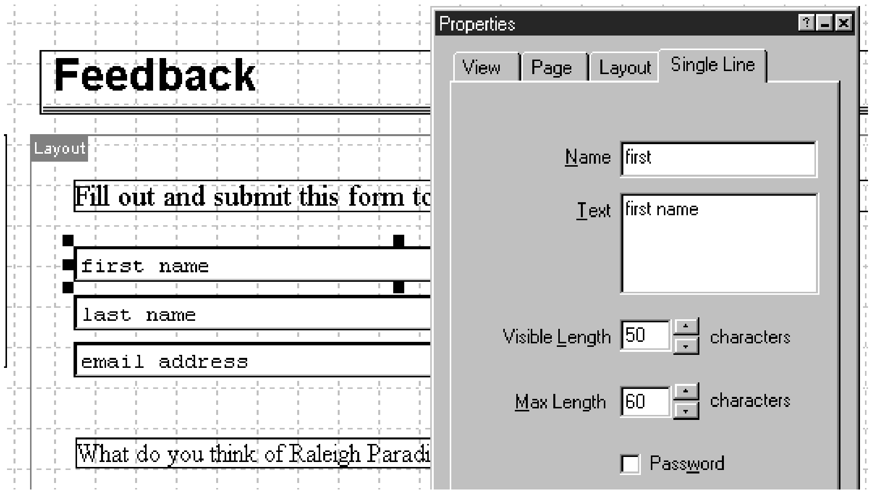
5. To give it another MasterBorder select the **Properties** box, click on the **Layout** tab and select a MasterBorder. In our example we choose the Default Layout Master Border.



Layout Name: Home Layout
Layout / Page
Width: 603 / 738 pixels
Height: 475 / 669 pixels
MasterBorder: Default
Background: (●) Site Style ( ) Solid Color

Figure 23. Feedback Template

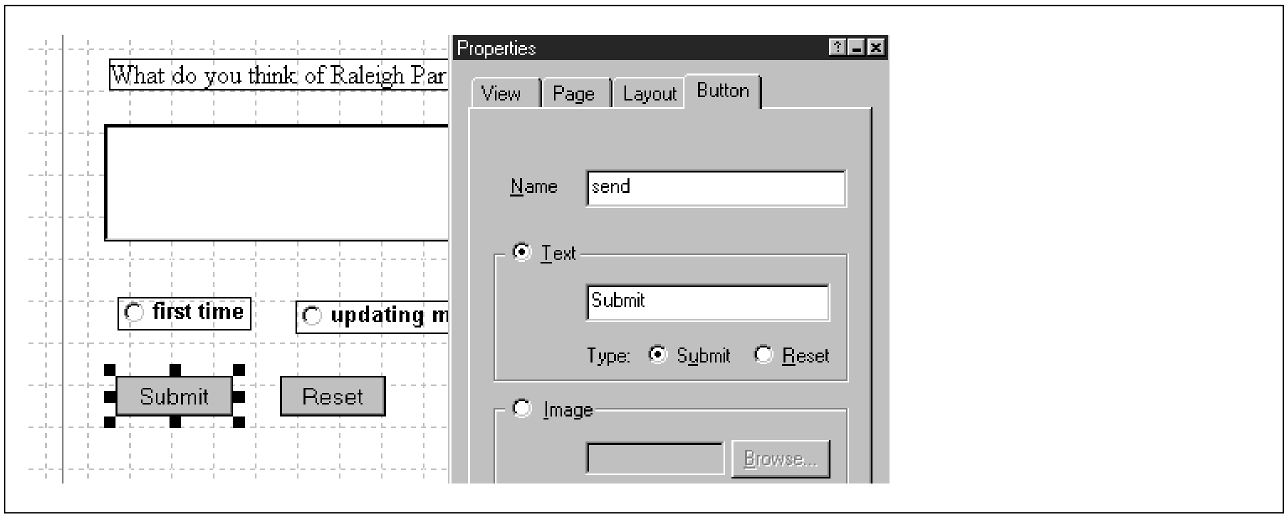
6. Select the Input box for a first name. If necessary, change the settings in the Property palette. Do the same for the multi-line box.



Name: first
Text: first name
Visible Length: 50 characters
Max Length: 60 characters
☐ Password

Figure 24. Template (Edit Button)

7. If necessary, change the Submit button and Reset button properties.



Name: send

[✓ Text]: Submit

Type: [✓ Submit] Reset

Image

Figure 25. Template (Submit Button)

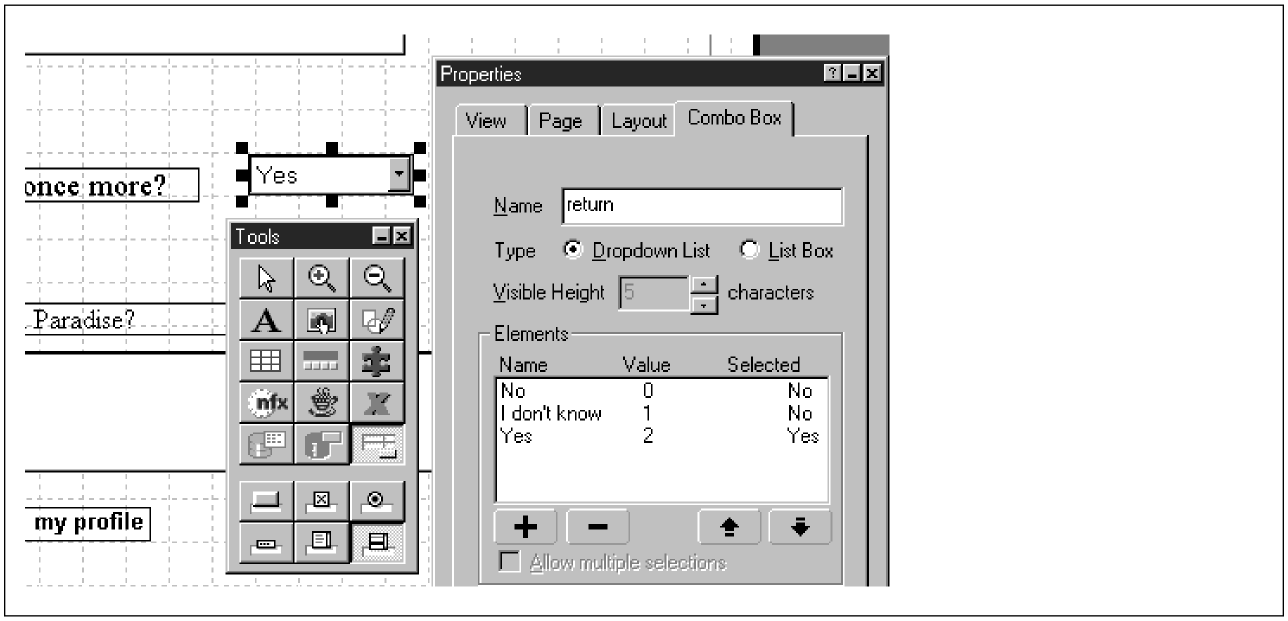
When this page is used in a browser and the user types in some information, by clicking on the **Submit** button, this information is uploaded to the Webserver. For prerequisites, see 2.1.4.7, “Adding a Form Element.”

2.1.4.7 Adding a Form Element

It may be desirable to let the user choose among different elements of information. This information could be in a static list or a drop-down menu.

The following shows how to do this:

1. Click on the **Forms Tools** in the Tools palette.
2. Click on the **Forms Combo** box and draw a rectangle where the text should be.
3. In the Combo box enter a name and click on the drop-down list radio button.
4. To add your items and the values, click on the large **+** symbol.



Name: return

Type: [✓ Dropdown List] List Box

Visible Height: 5 characters

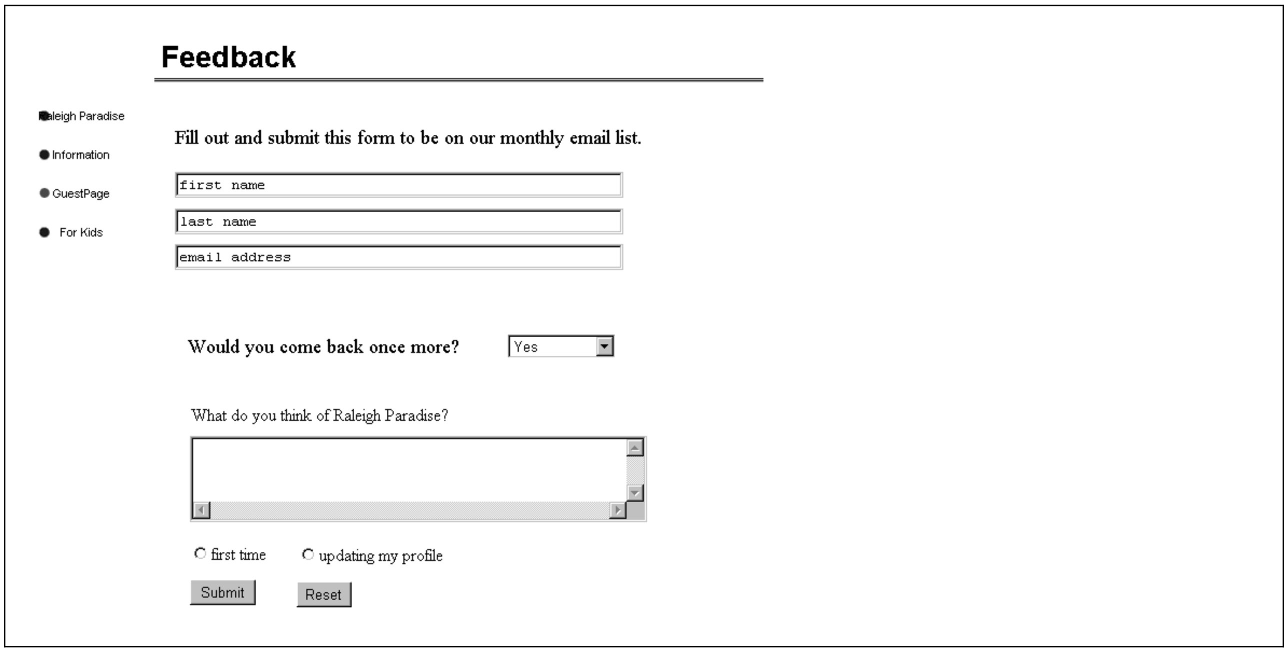
Elements

Name	Value	Selected
No	0	No
I don't know	1	No
Yes	2	Yes

Allow multiple selections

Figure 26. Adding a Form

5. Check this page in your browser by clicking on the **Preview** button.


Feedback

Raleigh Paradise

Information

GuestPage

For Kids

Fill out and submit this form to be on our monthly email list.

first name

last name

email address

Would you come back once more? Yes

What do you think of Raleigh Paradise?

first time updating my profile

Submit Reset

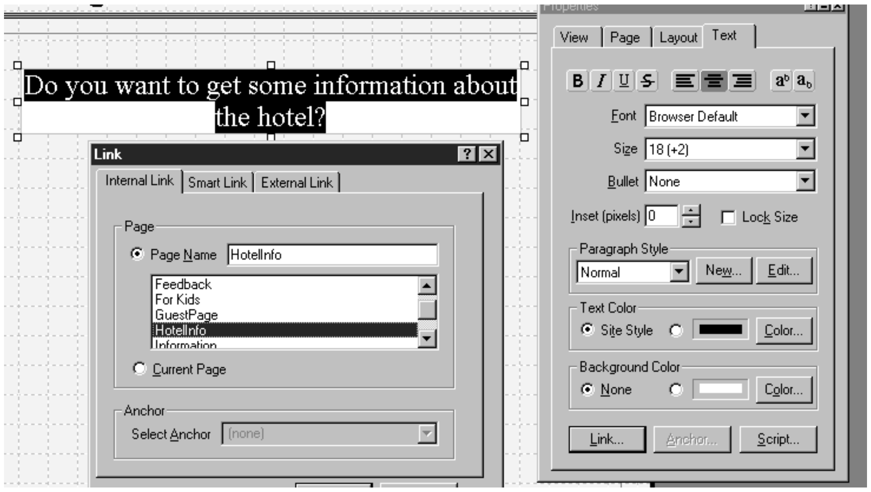
Figure 27. Checking Forms in a Browser

When the site visitor clicks on the Submit button, all information in the form is automatically uploaded to your Web server, provided that you previously did some work. You can either use your own CGI script or you can take advantage of the NetObjects Fusion component called Form Handler. Refer to the *NetObjects Fusion User Guide* for more details on this.

2.1.4.8 Adding a Text Link

To add a text link to our GuestPage:

1. From the GuestPage select the **Text** tool from the Tools properties box and create a text block containing the following text: `Do you want to get some information about the hotel?`.
2. Highlight the text and click on the link in the Text Property Box.
3. Select a page or an anchor and click on the link to continue.



Do you want to get some information about the hotel?

Link

Page
Page Name: HotelInfo
Feedback
For Kids
GuestPage
HotelInfo
Information
Current Page

Anchor
Select Anchor: (none)

Font: Browser Default
Size: 18 (+2)
Bullet: None
Inset (pixels): 0
Lock Size
Paragraph Style: Normal
Text Color: Site Style
Background Color: None

Figure 28. Adding a Text Link

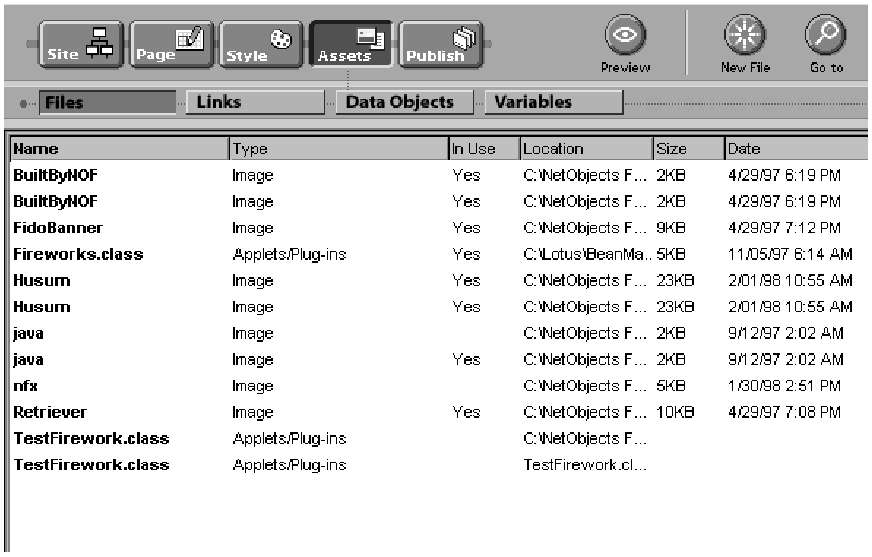
Clicking on the text in the GuestPage brings up the HotelInfo page.

2.1.4.9 Managing Assets

NetObjects Fusion lets you have direct access to files, links and data objects in your site.

If a company comes up with a new logo, you could quickly update all instances of this logo in your site. An example of that follows:

1. Click on the **Assets button** in the main menu to open the Assets view.



Name	Type	In Use	Location	Size	Date
BuiltByNOF	Image	Yes	C:\NetObjects F...	2KB	4/29/97 6:19 PM
BuiltByNOF	Image	Yes	C:\NetObjects F...	2KB	4/29/97 6:19 PM
FidoBanner	Image	Yes	C:\NetObjects F...	9KB	4/29/97 7:12 PM
Fireworks.class	Applets/Plug-ins	Yes	C:\Lotus\BeanMa...	5KB	11/05/97 6:14 AM
Husum	Image	Yes	C:\NetObjects F...	23KB	2/01/98 10:55 AM
Husum	Image	Yes	C:\NetObjects F...	23KB	2/01/98 10:55 AM
java	Image		C:\NetObjects F...	2KB	9/12/97 2:02 AM
java	Image	Yes	C:\NetObjects F...	2KB	9/12/97 2:02 AM
nfx	Image		C:\NetObjects F...	5KB	1/30/98 2:51 PM
Retriever	Image	Yes	C:\NetObjects F...	10KB	4/29/97 7:08 PM
TestFirework.class	Applets/Plug-ins		C:\NetObjects F...		
TestFirework.class	Applets/Plug-ins		TestFirework.cl...		

Figure 29. Assets

2. Click on **Date** to see the files sorted by date.
3. Double-click on the **Name** button to have the files sorted by name.
4. Double-click on **File** to see details for this file.
5. To see the list of links, click on the **Links** button.

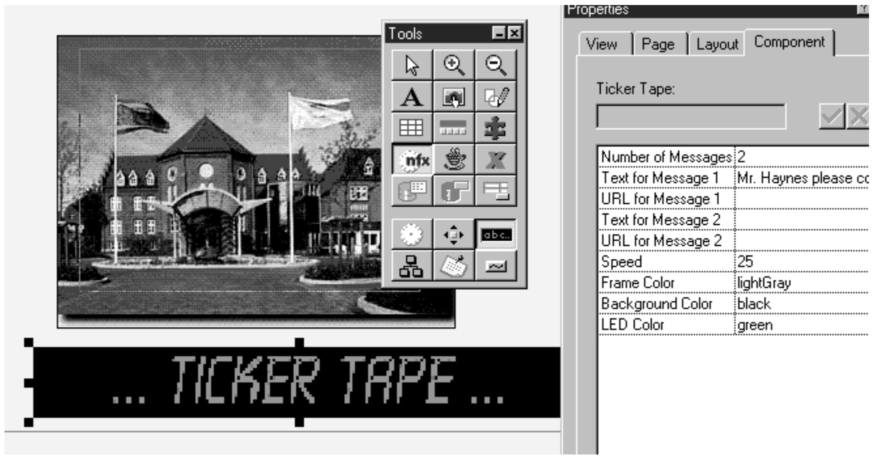
2.1.4.10 Adding a NetObjects Fusion Component

NetObjects Fusion components are a new type of Java-based drag-and-drop object that can be inserted into any site. The list of components available from the secondary tool bar are:

- NetObjects Message Board - A message board running on Windows NT and UNIX Web servers.
- NetObjects Site Manager - A Java-based application for viewing and navigating your site.
- DynaButtons - Java-based buttons that have a dynamic state (mouse over, pressed and depressed).
- TickerTape - A Java-based applet for messages.
- NetObjects AutoForm - A CGI script that can be used to allow your Web users to send feedback via your Web forms.
- Rotating Picture.
- Time-Based Picture- A Java-based applet that displays an applet for a specified period of time.
- Picture Loader- A Java-based applet that loads an image dynamically at browser request.

In order to install the Ticker Tape on the Welcome page:

- Select the **Welcome** page in Pagemode.
- Click on **Component Tools** in the Tools palette.
- Click on **Ticker Tape** in the secondary tool bar.
- Drag a box where you want the ticker to be.
- Type in the text in the properties box and change other values in the Properties box if needed.



Number of Messages	2
Text for Message 1	Mr. Haynes please cc
URL for Message 1	
Text for Message 2	
URL for Message 2	
Speed	25
Frame Color	lightGray
Background Color	black
LED Color	green

Figure 30. Adding a TapeTicker

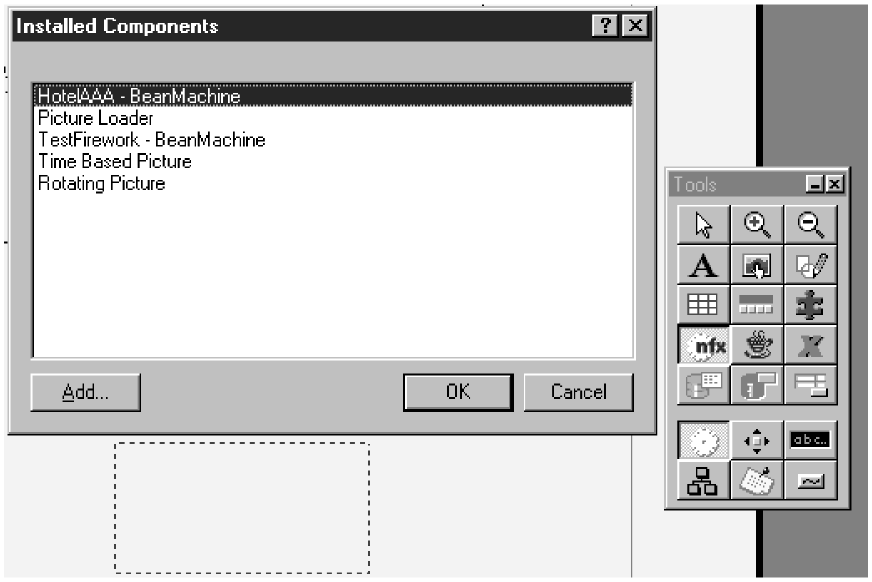
2.1.4.11 Database Publishing

Database Publishing in NetObjects Fusion allows you to store text and images internally or connect to external ODBC databases and to publish this information to standard HTML pages. You can easily publish listings of information such as product and service catalogs, employee directories, and event schedules.

2.1.4.12 Importing a Lotus BeanMachine File

NetObjects Fusion let's you import applets created by Lotus BeanMachine. The following is the procedure to insert them:

1. Select a page of your Web site in page mode.
2. Click on the **nfx** button in the Tools box and drag a box where you want the applet to be.


Installed Components

HotelAAA - BeanMachine
Picture Loader
TestFirework - BeanMachine
Time Based Picture
Rotating Picture

Figure 31. Importing Applet

3. Add the NFX files to the Installed Component box by clicking on **Add**.
4. Click on **Open** in the File Manager window to add the new file.

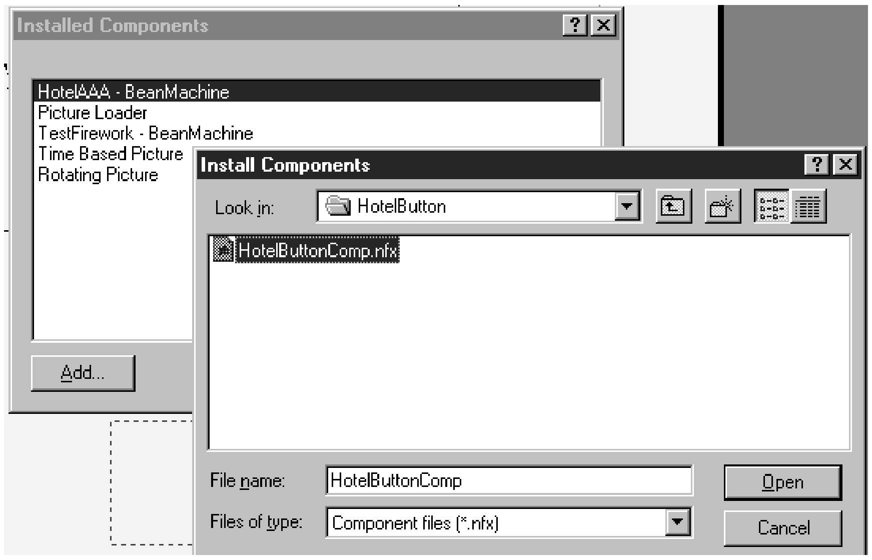
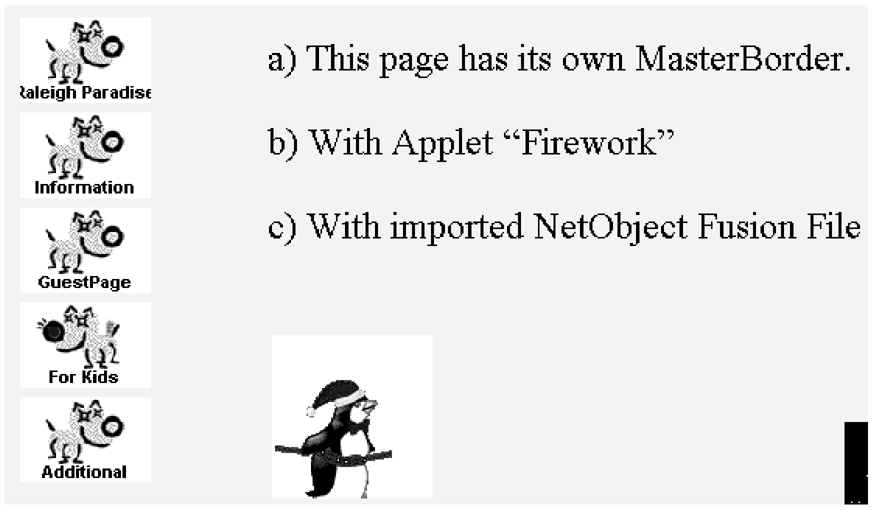


Figure 32. Adding Applet to Components

5. Click on **OK** to insert the applet into the page.
6. Test the applet by clicking on the **Preview** button in the main menu.



a) This page has its own MasterBorder.

b) With Applet "Firework"

c) With imported NetObject Fusion File

Figure 33. Result

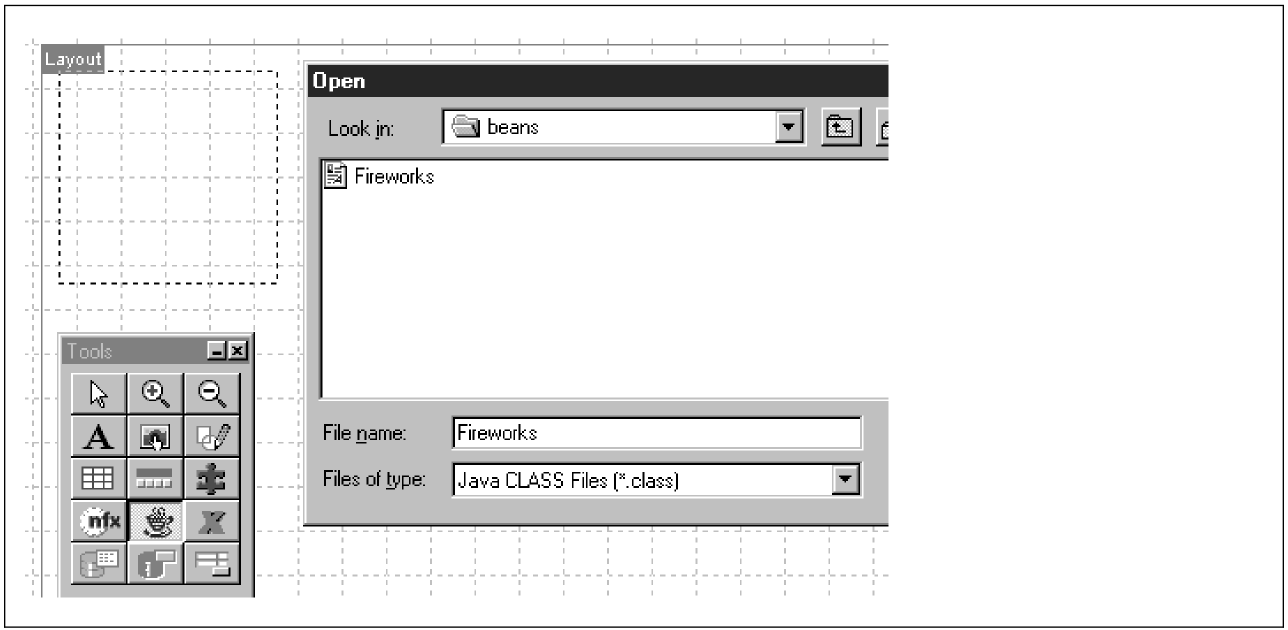
2.1.4.13 Adding an Applet

NetObjects Fusion offers you a way to import Java applets and to integrate the Java Code into your Web site.

The following steps show how to do this:

1. Select the page to which you want to add an applet.
2. Select the **Tools** palette and click on the **Applet** button.
3. Drag a box where you want the applet to be located.
4. Select the applet's Java class file.

5. Save your site file.



Look in: beans

Fireworks

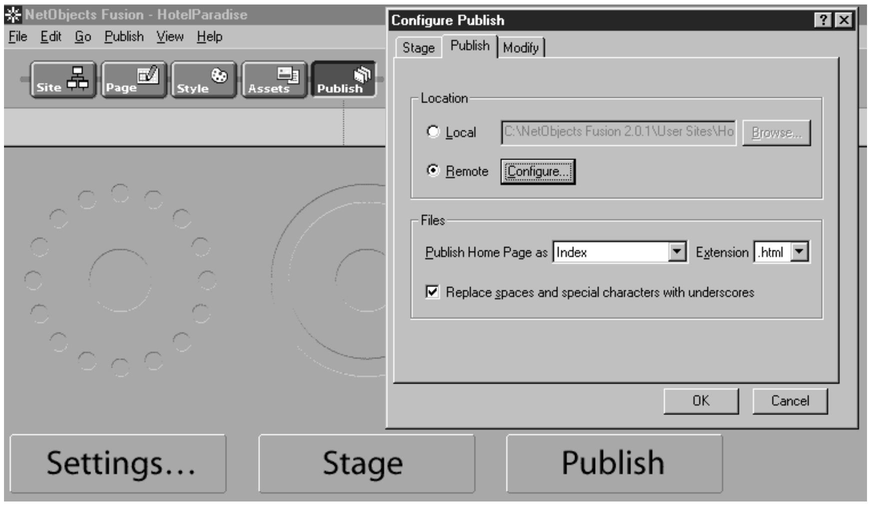
File name: Fireworks

Files of type: Java CLASS Files (*.class)

Figure 34. Adding an Applet

2.1.4.14 Publishing and Staging

The publish view lets you configure your publication settings and transmit the site to a local or remote server. You can enter two sets of configurations: one for your local staging server (the server on which you test your site) and one for your remote Web server (where site visitors will access your site). You can choose to publish your entire Web site or just the changes since your last publishing.



Location

Local C:\NetObjects Fusion 2.0.1\User Sites\Ho

Remote

Files

Publish Home Page as Index Extension .html

☑ Replace spaces and special characters with underscores

Figure 35. Publishing

The customization options follow:

- Stage lets you save your sites locally.
- Settings lets you type in the settings for the local directories to save the site in or the remote system, the port and your user ID and password on that system.

- Publish lets you save your sites on the remote system.

2.2 BeanMachine Software Installation

The BeanMachine is an easy and fast way to enrich Web sites with Java applets featuring multimedia, special effects, smart forms, and live data.

Lotus BeanMachine for Java puts the power of Java into the hands of non-programmers, giving them the ability to add any Java class file to the BeanMachine Palette. This means that existing Java code and third-party beans can enrich the BeanMachine environment. With JDBC, BeanMachine provides access to relational data from remote servers. It supplements Web site authoring tools such as NetObjects Fusion.

Note: The BeanMachine is also packaged with the Lotus Domino Go Pro Webserver.

2.2.1 Installing/Uninstalling the Lotus BeanMachine Version 1.1

The following sections show how to install and uninstall the Lotus BeanMachine.

2.2.1.1 Installing the Lotus BeanMachine Version 1.1

The following shows how to install BeanMachine:

1. Double-click on the installation file.

   In this documentation the installation file was the BeanMachine TrialVersion 1.1 (datafile BM11Trial.exe), downloaded from http://www.lotus.com.

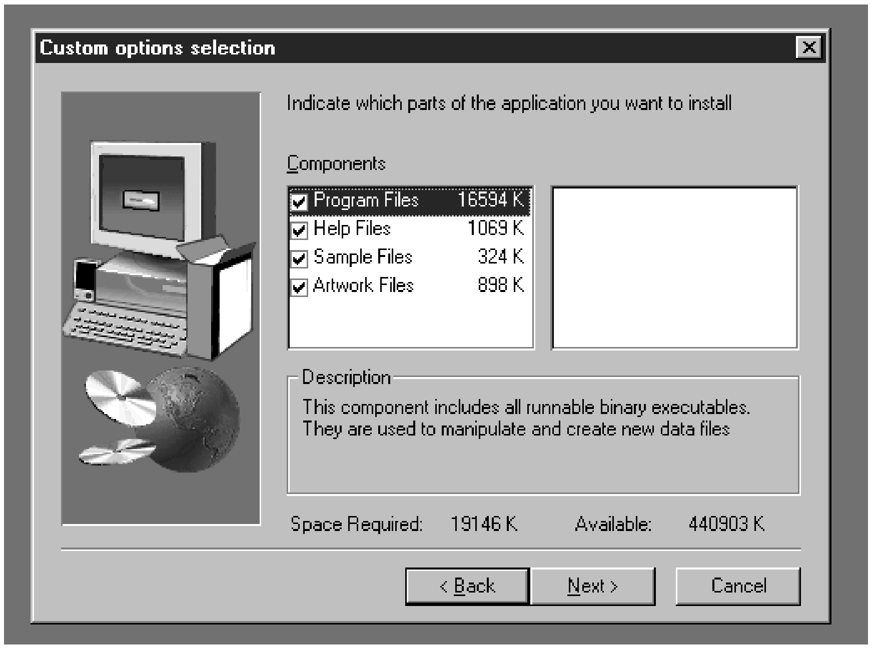
   Note: After this project finished, trial Version 1.4 was available for download from the Lotus Web site.

2. Select the appropriate language and click on **OK**.
3. Read the Welcome page and click on **Next**.
4. Read the License Agreement and click on **Yes**.
5. Select **Destination Folder** or click on **Next** to accept the default destination folder.
6. Select **Custom** in the Setup Type folder and click on **Next** to continue.

   The sample files contain elements such as:

   - Arrows
   - Backgrounds
   - Shapes
   - Buttons
   - Images
   - Symbols

   The Artwork file component includes all clip art samples.


Custom options selection

Indicate which parts of the application you want to install

Components

✓ Program Files	16594 K
✓ Help Files	1069 K
✓ Sample Files	324 K
✓ Artwork Files	898 K

Description

This component includes all runnable binary executables. They are used to manipulate and create new data files

Space Required: 19146 K Available: 440903 K

Figure 36. Setup Type Folder

7. Select which part of the application you want to install and click on **Next**.
8. Read the current settings and click on **Next**.

   The Lotus BeanMachine is now installed. You have the option of reading the Readme file at this time.

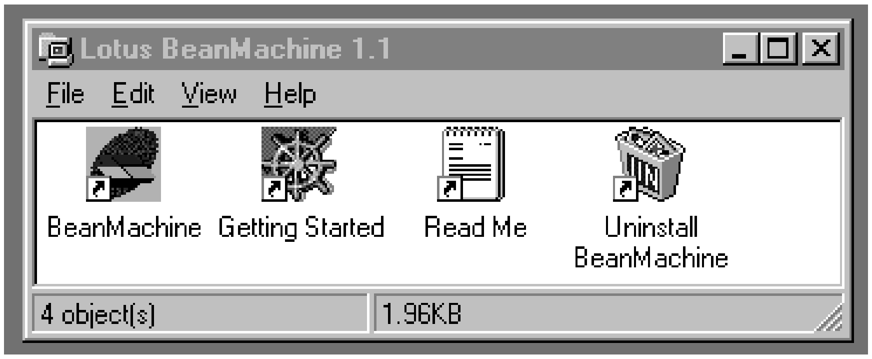
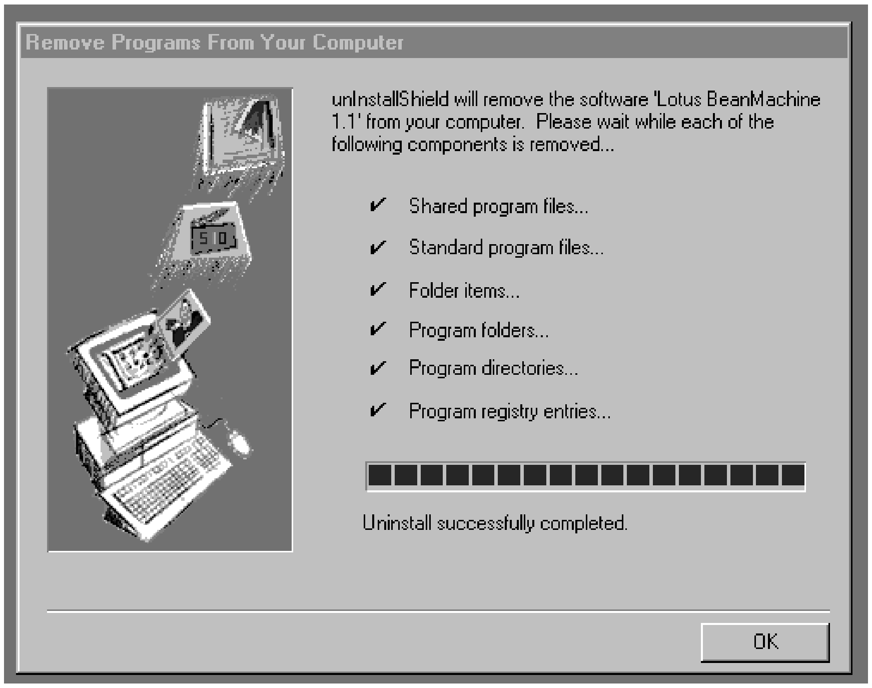


Figure 37. Lotus BeanMachine Folder

2.2.1.2 Uninstalling the Lotus BeanMachine

The following shows how to uninstall the BeanMachine:

1. Double-click on **Uninstall BeanMachine** in the Lotus BeanMachine 1.1 folder or select **Uninstall BeanMachine** from the pop-up menu off of the Start button.
2. Confirm the removal and click on **Yes** to continue.


Remove Programs From Your Computer

unInstallShield will remove the software 'Lotus BeanMachine 1.1' from your computer. Please wait while each of the following components is removed...

- ✓ Shared program files...
- ✓ Standard program files...
- ✓ Folder items...
- ✓ Program folders...
- ✓ Program directories...
- ✓ Program registry entries...

Uninstall successfully completed.

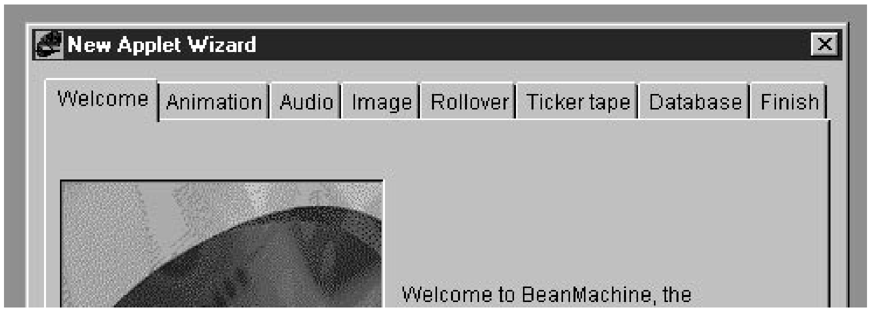
Figure 38. Remove Lotus BeanMachine

3. Restart the system.

2.2.2 New Applet Using the New Applet Wizard

To make a new applet you can either use the main menu for more detailed settings (see Figure 65 on page 47) or you can use the New Applet Wizard, which came up when the BeanMachine was started.

The wizard is an easy way to quickly make your first simple applet.



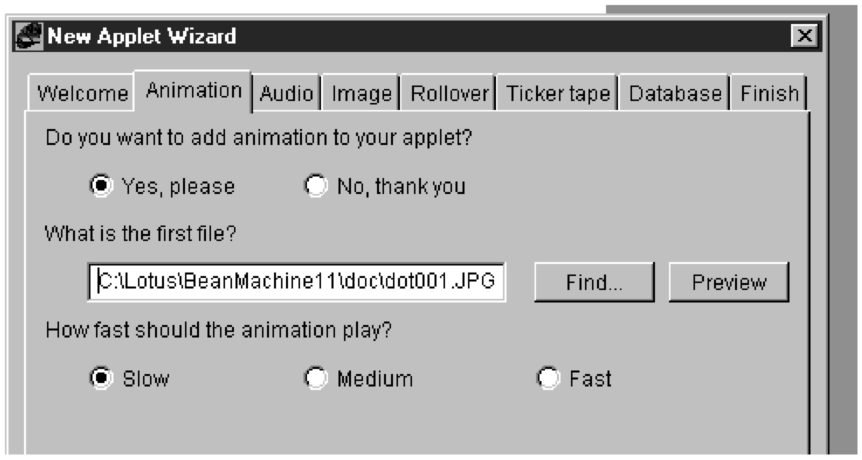
Welcome to BeanMachine, the

Figure 39. New Applet Wizard Headline

Select one or more of the following tabs to make your applet:

- Animation

  Lets you add animation to your applet. You choose the first part of some sequentially numbered files and select the speed of the animation play.



Do you want to add animation to your applet?

(●) Yes, please ( ) No, thank you

What is the first file?

C:\Lotus\BeanMachine11\doc\dot001.JPG

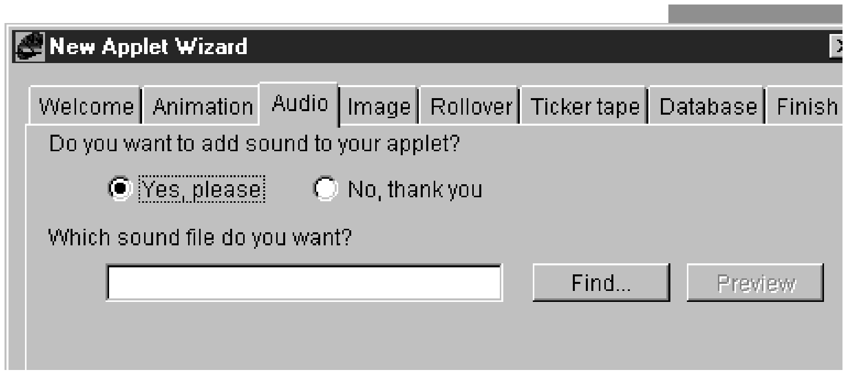
How fast should the animation play?

(●) Slow ( ) Medium ( ) Fast

Figure 40. The Animation Wizard

- Audio

  You choose the file.



Do you want to add sound to your applet?

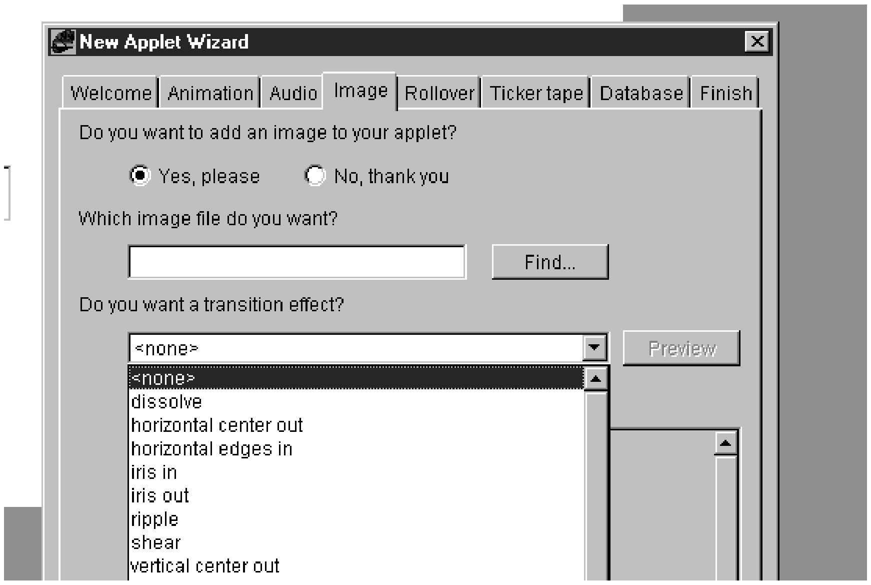
(●) Yes, please ( ) No, thank you

Which sound file do you want?

Figure 41. Installing Audio Files

- Image

  You select the file, the transition effect and the speed.


New Applet Wizard

Do you want to add an image to your applet?

(● Yes, please) ○ No, thank you

Which image file do you want?

Do you want a transition effect?

<none>

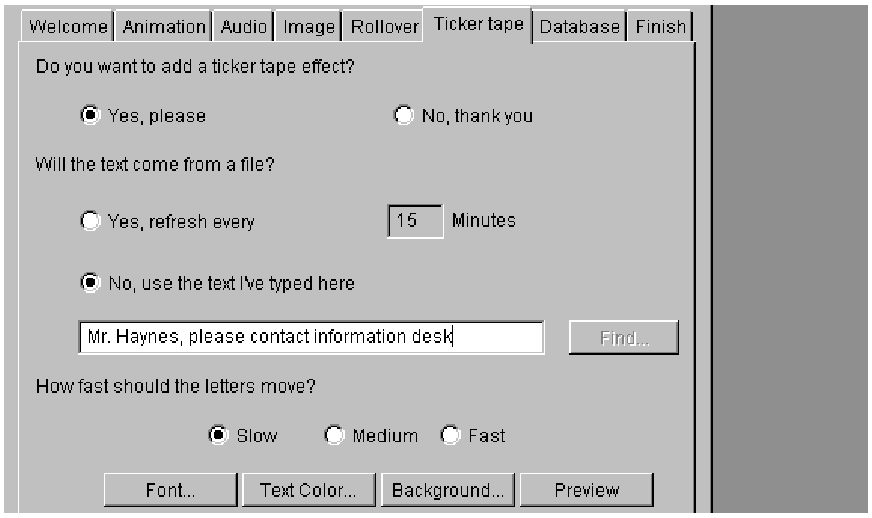
Figure 42. Installing Images

- Rollover (see 2.2.4.1, “Rollover Button and Export As a Fusion File” on page 37)

  This is the picture that is shown for a button itself or when the cursor is over this button or when the button is selected. You can also select a 3D effect around the button.

- Ticker Tape

  This is a horizontally moving text. You select where it comes from, either file or URL, the speed and the refresh time.



Do you want to add a ticker tape effect?

(● Yes, please) ○ No, thank you

Will the text come from a file?

○ Yes, refresh every 15 Minutes

(● No, use the text I've typed here)

Mr. Haynes, please contact information desk

How fast should the letters move?

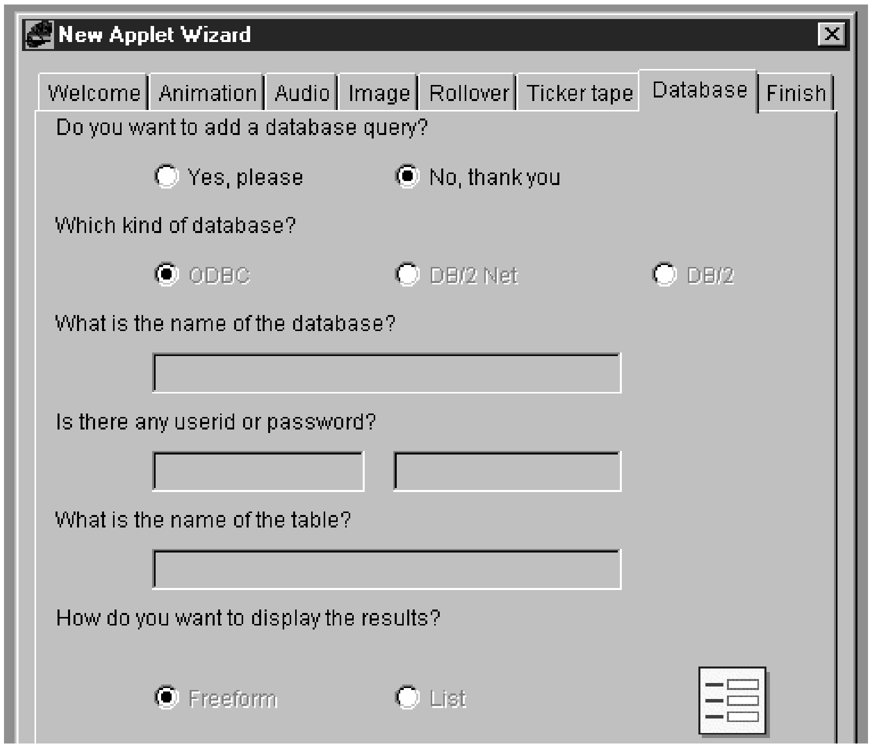
(● Slow) ○ Medium ○ Fast

Figure 43. Ticker Tape

- Database

  Figure 44 on page 35 shows how to get connected to a database using the Wizard tool. You type in the database name, its type (ODBC, DB2/NET, DB2), user ID, password, name of the table and how you want to display the results.

Only one table can be accessed and you can't specify your own SQL statement.


New Applet Wizard

Welcome | Animation | Audio | Image | Rollover | Ticker tape | Database | Finish

Do you want to add a database query?

Yes, please [✓ No, thank you]

Which kind of database?

[✓ ODBC] DB/2 Net DB/2

What is the name of the database?

Is there any userid or password?

What is the name of the table?

How do you want to display the results?

[✓ Freeform] List

Figure 44. New Applet Wizard Database

If you need more tables to be accessed and if you want to specify other variables, see 2.2.4.3, “Accessing a Database” on page 45 for how this can be done.

Click on **Finish** to get the applet being created by the Lotus BeanMachine program. You can save the applet and test it by clicking on the **Run** button on the main tool bar.

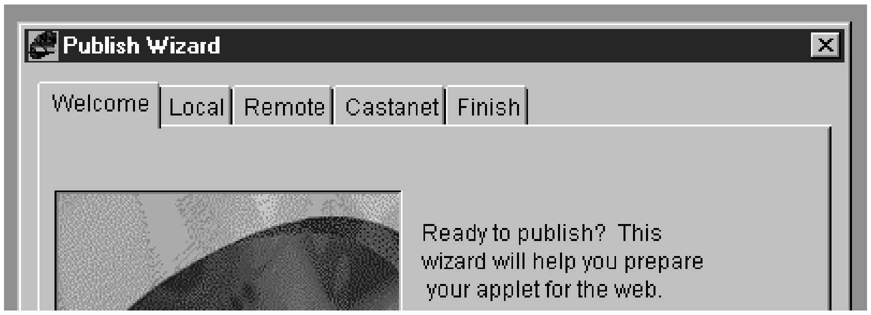
You can also publish the applet for use on the Internet (see 2.2.3, “Publishing an Applet”).

You can start the wizard any time from the File menu to add some additional features.

2.2.3 Publishing an Applet

When you have developed your applets, you will need to publish them to make them available for use on a Web server. That means, you need to collect in one place all the media, files and Java code used by your applet.

Click on the **Publish** button on the main tool bar to start Publish Wizard. With the Publish Wizard, you can place your applet anywhere on your local system or at any remote location.


Publish Wizard

Welcome | Local | Remote | Castanet | Finish

Ready to publish? This wizard will help you prepare your applet for the web.

Figure 45. Publishing Window Headline

Select one or more of the the tabs to publish your applet:

- Welcome

  Type in your applets name.

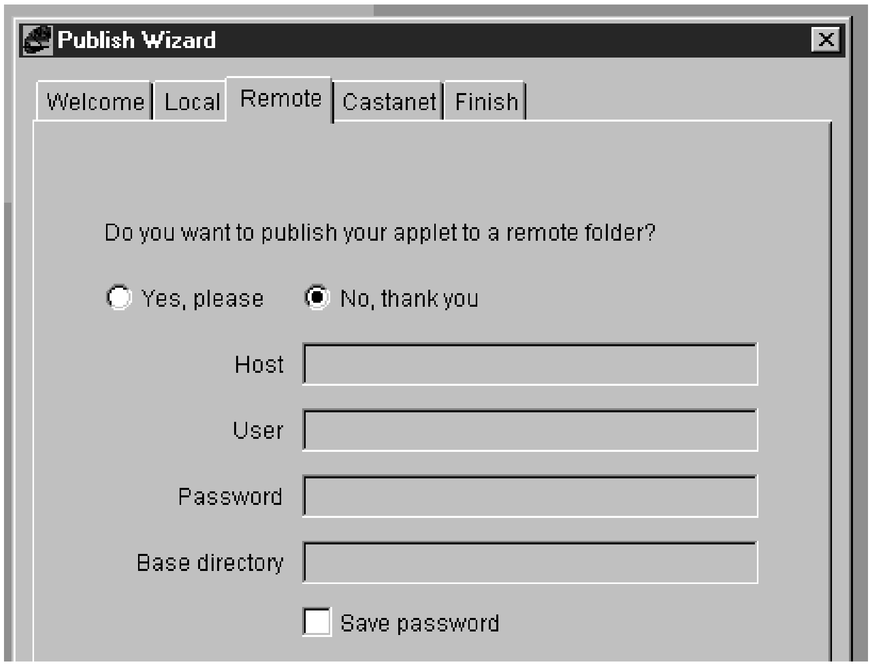
- Local (see Figure 51 on page 39)

  If you want to publish the applet to a local folder, type in the name.

- Remote

  If you want to publish to a remote folder, type in the host, user, password and base directory.

  It can then be called from this server.


Publish Wizard

Welcome | Local | Remote | Castanet | Finish

Do you want to publish your applet to a remote folder?

Yes, please [✓ No, thank you]

Host

User

Password

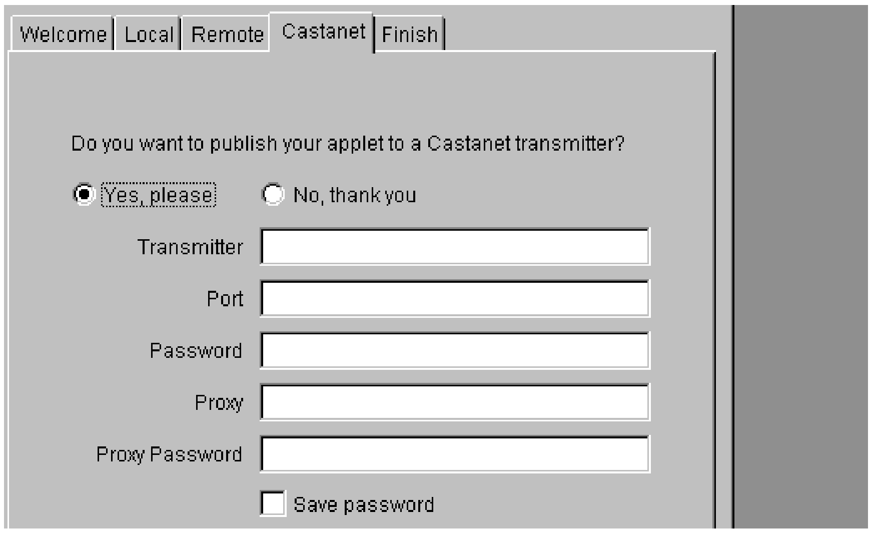
Base directory

☐ Save password

Figure 46. Publishing to a Remote Folder

- Castanet

  If you want to publish your applet to a Castanet transmitter, update the fields for: Transmitter, Port, Password, Proxy and Proxy Password.



Do you want to publish your applet to a Castanet transmitter?

[✓ Yes, please] No, thank you

Transmitter

Port

Password

Proxy

Proxy Password

☐ Save password

Figure 47. Publishing to a Castanet Transmitter

The publishing process creates the applet, compiles it and optimizes it for fast download. Finally you get a message for how long it takes to download the applet using a 28.8 modem.

2.2.4 Examples of Using the BeanMachine

The following examples show some important features of Lotus BeanMachine:

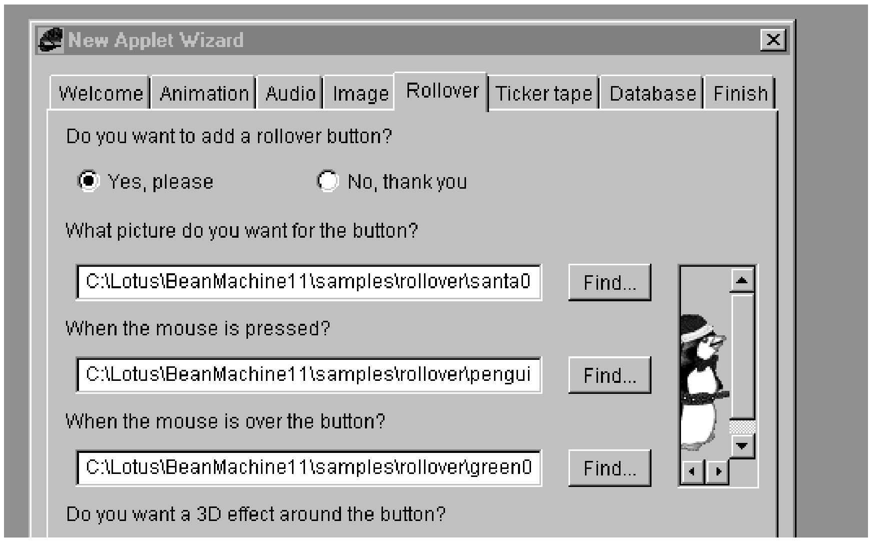
- Exporting the BeanMachine Java code to NetObjects Fusion using an NFX file
- Making connections by using events, actions and properties
- Access to a database
- BeanMachine's support to write Java code

2.2.4.1 Rollover Button and Export As a Fusion File

In BeanMachine, you have a couple of choices when it comes to buttons. You can use the standard push button or something a little more exciting such as a rollover button.

The intention of this sample is to show how BeanMachine works and how the result (an applet) can be exported to NetObjects Fusion. The following shows how to do it:

1. Click on **File** in the main menu and select **New Applet Wizard**.
2. Select the **Rollover** tab.
3. Select **Yes, please** and type in the file names for the default button, the selected button and move-over button.



New Applet Wizard

Do you want to add a rollover button?

(● Yes, please) ○ No, thank you

What picture do you want for the button?

C:\Lotus\BeanMachine11\samples\rollover\santa0

When the mouse is pressed?

C:\Lotus\BeanMachine11\samples\rollover\pengui

When the mouse is over the button?

C:\Lotus\BeanMachine11\samples\rollover\green0

Do you want a 3D effect around the button?

Figure 48. New Applet Wizard (Rollover Button)

4. Since you do not install any other feature, click on **Finish**.
5. Test the rollover button by clicking on **Run** (second button from right on the main menu).

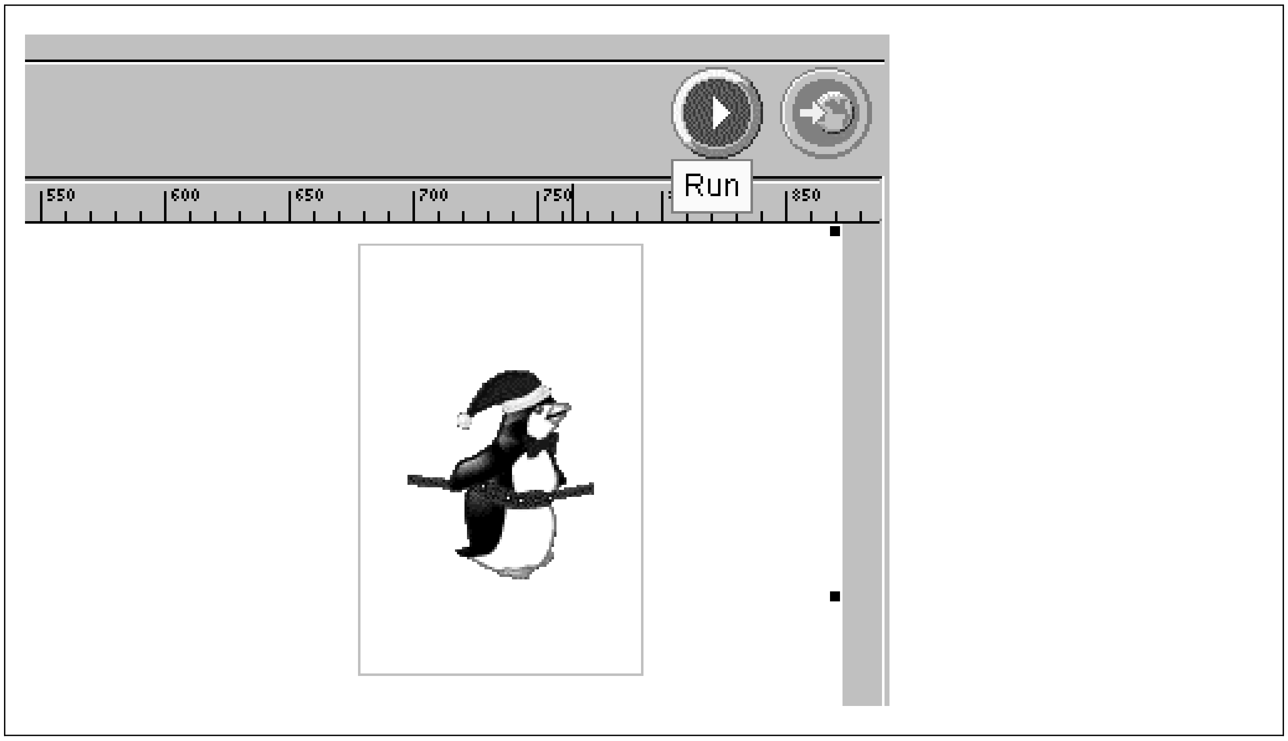
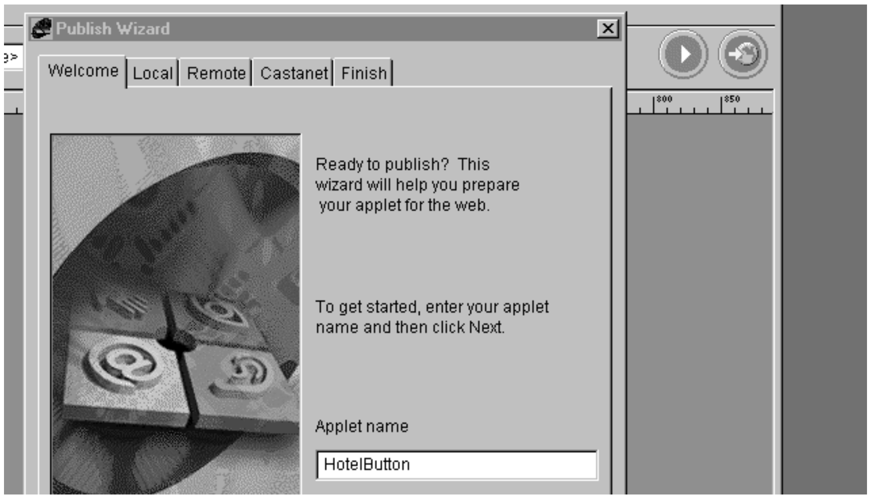


Figure 49. Testing Applet

6. Click on the **Publish** button (rightmost button of the main menu) to get the Publish Wizard.



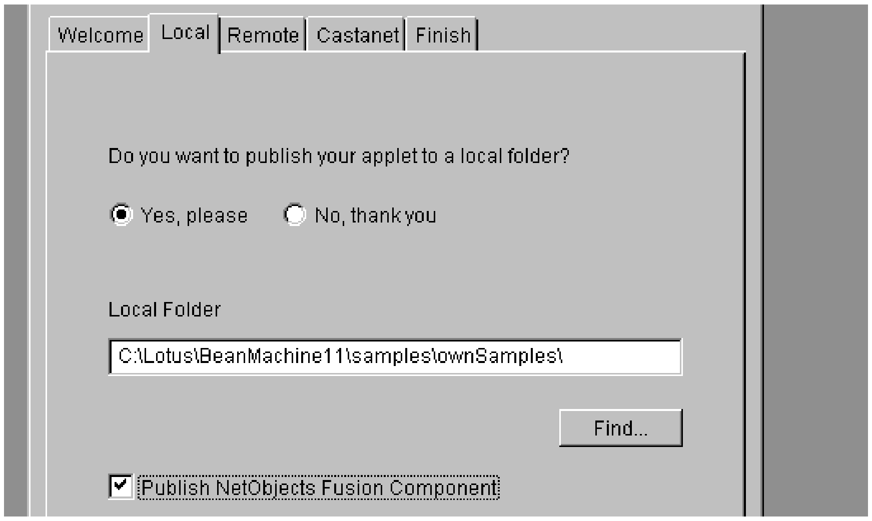
Ready to publish? This wizard will help you prepare your applet for the web.

To get started, enter your applet name and then click Next.

Applet name: HotelButton

Figure 50. Publish Wizard

7. Change the applets name if you want to and click **Next** to continue.
8. Click on **Yes, please** to publish the applet to a local folder.
9. Select the local folders name.
10. Select **Publish NetObjects Fusion Component** to export an NFX File.
11. Click on **Finish** to start publishing.



Do you want to publish your applet to a local folder?

● Yes, please ○ No, thank you

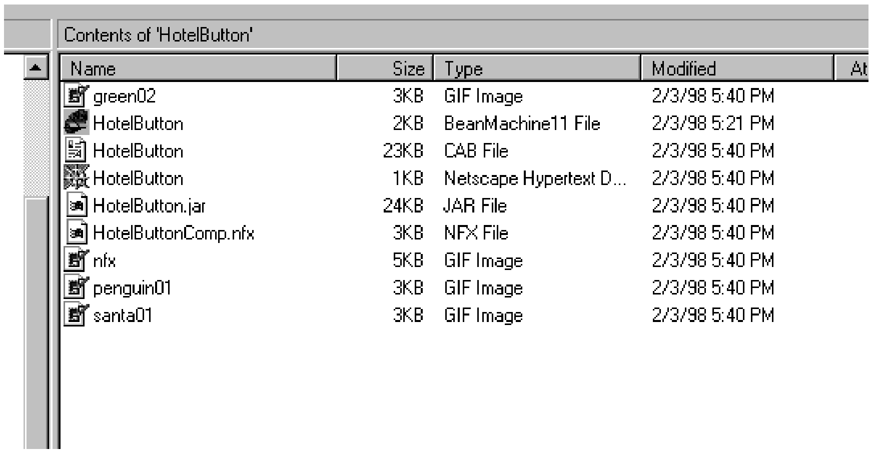
Local Folder: C:\Lotus\BeanMachine11\samples\ownSamples\

✓ Publish NetObjects Fusion Component

Figure 51. Publish Wizard (Local Destination)

The system does the following:

- Creates the applet.
- Compiles it.
- Optimizes it for downloading.
- Publishes it.
- Creates a NetObjects Fusion file (see contents of the HotelButton library Figure 52 on page 40).



Contents of 'HotelButton'

Name	Size	Type	Modified
green02	3KB	GIF Image	2/3/98 5:40 PM
HotelButton	2KB	BeanMachine11 File	2/3/98 5:21 PM
HotelButton	23KB	CAB File	2/3/98 5:40 PM
HotelButton	1KB	Netscape Hypertext D...	2/3/98 5:40 PM
HotelButton.jar	24KB	JAR File	2/3/98 5:40 PM
HotelButtonComp.nfx	3KB	NFX File	2/3/98 5:40 PM
nfx	5KB	GIF Image	2/3/98 5:40 PM
penguin01	3KB	GIF Image	2/3/98 5:40 PM
santa01	3KB	GIF Image	2/3/98 5:40 PM

Figure 52. Contents of Library HotelButton

2.2.4.2 Making a Connection

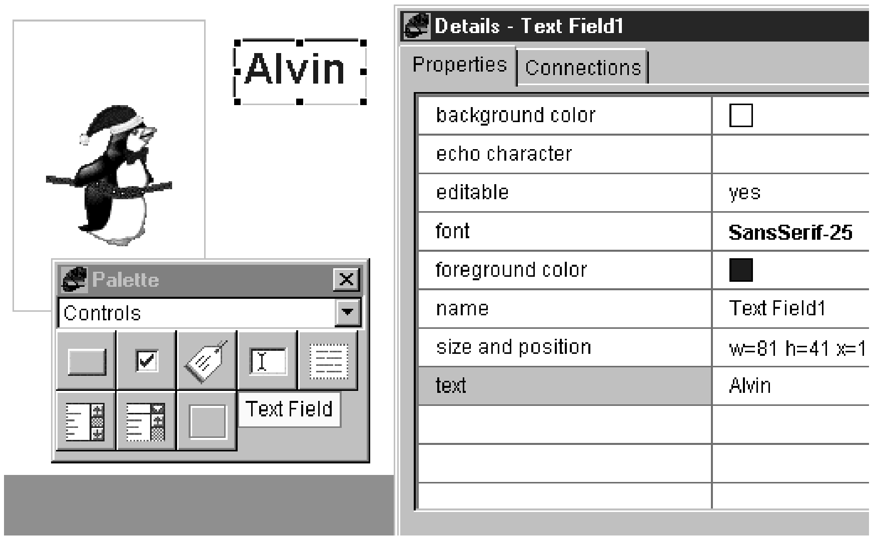
Lotus BeanMachine brings outs 100% pure Java applets. That's why events, actions and properties, which are part of the Java language, must be handled by the BeanMachine.

The following example shows this:

- The cursor is moved over the picture.
- This event is triggered.
- The action to be taken. The text of two text fields is exchanged; another text field is used as temporary storage.
- The mouse button is clicked on the picture.
- This event is also triggered.
- The action is: the temporary field is to be hidden.

The following shows how to make a connection and get actions/events working:

1. We opened our HotelButton Rollover example by selecting **File** from the main menu and then **Open**.
2. From the Palette box we selected **Text Field** and drew a box where we wanted the text field to be placed.
3. In the Details box we changed (if necessary) the color, font and text to be shown.



background color	☐
echo character	
editable	yes
font	**SansSerif-25**
foreground color	■
name	Text Field1
size and position	w=81 h=41 x=1
text	Alvin

Figure 53. Text Field

4. We drew two additional fields which we called Beta and temporary storage.

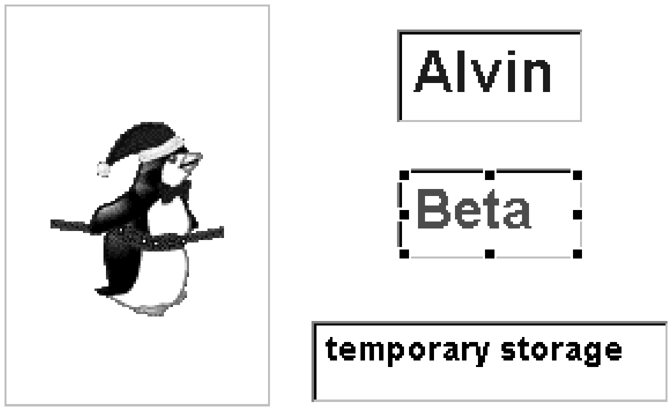
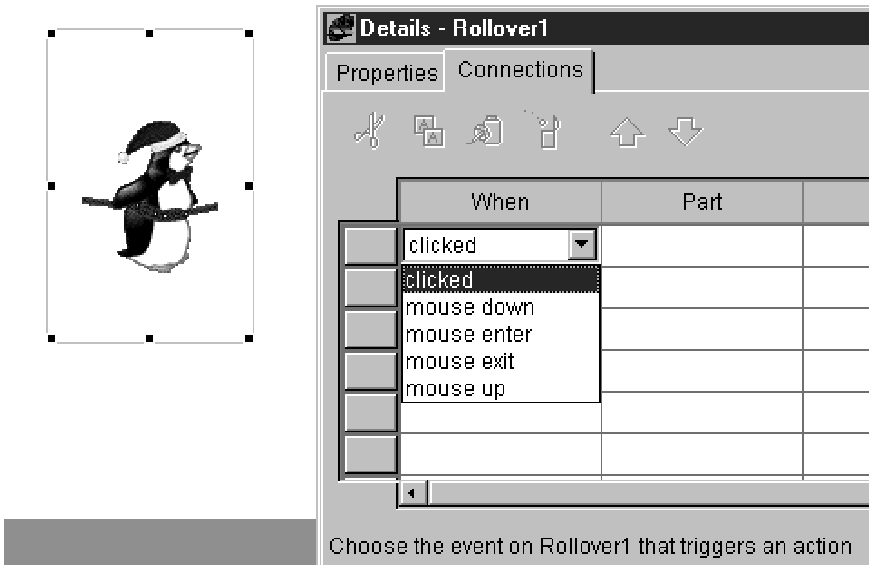


Figure 54. All Fields

5. To define the connections select the rollover button by clicking on it and the **Connections tab** in the Details box.
6. First select the cell under When. A drop-down list appears showing you all the events that can be started from the rollover button. Since we want the mouse-over-picture event we select **Mouse enter**.



Choose the event on Rollover1 that triggers an action

Figure 55. Connection (When)

7. Next, select the cell under Part. A list appears showing all parts currently in the applet that you can connect to your rollover button. Select **Text Field3**, which is used as temporary storage.

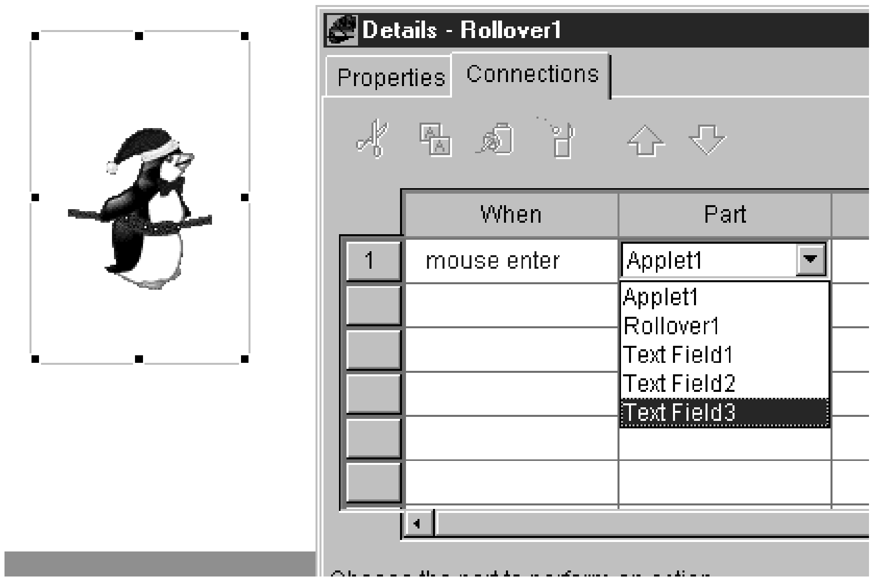
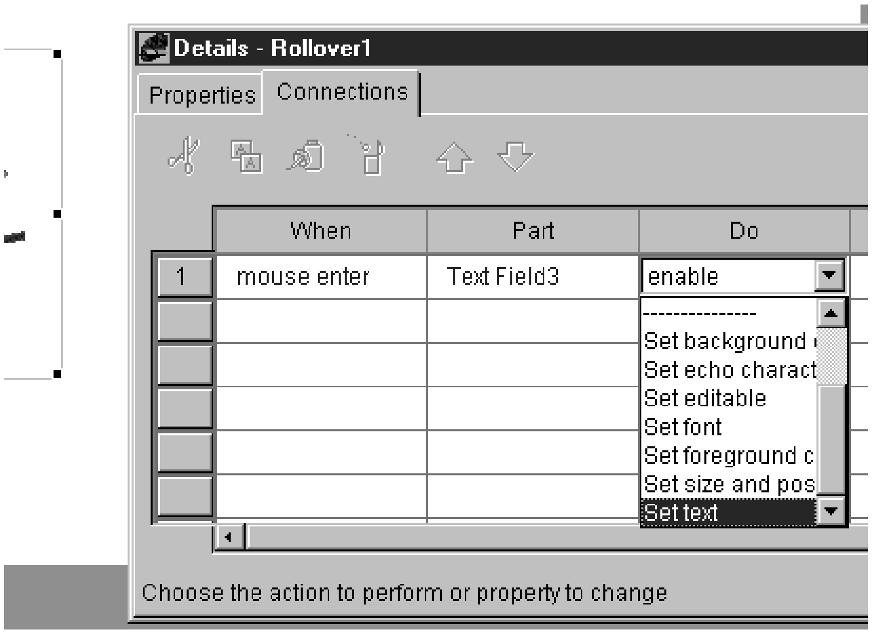


Figure 56. Connection (Part)

8. The next cell is Do. The pop-up menu shows all the things you can tell the rollover button to do when the button is entered. We selected **Set text**.



Details - Rollover1

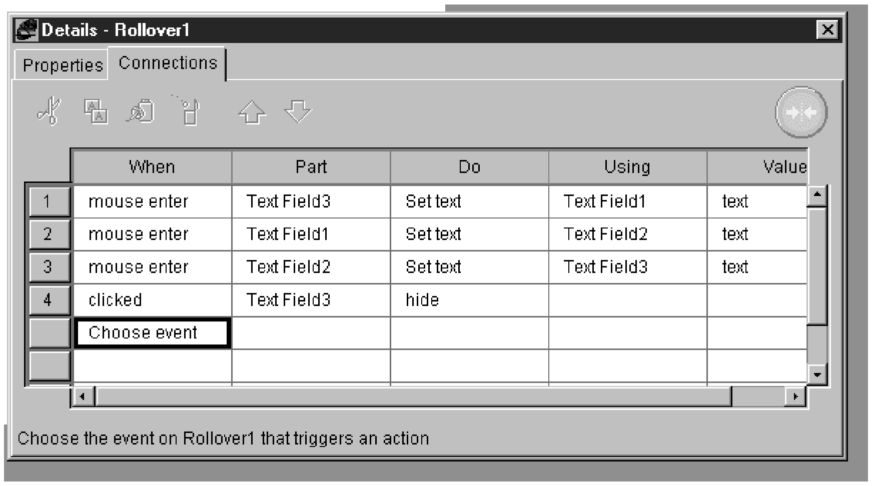
Properties | Connections

	When	Part	Do
1	mouse enter	Text Field3	enable

Choose the action to perform or property to change

Figure 57. Connection (Do)

9. The cell Using tells the user where the text that's set comes from, in our case from TextField1.
10. The cell Value asks for a variable containing the text, which is `text`.
11. We type in all the connections shown in Figure 58.



Details - Rollover1

Properties | Connections

	When	Part	Do	Using	Value
1	mouse enter	Text Field3	Set text	Text Field1	text
2	mouse enter	Text Field1	Set text	Text Field2	text
3	mouse enter	Text Field2	Set text	Text Field3	text
4	clicked	Text Field3	hide		
	Choose event				

Choose the event on Rollover1 that triggers an action

Figure 58. All Connections

We start the applet using a browser. The cursor is not over the picture.

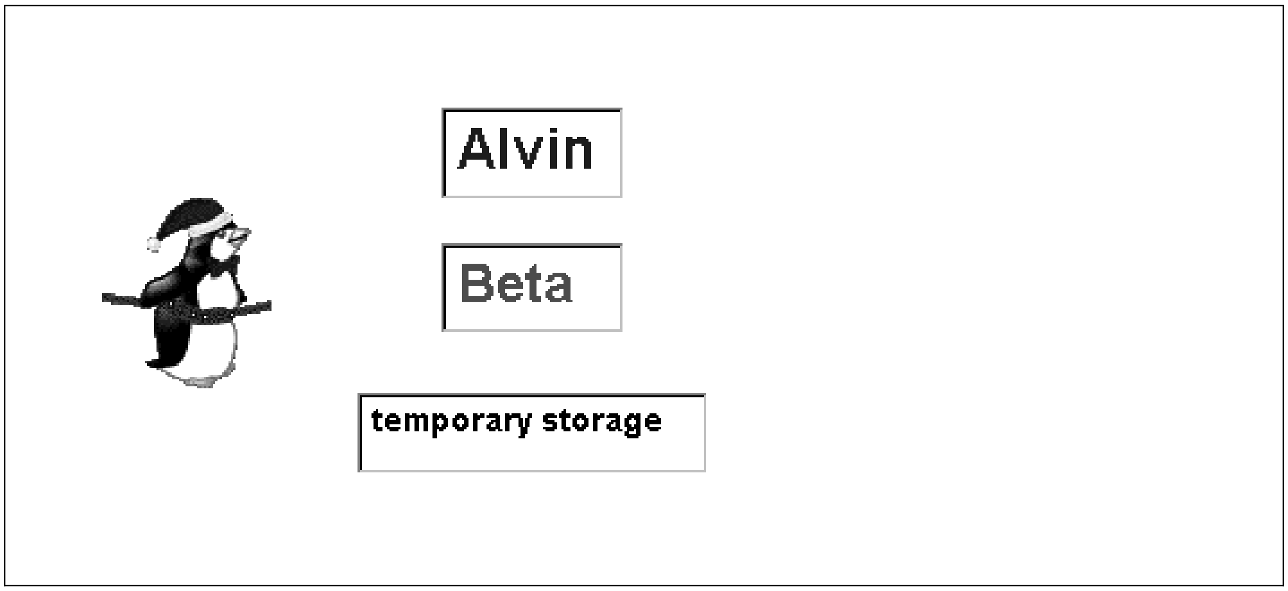


Figure 59. Cursor Outside

We move the cursor over the picture. This event is triggered. The text of the text fields change.

The picture itself changes also, because this event is automatically triggered by the rollover button.

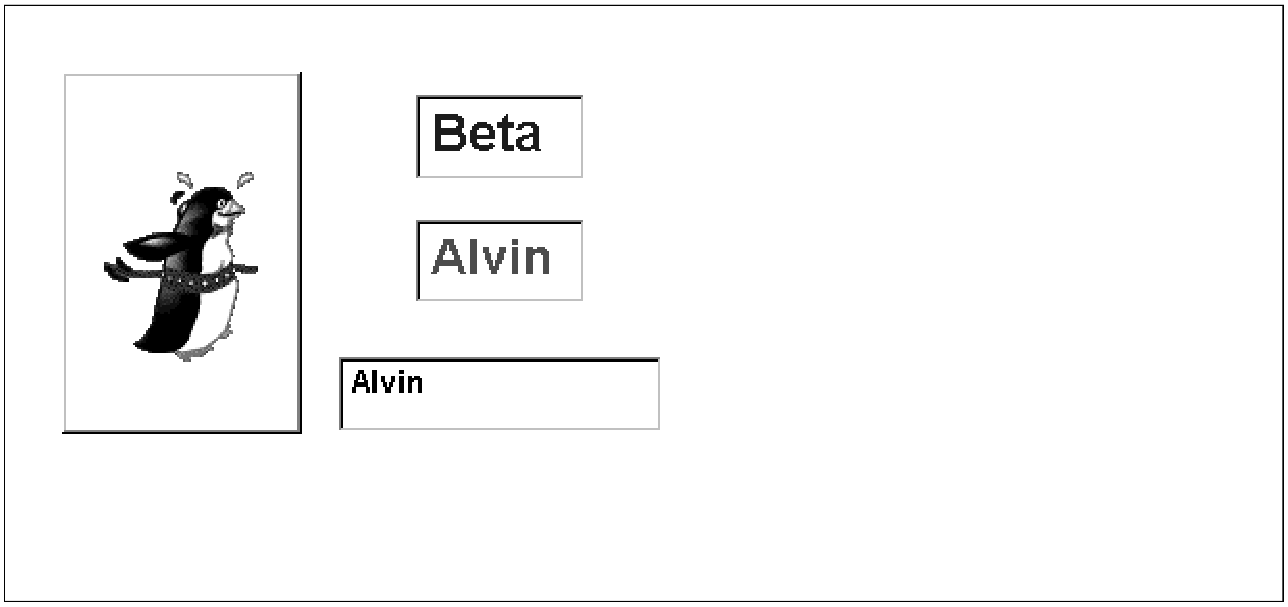


Figure 60. Cursor Over

We click on the picture. The action taken by this event lets the storage field disappear.

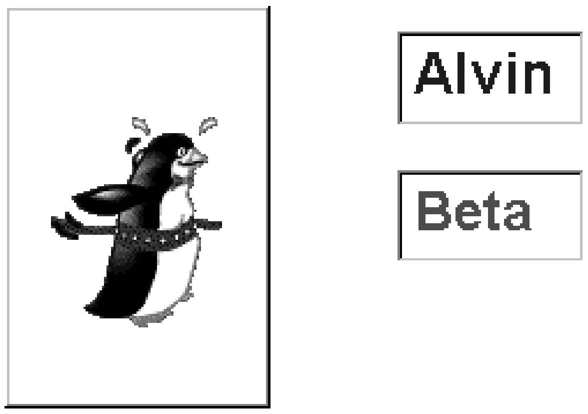
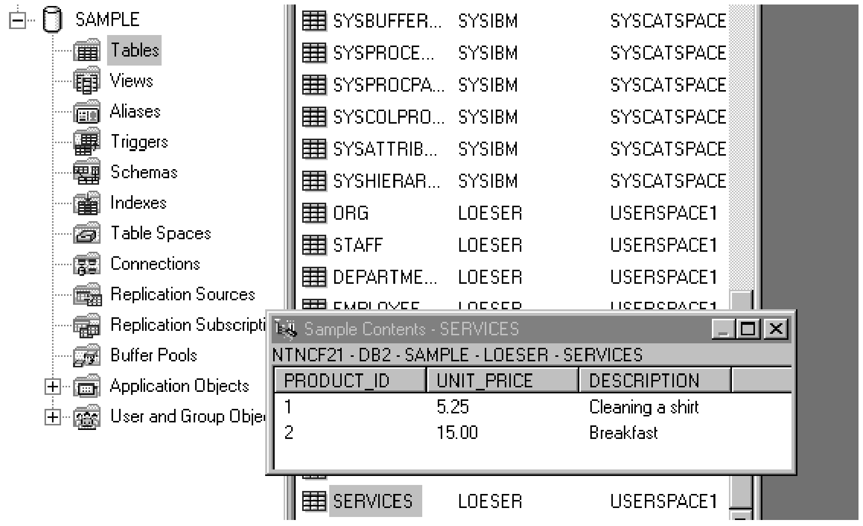


Figure 61. Cursor Clicked

2.2.4.3 Accessing a Database

Let's assume our hotel guest wants to get some information about the offerings from the hotel. He or she should be able to click a button on the Web guest page to get this information, which is stored in the hotel's database.

The next picture (Figure 62) shows the contents of the database table SERVICES.



SYSBUFFER...	SYSIBM	SYSCATSPACE
SYSPROCE...	SYSIBM	SYSCATSPACE
SYSPROCPA...	SYSIBM	SYSCATSPACE
SYSCOLPRO...	SYSIBM	SYSCATSPACE
SYSATTRIB...	SYSIBM	SYSCATSPACE
SYSHIERAR...	SYSIBM	SYSCATSPACE
ORG	LOESER	USERSPACE1
STAFF	LOESER	USERSPACE1
DEPARTME...	LOESER	USERSPACE1
SERVICES	LOESER	USERSPACE1

NTNCF21 - DB2 - SAMPLE - LOESER - SERVICES

PRODUCT_ID	UNIT_PRICE	DESCRIPTION
1	5.25	Cleaning a shirt
2	15.00	Breakfast

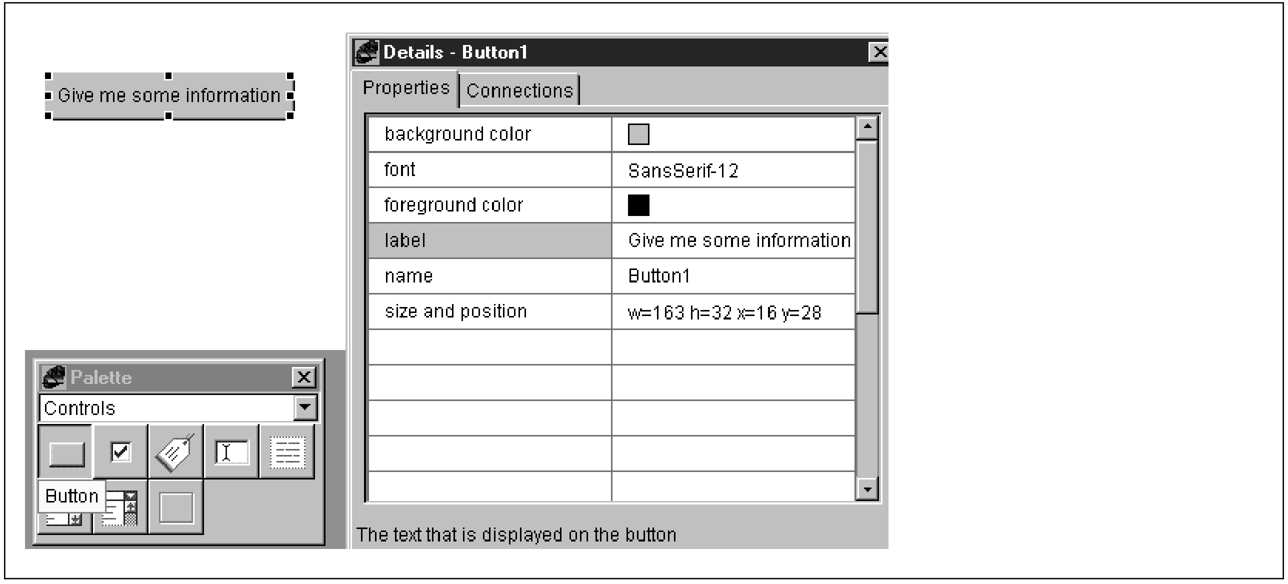
Figure 62. Services Table

The following shows how we get access to this database using the Lotus BeanMachine:

1. From the main menu select **File** and **New** to get a blank page.

2. In case they are not already open, click on **Window** on the main menu and select the **Details** box and the **Palette** box.
3. Choose **Controls** in the Palette box pop-up menu. Select the button icon and drag a box where you want the button to be located.

   You can also change the text of the label to `give me some information`.



background color	▢
font	SansSerif-12
foreground color	■
label	Give me some information
name	Button1
size and position	w=163 h=32 x=16 y=28

The text that is displayed on the button

Figure 63. Button

4. Choose **Networking** from the Palette tool. Then click on **Database** and drag a box where you want the database output to be.

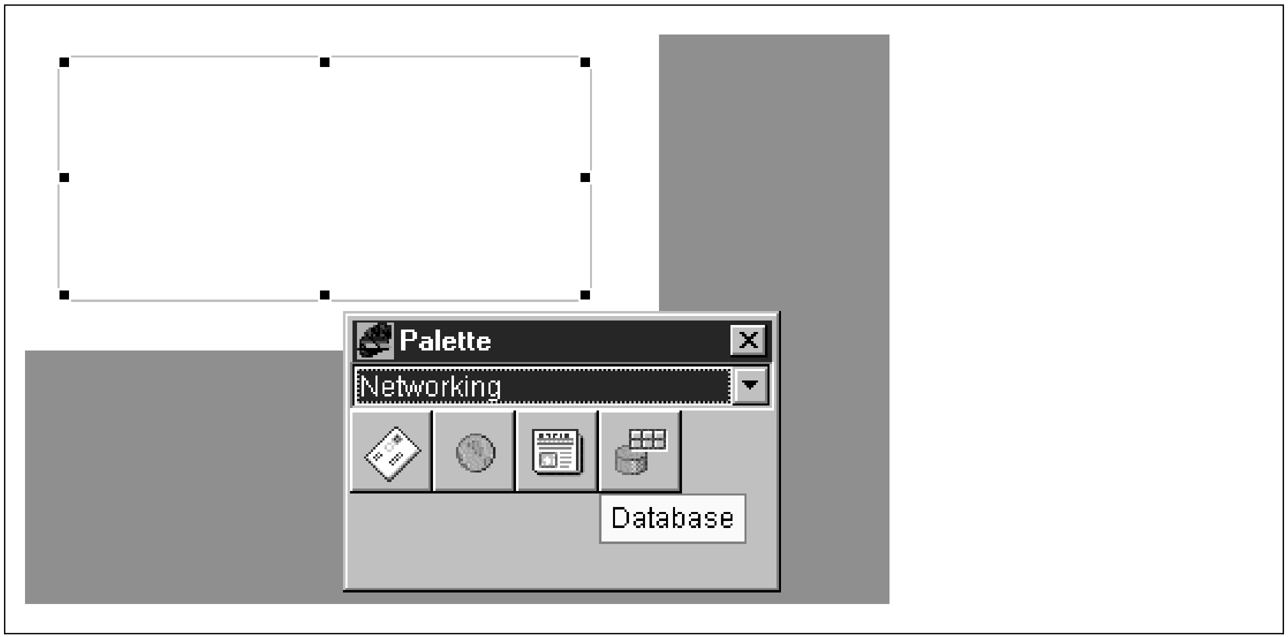
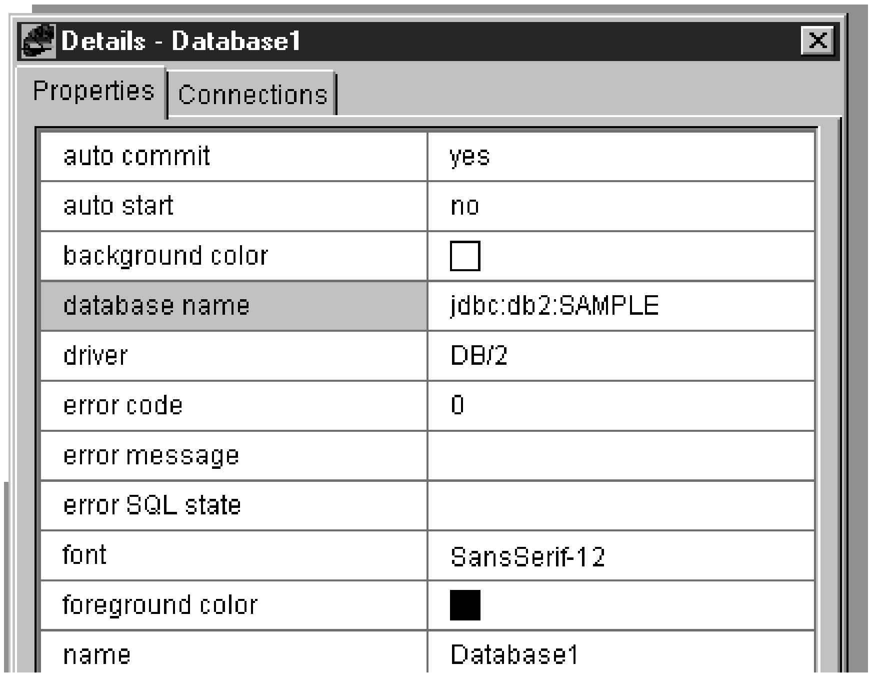


Figure 64. Database Field

5. The Details box (see Figure 65 on page 47) is used to change the properties. In our example we changed the following values:

- auto start to `no`, since the database is started by clicking on the push button.
- database name to `SAMPLE`.
- driver to `DB/2`.



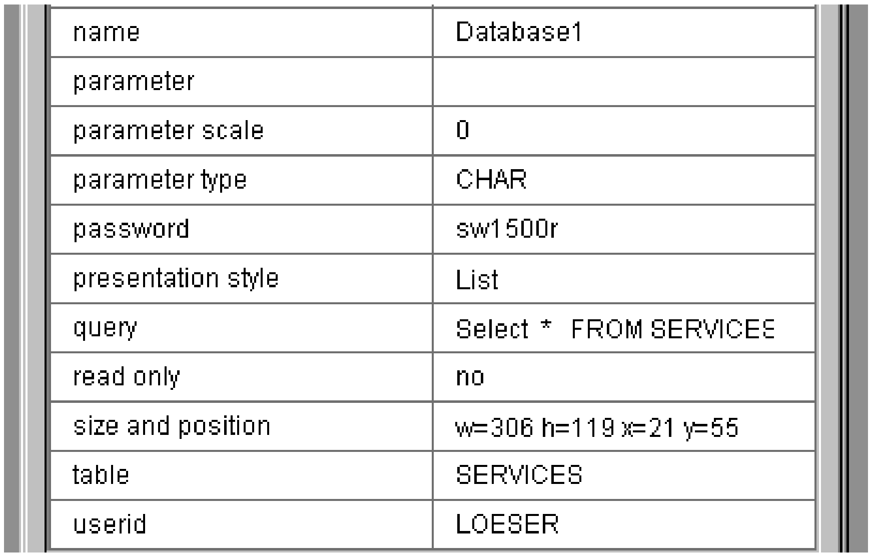
Details - Database1

Properties | Connections

auto commit	yes
auto start	no
background color	☐
database name	jdbc:db2:SAMPLE
driver	DB/2
error code	0
error message	
error SQL state	
font	SansSerif-12
foreground color	■
name	Database1

Figure 65. DB2 Details 1 of 2

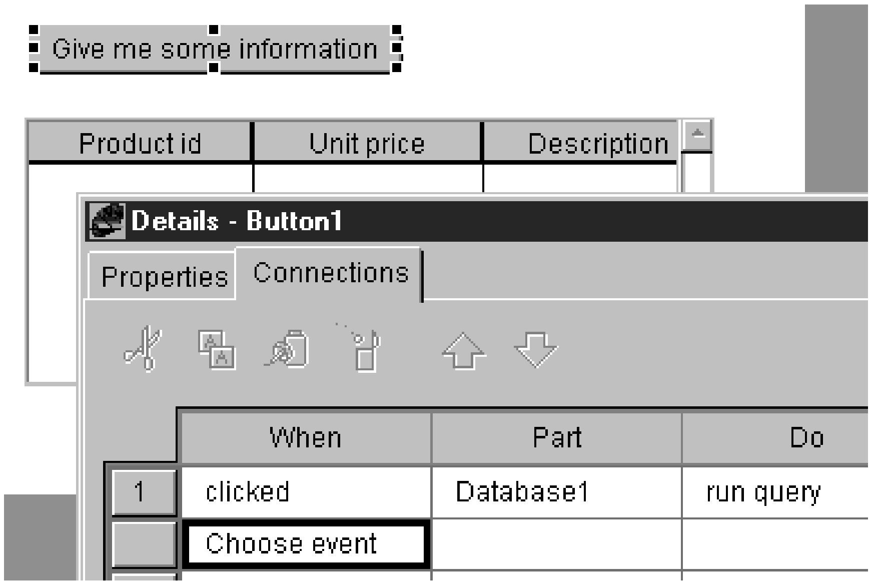
6. In Figure 66 on page 48 we typed in:
   - The password
   - The table `SERVICES`
   - The query: `Select * from SERVICES`
   - The user ID
   - The presentation style



name	Database1
parameter	
parameter scale	0
parameter type	CHAR
password	sw1500r
presentation style	List
query	Select * FROM SERVICES
read only	no
size and position	w=306 h=119 x=21 y=55
table	SERVICES
userid	LOESER

Figure 66. DB2 Details 2 of 2

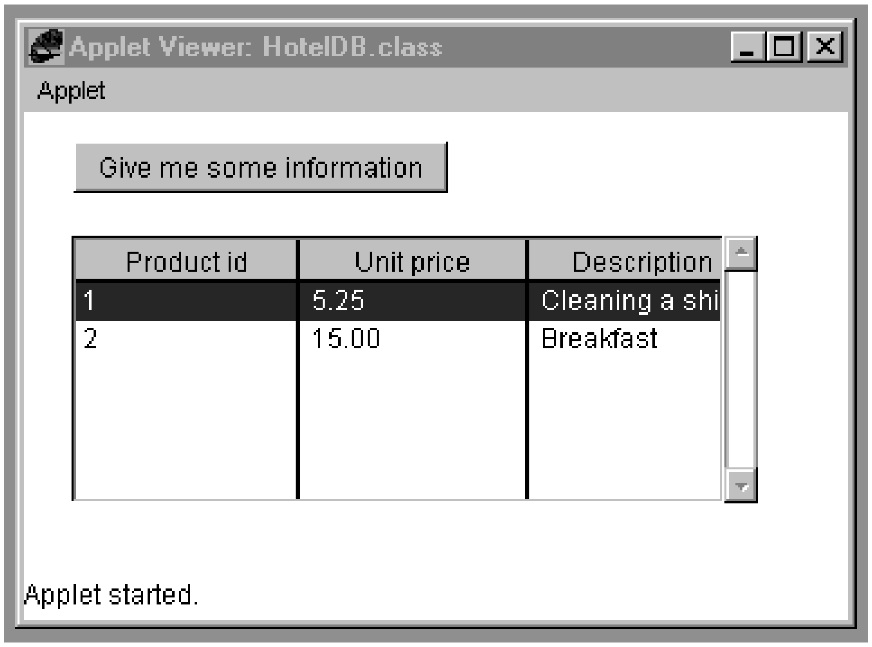
7. Finally we made a connection between the event clicked and the action run query for the database.



	When	Part	Do
1	clicked	Database1	run query
	Choose event		

Figure 67. Connection Button-DB

8. Following, is the result after the button was clicked:



Product id	Unit price	Description
1	5.25	Cleaning a shi
2	15.00	Breakfast

Applet started.

Figure 68. Result DB2 Query

2.2.4.4 Writing Your Own Java Code

Sometimes you need to do more than what BeanMachines basic properties and connections provide. BeanMachine supports you in writing your own Java code using the BeanMachine's Java window.

The following example has one input text field, one message text field and one button. The input typed in by the user is read by the Java method, the length is checked and a message is written to the message field.

The main purpose of this example is to show how the events, properties, and actions of the parts involved can be used in the Java code.

- Start a new applet by selecting **File** and **New** from the Main menu and adding two text fields and one button.
- The name of the first text field in our example is InputField, the other is called messageBox.

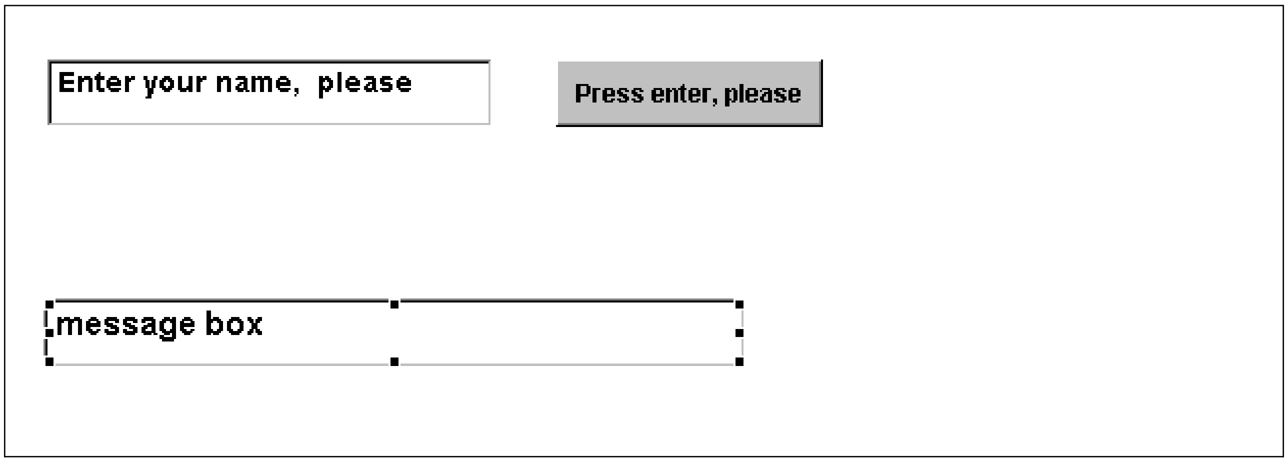
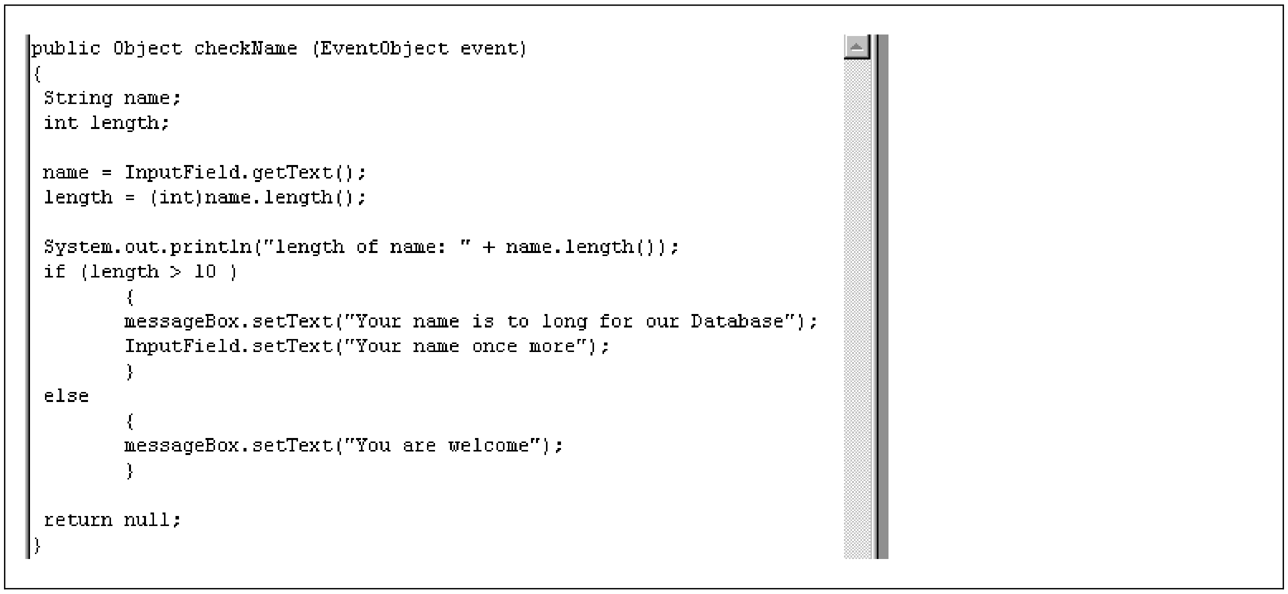


Figure 69. Fields of the Java Screen

- The following figure shows the code that has to be typed in and that is started later by clicking on the button.



```
public Object checkName (EventObject event)
{
 String name;
 int length;

 name = InputField.getText();
 length = (int)name.length();

 System.out.println("length of name: " + name.length());
 if (length > 10 )
        {
        messageBox.setText("Your name is to long for our Database");
        InputField.setText("Your name once more");
        }
 else
        {
        messageBox.setText("You are welcome");
        }

 return null;
}
```

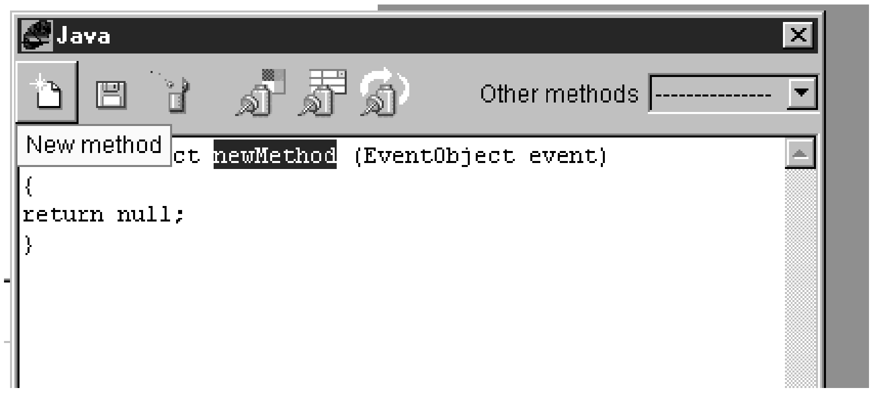
Figure 70. Java Code

The lines to pay attention to are:

- name = InputField.getText()
- name = InputField.setText("Your name once more")
- name = messageBos.setText("You are welcome")

The Java window helps you in getting access to all of your applets parts, their properties, their events and their actions.

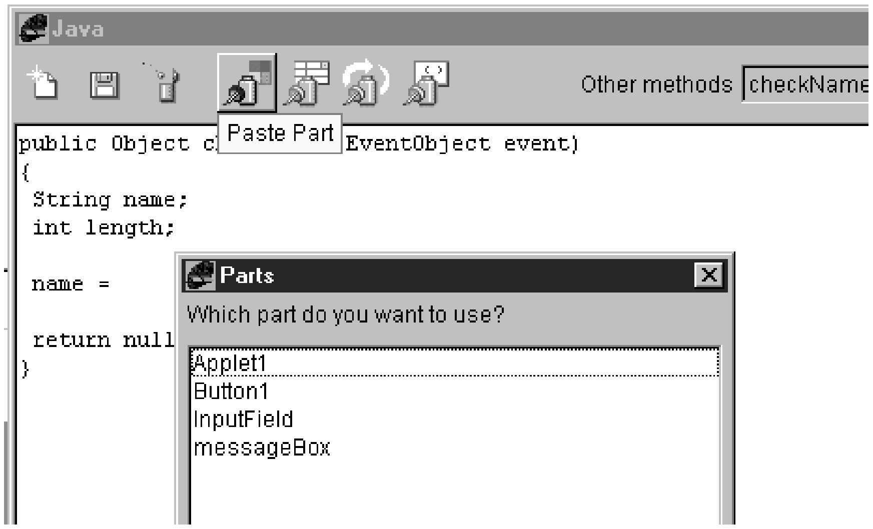
- From the main menu select **Window** and **Java** to open the Java window.
- Click on **New Method** to get a method template and overwrite the name newMethod by checkName.



```
...ct newMethod (EventObject event)
{
return null;
}
```

Figure 71. Java (New Method Template)

- The field name, which we defined to be of the type String is supposed to get the contents of the field Inputfield.
- Position the cursor behind name = and click on **Paste Part**.
- Select which part you want to use and click on **OK** to get the name in your code window.



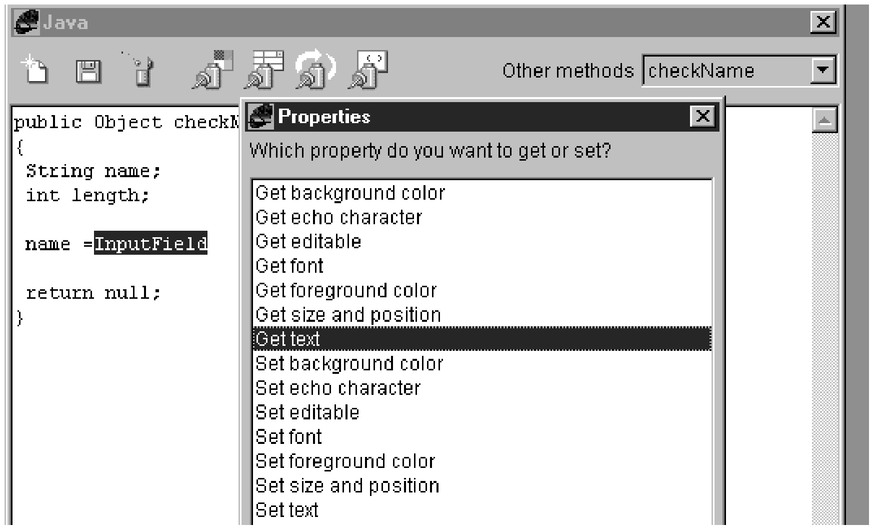
```
public Object c... EventObject event)
{
 String name;
 int length;

 name =

 return null
}
```

Figure 72. Java (Paste Part)

The system tells you not only which parts are available for use in your method but also the events, properties and actions for the selected part.

- With the selected part Inputfield highlighted, click on **Paste Properties** to get all the selected parts properties that can be used.
- Select **Get text**. You will see that the corresponding method getText() is added to your code.

The other statements are built in a similar way.

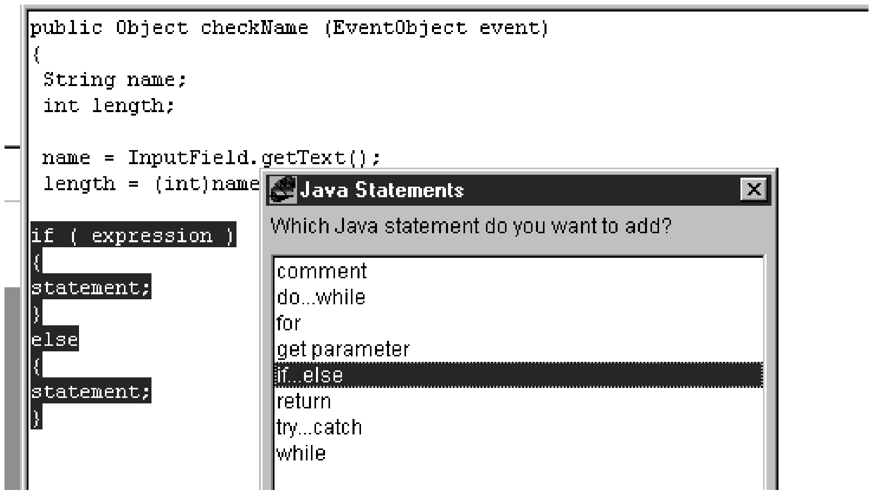


```
public Object checkN
{
 String name;
 int length;

 name =InputField

 return null;
}
```

Figure 73. Java (Paste Property)

The system tells you what parts are available and what methods can be used. It also supports you in writing pure Java code. See that there is an if...else statement in your code.

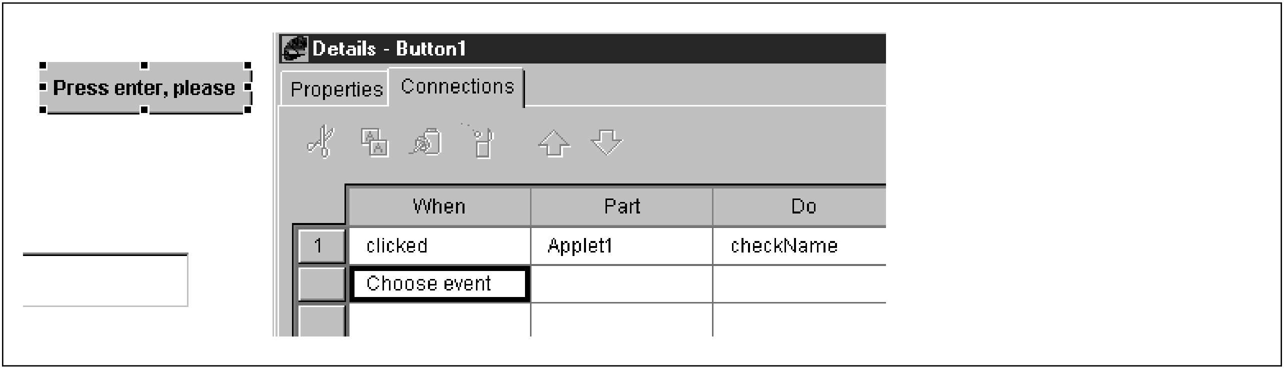
- Put the cursor at a place where the statement should be.
- Select **Paste Java** from the menu.
- Select the statement you want. A pattern will be inserted into your code.



```
public Object checkName (EventObject event)
{
 String name;
 int length;

 name = InputField.getText();
 length = (int)name
if ( expression )
{
statement;
}
else
{
statement;
}
```

Figure 74. Java (Paste Java)

- Finally, make a connection between the push button and the applets method checkName using the Details box.



	When	Part	Do
1	clicked	Applet1	checkName
	Choose event		

Figure 75. Connection to Java Method

- Here is the result:

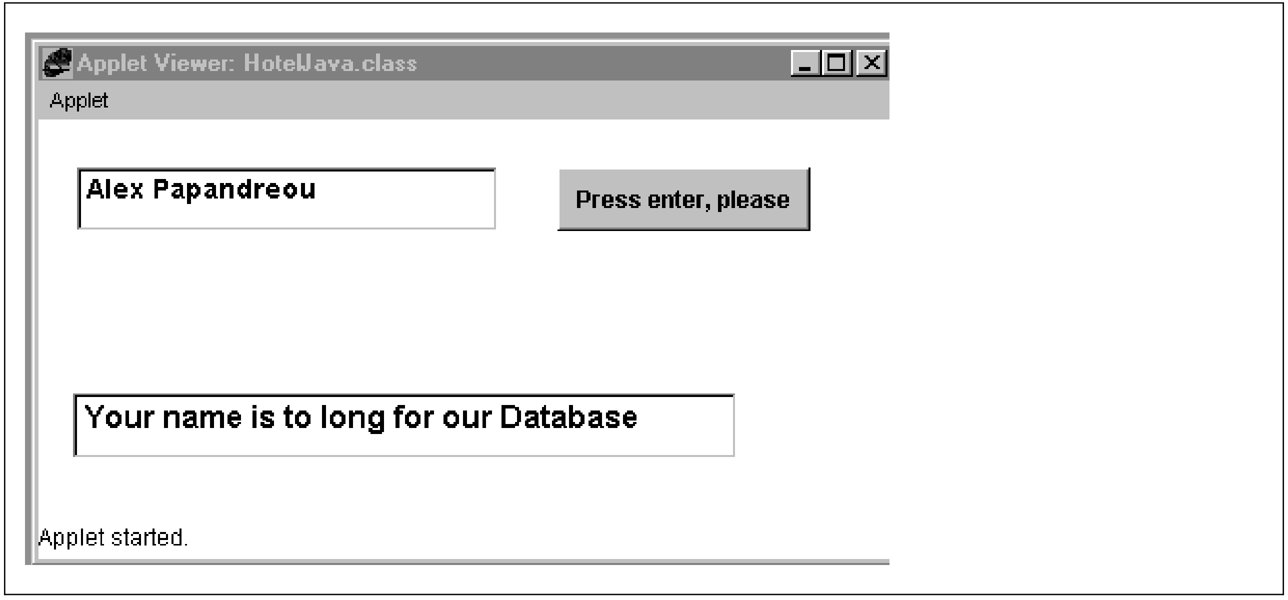

Applet Viewer: HotelJava.class
Applet
Alex Papandreou
Press enter, please
Your name is to long for our Database
Applet started.

Figure 76. Result (Long Name)

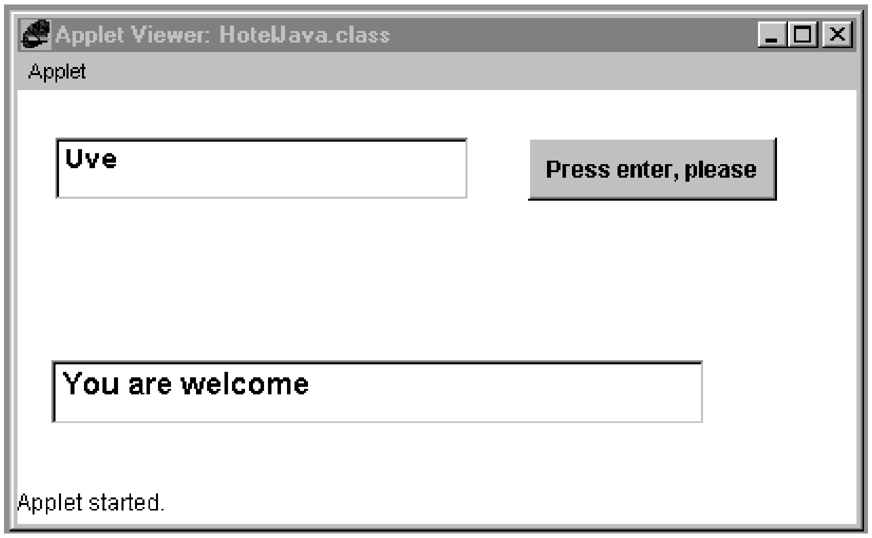


Figure 77. Result (Short Name)

2.3 Beans Development Kit

JavaBeans is a portable, platform-independent software component model written in Java. It enables developers to write reusable components once and run them anywhere. Beans are Java classes that can be manipulated in a visual builder tool and composed together in applications. The Beans Development Kit (BDK) is a pure Java application that provides support for JavaBeans APIs, a test container and sample Beans. IBM provides a visual tool called VisualAge for Java. For this book the file bdk10-nov97-win32 of JavaBeans Development Kit 1.0 was downloaded from:

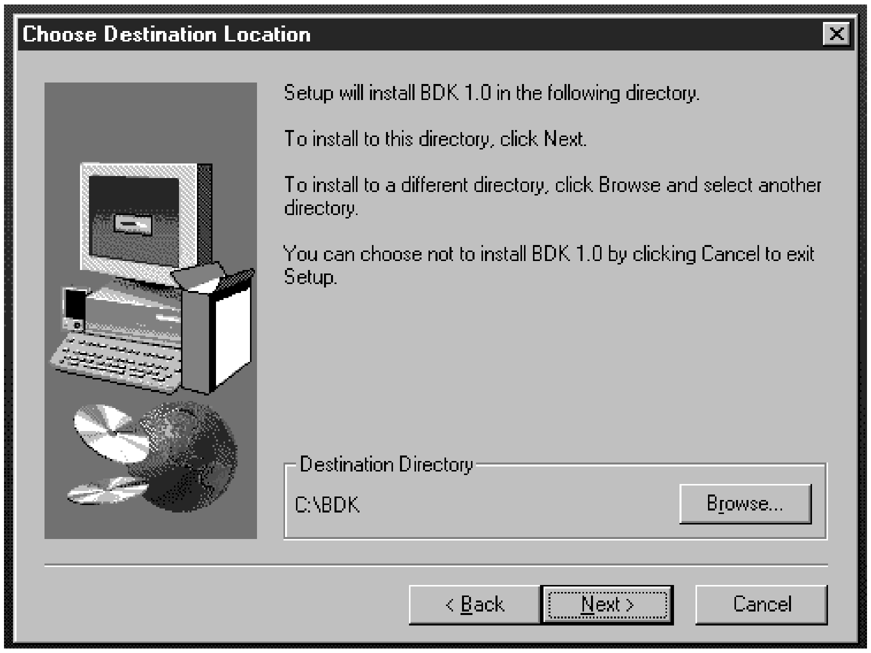
http://splash.javasoft.com/beans/software/bdk_download.html#win.

Note: Before this book was published, a newer version of the BDK was available from the same Web site, BDKMar98-win32.

2.3.1 Installing Beans Development Kit

The following shows how to install the Beans Development Kit:

1. Double-click on the installation file.
2. Read the Welcome page and click on **Next**.
3. Select Destination folder or click on **Next** to accept the default destination folder.



Setup will install BDK 1.0 in the following directory.

To install to this directory, click Next.

To install to a different directory, click Browse and select another directory.

You can choose not to install BDK 1.0 by clicking Cancel to exit Setup.

C:\BDK

Figure 78. Destination Folder

4. Read the Information panel and click on **Next** to continue.
5. The Beans Development Kit is installed. You have the option of reading the readme file at that time or clicking on **Finish** to close the panel.

2.4 Comparison of Fusion, Lotus BeanMachine, Build-IT and pageCompile

The following chart attempts to show for each of the tools that were used in this project, what functions are available:

Table 1 (Page 1 of 2). Functions

	Fusion	**Lotus Bean Machine**	**Build-IT**	**Page Compile (ServletExpress)**
Central Graphic Control				
Site View	√	---	√	
Style Site	√	---	√	
ActiveX Support	√	---		
Java Script	√	---		√
Editing HTML Pages	√	---		
Site Assets	√	---	√	
Masterborder	√	---		
Multiple Layout	√	---		
Multiple Renditions	√	---		
Publish	√	√	√	√
Text link	√	√		
LIVE connection	√	√		
Stacked pages	√	---		
AutoSites/ Templates	√	---	√	
Design Parts	√	---		
Autoresize	√	---		
Import HTML Pages	√	---	√	√
Form Element	√	---		
Java Code				
import	√	---		
create	---	√		
Components				
Message Board	√	---		
Site Mgr	√	---		
Dyna Buttons	√	√		
Ticket	√	√		
CGI/Forms	√	---		
Rotating Pictures	√	---		
Multimedia				
Animation	√	√		
Audio	√	√		
Clock	√	√		
Image	√	√		
Image map	√	√		
Nervous Text	√	√		
Timer	√	√		
Teletype	√	√		
Rollover	√	√		

Table 1 (Page 2 of 2). Functions

	Fusion	**Lotus Bean Machine**	**Build-IT**	**Page Compile (ServletExpress)**
Controls				
Button	√	√		
Checkbox	√	√		
Choice	√	√		
Label	√	√		√
List	√	√		√
Panel	√	√		
TextArea	√	√		
TextField	√	√		
Database	√	√		
Headline	---	√		
Maillink	---	√		
URLLink	---	√		
Object-oriented				
Action	---	√		
Event	---	√		
Properties	---	√		
Find & replace text in components				√

Chapter 3. ServletExpress for Internet Servers

This chapter shows how to manage servlets by using IBM ServletExpress (see 3.3, "Installing IBM ServletExpress" on page 68 and 3.5.1, "Managing Servers and Servlets" on page 90). ServletExpress is supposed to work with the following servers on the NT platform:

- Lotus Domino Go Webserver
- Microsoft IIS 3.0
- Microsoft IIS 4.0
- Netscape Enterprise Server 3.0
- Netscape Proxy Server 3.5
- Netscape Fasttrack Server 2.01

Note: ServletExpress is packaged separately for each operating system. If you want a beta package, refer to http://www.ibm.com/java/servexp. There is a discussion forum as well as product support information.

3.1 Lotus Domino Go Webserver

The Network Computing Framework (NCF) consists of several elements. One of the major elements relates to Web application servers that can integrate collaboration, relational database access and transaction support.

Lotus Domino Go Webserver connects the clients with the new and traditional I/T application servers through Java and standard protocol-based architectures such as Java servlets, JavaBeans, JDBC, and Enterprise Beans.

There are three editions of Domino Go Webserver:

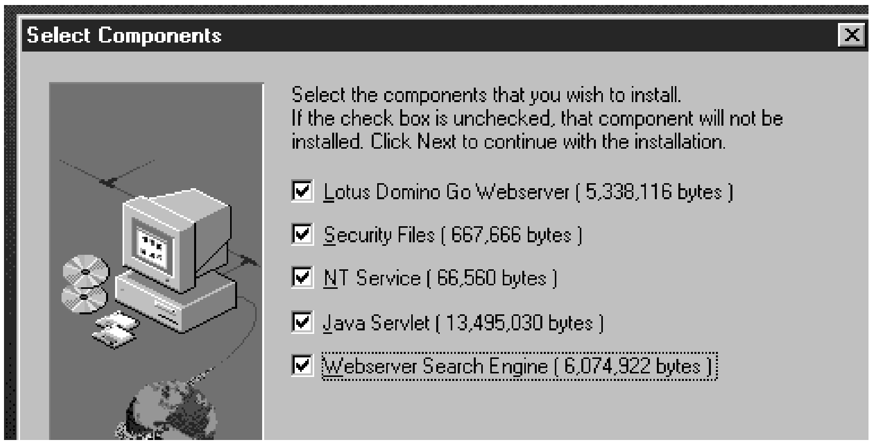
1. The North American Edition
2. The International Edition
3. The French Edition

The editions differ in the level of security provided. The North American Edition contains the strongest security features and may not be exported outside of the United States and Canada. For information on supported key lengths and encryption modes for each edition, see the *Webmaster's Guide*.

3.1.1 Installing Lotus Domino Go Webserver

You can start the installation program manually just like any other Windows program.

1. Start the installation process by double-clicking on the installation file.
2. Read the Welcome page and click on **Next** to continue.



Select Components

Select the components that you wish to install.
If the check box is unchecked, that component will not be installed. Click Next to continue with the installation.

- [✓] Lotus Domino Go Webserver (5,338,116 bytes)
- [✓] Security Files (667,666 bytes)
- [✓] NT Service (66,560 bytes)
- [✓] Java Servlet (13,495,030 bytes)
- [✓] Webserver Search Engine (6,074,922 bytes)

Figure 79. Select Component

3. Select the components you want to install.
   - Domino Go Webserver (selected by default)

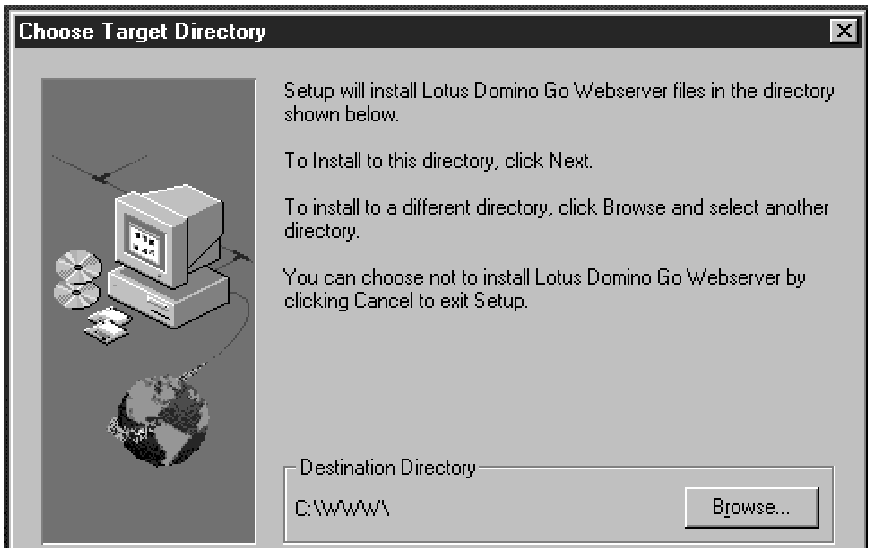
     This is the base Web server product.
   - Security Files (selected by default)

     This contains all the functions to use the Secure Sockets Layer (SSL) protocol as part of your server.
   - NT Service (selected by default)

     For Windows NT the NT Service component allows you to run the server as an NT service.
   - Java servlet support

     Domino Go Webserver supports Java servlets. In many cases, Java servlets can be used instead of CGI programs. Java servlets can provide better performance than other programming alternatives.
   - The Web server search engine

     The engine, which is an optional feature of Domino Go Webserver, enables you to build and maintain searchable indexes to the information on your Web site.
4. Click on **Next** to continue.


Choose Target Directory

Setup will install Lotus Domino Go Webserver files in the directory shown below.

To Install to this directory, click Next.

To install to a different directory, click Browse and select another directory.

You can choose not to install Lotus Domino Go Webserver by clicking Cancel to exit Setup.

Destination Directory

C:\WWW\

Figure 80. Target Directory

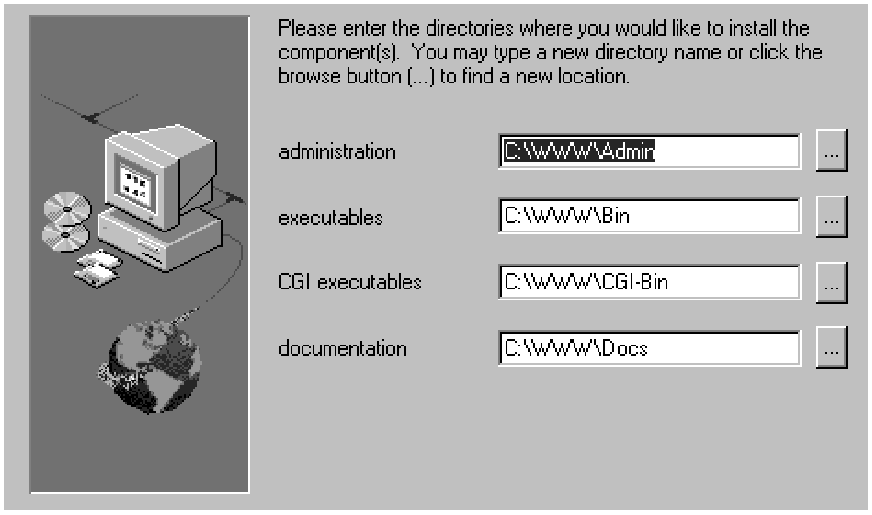
5. Choose the target directory.

   Note: With Windows NT, the directory you specify for the installation must be on a drive in an NTFS, HPFS, or FAT partition. It's recommended you install it onto an NTFS drive for better file protection and security.

   Windows 95 supports only FAT partitions. The directory you specify for the installation must on a drive in a FAT partition.

   - Click on **Browse** if you want to change the drive or directory destination. Otherwise the default destination directory c:\www\ is taken.

6. Click on **Next** to continue.


Please enter the directories where you would like to install the component(s). You may type a new directory name or click the browse button (...) to find a new location.

administration	C:\WWW\Admin
executables	C:\WWW\Bin
CGI executables	C:\WWW\CGI-Bin
documentation	C:\WWW\Docs

Figure 81. Select Component Directory I

7. Choose component directories.

   - Administration directory

     Contains the files used by the server configuration and administration forms.

- Executable directory

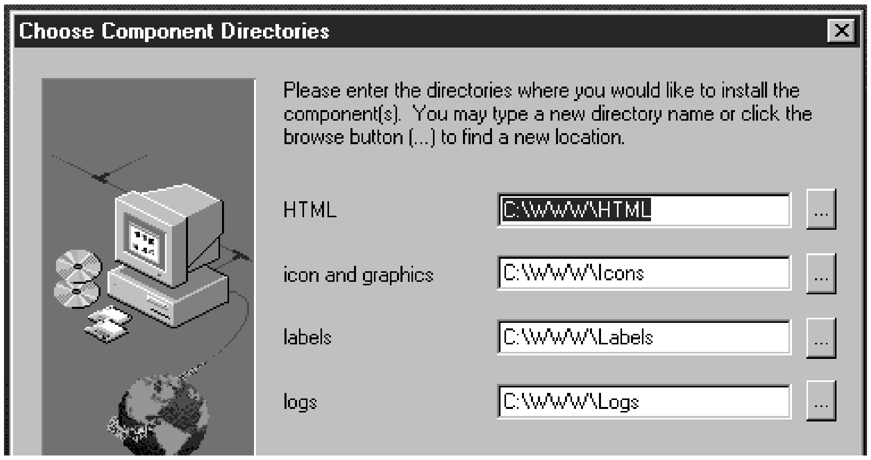
  Contains the servers executable program files and other related files.

- CGI Bin script directory

  Script programs that use the Common Gateway Interface.

- Documentation directory

8. Click on **Next** to continue to the second Component directories window.



Please enter the directories where you would like to install the component(s). You may type a new directory name or click the browse button (...) to find a new location.

HTML C:\WWW\HTML ...

icon and graphics C:\WWW\Icons ...

labels C:\WWW\Labels ...

logs C:\WWW\Logs ...

Figure 82. Select Component Directory II

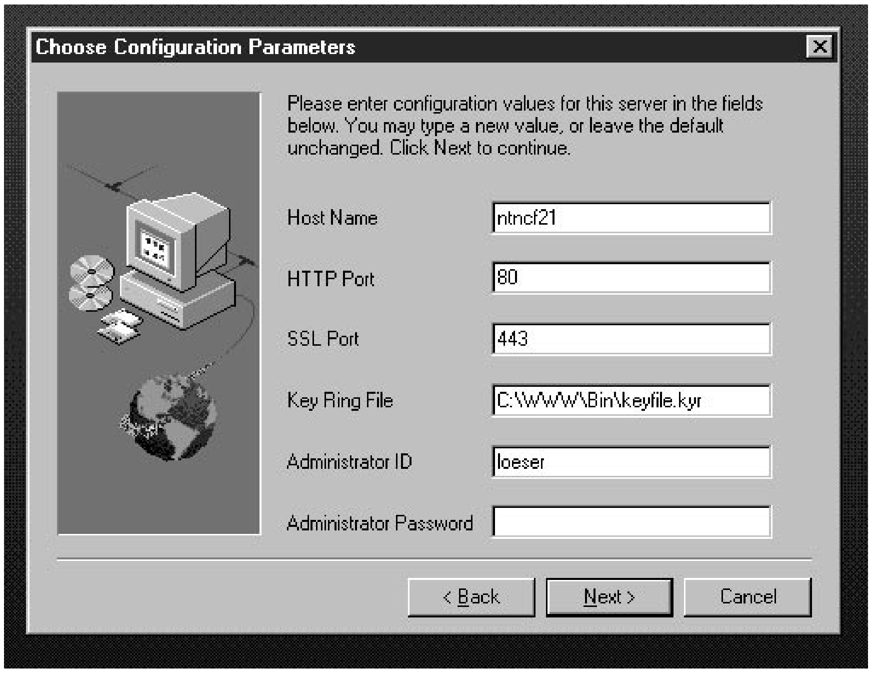
9. Select component directories:

   - HTML directory
   - Icons and graphics directory
   - Labels directory

     Sample labels for Platform for Internet Content Selection (PICS) support are installed in this directory.

   - Logs directory (See Figure 90 on page 66 for details.)

10. Click on **Next** to choose the configuration parameters window.


Choose Configuration Parameters

Please enter configuration values for this server in the fields below. You may type a new value, or leave the default unchanged. Click Next to continue.

Host Name	ntncf21
HTTP Port	80
SSL Port	443
Key Ring File	C:\WWW\Bin\keyfile.kyr
Administrator ID	loeser
Administrator Password	

Figure 83. Configuration Parameters

Enter the configuration values for:

- Host Name

  The default value is the host name defined as part of your TCP/IP configuration.

- HTTP Port (80)

  The default value of 80 is the well-known port number for the Hypertext Transfer Protocol (HTTP).

- SSL Port (443)

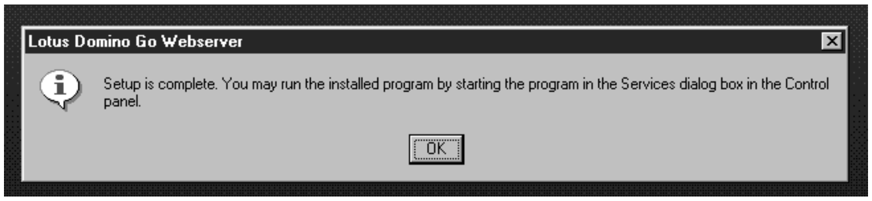
  The default value of 443 is the well-known port number for Secure Sockets Layer (SSL) protocol requests.

- The Ring File

  This is the name of the file where you want to store private/public key pairs that the server will use for secure communication.

- Administrator ID
- Administrator Password

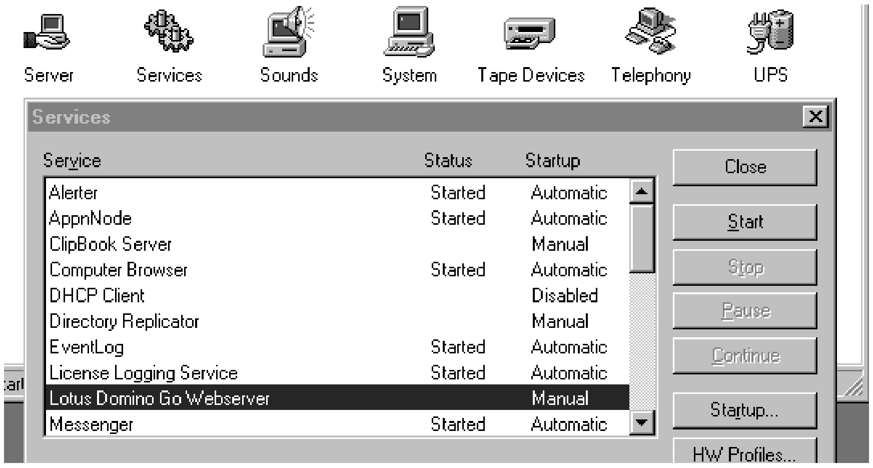
Finally, you get a message asking you to start the Webserver in the Services dialog box in the control panel.


Lotus Domino Go Webserver

Setup is complete. You may run the installed program by starting the program in the Services dialog box in the Control panel.

Figure 84. Message

11. You may run the installed program by starting the program in the Services dialog box in the control panel.



Service	Status	Startup
Alerter	Started	Automatic
AppnNode	Started	Automatic
ClipBook Server		Manual
Computer Browser	Started	Automatic
DHCP Client		Disabled
Directory Replicator		Manual
EventLog	Started	Automatic
License Logging Service	Started	Automatic
Lotus Domino Go Webserver		Manual
Messenger	Started	Automatic

Figure 85. Starting Lotus Domino Go Webserver

12. Connect to your server.

    Use your favorite browser, which has to be Java-enabled, to connect to your server's home page. This is done by using the URL: http://your.server.name, where http://your.server.name is the fully qualified name of your host.

13. To install ServletExpress you need to add the following files to your classpath:

    - C:\WWW\Bin\Java\lib\classes.zip
    - C:\WWW\CGI-Bin\icsclass.zip
    - C:\WWW\Servlets\Public

    If there isn't a classpath variable, you have to create one.

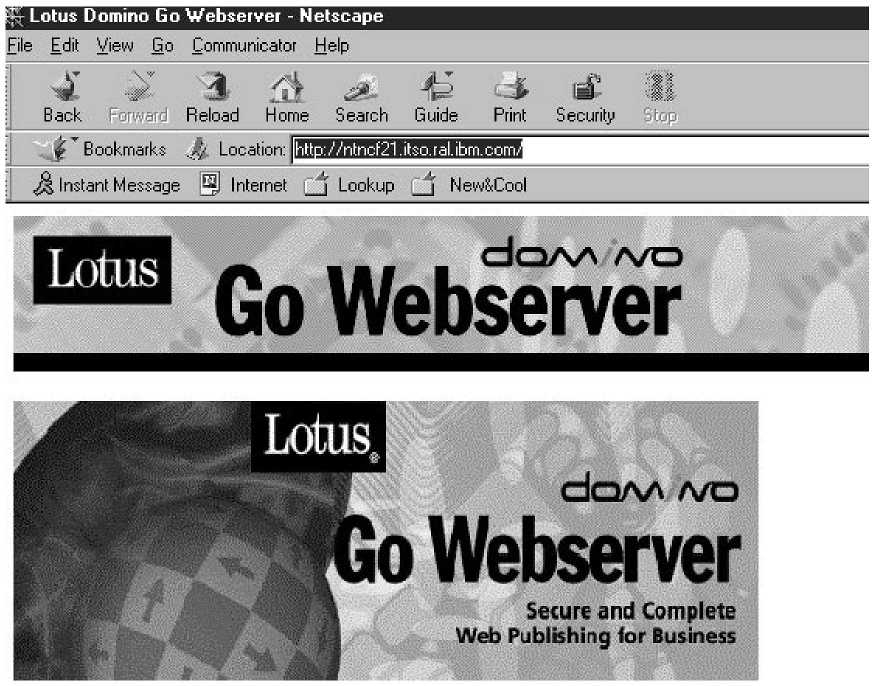

Lotus Domino Go Webserver - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf21.itso.ral.ibm.com/
Instant Message Internet Lookup New&Cool
Lotus domino Go Webserver
Lotus domino Go Webserver
Secure and Complete
Web Publishing for Business

Figure 86. Home Page of Your Webserver

3.1.1.1 Configuring Lotus Domino Go Server

Lotus Domino Go Webserver can be configured in two ways:

1. By using the online Configuration and Administration Forms

   The Configuration and Administration Forms can be accessed from any Java-enabled browser with an administrator ID and the password. These forms provide a way to configure and view the servers configuration settings as shown in Figure 87 on page 64.

2. By editing the servers configuration file (see 3.1.1.3, “Editing the Configuration File” on page 66).

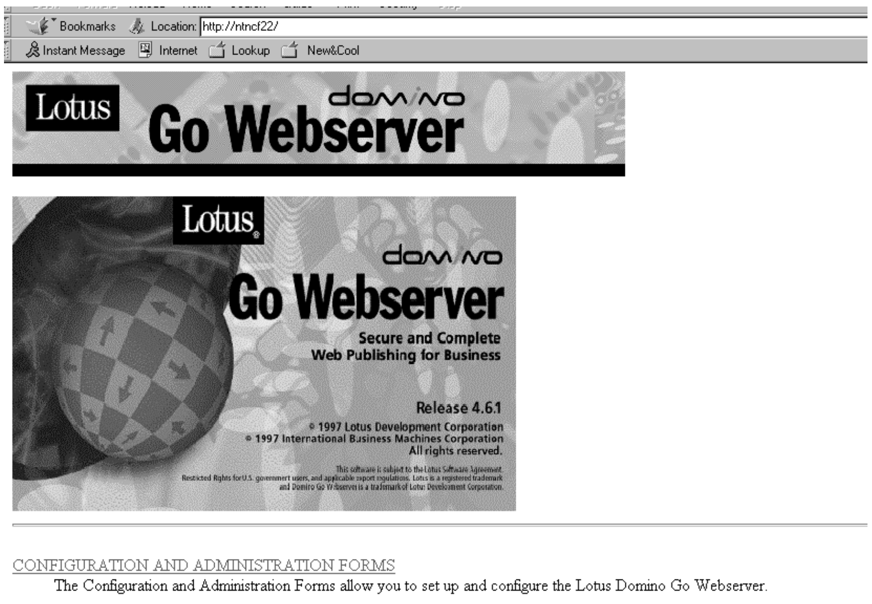
   The configuration file httpd.cnf, is made up of configuration statements called directives. By updating the values of the directives, the server's configuration can be customized.

3.1.1.2 Using the Configuration and Administration Forms

Almost all configuration and administration activities are enabled through these forms.

To access the Configuration and Administration Forms, perform the following steps:

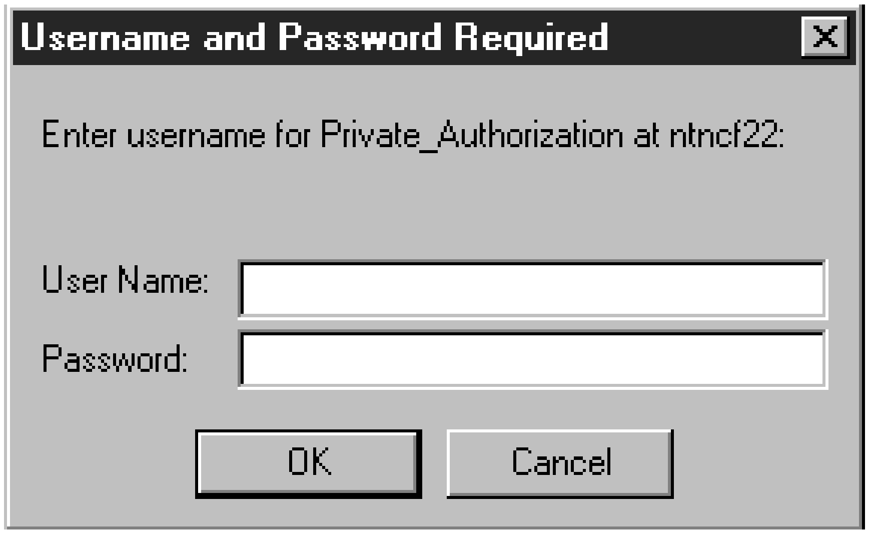
1. Use a Java-enabled browser to access the Lotus Domino Go Webserver's home page.


Bookmarks
Location: http://ntncf22/
Instant Message
Internet
Lookup
New&Cool
Lotus
domino
Go Webserver
Secure and Complete
Web Publishing for Business
Release 4.6.1
© 1997 Lotus Development Corporation
© 1997 International Business Machines Corporation
All rights reserved.

CONFIGURATION AND ADMINISTRATION FORMS
The Configuration and Administration Forms allow you to set up and configure the Lotus Domino Go Webserver.

Figure 87. Configuration And Administration Form Page

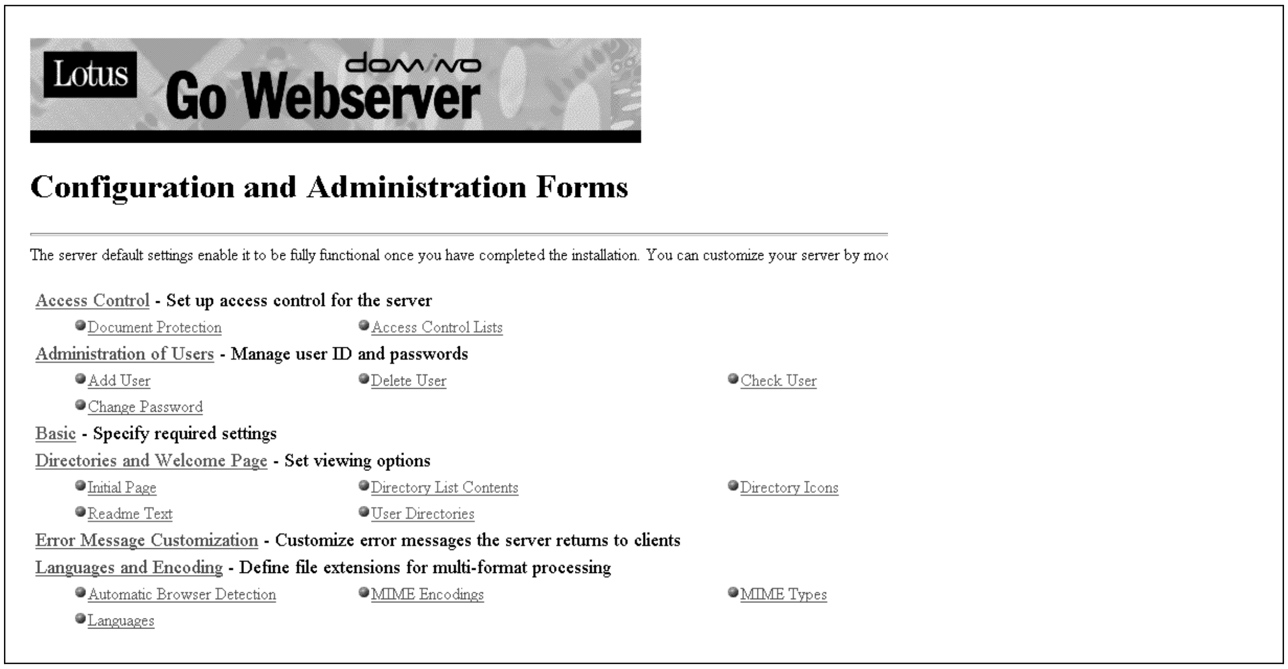
2. On the Lotus Domino Go Webserver home page, click on the hyperlink **CONFIGURATION AND ADMINISTRATION FORMS** to get into the Configuration and Administration Forms.
3. A dialog window asking for a user name and the password will pop up. To access these forms, an administrator privilege user ID and its password are required. Type the administrator user ID and password in the dialog window and click on **OK**.



Enter username for Private_Authorization at ntncf22:

Figure 88. User Name and Password

4. After the administrator ID and the password have been authenticated, the Configuration and Administration Forms window comes up.



Configuration and Administration Forms

The server default settings enable it to be fully functional once you have completed the installation. You can customize your server by moc

Access Control - Set up access control for the server
- Document Protection
- Access Control Lists

Administration of Users - Manage user ID and passwords
- Add User
- Delete User
- Check User
- Change Password

Basic - Specify required settings

Directories and Welcome Page - Set viewing options
- Initial Page
- Directory List Contents
- Directory Icons
- Readme Text
- User Directories

Error Message Customization - Customize error messages the server returns to clients

Languages and Encoding - Define file extensions for multi-format processing
- Automatic Browser Detection
- MIME Encodings
- MIME Types
- Languages

Figure 89. Configuration And Administration Forms I

This page enables you to:

- To set up access protection on your server.

  Access to files on the server is controlled by several files and directives. You can establish access control using a combination of protect statements, protection setups, and optional access control lists.

- To manage password files.

  The server uses password files to control access to files on the server. With these forms you can add a new user to a password file and group file, delete a user from a password file, change a password for a user, or check on a user and password.

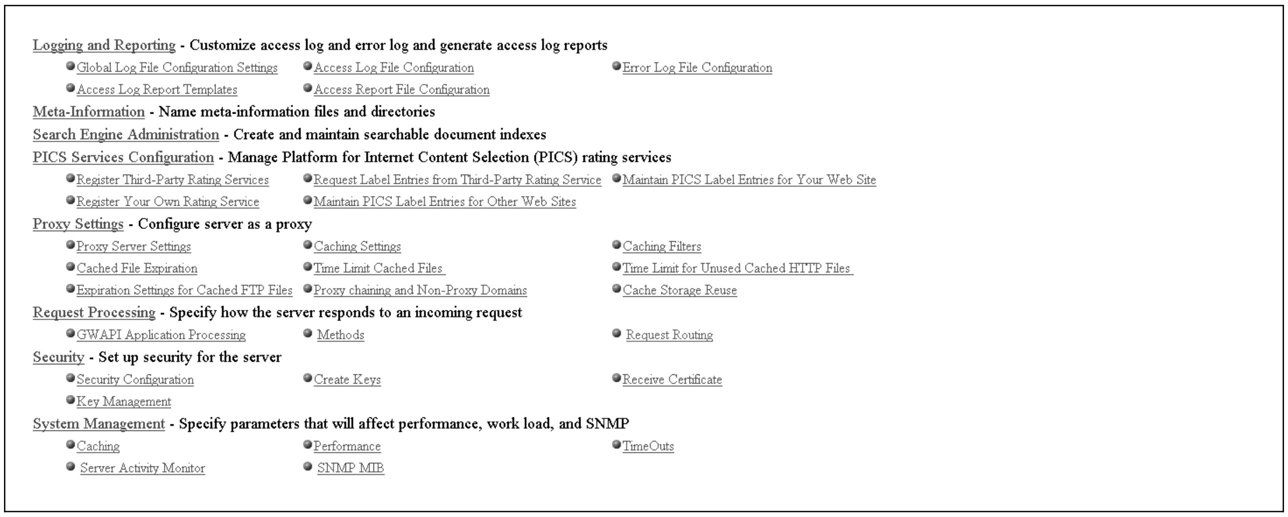
- To specify the host name of the computer on which the server is installed, the port number on which the server listens for requests, and the directory the server uses as the root of the data hierarchy.

- To control what information your server returns to clients.

  You can control whether the server returns a welcome page or a directory listing. You can also control the contents and layout of directory listings.

- To customize the error messages the server returns to clients when an error condition is encountered. You can also select an error condition and specify the path and the name of the message file you have written to display at the client browser when that error condition occurs.

- To define the extensions for multi-format processing and languages. You can also define file extensions to allow automatic browser detection, and allow your server to serve up browser specific pages.



Logging and Reporting - Customize access log and error log and generate access log reports

- Global Log File Configuration Settings
- Access Log File Configuration
- Error Log File Configuration
- Access Log Report Templates
- Access Report File Configuration

Meta-Information - Name meta-information files and directories

Search Engine Administration - Create and maintain searchable document indexes

PICS Services Configuration - Manage Platform for Internet Content Selection (PICS) rating services

- Register Third-Party Rating Services
- Request Label Entries from Third-Party Rating Service
- Maintain PICS Label Entries for Your Web Site
- Register Your Own Rating Service
- Maintain PICS Label Entries for Other Web Sites

Proxy Settings - Configure server as a proxy

- Proxy Server Settings
- Caching Settings
- Caching Filters
- Cached File Expiration
- Time Limit Cached Files
- Time Limit for Unused Cached HTTP Files
- Expiration Settings for Cached FTP Files
- Proxy chaining and Non-Proxy Domains
- Cache Storage Reuse

Request Processing - Specify how the server responds to an incoming request

- GWAPI Application Processing
- Methods
- Request Routing

Security - Set up security for the server

- Security Configuration
- Create Keys
- Receive Certificate
- Key Management

System Management - Specify parameters that will affect performance, work load, and SNMP

- Caching
- Performance
- TimeOuts
- Server Activity Monitor
- SNMP MIB

Figure 90. Configuration And Administration Forms II

You can also:

- Control how your server logs access and error information. The server can log client access information, error information, and cache access information. You can filter out hosts and domains for which you do not want to collect request information.
- Specify the extension for meta information files.
- Create and maintain searchable document indexes.
- Manage and configure the server as a proxy.
- Specify how the server responds to an incoming request.
- Set up security for the server. You can specify the security configuration information, create a public-private key pair and request a certificate from a certification authority, receive the certificate.
- Set the performance settings for your server.

Note: The server default settings enable it to be fully functional once you have completed the installation. The Configuration and Administration Forms enables you to perform additional settings.

3.1.1.3 Editing the Configuration File

The configuration file is stored in C:\WINNT, where C is the system partition. You need to have some knowledge about the commands before changing this file. Figure 91 on page 67 shows you the table of contents of this file, which has a size of about 76 KB.

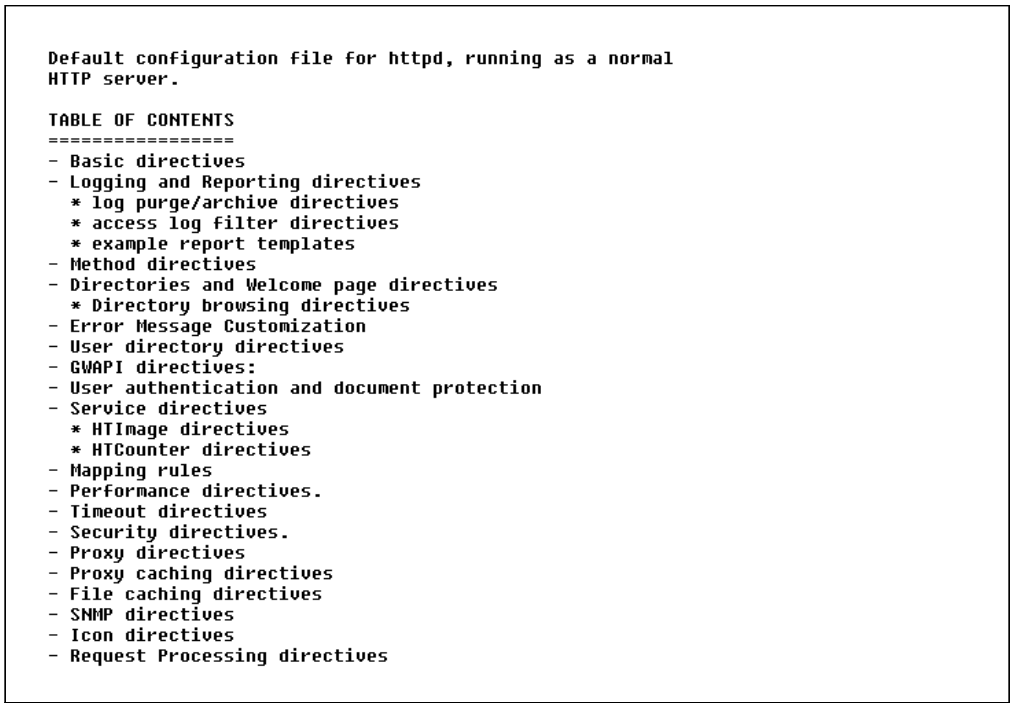

```
Default configuration file for httpd, running as a normal
HTTP server.

TABLE OF CONTENTS
=================
- Basic directives
- Logging and Reporting directives
  * log purge/archive directives
  * access log filter directives
  * example report templates
- Method directives
- Directories and Welcome page directives
  * Directory browsing directives
- Error Message Customization
- User directory directives
- GWAPI directives:
- User authentication and document protection
- Service directives
  * HTImage directives
  * HTCounter directives
- Mapping rules
- Performance directives.
- Timeout directives
- Security directives.
- Proxy directives
- Proxy caching directives
- File caching directives
- SNMP directives
- Icon directives
- Request Processing directives
```

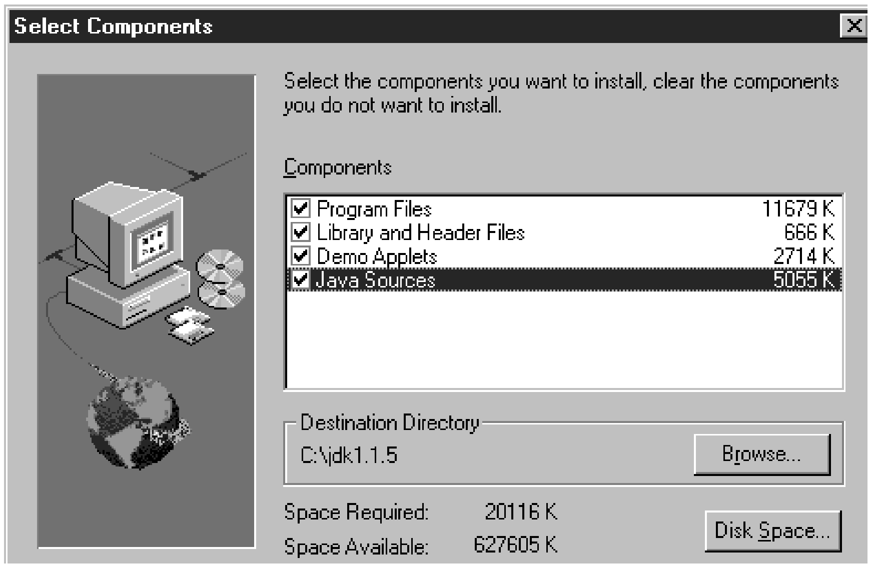
Figure 91. HTTPD.CNF Configuration File

3.2 Installing JDK 1.1.5

Java Development Kit 1.1.4, or later, is a prerequisite for ServletExpress.

The following shows how to install it:

1. Double-click on the installation file. In our example we had downloaded the file jdk115-win32.
2. Confirm the installation.
3. Read the welcome panel and click on **Next** to continue.
4. Click on **Yes** to accept the License Agreement.


Select Components

Select the components you want to install, clear the components you do not want to install.

Components

☑ Program Files	11679 K
☑ Library and Header Files	666 K
☑ Demo Applets	2714 K
☑ Java Sources	5055 K

Destination Directory
C:\jdk1.1.5

Space Required: 20116 K
Space Available: 627605 K

Figure 92. Components of JDK 1.1.5

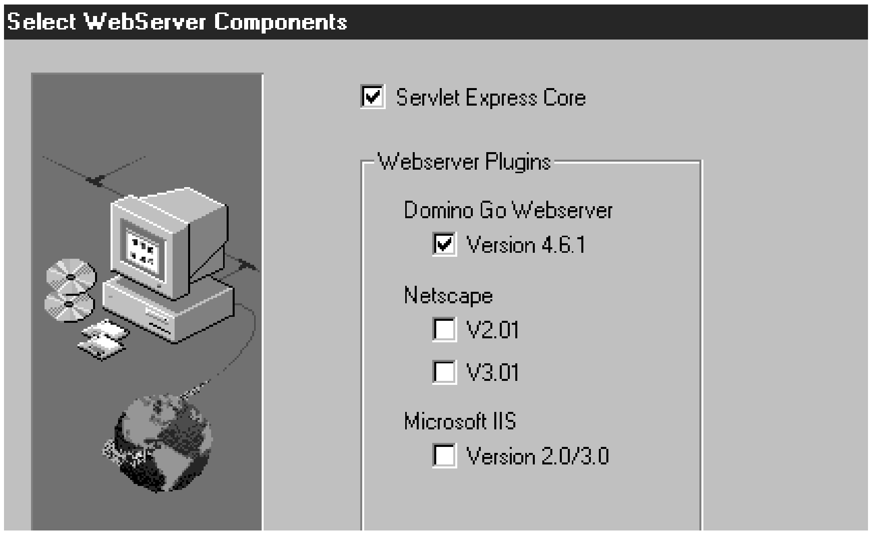
5. Select the components you want to install and the library where you want them to be installed.
6. Click on **Next** to continue.
7. Review the settings and click on **Next** to continue.
8. You have the option to view the Readme file and then click on **Finish** to complete the setup.
9. If you want to install ServletExpress, add to the classpath c:\jdk1.1.5\bin. If there is no classpath variable, create a new one.

3.3 Installing IBM ServletExpress

IBM ServletExpress enables you to achieve the write once, use everywhere goal for servlet development. For details about what ServletExpress can do see 3.5, "Working with ServletExpress" on page 89.

The following shows how the product is installed:

1. Log on as Administrator or make sure that the account you are installing from has administrative privileges.
2. Shut down the Webserver if it is currently running.
3. Double-click on **s100bent.exe** to launch the InstallShield interface.
4. Read the Welcome page and click on **Next** to continue.
5. Read the next page asking you to exit all Windows programs and click on **Next** to continue or **Cancel** to quit setup.
6. Select the Webserver Plug-in for the type of Webserver you are using.


Select WebServer Components

☑ Servlet Express Core

Webserver Plugins

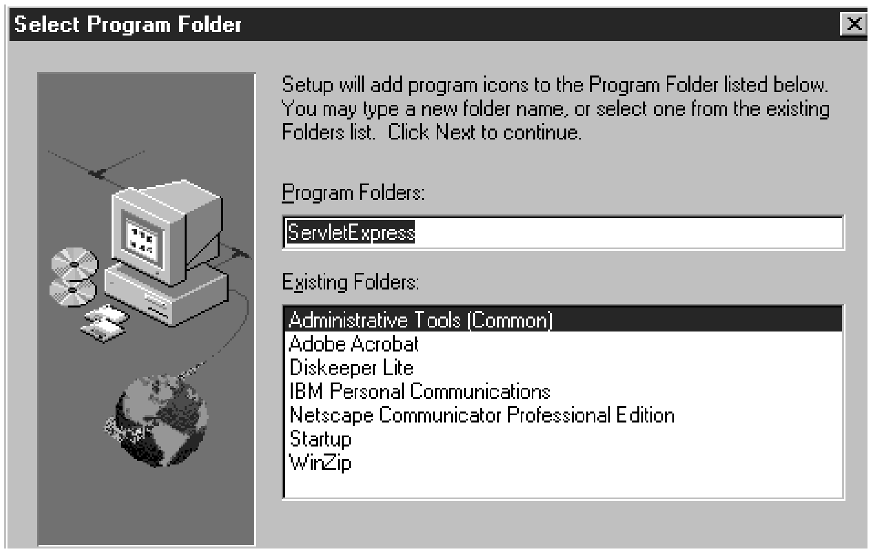
Domino Go Webserver
☑ Version 4.6.1

Netscape
☐ V2.01
☐ V3.01

Microsoft IIS
☐ Version 2.0/3.0

Figure 93. IBM ServletExpress Components

7. Click on **Next** to continue.
8. Accept the default destination directory or choose another one.
9. Click on **Next**.


Select Program Folder

Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folders list. Click Next to continue.

Program Folders:
ServletExpress

Existing Folders:
Administrative Tools (Common)
Adobe Acrobat
Diskeeper Lite
IBM Personal Communications
Netscape Communicator Professional Edition
Startup
WinZip

Figure 94. IBM ServletExpress Program Folder

10. Choose a program folder.
11. Click on **Next** to start the setup process.
12. After the setup is complete, you have the option of reading the ReadMe file and completing the setup by clicking on **Finish**.
13. After the installation is done, you will need to move the servlets from their current location in www\servlets\public or other specified directories to servlets_root\servlets.
14. In the system CLASSPATH, place servletexpress_root\classes\unprotected.jar before the Domino Go Webserver icsclass.zip. If there is no .jar file, you have to add it manually.

15. For the samples to access a DB2 database, ensure that SQLLIB\java\db2\db2java.zip is in the ncf.jvm.classpath directive in the jvm.properties file.

```
# System Properties
ServletExpressVersion=1.0.0
server.root=C:/ServletExpress/
server.name=ncf
java.compiler=symcjit

# NCF Properties
ncf.service.name=ncfservice
ncf.plugin.classname=com.ibm.ServletExpress.ServletSystem

ncf.native.httpd.cnf.path=C:\WINNT\httpd.cnf
#ncf.native.logfile=C:\ServletExpress\logs\native.log
ncf.native.logison=true

# Bring up debug servlet by default
# To log to file uncomment filename
ncf.jvm.stdoutlog.enabled=true
ncf.jvm.stdoutlog.file=true
ncf.jvm.stdoutlog.filename=C:\ServletExpress\logs\ncf.log

# NCF - Admin Service Properties for BasicNCFConfig Applet
ncf.jvm.classpath=C:\SQLLIBC\java\db2java.zip;
     C:-jdk1.1.5-lib-classes.zip;
     C:\ServletExpress\classes\unprotected.jar;
     C:-ServletExpress-classes;
     C:\ServletExpress\Web\classes
ncf.jvm.libpath=C:\jdk1.1.5\bin
ncf.jvm.path=C:\jdk1.1.5\bin
ncf.jvm.path=C:\jdk1.1.5\bin

#Properties for Netscape Webserver on AIX or SOLARIS
#
#ncf.native.outofproc.runscript=/usr/bin/servlet_eng_runner.sh
#ncf.native.outofproc.port=8090
#ncf.native.outofproc.idstring="servexp"
#ncf.native.outofproc.netscapemime=<netscape_root>/config/mime.types
```

Figure 95. jvm.properties File

16. Once this is done, restart the Webserver.

3.4 Servlets

Servlets are protocol and platform-independent server-side software components written in Java. Servlets run on a Web server machine inside a Java-enabled server. This server starts the Java Virtual Machine (JVM) in order to support the use of Java servlets. Servlets dynamically extend the capabilities of the server because they provide services over the Web. They were introduced to interactively view and modify data and to generate dynamic Web content.

The process flow is as follows:

- The client sends a request to the server.

- The server sends the request information to the servlet.
- The servlet builds a response and passes it back to the server.
- The server sends the response back to the client.

There are a lot of things servlets can do:

- Servlets can interact with other resources to construct the response that will be sent back to the client.
- With a servlet, a server can grant full access to local facilities.
- Servlets can be client programs of other services.
- Servlets can handle connections with multiple clients.
- Servlets can invoke other servlets.
- Servlets can open a separate connection from the server to an applet on the browser and keep the connection open, allowing many data transfers on a single connection.
- They can be called dynamically from within HTML pages.
- Servlets use the capabilities of the object-oriented language Java.

For more details see *Network Computing Framework Component Guide*, Chapter 5 and http://www.ibm.com/java/servexp/.

Several packages are required for you to write your own servlets. They are available in the Java Servlet Development Kit (JSDK) Version 1.1 and the JavaServer Toolkit. They include the javax.servlet and javax.servlet.http packages which serve as the basis for all servlets.

3.4.1 Structure of a Servlet

Servlets are ordinary Java programs, but they use some additional packages found in the Java servlet API. When you write code for a Java applet, you must import at least one of the following two packages:

- javax.servlet
- javax.servlet.http

For more details see *Network Computing Framework Component Guide*, Chapter 5.2.

Let us look at several sample servlets. These are supposed to demonstrate the simple techniques for request and response processing and the more advanced techniques for database access.

- The HelloWorldServlet just writes some text to the browsers window.
- The FileToBrowserServlet reads a specified file and returns its contents, line by line, in a Web page.
- The FormDisplayServlet reads input from an HTML form and returns it in a Web page.
- The JDBCServlet reads input from an HTML form to build an SQL query, makes a JDBC connection to a database, processes the query result set, and returns it in a Web page.

3.4.1.1 Servlet HelloWorld

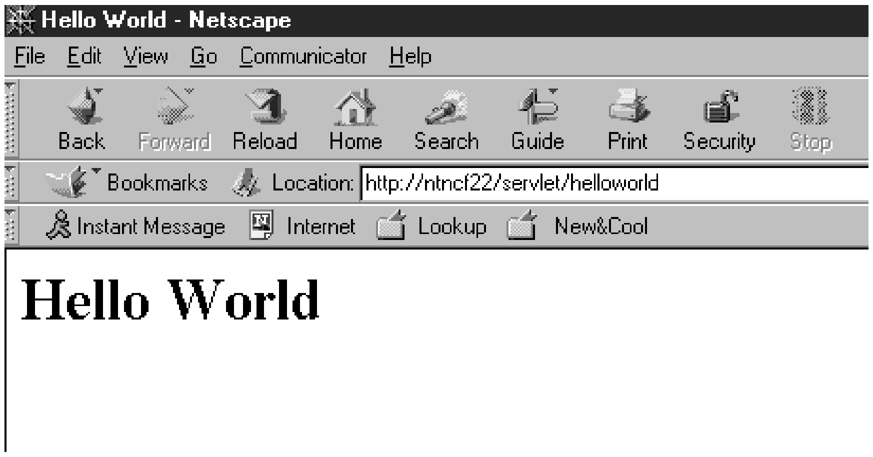
Look at the Java code for the servlet in Figure 96. As you can see, this servlet HelloWorldSerlet is a subclass of HttpServlet. It does nothing but create the HTML statements, which are sent from the server to the client after this servlet is invoked from a clients browser.

```
import java.io.*;

import javax.servlet.*;
import javax.servlet.http.*;
public  class HelloWorldServlet extends HttpServlet {

    public void doGet (HttpServletRequest req, HttpServletResponse res)
 throws ServletException, IOException
    {
 res.setContentType("text/html");

 ServletOutputStream out = res.getOutputStream();
 out.println("<html>");
 out.println("<head><title>Hello World</title></head>");
 out.println("<body>");
 out.println("<h1>Hello World</h1>");
 out.println("</body></html>");
    }

    public String getServletInfo() {
 return "Create a page that says <i>Hello World</i> and send it back";
    }
}
```

Figure 96. HelloWorldServlet

See how this servlet is called:

- ntncf22 - Is the server name.
- Servlet - Points to the library where the Java class helloWorld.class is stored.


Hello World - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location:
Instant Message Internet Lookup New&Cool
http://ntncf22/servlet/helloworld

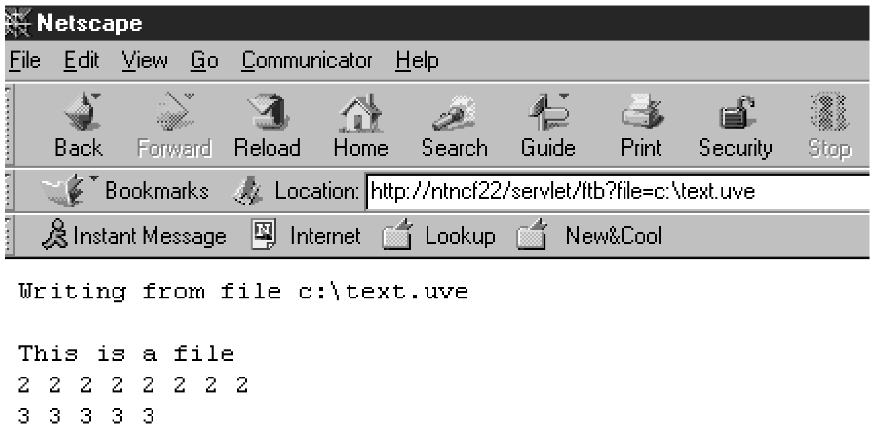
Hello World

Figure 97. Calling HelloWorldServlet

3.4.1.2 Servlet FileToBrowser

This example shows how to access a file that is on the server. It is called in the browser's location line, but an additional argument ?file=c:\text.uve is added.

You may notice that the class name of the called class is ftb, although the class name of the Java code is FileToBrowserServlet (see Figure 99 on page 74). That's because we created another name for this class using ServletExpress (see Figure 137 on page 104).


Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf22/servlet/ftb?file=c:\text.uve
Instant Message Internet Lookup New&Cool

```
Writing from file c:\text.uve

This is a file
2 2 2 2 2 2 2 2
3 3 3 3 3
```

Figure 98. Calling FileToBrowser

In this case the class FileToBrowserServlet is a subclass of GenericServlet, which provides an output stream for writing the servlets responses. For servlets not using HTTP for its communication but working directly with the browser, this is how servlets can be written.

```
import javax.servlet.*;
import java.io.*;

public class FileToBrowserServlet extends GenericServlet
{
    /**
      * @param req Instance of class ServletRequest.
      * @param res Instance of class ServletResponse.
      * @exception IOException When opening or reading from
      * the input file or writing to the output stream.
      */
        public void service(ServletRequest req, ServletResponse res)
                throws IOException
        {
                char c;
                String fileParam;
                String lineIn;
                BufferedReader fileIn;

                res.setContentType("text/plain");
                ServletOutputStream os = res.getOutputStream();

        try
        {
                   /* get the file parameter from the query string */
                   fileParam = req.getParameter("file");

                   /* open the file for reading and set the file
                      pointer to the beginning of the file */
                 fileIn = new BufferedReader(new FileReader(fileParam));

                   /* read a line from the file and write the line
                   to the browser page until the file is empty */
                   os.println("Writing from file " + fileParam);
                   os.println();

                   // read in lines and write to browser until end of
                   // stream is reached
                   while((lineIn = fileIn.readLine()) != null)
                   {
                       // check for empty line
                       if((lineIn.length()) > 0)
                       {
                           os.println(lineIn);
                       }
                       {
                          os.print(lineIn);
                       }
                    }

                    /* be sure to close
                           the input file stream */
                   fileIn.close();
        }
```

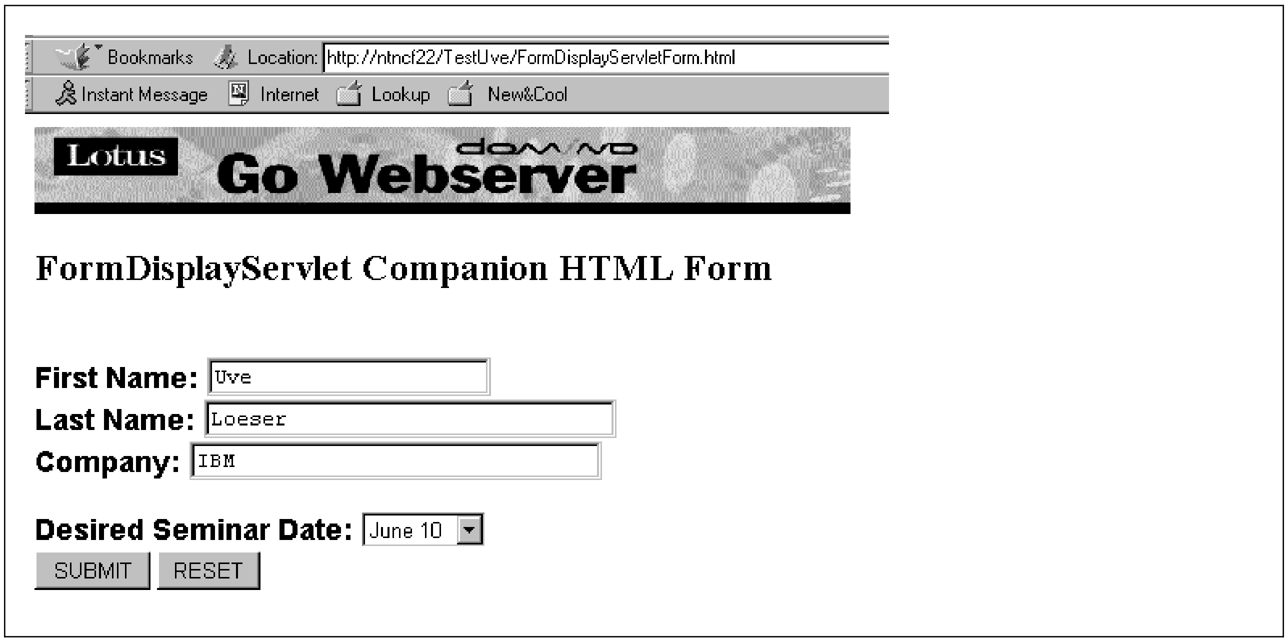
Figure 99. FileToBrowser Servlet Part 1 of 2

```
        catch(Throwable e)
        {
           os.println(e.toString());
           PrintWriter pout = new PrintWriter(os);
           e.printStackTrace(pout);
           pout.flush();
           pout.close();
        }
    } // end of service()
} // end of class FileToBrowserServlet
```

Figure 100. FileToBrowser Servlet Part 2 of 2

3.4.1.3 FormDisplayServlet

This servlet is called by the HTML page FormDisplayServletForm. The data is transmitted to the server by clicking on **Submit**.



FormDisplayServlet Companion HTML Form

First Name: Uve
Last Name: Loeser
Company: IBM

Desired Seminar Date: June 10

Figure 101. Calling FormDisplayServlet

The following figure shows the corresponding HTML file which uses the get method and calls the servlet FormDisplayServlet.

```
<HTML>
<HEAD>
 <TITLE>FormDisplayServletForm.html</TITLE>
<IMG SRC="../images/lgmast.gif" WIDTH=506 HEIGHT=54 BORDER=0 ALT="">
</HEAD>

<BODY BGCOLOR="#FFFFFF">
<H2>FormDisplayServlet Companion HTML Form</H2><BR>

<FORM  METHOD="GET" ACTION="/servlet/FormDisplayServlet">
<FONT SIZE=4 FACE="Arial"><B>First Name: </B></FONT>
<INPUT TYPE="TEXT" NAME="firstname" SIZE=20 MAXLENGTH=20><BR>
<FONT SIZE=4 FACE="Arial"><B>Last Name: </B></FONT>
<INPUT TYPE="TEXT" NAME="lastname" SIZE=30 MAXLENGTH=30><BR>
<FONT SIZE=4 FACE="Arial"><B>Company: </B></FONT>
<INPUT TYPE="TEXT" NAME="company" VALUE="" SIZE=30 MAXLENGTH=30><BR><BR>
<FONT SIZE=4 FACE="Arial"><B>Desired Seminar Date: </B></FONT>
<SELECT NAME="sem_date">
<OPTION>June 10
<OPTION>June 17
<OPTION>June 24
</SELECT><BR>
<INPUT TYPE="SUBMIT" NAME="submit_btn" VALUE="SUBMIT">
<INPUT TYPE="RESET" NAME="reset_btn" VALUE="RESET">

</FORM>
<BR>
<BR>
</BODY>
</HTML>
```

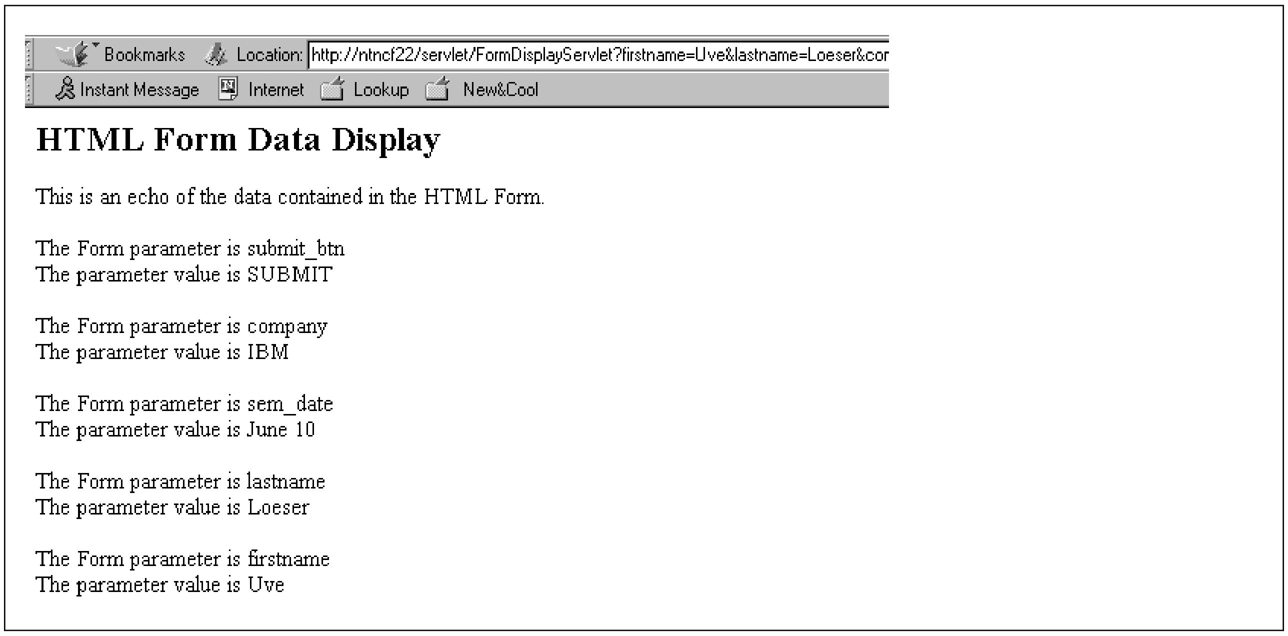
Figure 102. FormDisplayServlet HTML

The Java class of this servlet is a subclass of HttpServlet since it interacts with HTML Web pages containing forms. For more details about servlet interfaces, servlet classes and their methods see *Network Computing Framework Component Guide*, Chapter 5 and the documentation provided in http://www.ibm.com/java/servexp/.

```
import javax.servlet.*;
import javax.servlet.http.*;
import java.io.*;
import java.util.*;

public class FormDisplayServlet extends HttpServlet
{
    /**
      * @param req Instance of class HttpServletRequest.
      * @param res Instance of class HttpServletResponse.
      * @exception IOException When inputting form data or writing
      * the form data back to the browser.
      */

      public void doGet(HttpServletRequest req, HttpServletResponse res)
                throws IOException
        {
                Enumeration params;
                String name, value;

                res.setContentType("text/html");
                PrintWriter pw = new PrintWriter(res.getOutputStream());
                pw.println("<HEAD>");
                pw.println("<TITLE>HTML Form Display</TITLE>");
                pw.println("<BODY>");
                pw.println("<H2>HTML Form Data Display</H2>");
                pw.println("<P>This is an echo of the data contained
                                           in the HTML Form.<BR><BR>");

 params = req.getParameterNames();
                while(params.hasMoreElements())
                {
                 name = (String)params.nextElement();
                 value = req.getParameter(name);
                 pw.println("The Form parameter is " + name + "<BR>");
           pw.println("The parameter value is " + value + "<BR><BR>");
                }
                pw.println("</BODY>");
                pw.flush();
                pw.close();

        } // end of doGet()
} // end of class FormDisplayServlet
```

Figure 103. Java Code of FormDisplayServlet

The following shows the output of the servlet written to the browser:


Bookmarks
Location: http://ntncf22/servlet/FormDisplayServlet?firstname=Uve&lastname=Loeser&cor
Instant Message
Internet
Lookup
New&Cool

HTML Form Data Display

This is an echo of the data contained in the HTML Form.

The Form parameter is submit_btn
The parameter value is SUBMIT

The Form parameter is company
The parameter value is IBM

The Form parameter is sem_date
The parameter value is June 10

The Form parameter is lastname
The parameter value is Loeser

The Form parameter is firstname
The parameter value is Uve

Figure 104. Output of FormDisplayServlet

3.4.1.4 JDBCServlet

The next servlet connects to the DB2 Sample database using JDBC and prints out the query result set to the browser page. The servlet is invoked from the HTML page forms Submit button (see Figure 105 on page 79). The HTML is used to dynamically specify the query parameters. The parameters are parsed by the servlet from the query string sent from the form and used to build an SQL query that is executed on the database via the JDBC driver. The servlet also opens two connections to the database that it keeps open.

The following picture shows the HTML page which calls the servlets via submit.

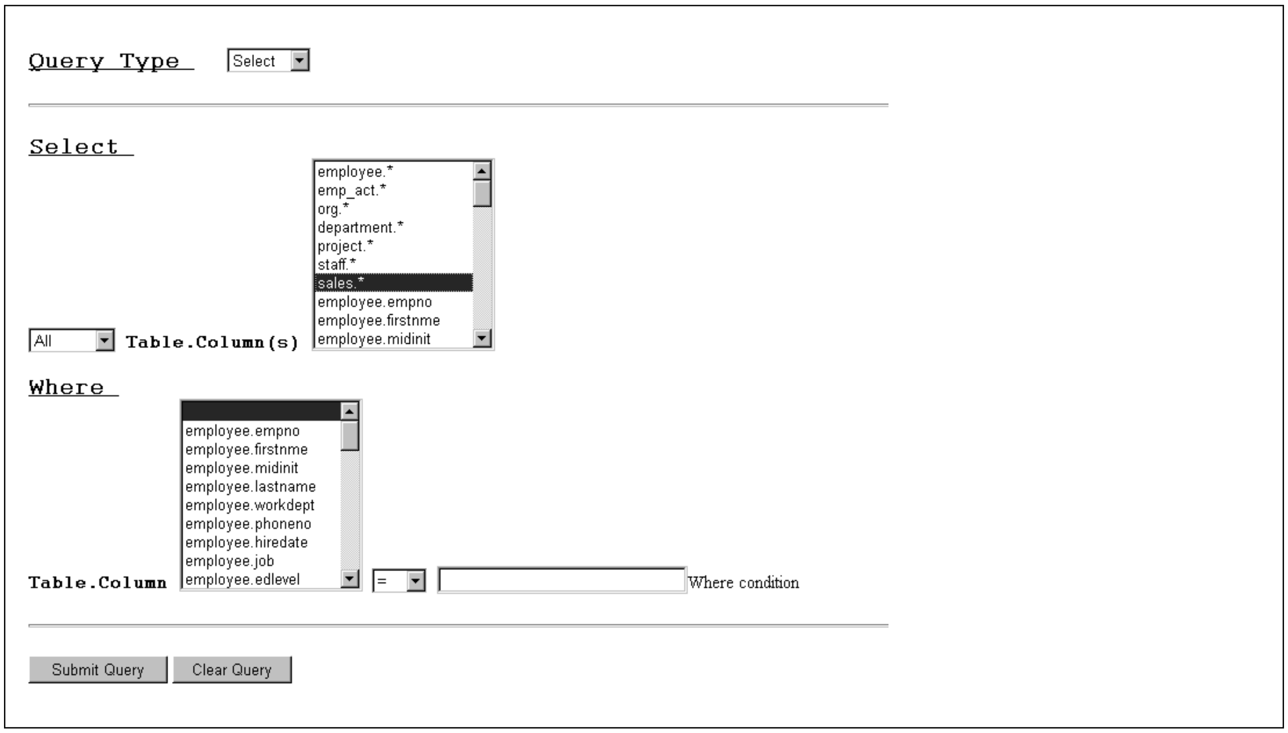


Figure 105. Calling the JDBC Servlet

Some explanation about the code follows:

- In Figure 106 on page 80 the driver is registered, the URL is built and the connection is established.
- In Figure 107 on page 81 the service method of the HttpServlet package establishes the output queue, and gets the query string.
- In Figure 108 on page 82 the data is retrieved from the database.
- In Figure 109 on page 83 the result set is displayed, and another connection is established.
- In Figure 110 on page 84 the query string is parsed.
- In Figure 112 on page 86 the query is built.

Keep in mind, that the sequence the methods are called is different from the sequence they are listed.

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;
import java.sql.*;
import java.util.*;
import java.text.*;
import sun.server.util.*;

public class JDBCServlet extends HttpServlet
{
   // ResourceBundle class constant
   public final String BASENAME = "samples";

   // con is initialized at startup of servlet
   static String url=null;
   static int ¬] Constat = {0,0};
   static Connection con0;
   static Connection con1;

   static
   {
      try
      {
         // register the driver with DriverManager
         Class.forName("COM.ibm.db2.jdbc.app.DB2Driver");
      }
      catch (ClassNotFoundException e)
      {
public void init(ServletConfig sc)
   {
      try
      {
         super.init(sc);
      }
      catch (ServletException e)
      {
         e.printStackTrace();
      }

      // URL is jdbc:db2:dbname
      url = "jdbc:db2:sample";

      try
      {
         // connect with default id/password
         con0 = DriverManager.getConnection(url);
         con1 = DriverManager.getConnection(url);
      }
      catch( Exception e )
      {
         e.printStackTrace();
      }

   } // init
```

Figure 106. JDBCServlet Java Code Part 1 of 10

```
   public void service(HttpServletRequest req, HttpServletResponse res)
      throws ServletException, IOException
   {
      ResourceBundle rb = null;
      MessageFormat mf = null;
      ServletOutputStream out = null;
      String qry, qs, qryStr, state;
String [] vars = {""};
      String tbl = null, col = null;
      String colStr = null;
      Object colVal = null;
      String [] qArgs = new String [6];
      PrintWriter pw = null;

      res.setContentType("text/html");
      out = res.getOutputStream();
      pw = new PrintWriter(out);

      try
      {
          /* get the ResourceBundle for localization */
          try
          {
              rb = ResourceBundle.getBundle(BASENAME);
           }
           catch(Exception e)
           {
              pw.println(e.getMessage());
           }

           ConInfo index = new ConInfo();
           Connection con = getCon(index);
           if (con == null)
          {
              pw.println(rb.getString("s27"));
              pw.println("</BODY>");
           }
          else
          {
              // get the request query string and URL unencode it from
              // "x-www-form-urlencoded" MIME format to an ASCII string
              qs = req.getQueryString();

              pw.println("Query string = " + qs + "<BR>");
             pw.flush();

              URLDecoder dec = new URLDecoder();
              qryStr = dec.decode(qs);

   pw.println("Decoded query string = " + qryStr + "<BR>");
   pw.flush();
```

Figure 107. JDBCServlet Java Code Part 2 of 10

```
            // parse the query string to get its name/value pairs
            qArgs = getQueryArgs(qryStr);

            // make sure no required values are missing
           state = qArgs[5];

           pw.println("<BODY>");

           // print error message if missing WHERE condition
           if(state.equals((Object)"1"))
          {
             pw.println("<H2>" + rb.getString("s29") + "</H2>");
             pw.println("<H3>" + rb.getString("s30") + "</H3>");
          }
          // otherwise use query string args to build an SQL query
          // and print out the SQL query executed
          else
          {
             qry = buildQuery(qArgs);
             vars[0] = qry;
             pw.println("<H3>" + rb.getString("s31") + "</H3>");
         pw.println(mf.format(rb.getString("s32"), vars) + "<BR><BR>");
             pw.flush();

             // retrieve data from the database
             Statement stmt = con.createStatement();
             ResultSet rs = stmt.executeQuery(qry);

             // print the query results (no formatting done)
             // print an output section line
             pw.println("<H3>" + rb.getString("s28") + "</H3>");
             // print out a header row of column names
             ResultSetMetaData rsmd = rs.getMetaData();
             int numCols = rsmd.getColumnCount();
             for(int i = 1;i <= numCols;i++)
             {
                col = rsmd.getColumnName(i);
                pw.print("<B>" + col + "  </B>");
             }
             pw.println("<BR>");
```

Figure 108. JDBCServlet Java Code Part 3 of 10

```
            // display the result set, one record at a time
            // rs.next() returns false when there are no more records
            while (rs.next())
            {
               for(int k = 1;k <= numCols;k++)
               {
                  colVal = rs.getObject(k);
                  colStr = colVal.toString();
                  pw.print(colStr + "  ");
               }
               pw.println("<BR>");
            }

             rs.close();
             stmt.close();
             pw.println("</BODY>");
             pw.flush();
             pw.close();
             putCon(index.index);
         } // end of if state not "0" - else
      } // end of else{}
   } // end of try
   catch( Throwable e )
   {
      out.println(e.toString());
      PrintWriter pout = new PrintWriter(out);
      e.printStackTrace(pout);
      pout.flush();
      pout.close();
   }
} // end of service()

// get a database connection for a statement to use
private synchronized Connection getCon(ConInfo index)
{
   int i = 0;

   if (Constat[0] == 0)
   {
      index.index = 0;
      Constat[0]=1;
      return (con0);
   }
   else if (Constat[1] == 0)
   {
      index.index = 1;
      Constat[1]=1;
      return (con1);
   }
```

Figure 109. JDBCServlet Java Code Part 4 of 10

```
      else
      {
         index.index = -1;
         return(null);
      }
   } // end of getCon()

   // release the database connection so it can be reused
   private synchronized void putCon(int index)
   {
      Constat[index] = 0;
   } // end of putCon()
   // parse the name/value pairs from the query string for use
   // in building the SQL query
   public String[] getQueryArgs(String qs)
      throws IOException
   {
          String name, val = "";
          String qryState = "0", fromArg;
          String[] qsArgs = new String[6];

          for(int i = 0;i < 6;i++)
             qsArgs[i] = val;

          if (qs == null)
          {
                 throw new IllegalArgumentException();
          }

          StringTokenizer st = new StringTokenizer(qs, "&");
          while (st.hasMoreTokens())
          {
              String pair = (String)st.nextToken();
              int len = pair.length();
              int pos = pair.indexOf('=');
              if (pos == -1)
             {
                 throw new IllegalArgumentException();
             }
else
             {
                name = pair.substring(0, pos);
                if(len - 1 == pos)
                {
                   val = "";
                }
                else
                {
                   val = pair.substring(pos + 1, len);
                } // end if no value
             } // end if empty string-else
```

Figure 110. JDBCServlet Java Code Part 5 of 10

```
            // insert value arg into args array in a pre-defined place
            // so it can be found later by buildQuery() method
            if(name.equals((Object)"allChoice"))
           {
               qsArgs[0] = val;
            }
            if(name.equals((Object)"fromTblCols"))
            {
                if(qsArgs[1].equals((Object)""))
                {
                    qsArgs[1] = val;
                 }
                 else
                 {
                     fromArg = qsArgs[1];
                     fromArg += ",";
                     fromArg += val;
                     qsArgs[1] = fromArg;
                 }
              }
              if(name.equals((Object)"whereTblCol"))
             {
                 qsArgs[2] = val;
              }
              if(name.equals((Object)"relate"))
             {
                 qsArgs[3] = val;
              }
              if(name.equals((Object)"whereTxt"))
             {
                 qsArgs[4] = "'" + val  + "'";
              }

      } // end while more tokens in query string

      // check the query information for
      // where clause with no text info for condition
  if((!qsArgs[2].equals((Object)"")) && (qsArgs[4].equals((Object)"")))
         qryState = Integer.toString(1);

      qsArgs[5] = qryState;
          return qsArgs;
   } // end of getQueryArgs()
```

Figure 111. JDBCServlet Java Code Part 6 of 10

```
// use the array of query string values to build an SQL query
public String buildQuery(String [] args)
{
   String query = "";
   String allChc, fCols, wCol;
   String rel, wTxt;
   String colTbls;
   allChc = (String)args[0];
   fCols = (String)args[1];
   wCol = (String)args[2];
   rel = (String)args[3];
   wTxt = (String)args[4];
   String fromTbls, fromCols;

   // get tables and columns selected
   fromTbls = getTbls(fCols);
   fromCols = checkCols(fCols);

   // build the query SELECT clause
   if(allChc.equals((Object)"Distinct"))
   {
      query = "Select Distinct " + fromCols + " From " + fromTbls;
   }
   else
   {
      query = "Select " + fromCols + " From " + fromTbls;
   }

   // add the WHERE clause to the query
   if(!wCol.equals((Object)""))
   {
      query += " Where " + wCol + " " + rel + " " + wTxt;
   }

   return query;
} // end of buildQuery()
```

Figure 112. JDBCServlet Java Code Part 7 of 10

```
// get the tables selected for the FROM clause,
// eliminating duplicates
public String getTbls(String cols)
{
   int nbrTbls = 0;
   boolean inTbls = false;
   String tblString = "";
   String [] tbls = new String [7];
   StringTokenizer strTok = new StringTokenizer(cols, ",");
   while(strTok.hasMoreTokens())
   {
      String col = (String)strTok.nextToken();
      int pos = col.indexOf('.');
      String tbl = col.substring(0, pos);
      for(int i = 0;i <= nbrTbls;i++)
      {
         if(tbl.equals((Object)tbls[i]))
            inTbls = true;
      }
      if(inTbls == false)
      {
         tbls[nbrTbls] = tbl;
         nbrTbls++;
      }
      if(inTbls == true)
         inTbls = false;
   } // end of while more tokens

   for(int k = 0;k < nbrTbls;k++)
   {
      if(k == 0)
      {
         tblString += tbls[k];
      }
      else
      {
         tblString += "," + tbls[k];
      }
   }
   return tblString;
} // end of getTbls()
```

Figure 113. JDBCServlet Java Code Part 8 of 10

```
   // get the columns for the SELECT clause,
   // eliminating any other columns from a
   // table after the wildcard for a table
   // has been chosen
   public String checkCols(String fromCols)
   {
      int nbrTbls = 0;
      boolean inTbls = false;
      String colString = "", fCols = "";
      String [] colTbls = new String [7];
      StringTokenizer strTok = new StringTokenizer(fromCols, ",");
      while(strTok.hasMoreTokens())
      {
         colString = (String)strTok.nextToken();
         int pos = colString.indexOf('.');
         String tbl = colString.substring(0, pos);
         String col = colString.substring(pos + 1, colString.length());

         // if a wildcard for a table was selected
         if(col.equals((Object)"*"))
         {
// colTbls are those where the wildcard for the table was selected,no
// other column selections from that table are put into the columns
// strings.put wildcard table into the array to check columns against
            colTbls[nbrTbls++] = tbl;
            if(fCols.equals((Object)""))
            {
               fCols += colString;
            }
            else
            {
               fCols += ",";
               fCols += colString;
            }
         }
         // if the column selected is not a wildcard, check it against
         // wildcard tables
         else
         {
            for(int i = 0;i <= nbrTbls;i++)
            {
               if(tbl.equals((Object)colTbls[i]))
                  inTbls = true;
            }
```

Figure 114. JDBCServlet Java Code Part 9 of 10

```
            // can't use any columns for a table after wildcard for table
            // selected.
            if(inTbls == false)
            {
               if(fCols.equals((Object)""))
               {
                  fCols += colString;
               }
               else
               {
                  fCols += ",";
                  fCols += colString;
               }
            }
            if(inTbls == true)
               inTbls = false;
         } // end of if wildcard - else check
      } // end of while more tokens
      return fCols;
   } // end of checkCols()

} // end of class DbServlet

class ConInfo
{
   int index;

   ConInfo()
   {
      this.index = 0;
   }
}
```

Figure 115. JDBCServlet Java Code Part 10 of 10

3.5 Working with ServletExpress

ServletExpress is not a rapid application development tool that enables you to write servlet code. It is a tool used to help you manage your servlets.

In addition to the packages mentioned in 3.4, “Servlets” on page 70, (needed to develop servlets), ServletExpress includes its own packages that extend the Java Servlet Development Kit (JSDK) and make it easier to maintain user information, create dynamic, personalized Web pages, and analyze Web site usage. ServletExpress also provides you with samples that use these classes, servlets, and applets to help you get started with your own Web applications.

These are the additional packages:

- com.ibm.ncf.personalization.sessiontracking

  The ServletExpress extension to the JSDK. It records the referral page that led a visitor to your Web site, tracks the visitors position within the site, and also associates user identification with the session.

- com.ibm.ncf.personalization.userprofile

Provides methods to maintain detailed information about your Web visitors and to make that information available for use in your Web applications.

- com.ibm.ncf.personalization.util

  Supports variable substitution in your HTML pages. It allows you to replace variable fields in your HTML with values derived in servlet processing. It also includes specialized servlets that allow Web site administrators to dynamically post bulletins and enable Web site visitors to exchange messages.

- com.ibm.ncf.personalization.sam

  Allows you to register your own Web applications with the Site Activity Monitor. The Site Activity Monitor is an applet that gives you a dynamic real-time view of the activity on your Web site.

- Sample applications.
- ServletExpress Manager is a graphical interface that makes it easy to set options, parameters, aliases, filters, messages, and perform other servlet management tasks.
- Support for a new tag, <JAVA> and a new file type <JHTML> that enable you to embed Java coding for servlets in-line in your HTML coding.

You can find the ServletExpress API at http://www.ibm.com/java/servexp.

3.5.1 Managing Servers and Servlets

To work with ServletExpress you use the ServletExpress Manager, which is a Java applet. The ServletExpress Manager provides a consistent interface for configuring and managing servlets.

1. To start the ServletExpress Manager, from your Web browser enter `http://your.server.name:9090/`, where your.server.name is the fully qualified name of your host.

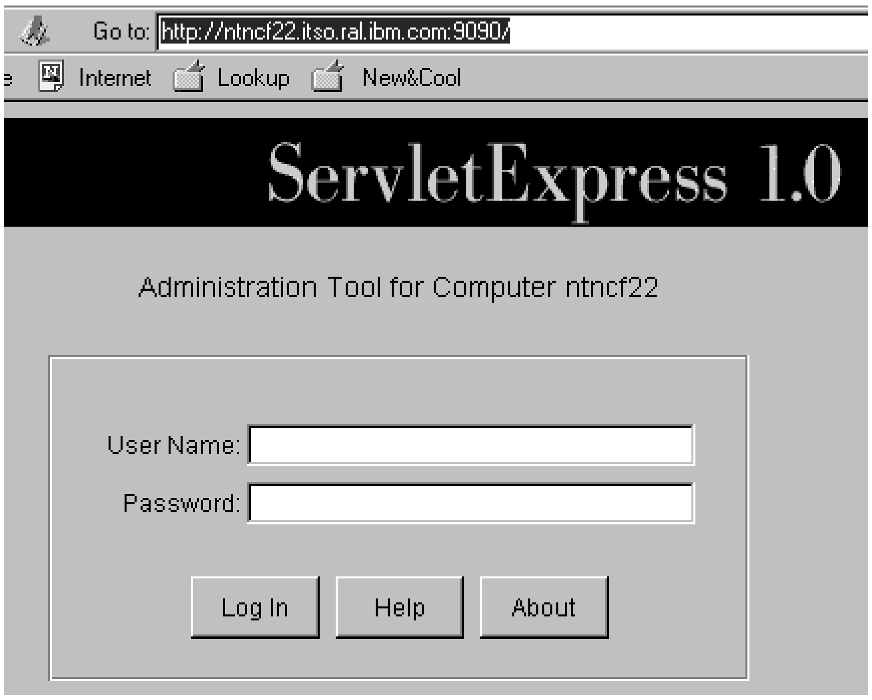
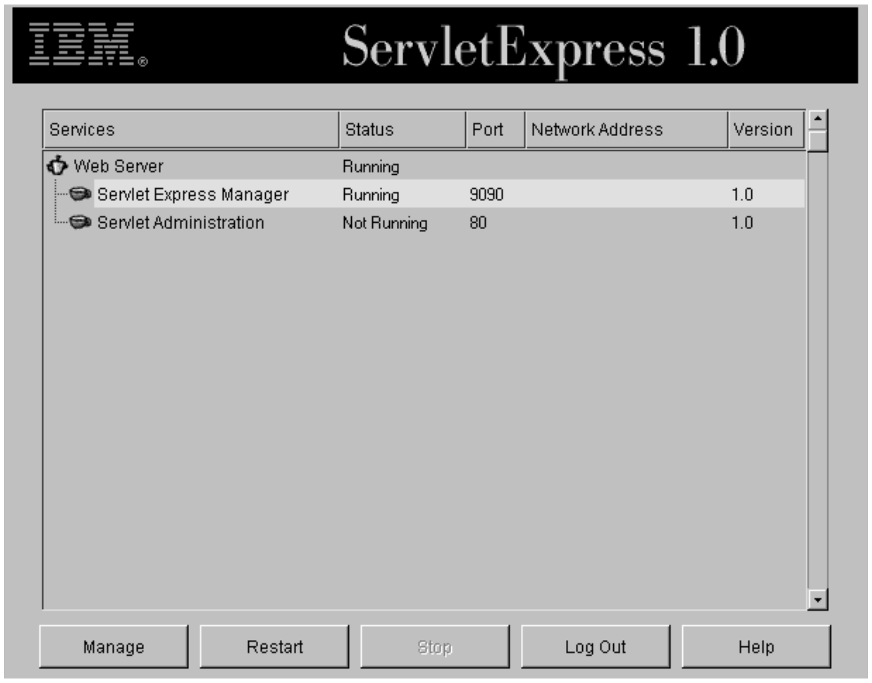

Go to: http://ntncf22.itso.ral.ibm.com:9090/
Internet
Lookup
New&Cool
ServletExpress 1.0
Administration Tool for Computer ntncf22
User Name:
Password:
Log In
Help
About

Figure 116. ServletExpress (Administration Tool)

2. Log on by entering your Webserver logon user ID and password and click on **OK** to get the ServletExpress Manager's interface.



Services	Status	Port	Network Address	Version
Web Server	Running			
Servlet Express Manager	Running	9090		1.0
Servlet Administration	Not Running	80		1.0

Figure 117. ServletExpress Manager Interface

The ServletExpress Manager Servers and Services page (Figure 117) shows the current state of the Webserver and lists the services that are installed and running on your machine. The Webserver is made up of one server process (the Webserver) and the following two services:

- ServletExpress Manager - The service you use to administer the Manager.
- Servlet Administration - The service you use to configure and manage servlets.

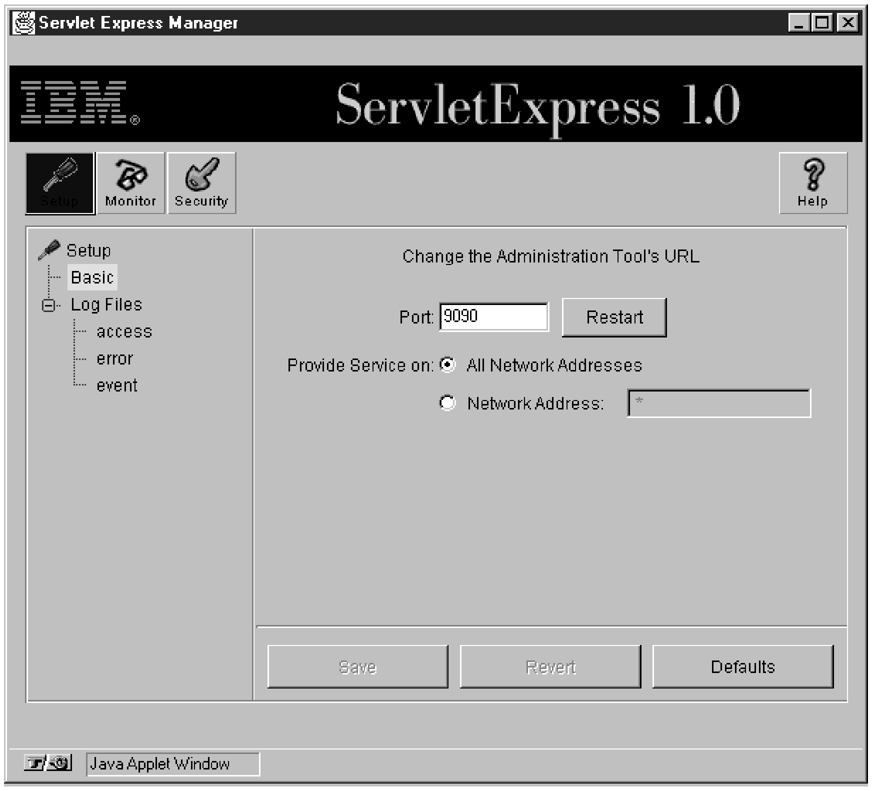
3.5.2 Selecting the ServletExpress Manager

The ServletExpress Manager gives you the capability to define and monitor a range of parameters for each service displayed on the Servers and Services page (see Figure 117).

The services that you can manage are displayed in a tree view. To manage a service, highlight it by clicking on it, then click on **Manage**. The next picture shows what comes up when you select ServletExpress Manager. Notice that the screen has a:

- Setup button
- Monitor button
- Security button

3.5.2.1 Setup Services in Express Manager



Change the Administration Tool's URL

Port: 9090

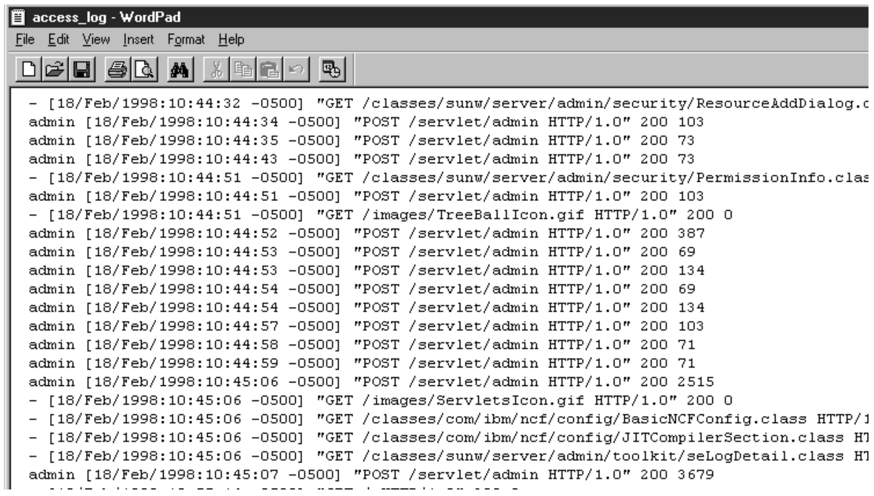
Provide Service on: [✓ All Network Addresses] Network Address: *

Figure 118. ServletExpress Manager Interface

In the setup screen you can do the following:

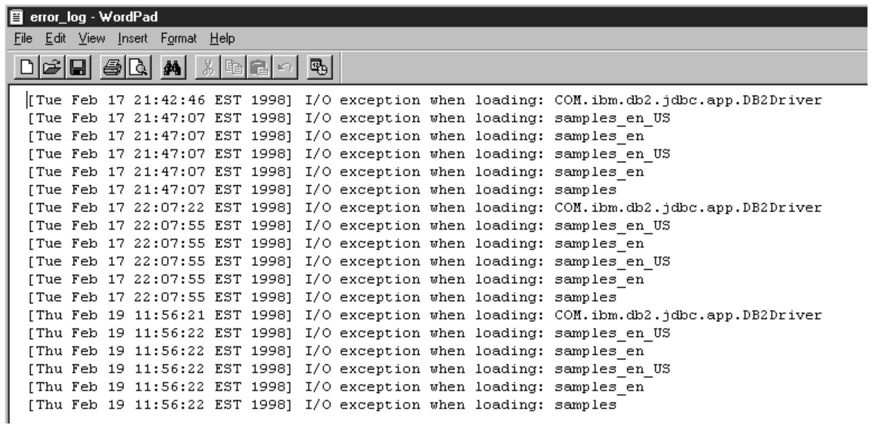
- In the Basic services, you can define another port number for the service on which to listen for requests.
- In the Access Log files you can tell if you want messages (or not) and what kind of file you want to have.
- In the Error Log files you choose which problems you want to be informed of.
- The same can be done for the Event Log files.

The contents of some sample log files follow:



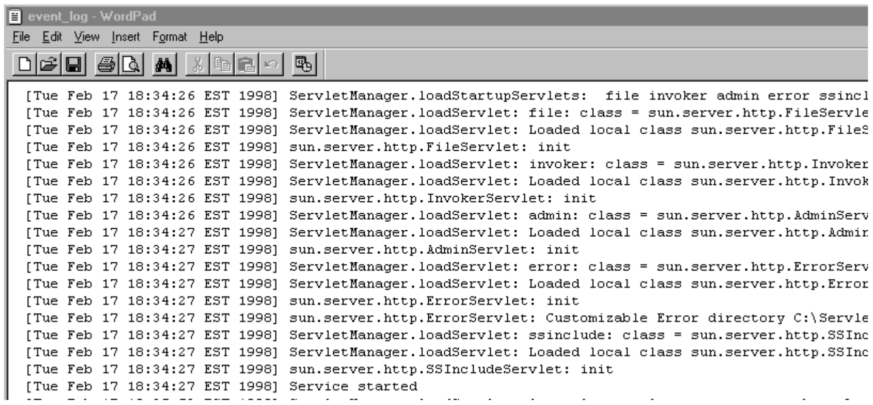
```
 - [18/Feb/1998:10:44:32 -0500] "GET /classes/sunw/server/admin/security/ResourceAddDialog.c
 admin [18/Feb/1998:10:44:34 -0500] "POST /servlet/admin HTTP/1.0" 200 103
 admin [18/Feb/1998:10:44:35 -0500] "POST /servlet/admin HTTP/1.0" 200 73
 admin [18/Feb/1998:10:44:43 -0500] "POST /servlet/admin HTTP/1.0" 200 73
 - [18/Feb/1998:10:44:51 -0500] "GET /classes/sunw/server/admin/security/PermissionInfo.clas
 admin [18/Feb/1998:10:44:51 -0500] "POST /servlet/admin HTTP/1.0" 200 103
 - [18/Feb/1998:10:44:51 -0500] "GET /images/TreeBallIcon.gif HTTP/1.0" 200 0
 admin [18/Feb/1998:10:44:52 -0500] "POST /servlet/admin HTTP/1.0" 200 387
 admin [18/Feb/1998:10:44:53 -0500] "POST /servlet/admin HTTP/1.0" 200 69
 admin [18/Feb/1998:10:44:53 -0500] "POST /servlet/admin HTTP/1.0" 200 134
 admin [18/Feb/1998:10:44:54 -0500] "POST /servlet/admin HTTP/1.0" 200 69
 admin [18/Feb/1998:10:44:54 -0500] "POST /servlet/admin HTTP/1.0" 200 134
 admin [18/Feb/1998:10:44:57 -0500] "POST /servlet/admin HTTP/1.0" 200 103
 admin [18/Feb/1998:10:44:58 -0500] "POST /servlet/admin HTTP/1.0" 200 71
 admin [18/Feb/1998:10:44:59 -0500] "POST /servlet/admin HTTP/1.0" 200 71
 admin [18/Feb/1998:10:45:06 -0500] "POST /servlet/admin HTTP/1.0" 200 2515
 - [18/Feb/1998:10:45:06 -0500] "GET /images/ServletsIcon.gif HTTP/1.0" 200 0
 - [18/Feb/1998:10:45:06 -0500] "GET /classes/com/ibm/ncf/config/BasicNCFConfig.class HTTP/1
 - [18/Feb/1998:10:45:06 -0500] "GET /classes/com/ibm/ncf/config/JITCompilerSection.class HT
 - [18/Feb/1998:10:45:06 -0500] "GET /classes/sunw/server/admin/toolkit/seLogDetail.class HT
 admin [18/Feb/1998:10:45:07 -0500] "POST /servlet/admin HTTP/1.0" 200 3679
```

Figure 119. Access Log



```
[Tue Feb 17 21:42:46 EST 1998] I/O exception when loading: COM.ibm.db2.jdbc.app.DB2Driver
[Tue Feb 17 21:47:07 EST 1998] I/O exception when loading: samples_en_US
[Tue Feb 17 21:47:07 EST 1998] I/O exception when loading: samples_en
[Tue Feb 17 21:47:07 EST 1998] I/O exception when loading: samples_en_US
[Tue Feb 17 21:47:07 EST 1998] I/O exception when loading: samples_en
[Tue Feb 17 21:47:07 EST 1998] I/O exception when loading: samples
[Tue Feb 17 22:07:22 EST 1998] I/O exception when loading: COM.ibm.db2.jdbc.app.DB2Driver
[Tue Feb 17 22:07:55 EST 1998] I/O exception when loading: samples_en_US
[Tue Feb 17 22:07:55 EST 1998] I/O exception when loading: samples_en
[Tue Feb 17 22:07:55 EST 1998] I/O exception when loading: samples_en_US
[Tue Feb 17 22:07:55 EST 1998] I/O exception when loading: samples_en
[Tue Feb 17 22:07:55 EST 1998] I/O exception when loading: samples
[Thu Feb 19 11:56:21 EST 1998] I/O exception when loading: COM.ibm.db2.jdbc.app.DB2Driver
[Thu Feb 19 11:56:22 EST 1998] I/O exception when loading: samples_en_US
[Thu Feb 19 11:56:22 EST 1998] I/O exception when loading: samples_en
[Thu Feb 19 11:56:22 EST 1998] I/O exception when loading: samples_en_US
[Thu Feb 19 11:56:22 EST 1998] I/O exception when loading: samples_en
[Thu Feb 19 11:56:22 EST 1998] I/O exception when loading: samples
```

Figure 120. Error Log



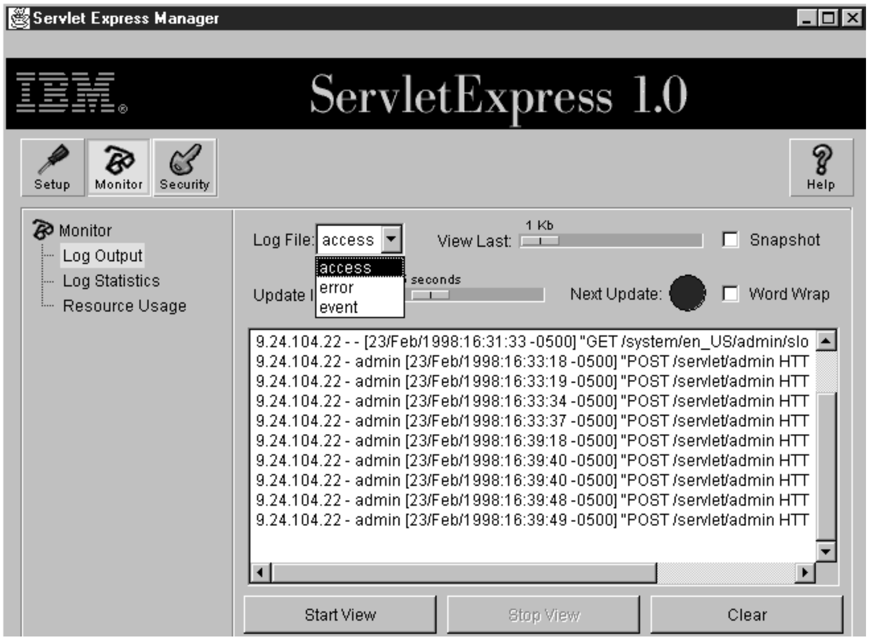
```
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadStartupServlets:  file invoker admin error ssincl
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadServlet: file: class = sun.server.http.FileServle
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadServlet: Loaded local class sun.server.http.FileS
[Tue Feb 17 18:34:26 EST 1998] sun.server.http.FileServlet: init
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadServlet: invoker: class = sun.server.http.Invoker
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadServlet: Loaded local class sun.server.http.Invok
[Tue Feb 17 18:34:26 EST 1998] sun.server.http.InvokerServlet: init
[Tue Feb 17 18:34:26 EST 1998] ServletManager.loadServlet: admin: class = sun.server.http.AdminServ
[Tue Feb 17 18:34:27 EST 1998] ServletManager.loadServlet: Loaded local class sun.server.http.Admir
[Tue Feb 17 18:34:27 EST 1998] sun.server.http.AdminServlet: init
[Tue Feb 17 18:34:27 EST 1998] ServletManager.loadServlet: error: class = sun.server.http.ErrorServ
[Tue Feb 17 18:34:27 EST 1998] ServletManager.loadServlet: Loaded local class sun.server.http.Error
[Tue Feb 17 18:34:27 EST 1998] sun.server.http.ErrorServlet: init
[Tue Feb 17 18:34:27 EST 1998] sun.server.http.ErrorServlet: Customizable Error directory C:\Servle
[Tue Feb 17 18:34:27 EST 1998] ServletManager.loadServlet: ssinclude: class = sun.server.http.SSInc
[Tue Feb 17 18:34:27 EST 1998] ServletManager.loadServlet: Loaded local class sun.server.http.SSInc
[Tue Feb 17 18:34:27 EST 1998] sun.server.http.SSIncludeServlet: init
[Tue Feb 17 18:34:27 EST 1998] Service started
```

Figure 121. Event Log

3.5.2.2 Monitor Services in Express Manager

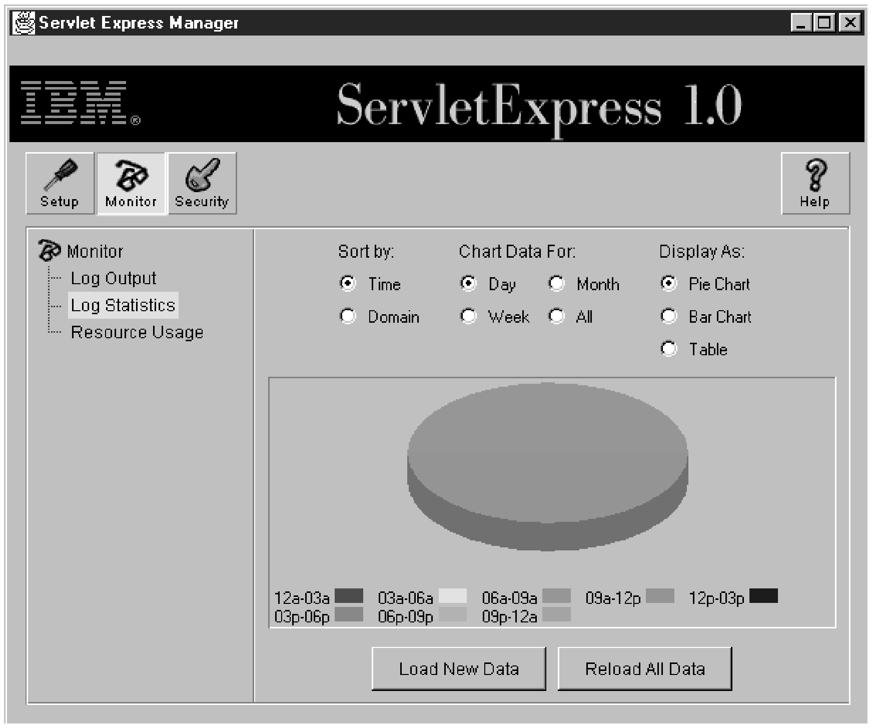
The second option in the ServletExpress Manager screen is for monitoring. As you can see in the three figures in this section, you can:

- Check the Log Output for access, errors, and events (see Figure 122).
- Get the LogStatistics. You can choose to sort the statistics, determine the kind of data to log. You can also choose which charts will display (see Figure 123 on page 95).
- Get the ResourceUsage (see Figure 123 on page 95).



```
9.24.104.22 - - [23/Feb/1998:16:31:33 -0500] "GET /system/en_US/admin/slo
9.24.104.22 - admin [23/Feb/1998:16:33:18 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:33:19 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:33:34 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:33:37 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:39:18 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:39:40 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:39:40 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:39:48 -0500] "POST /servlet/admin HTT
9.24.104.22 - admin [23/Feb/1998:16:39:49 -0500] "POST /servlet/admin HTT
```

Figure 122. Monitoring Output

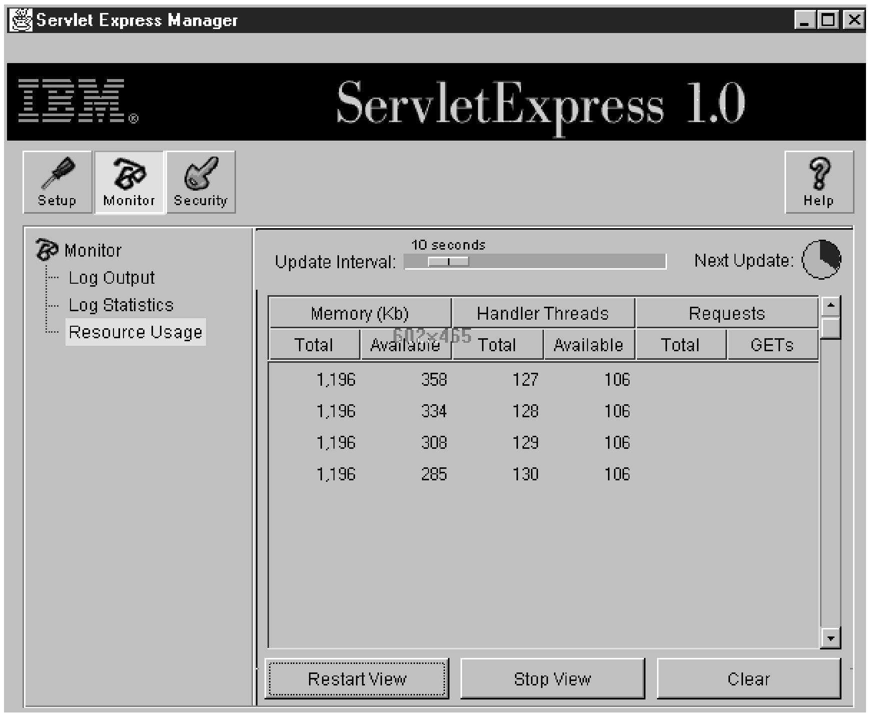


Sort by: [✓ Time] Domain

Chart Data For: [✓ Day] Month Week All

Display As: [✓ Pie Chart] Bar Chart Table

Figure 123. Log Statistics



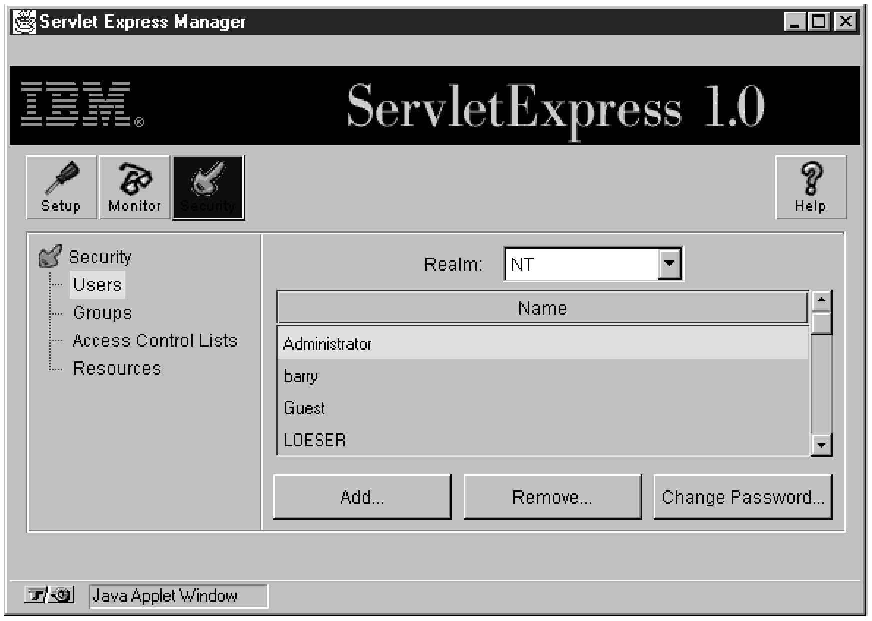
Update Interval: 10 seconds

Memory (Kb)		Handler Threads		Requests	
Total	Available	Total	Available	Total	GETs
1,196	358	127	106		
1,196	334	128	106		
1,196	308	129	106		
1,196	285	130	106		

Figure 124. Resource Usage

3.5.2.3 Security Services in Express Manager

The security services enables you to add users, groups, access control lists and manage resources.



Realm: NT

Name
Administrator
barry
Guest
LOESER

Figure 125. ServletManager Security

Users belong to a realm, which is a database for users, groups, and access control lists. The realm is used to specify which users have access to the resources of a specific service.

- In the Users section you can add or remove a user or change their password. All users belonging to the selected realm are shown. ServletExpress uses the list of users in the database to identify the customers for the service. Users not included in the realm cannot be added to any access control list for the service. Users not on an access control list are generally denied the use of a service.

  In some cases, a service does not require that its customers be in an access control list. For example, many Web page services (HTTP) make their documents available to all users without requiring that they be registered in an ACL.

- The Groups panel lets you add or remove a group for the selected realm. The members field lists the members of the group, the non-members field shows you the other users in the selected realm.

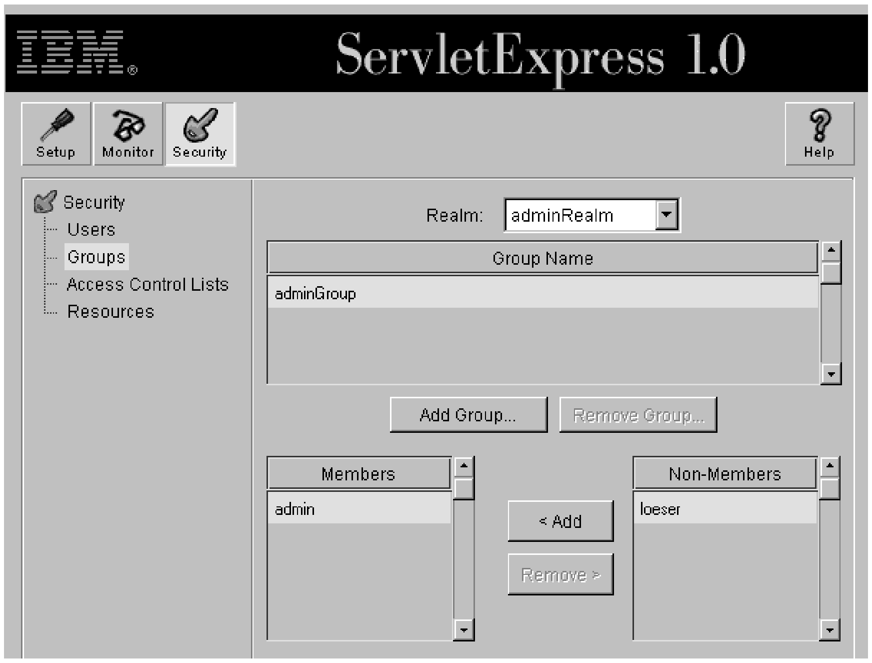


Figure 126. ServletManager Groups

- The Access Control Lists page enables you to add and delete access control lists and to add or delete the users and groups they contain. This is how you control users and groups that access servlets on you Webserver.

  Keep in mind, that this is separate from and does not replace the access control lists you administer on your Webserver.

  You can create an access control list (ACL) by clicking on **Add ACL**, typing in its name in the name field and clicking on **Add**.

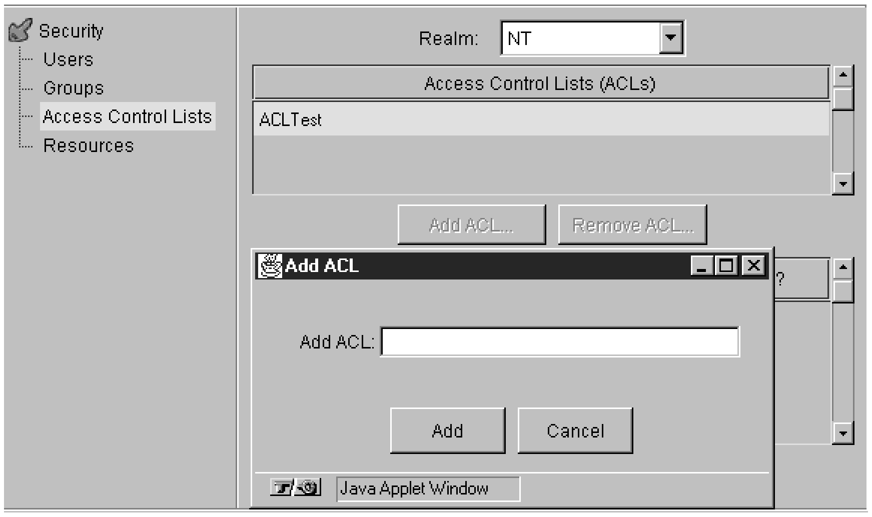
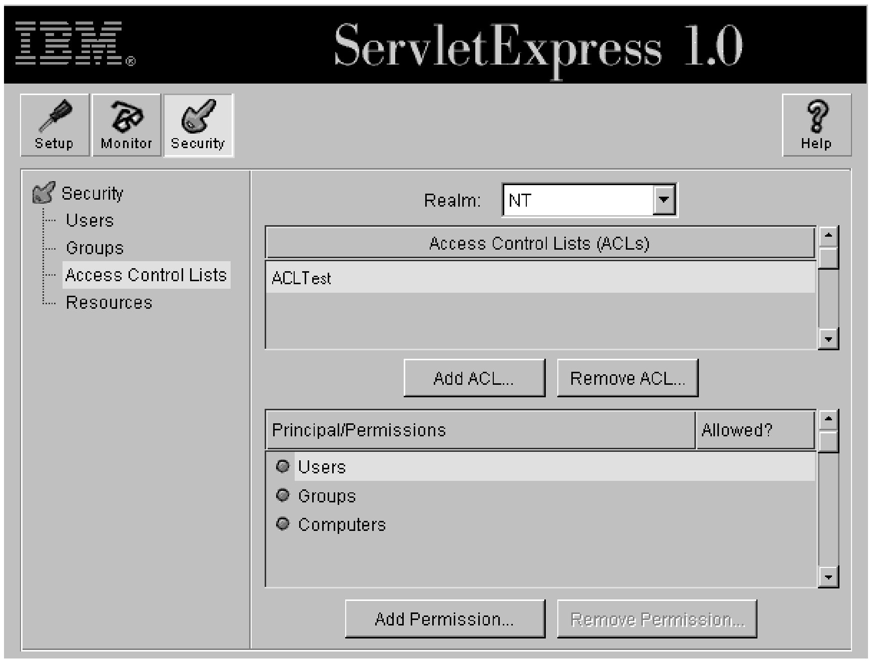


Figure 127. Servlet Manager (Adding Access Control List)

To add a permission to a user, a group, or a computer select it and click on **Add Permission**.



Realm: NT

Access Control Lists (ACLs)
ACLTest

Principal/Permissions	Allowed?
● Users	
● Groups	
● Computers	

Figure 128. ServletManager Access Control Lists

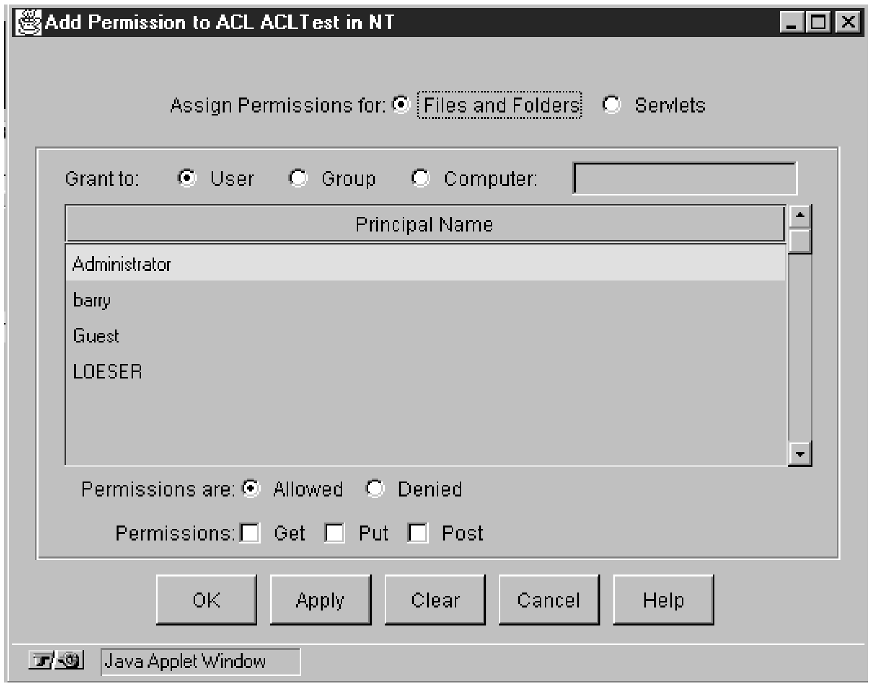
The Add Permissions box (see Figure 129 on page 99) is used to assign permissions to specific users, or specific groups. It has the following fields:

– Assign Permissions for - Files/folders or servlets.

– Grant to - For files and folders there are three classes: User, Group and Computer. For Servlets there are only two: User and Group (see Figure 130 on page 100).

– Permissions are - Either allowed or denied.

– Permission - For files and folders you have three choices: GET, PUT or POST.


Add Permission to ACL ACLTest in NT

Assign Permissions for: [✓ Files and Folders] Servlets

Grant to: [✓ User] Group Computer:

Principal Name
Administrator
barry
Guest
LOESER

Permissions are: [✓ Allowed] Denied

Permissions: ☐ Get ☐ Put ☐ Post

Figure 129. ServletManager Adding Permissions To Files And Folders

For servlets (see Figure 130 on page 100) there are eight different permissions that can be denied or allowed:

1. Load servlet - Enables you to load a named servlet.
2. Write files - Enables you to write to any file on the server where the servlet is running.
3. Listen to socket - Enables you to execute calls on a socket.
4. Link libraries - Enables you to link to any library called with the load library.
5. Read files - Enables you to read any file on the system where the servlet is running.
6. Open remote socket - Enables you to open any socket not on the current machine.
7. Execute programs - Enables you to execute programs on the server where the servlet is running. This is similar to CGI-BINs.
8. Access system properties - Enables you to access system properties. For more information see the documentation for java.lang.system.

After you have confirmed your selection by clicking on **OK** or **Apply**, the realm NT (in our case) has knowledge of the access control list ACLTest which is related to a user LOESER. This ACL grants the following permissions:

– Load servlet
– Read files
– Write files
– Open remote socket
– Listen to socket

At this point in time there isn't a relation established between an access control file and a resource file. This is done in the resource pages.

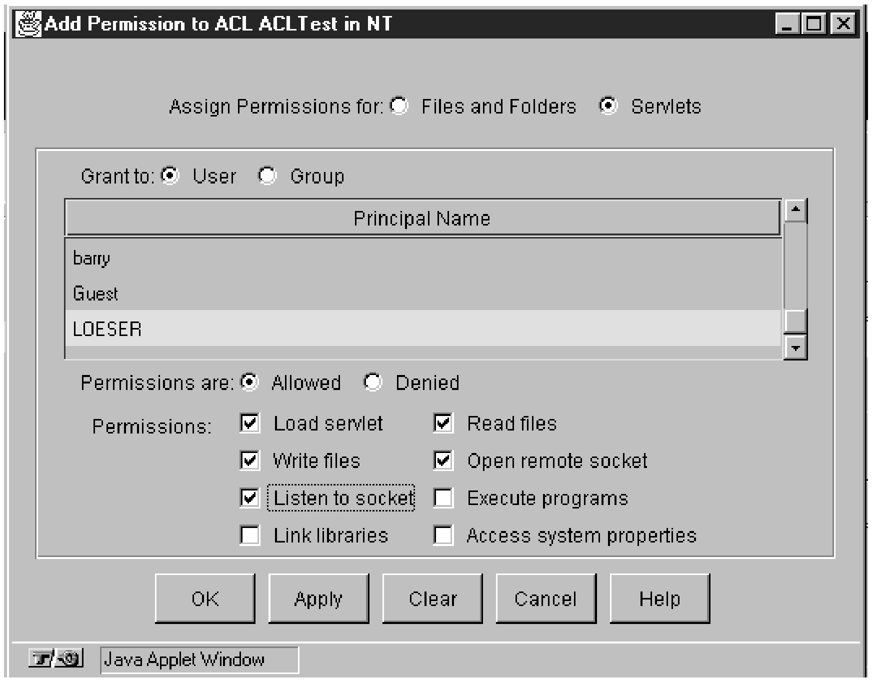
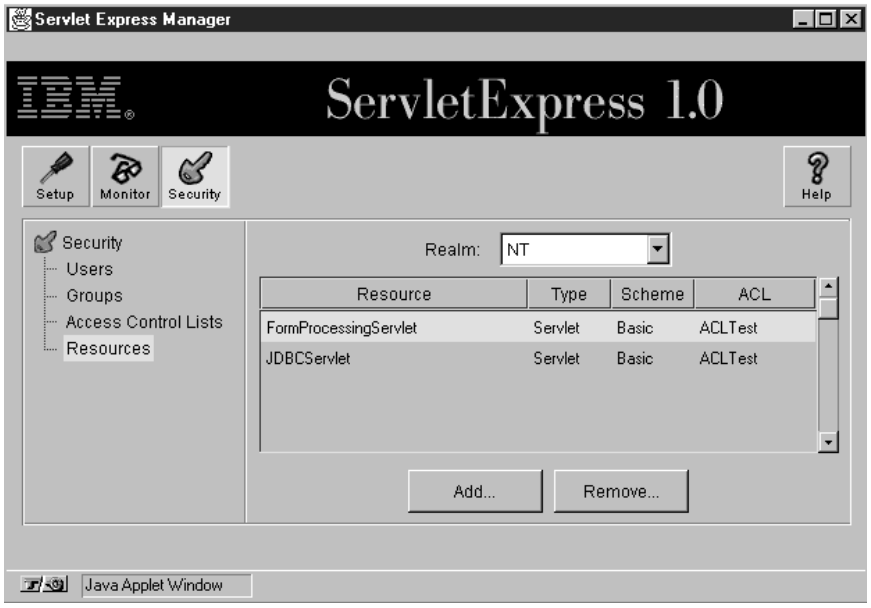


Figure 130. ServletManager Adding Permissions to Servlets

- The resources page enables you to control user access to server resources such as servlets, files, or directories by assigning the resource to an access control list.



Resource	Type	Scheme	ACL
FormProcessingServlet	Servlet	Basic	ACLTest
JDBCServlet	Servlet	Basic	ACLTest

Figure 131. ServletManager Resource Panel

Click on **Add** to add a new resource.

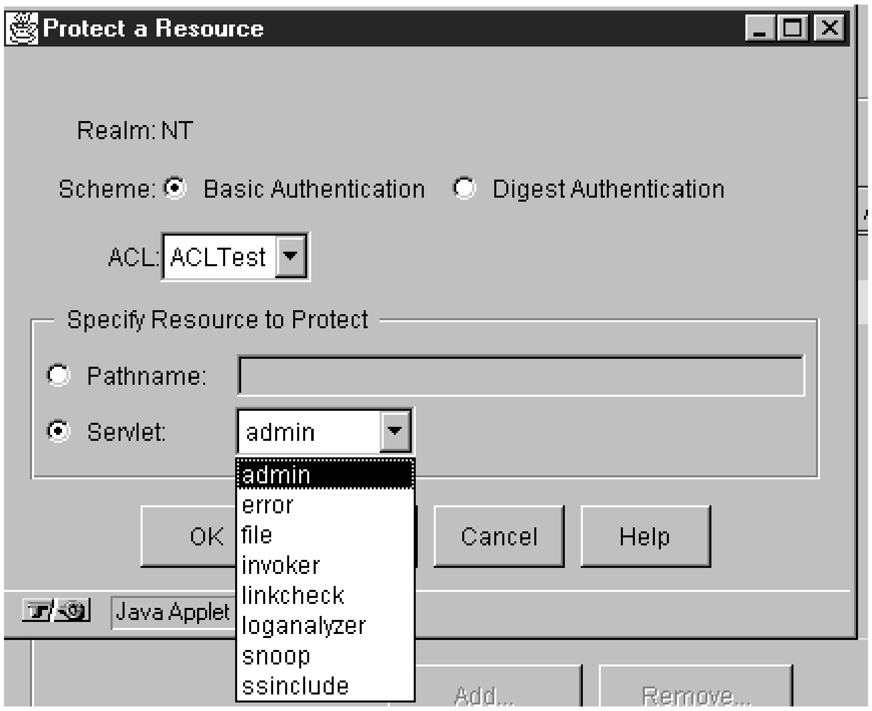


Figure 132. ServletManager Protect a Resource

Scheme defines the authentication method used, along with an access control list, to protect the resource. There are two kinds of schemes:

1. Basic, which sends plain text passwords over the net.
2. Digest, which sends functions over the net, so that snoopers can't read the passwords.

Select an access control list from the pop-up menu.

Select **Pathname** or **Servlet**.

If you don't assign an access control list to a server resource, ServletExpress applies the default access control.

3.5.3 Selecting Servlet Administration

Servlet Administration is the service you use to configure and manage servlets.

3.5.3.1 Setup Services in ServletAdministration

To start Servlet Administration select **Servlet Administration** and click on **Manage** in the Entrance panel (see Figure 117 on page 91). The following picture comes up:

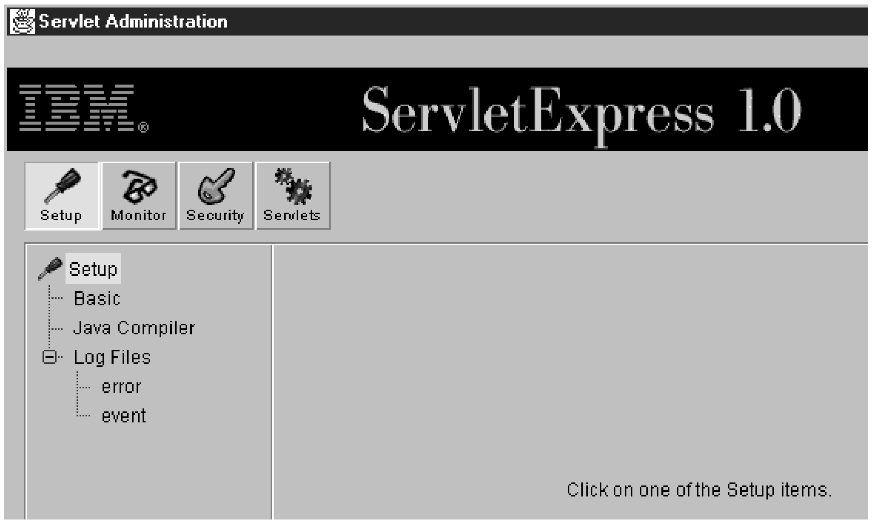


Figure 133. ServletAdministration (Setup)

In this screen you have the option to:

- Change the basic settings. For details see 4.1, “Installation and Configuration” on page 107.
- Select the compiler.
- Set the log files. The is similar to the Servlets Express Manager setup services. For details see 3.5.2.1, “Setup Services in Express Manager” on page 92.

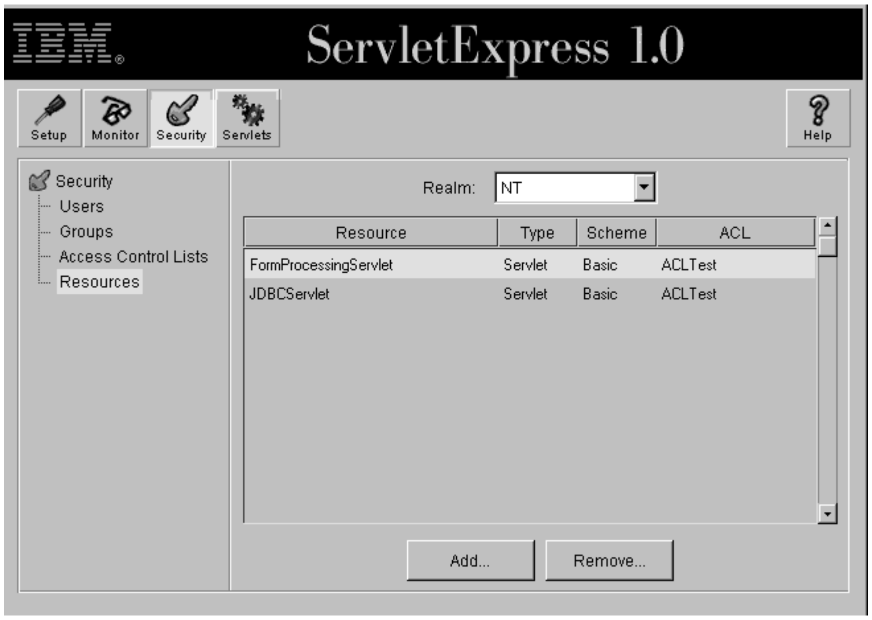
3.5.3.2 Monitor Services in ServletAdministration

This service is also similar to the Servlets Express Manager monitor service except that the log file is only for errors and events, not for access, errors and events as in Servlet Express Manager (see Figure 122 on page 94).

3.5.3.3 Security Services in ServletAdministration

Security Services of Servlet Administration lets you manipulate:

- Users, as in ServletExpress Manager (see 3.5.2.3, “Security Services in Express Manager” on page 96)
- Groups, as in ServletExpress Manager (see 3.5.2.3, “Security Services in Express Manager” on page 96)
- Access Control Lists, as in ServletExpress Manager (see 3.5.2.3, “Security Services in Express Manager” on page 96)
- Resources

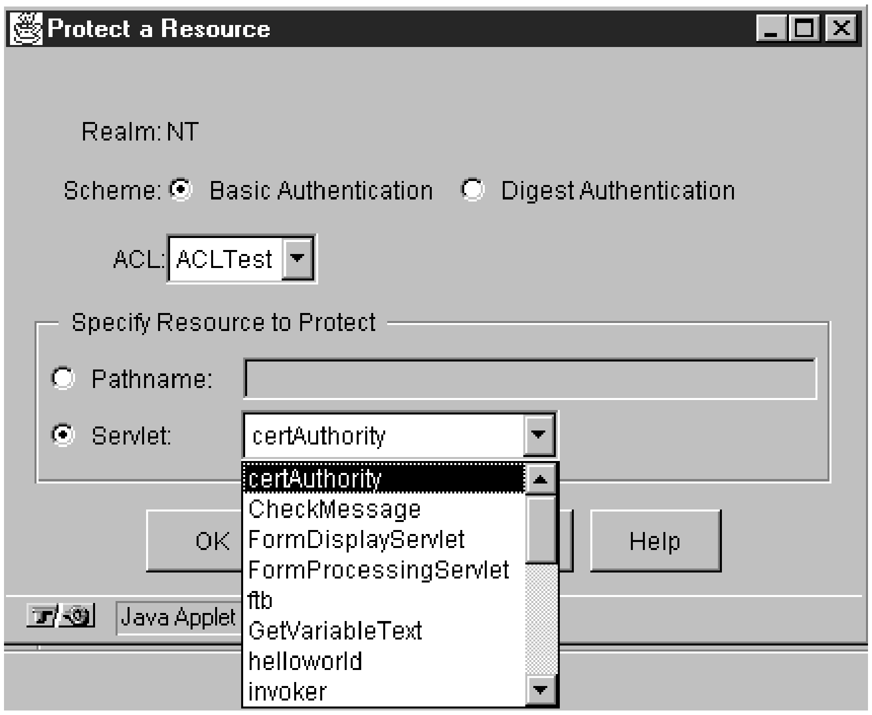


Realm: NT

Resource	Type	Scheme	ACL
FormProcessingServlet	Servlet	Basic	ACLTest
JDBCServlet	Servlet	Basic	ACLTest

Figure 134. Resources in ServletAdministration

When adding a new resource there is one difference from the corresponding windows for the ServletExpress Manager (see Figure 132 on page 101). ServletExpress Manager offers only standard servlets; the Security panel of Servlet Administration (see Figure 135) offers all servlets that have been added to ServletExpress.



Realm: NT

Scheme: [✓ Basic Authentication] Digest Authentication

ACL: ACLTest

Specify Resource to Protect

Pathname:

[✓ Servlet:] certAuthority

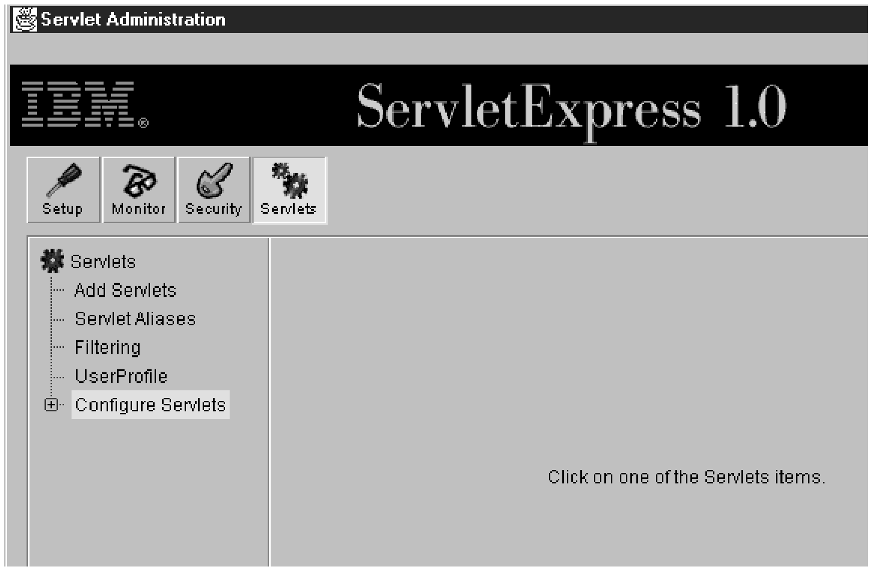
certAuthority
CheckMessage
FormDisplayServlet
FormProcessingServlet
ftb
GetVariableText
helloworld
invoker

Figure 135. ServletAdministration (Adding a Resource)

3.5.3.4 Servlets in ServletAdministration

Figure 136 lets you:

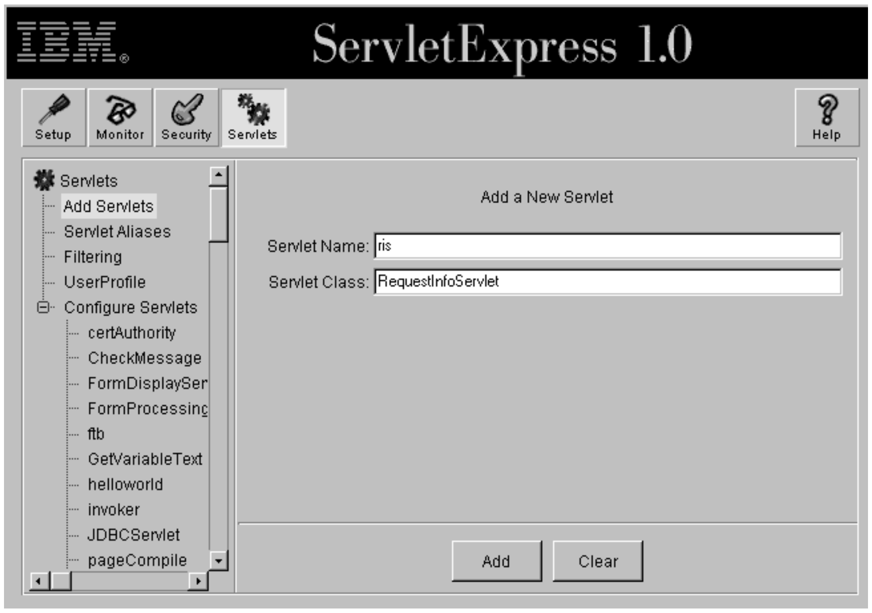
- Configure servlets.



Click on one of the Servlets items.

Figure 136. ServletAdministration

- Add servlets by entering a unique servlet name and the corresponding servlet class (without the .class extension). This servlet can then be invoked.



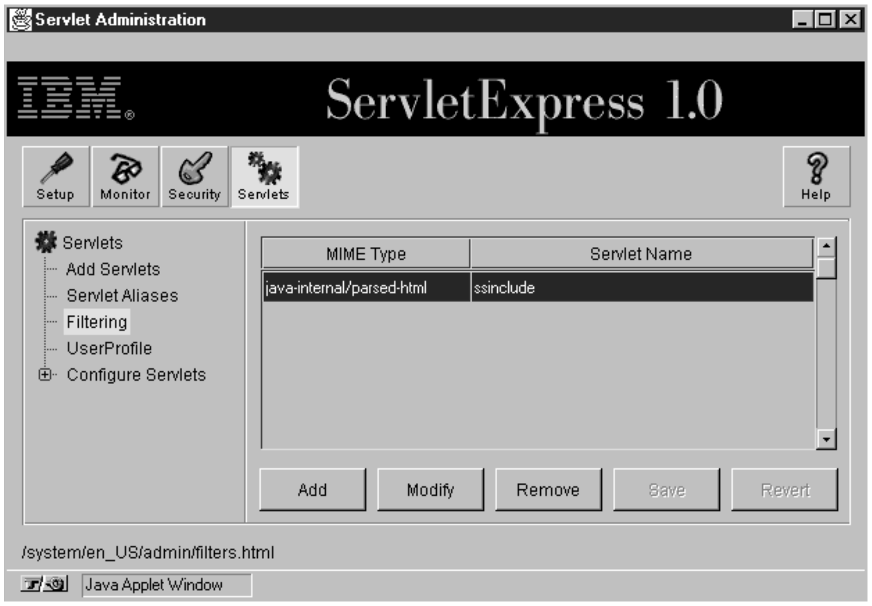
Add a New Servlet

Servlet Name: ris

Servlet Class: RequestInfoServlet

Figure 137. Adding Servlets

- Use servlet aliases. For more details see Chapter 4, “Page Compilation Examples” on page 107.
- Use filtering, which enables you to associate servlets with specific Multipurpose Internet Mail Extension (MIME) types. A servlet that is associated with a particular MIME type is invoked each time a response with the associated MIME type is generated.



MIME Type	Servlet Name
java-internal/parsed-html	ssinclude

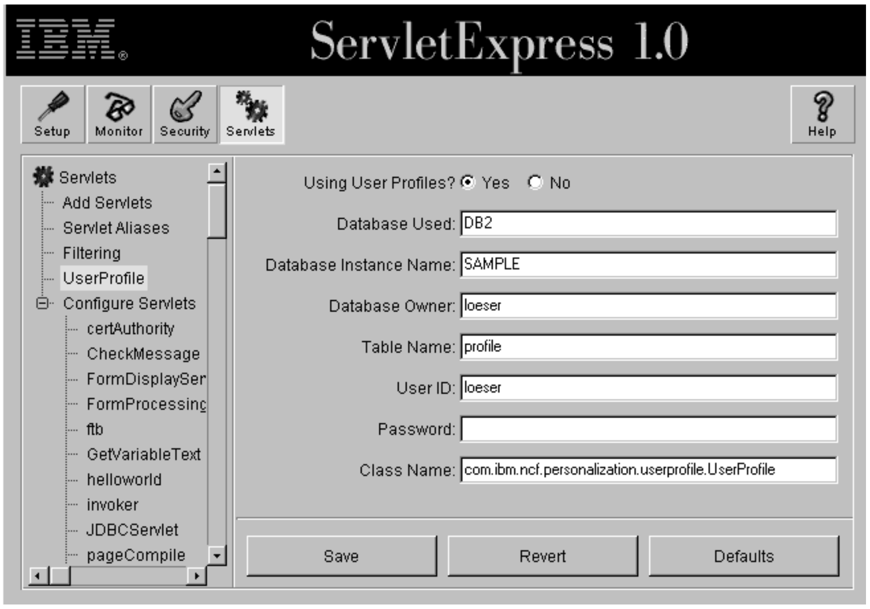
/system/en_US/admin/filters.html

Figure 138. Servlets Filtering

– MIME Type is a file type recognized by the Web server. The type part of the pair indicates the generic file category to be served by the Web server, for example audio, application or image. The subtype part of the pair indicates the exact file extension for that generic category.

– Servlet Name is the name of the servlet to be invoked when the associated MIME type is recognized.

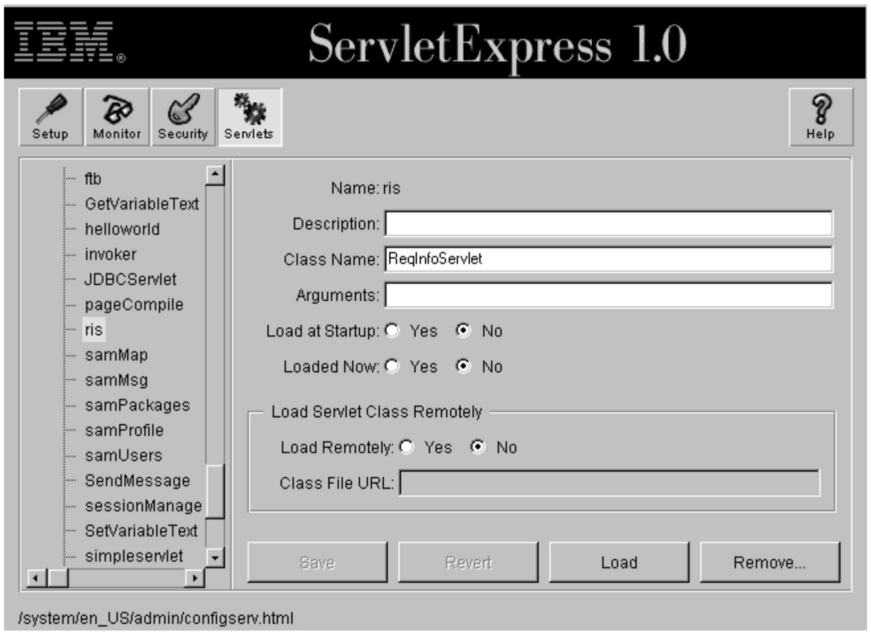
- Set a user profile, which enables you view, add, edit or delete the list of users who have access to your Web server pages and other resources (such as servlets).



Using User Profiles?	[✓ Yes] No
Database Used:	DB2
Database Instance Name:	SAMPLE
Database Owner:	loeser
Table Name:	profile
User ID:	loeser
Password:	
Class Name:	com.ibm.ncf.personalization.userprofile.UserProfile

Figure 139. User Profile

- Configure servlets, which enables you to define when a servlet is invoked, if it is a remote or local servlet, and other information.



Name: ris

Description:

Class Name: ReqInfoServlet

Arguments:

Load at Startup: Yes [✓ No]

Loaded Now: Yes [✓ No]

Load Servlet Class Remotely

Load Remotely: Yes [✓ No]

Class File URL:

/system/en_US/admin/configserv.html

Figure 140. Configure Servlet

These are the settings:

– Name - Is the unique name of the servlet.

– Description - Is a text string. This field can be blank.

– Class Name - Is the name of the associated class file.

– Arguments - Are the initialization parameters for the servlet.

– Load at Startup - Whether or not the servlet is loaded at startup.

– Loaded Now - Whether or not the servlet is currently loaded.

– Loaded Remotely - Whether or not the Web server loads the servlet from a remote location.

– Class File URL - The URL that points to the class file for the remote servlet.

Chapter 4. Page Compilation Examples

Page compilation with pageCompile (from ServletExpress) provides a new way of creating dynamic Web pages by combining HTML and Java. Dynamic pages are something that can be done at the server or at the browser side, or both. Page compilation is specific to the server side.

Dynamic pages creation is something that normal servlets do, so you might likely ask, "What is the difference?". It is much simpler with page compilation. Once installed, page compilation allows you to create servlets from source code that are a mix of HTML and Java and does not require very deep Java knowledge. Page compile is a good alternative to creating new servlets. It lets you:

- Create simple dynamic pages, which perform changes according to the logic defined in the Java code for the page.
- Create complex pages in which normal servlets are called to perform other functions such as accessing databases. The servlets that are called and their parameters may be dynamically changed by the Java code.

In summary, when you need to change the contents of a page, change links, data, calls to different servlets or perform simple Java processing, page compilation is highly recommended.

In terms of the browser side, you can still continue to use any kind of applet, JavaScript or whatever your browser understands, with the advantage that it can be generated and controlled by your page compilation mixed code.

4.1 Installation and Configuration

In ServletExpress the servlet for page compilation is called pageCompiler and it is installed when ServletExpress is installed.

During the installation process two aliases are defined for this servlet in the Web server configuration files:

*.jhtml

*.shtml

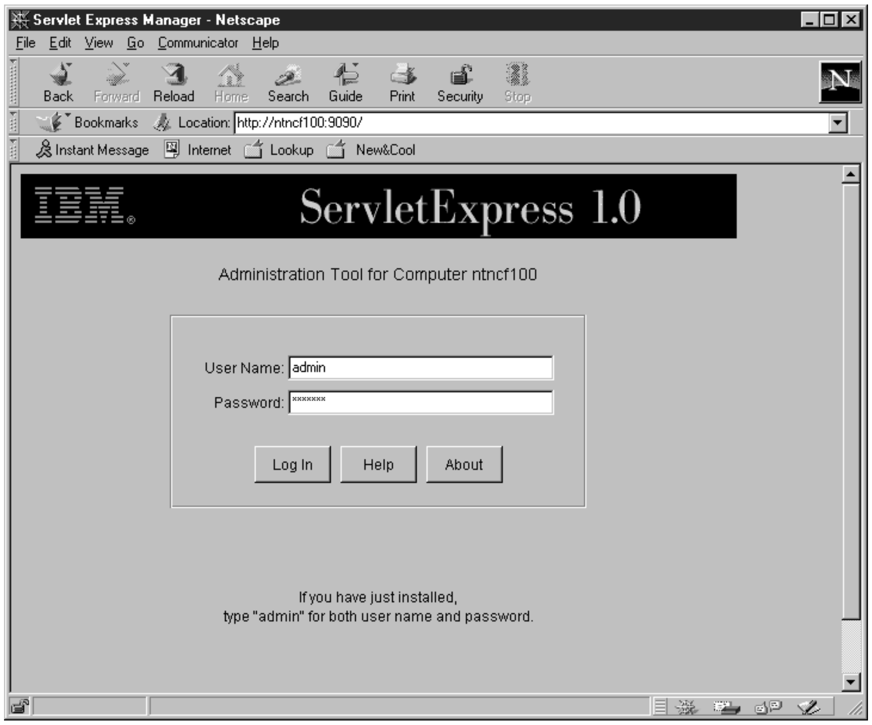
This means that whenever a file having one of these extensions is invoked from a browser, it is compiled with pageCompile before sending the result to the browser. This process is described in more detail in 4.2, “How Page Compilation Works” on page 113.

Under normal conditions you do not need to change the default configuration for pageCompiler since jhtml and shtml are the extensions commonly used everywhere for the files having this kind of hybrid code mix of HTML and Java.

Should you need to modify the configuration to change or add new extensions, you need a ServletExpress user ID with the right authorization level to change the ServerAdministration parameters. You can do the following:

1. From a Web browser enter the URL format `http://your.server.name:9090`, where your.server.name is the fully qualified name of your Web server. 9090 is

the default port for ServletExpress when it is installed. Check with your ServletExpress administrator to find out which port was specified for ServletExpress during its installation.

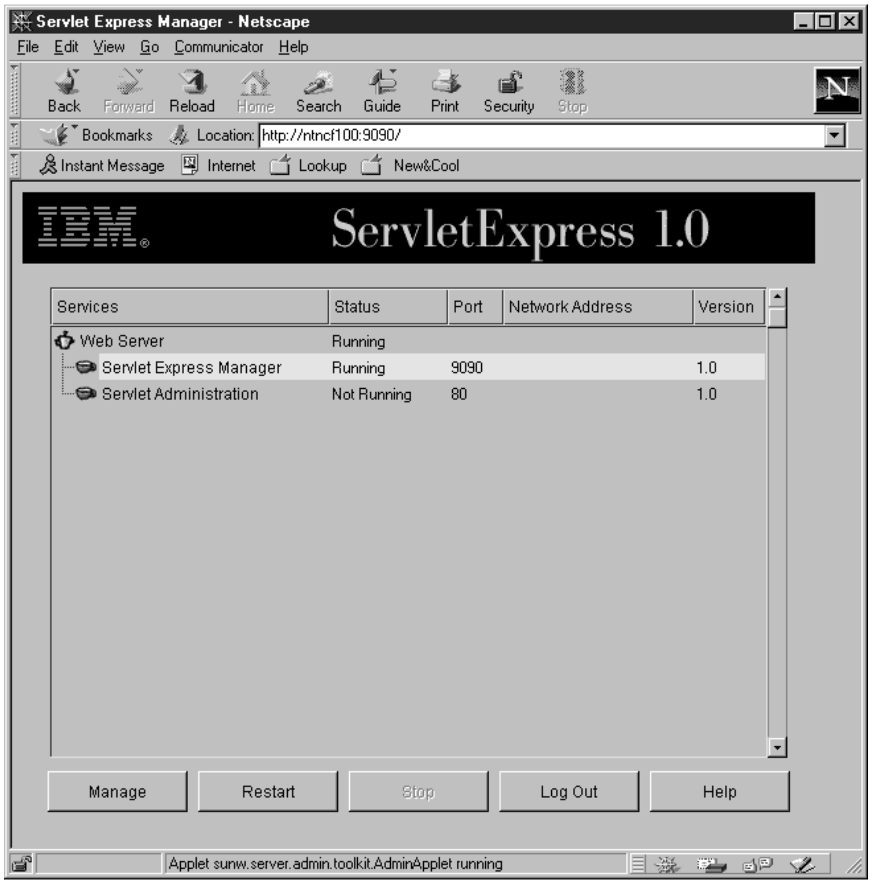

Servlet Express Manager - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100:9090/
Instant Message Internet Lookup New&Cool
IBM
ServletExpress 1.0
User Name: admin
Password: *******
Log In Help About

Administration Tool for Computer ntncf100

If you have just installed,
type "admin" for both user name and password.

Figure 141. ServletExpress Log In Window

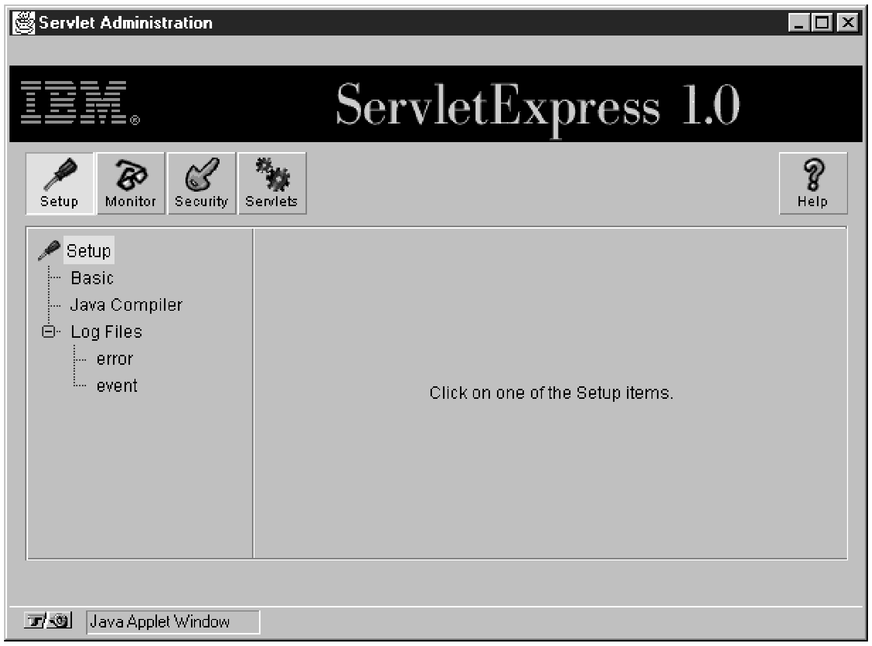
2. Type your user ID and password and click on **Log In**. By default, the first user ID available when ServletExpress is installed is admin. Refer to 3.5.2.3, “Security Services in Express Manager” on page 96 to add new user IDs or contact your ServletExpress administrator.


Servlet Express Manager - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100:9090/
Instant Message Internet Lookup New&Cool
IBM ServletExpress 1.0
Manage Restart Stop Log Out Help
Applet sunw.server.admin.toolkit.AdminApplet running

Services	Status	Port	Network Address	Version
Web Server	Running			
Servlet Express Manager	Running	9090		1.0
Servlet Administration	Not Running	80		1.0

Figure 142. ServletExpress Manager Window

3. Double-click on **Servlet Administration**.

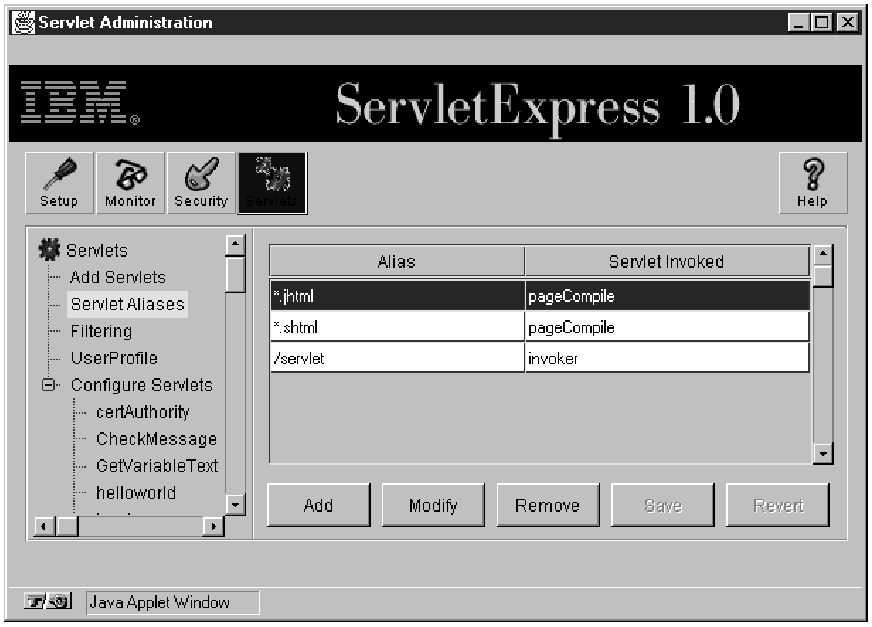


Click on one of the Setup items.

Figure 143. Servlet Administration Window

4. Click on the **Servlets** icon.

5. Double-click on **Servlet Aliases**.



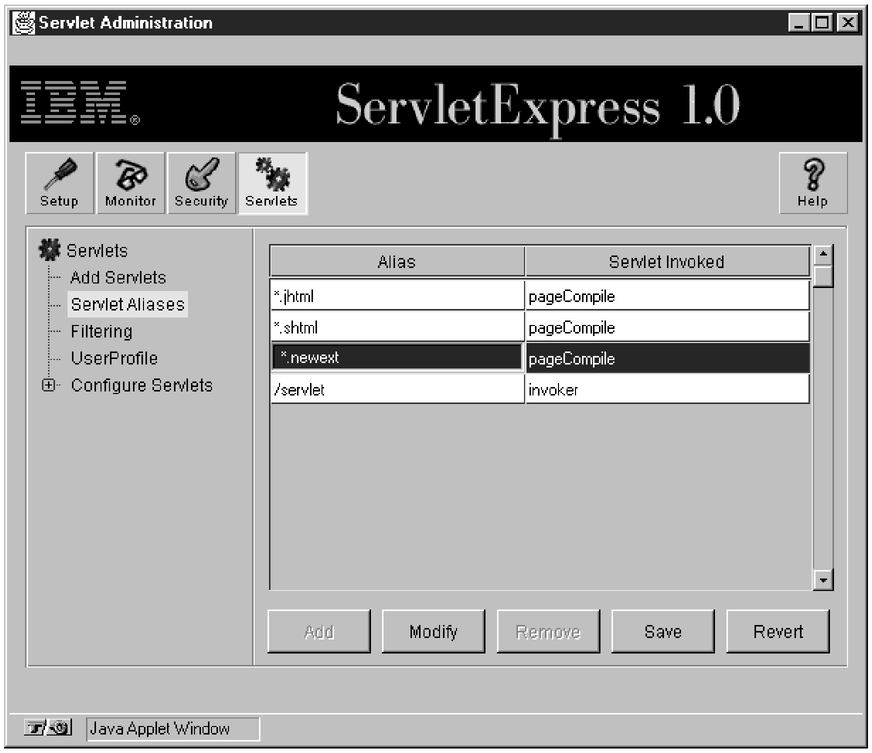
Alias	Servlet Invoked
*.jhtml	pageCompile
*.shtml	pageCompile
/servlet	invoker

Figure 144. Selecting Servlet Aliases

6. Place the cursor on the line you want to add new lines from, or the line you want to modify or remove. Then click the button with the desired action. We selected **Add** to add a new extension.

7. Type `*.newext` in the column Alias.

   newext is the new extension and pageCompile is placed in the column Servlet Invoked.



Alias	Servlet Invoked
*.jhtml	pageCompile
*.shtml	pageCompile
*.newext	pageCompile
/servlet	invoker

Figure 145. New Alias Added

8. Click on **Save** to save the changes or **Revert** to restore the original configuration.
9. Close the Servlet Administration window.
10. Click on **Log Out** in the configuration window to exit.

4.1.1 Classpath and Other Java Parameters for ServletExpress

ServletExpress allows you to modify the following parameters related to Java:

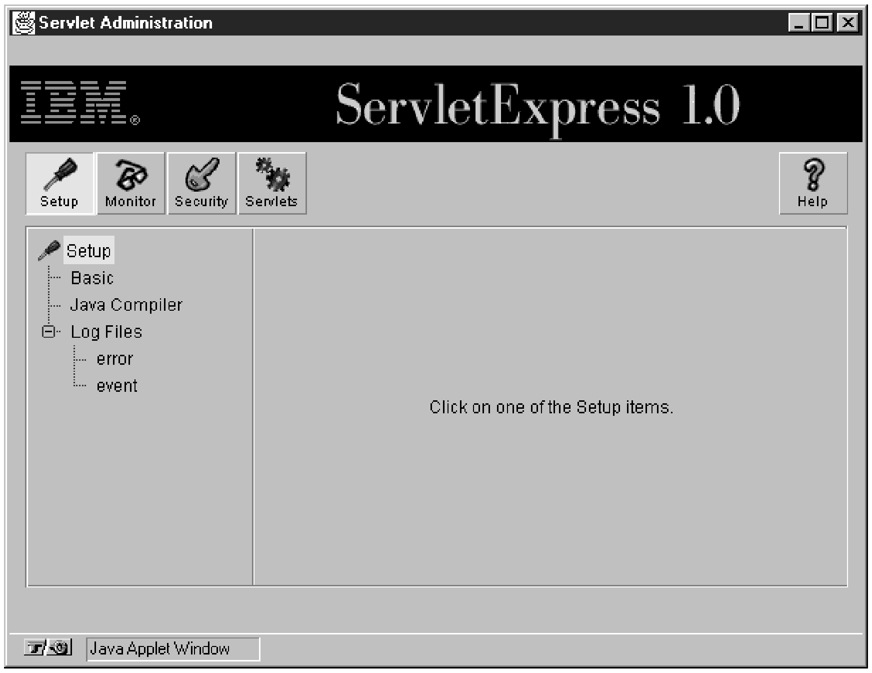
- Classpath - The path to Java classes.
- Libpath - The path to the Java shared libraries.
- Path - The path to the the Java binary files, such as java and javac.
- Java just-in-time compiler for your platform. Note that this is not the basic Java compiler, which is javac.

By default, ServletExpress does not use the system classpath. It uses its own. This allows you to have two different classpaths: one for general use and another just for the ServletExpress environment.

In general it is recommended you use the system classpath, since you will only need to define your class libraries in one place.

Should you want to change any of the Java-related paths for ServletExpress, do the following:

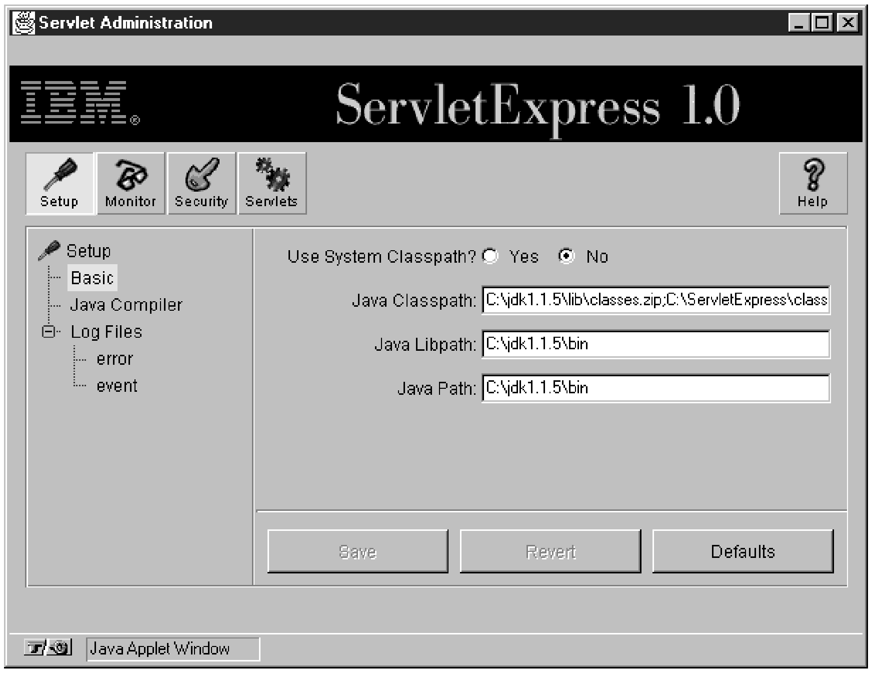
1. Open the Servlet Administration window.
2. Click on **Setup**.



Click on one of the Setup items.

Figure 146. Servlet Administration Window

3. Click on **Basic**.



Use System Classpath? Yes [✓ No]

Java Classpath: C:\jdk1.1.5\lib\classes.zip;C:\ServletExpress\class

Java Libpath: C:\jdk1.1.5\bin

Java Path: C:\jdk1.1.5\bin

Figure 147. Servlet Administration Window - Basic Data

4. If you want to use the system classpath, select the **Yes** button.
5. If you want to keep using the ServletExpress classpath, but want to modify it, type your changes in the field Java Classpath.

   Take into account the following when pointing to your classes in the classpath variable:

    - If your classes are packed in a zip, jar or similar file, write the full path to this file and the name of the file, for example, C:\myclasses\set1\set1.zip.
    - If your classes are not packed but they are organized in subdirectories inside a main directory, for example:

      ```
      C:
       }
       myclasses
         }
          set1
         }
          set2
      ```

      You must write the classpath variable as `C:\myclasses;`.

      You then have to import the corresponding packages: set1, set2, into your Java code.
6. Modify the fields Java libpath and Java path according to your needs.
7. Click on **Save** to save all changes or **Revert** to restore the original values.

It is important that directories in the class path do not have blanks as part of the name. In other words any blank in directory names must be avoided, because they are not well understood by JDK 1.1.5 and you may get in trouble when compiling pages.

To modify your just-in-time Java compiler do the following:

1. Open the ServletAdministration window and click on **Setup**.
2. Click on **Java Compiler**.
3. Modify the contents of the field Java Compiler according to your needs. By default the values for this field are `jitc` for AIX and `symcjit` for Windows NT.
4. Click on **Save** to save all changes or **Revert** to restore the original values.

4.2 How Page Compilation Works

The way page compilation works is that whenever a page with the extension jhtml, shtml (or any others you configured) are invoked pageCompile servlet does the following:

- If it is the first time the page is invoked or the source of the page has changed:
  - pageCompile generates a Java servlet file from the hybrid code and compiles it.
  - pageCompile executes the servlet created in the previous step and sends the output to the browser.
- It there are no changes, pageCompile executes the servlet and sends the output to the browser.

The entire process is executed in the server. The output sent to the browser is HTML code.

An example of this follows:

1. Initial source hybrid code, file Sample1.jhtml:

```
<html>
<head>
<title>List Sample</title>
</head>
<body>
<h1>List Sample</h1>
<ul><java>
for (int i=1;i<=5;i++) out.println ("<li> Some text for line: " + i);
</java>
</ul>
</body>
</html>
```

Figure 148. Hybrid Code - Sample1.jhtml

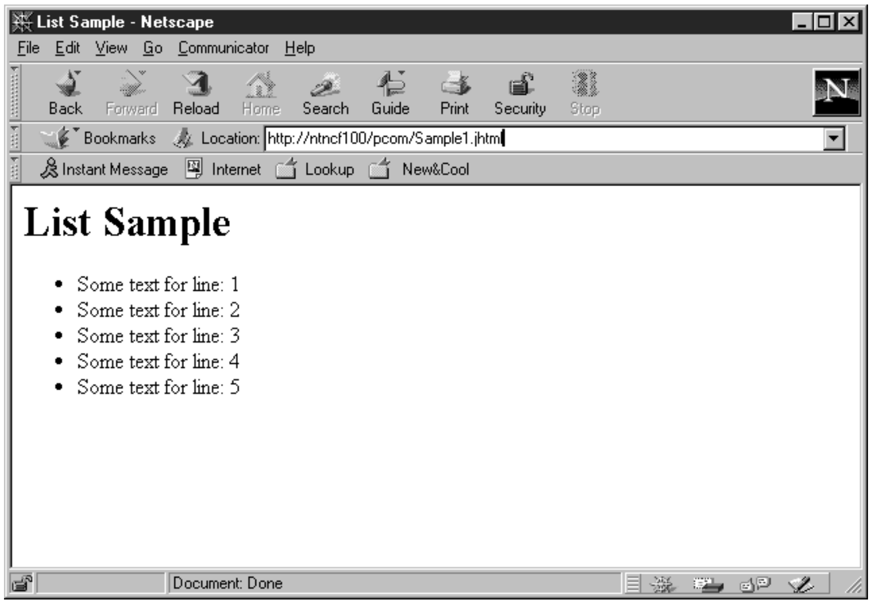
2. Java code generated by pageCompile, file _Sample1.java. Notice the underscore that pageCompile places before the name:

```
package pagecompile._pcom;

import java.io.*;
import java.util.*;
import javax.servlet.*;
import javax.servlet.http.*;
import sun.server.http.pagecompile.filecache.*;
import sun.server.http.pagecompile.ParamsHttpServletRequest;
import sun.server.http.pagecompile.*;

public class _Sample1
extends HttpServlet{

//-------------------------------
  static {
  }

  //-------------- The service method
  public void service (HttpServletRequest request,
                         HttpServletResponse response)
      throws ServletException, IOException
  {
    PrintWriter out = new PrintWriter(new OutputStreamWriter(
response.getOutputStream(), "8859_1"));
    response.setContentType("text/html");
    CharFileData __fileData = null;
    try {
      __fileData = (CharFileData) ServletUtil.getFileCache(this).getFile(
"C:\\WWW\\HTML\\pcom\\Sample1.jhtml", "8859_1", 887226677000L);
      if (__fileData == null) throw new ServletException("FileChanged");

      /*** lines: 1-7 */
      __fileData.writeChars (0, 87, out);

for (int i=1;i<=5;i++) out.println ("<li> Some text for line: " + i);
      /*** lines: 9-12 */
      __fileData.writeChars (173, 25, out);
      out.close();
    }
    finally {
      if (__fileData != null) __fileData.close();
    }
  }
}
```

Figure 149. pageCompile Generated from the Hybrid Code

3. Java class resulting from the compilation: _Sample1.java

   From a Web browser you would see the following:

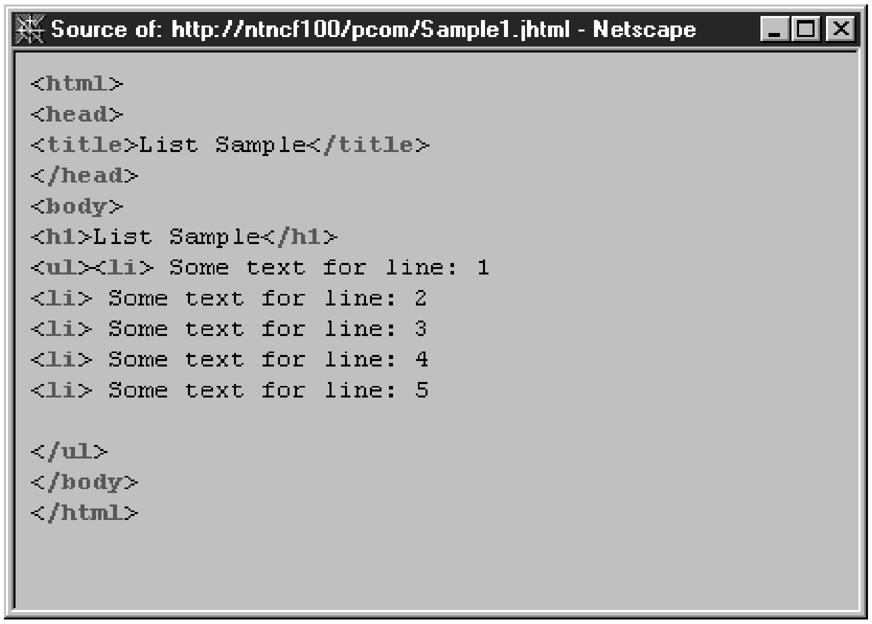

List Sample - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/Sample1.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

List Sample

- Some text for line: 1
- Some text for line: 2
- Some text for line: 3
- Some text for line: 4
- Some text for line: 5

Figure 150. pageCompile Result

4. This is the HTML code the browser receives. Please compare it with the original hybrid code.

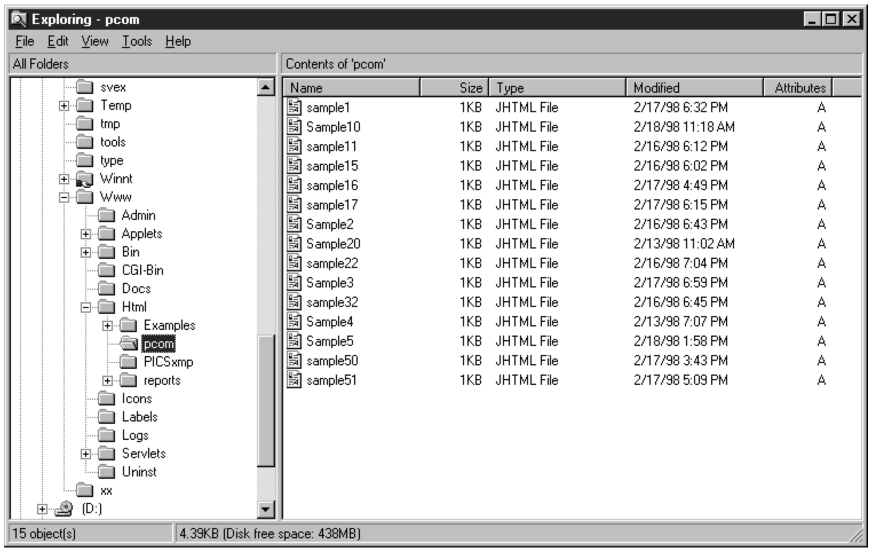


```
<html>
<head>
<title>List Sample</title>
</head>
<body>
<h1>List Sample</h1>
<ul><li> Some text for line: 1
<li> Some text for line: 2
<li> Some text for line: 3
<li> Some text for line: 4
<li> Some text for line: 5

</ul>
</body>
</html>
```

Figure 151. HTML Code Generated by pageCompile

Another way to follow the example follows:

- In the Web server (Lotus Domino Go), the sample pages are located in: C:\WWW\HTML\pcom.
- ServletExpress keeps all the files for the examples in: C:\ServletExpress\servlets\pagecompile_pcom.



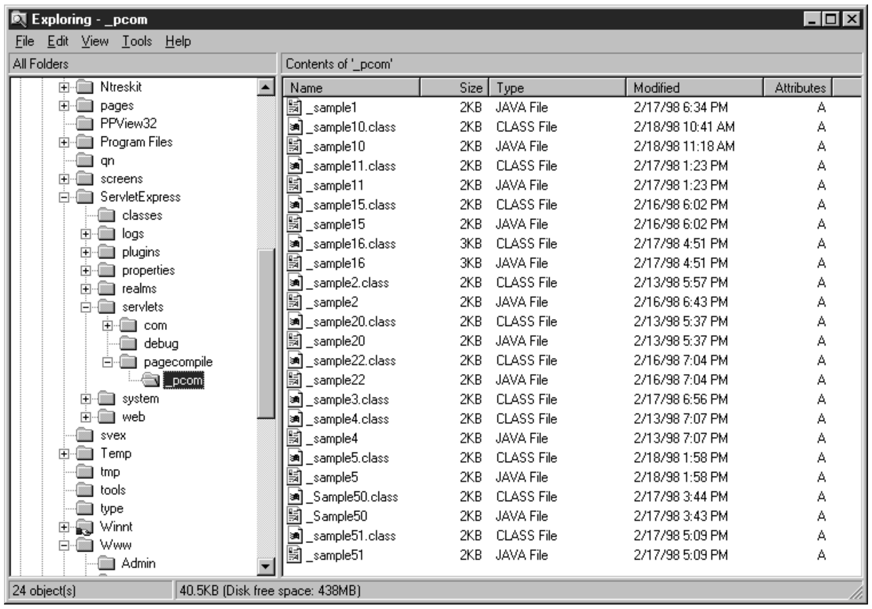
Exploring - pcom

Contents of 'pcom'

Name	Size	Type	Modified	Attributes
sample1	1KB	JHTML File	2/17/98 6:32 PM	A
Sample10	1KB	JHTML File	2/18/98 11:18 AM	A
sample11	1KB	JHTML File	2/16/98 6:12 PM	A
sample15	1KB	JHTML File	2/16/98 6:02 PM	A
sample16	1KB	JHTML File	2/17/98 4:49 PM	A
sample17	1KB	JHTML File	2/17/98 6:15 PM	A
Sample2	1KB	JHTML File	2/16/98 6:43 PM	A
Sample20	1KB	JHTML File	2/13/98 11:02 AM	A
sample22	1KB	JHTML File	2/16/98 7:04 PM	A
Sample3	1KB	JHTML File	2/17/98 6:59 PM	A
sample32	1KB	JHTML File	2/16/98 6:45 PM	A
Sample4	1KB	JHTML File	2/13/98 7:07 PM	A
Sample5	1KB	JHTML File	2/18/98 1:58 PM	A
sample50	1KB	JHTML File	2/17/98 3:43 PM	A
sample51	1KB	JHTML File	2/17/98 5:09 PM	A

15 object(s) 4.39KB (Disk free space: 438MB)

Figure 152. Source Files in HTML\pcom Directory



Exploring - _pcom

Contents of '_pcom'

Name	Size	Type	Modified	Attributes
_sample1	2KB	JAVA File	2/17/98 6:34 PM	A
_sample10.class	2KB	CLASS File	2/18/98 10:41 AM	A
_sample10	2KB	JAVA File	2/18/98 11:18 AM	A
_sample11.class	2KB	CLASS File	2/17/98 1:23 PM	A
_sample11	2KB	JAVA File	2/17/98 1:23 PM	A
_sample15.class	2KB	CLASS File	2/16/98 6:02 PM	A
_sample15	2KB	JAVA File	2/16/98 6:02 PM	A
_sample16.class	3KB	CLASS File	2/17/98 4:51 PM	A
_sample16	3KB	JAVA File	2/17/98 4:51 PM	A
_sample2.class	2KB	CLASS File	2/13/98 5:57 PM	A
_sample2	2KB	JAVA File	2/16/98 6:43 PM	A
_sample20.class	2KB	CLASS File	2/13/98 5:37 PM	A
_sample20	2KB	JAVA File	2/13/98 5:37 PM	A
_sample22.class	2KB	CLASS File	2/16/98 7:04 PM	A
_sample22	2KB	JAVA File	2/16/98 7:04 PM	A
_sample3.class	2KB	CLASS File	2/17/98 6:56 PM	A
_sample4.class	2KB	CLASS File	2/13/98 7:07 PM	A
_sample4	2KB	JAVA File	2/13/98 7:07 PM	A
_sample5.class	2KB	CLASS File	2/18/98 1:58 PM	A
_sample5	2KB	JAVA File	2/18/98 1:58 PM	A
_Sample50.class	2KB	CLASS File	2/17/98 3:44 PM	A
_Sample50	2KB	JAVA File	2/17/98 3:43 PM	A
_sample51.class	2KB	CLASS File	2/17/98 5:09 PM	A
_sample51	2KB	JAVA File	2/17/98 5:09 PM	A

24 object(s) 40.5KB (Disk free space: 438MB)

Figure 153. Java and Class Files in pageCompile/_pcom Directory

As you can see from this example, it is easy to generate HTML code by printing it to out. Any kind of HTML tag can be generated this way. See the following example to display an image:

```
<html>
<head>
<title>Image Sample</title>
</head>
<body>
<h1>Image Sample</h1>
<java>
out.println ("<IMG SRC=\"homehead3.gif\">");
</java>
</body>
</html>
```

Figure 154. Display an Image

Another way to print Java expressions to the output string is by using the <java type=print> tag. The following example shows this:

```
<html>
<body>
<java>
  String myVar = "HelloWorld";
</java>

<java type=print>
  myVar
</java>

</body>
</html>
```

Figure 155. Print Java Expressions to Out

You can use the <java type=print> tag for any string type variable or any expression for the String.valueOf() Java method call. This includes any object and any primitive value expression such as int and float. An expression that resolves to a null object does not send any text to the output stream.

Note that we created a Java variable. We describe the use of Java variables in 4.3, “Declaring Variables” on page 119.

To put Java inside an HTML statement, we need to use the single back quote. The back quote is not a single quote. It is the key, on the standard English keyboard that is just to the left of the 1 key. For example, to display the same picture as in the previous example we can do the following:

```
<html>
<head>
<title>Image Sample</title>
</head>
<body>
<h1>Image Sample</h1>
<java>
String i = "homehead3.gif";
</java>
<IMG SRC="`i`">
</body>
</html>
```

Figure 156. Java Inside an HTML Statement

We created a Java variable and then we inserted the variable between back quotes into an HTML statement: <IMG SRC="`i`">.

Java comments can also be inserted beteween <java> tags:

```
<html>
<head>
<title>Image Sample</title>
</head>
<body>
<h1>Image Sample</h1>
<java>
//Assigning the image name to a string variable
String i = "homehead3.gif";
</java>
//Displaying the image
<IMG SRC="`i`">
</body>
</html>
```

Figure 157. Java Comments

4.3 Declaring Variables

Variables get declared inside <java> blocks. Once they are declared, all variables are available for all subsequent Java blocks and cannot be declared again. The following example shows how to declare Java variables in jhtml files:

```
<html>
<head>
<title>Declaring Variables</title>
</head>
<body>
<h1>Declaring Variables</h1>

<java>
int x = 1;
out.println ("<p> Value in the first Java block = " + x);
</java>

<java>
out.println ("<p> Value in the second Java block = " + (x + 1000));
</java>

</body>
</html>
```

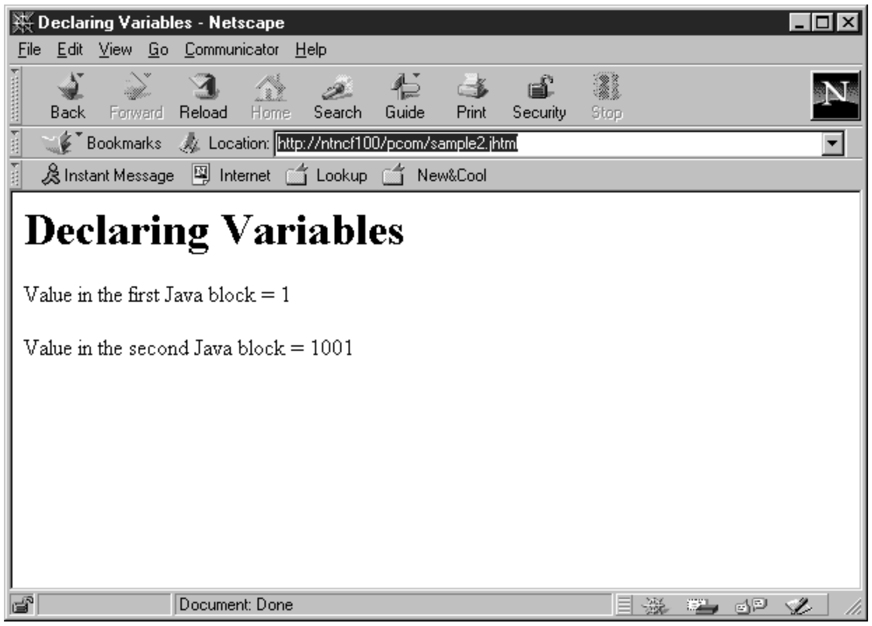
Figure 158. Declaring Java Variables in jhtml Files

Here is the resulting Java code. Look at the declaration of the variable x to understand the scope of the variable:

```
package pagecompile._pcom;

import java.io.*;
import java.util.*;
import javax.servlet.*;
import javax.servlet.http.*;
import sun.server.http.pagecompile.filecache.*;
import sun.server.http.pagecompile.ParamsHttpServletRequest;
import sun.server.http.pagecompile.*;

public class _sample2
extends HttpServlet{

//-------------------------------
  static {
  }

  //-------------- The service method
  public void service (HttpServletRequest request,
                         HttpServletResponse response)
      throws ServletException, IOException
  {
    PrintWriter out = new PrintWriter(new
OutputStreamWriter(response.getOutputStream(), "8859_1"));
    response.setContentType("text/html");
    CharFileData __fileData = null;
    try {
      __fileData = (CharFileData)ServletUtil.getFileCache(this).getFile(
"C:\\WWW\\HTML\\pcom\\sample2.jhtml", "8859_1", 887410600000L);
      if (__fileData == null) throw new ServletException("FileChanged");

      /*** lines: 1-8 */
      __fileData.writeChars (0, 101, out);

int x = 1;
out.println ("<p> Value in the first Java block = " + x);
      /*** lines: 11-13 */
      __fileData.writeChars (187, 4, out);

out.println ("<p> Value in the second Java block = " + (x + 1000));
      /*** lines: 15-18 */
      __fileData.writeChars (275, 20, out);
      out.close();
    }
    finally {
      if (__fileData != null) __fileData.close();
    }
  }
}
```

Figure 159. Resulting Java Code

See in Figure 160 on page 122 the result using a Web browser that was executing the example.


Declaring Variables - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample2.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Declaring Variables

Value in the first Java block = 1

Value in the second Java block = 1001

Figure 160. Working with Java Variables

To restrict the scope of a variable, enclose the block between braces. Then it will be visible only inside the scope created by the braces. The following example illustrates how to restrict the scope of variables:

```
<html>
<head>
<title>Declaring Variables</title>
</head>
<body>
<h1>Declaring Variables</h1>

<java>
{
  int x = 1;
  out.println ("<p> Value in the first Java block = " + x);
}
</java>

<java>
{
  int x = 2;
  out.println ("<p> Value in the second Java block = " + x);
}
</java>

</body>
</html>
```

Figure 161. Restricting the Scope of Java Variables

4.4 Control Structures

From previous examples you know there are several ways to mix HTML and Java code. We show here how to manage the if/else structure in two ways:

1. Separated blocks for HTML and Java code:

```
<html>
<head>
<title>Control Structures (if/else)</title>
</head>
<body>
<h1>Control Structures (if/else)</h1>

<java>
int x = 2;
out.println ("<p> Value of the variable x = " + x);
</java>

<java>
if (x == 1) { </java>
<p> Value of x is 1
<java> }

else  { </java>
<p> x is not equal to 1
<java> }

</java>

</body>
</html>
```

Figure 162. HTML and Java Code

Note: Notice the way the blocks are split up to mix the HTML and Java code. This is to properly generate the Java code for the servlet.

See the resulting Java code:

```
package pagecompile._pcom;

import java.io.*;
import java.util.*;
import javax.servlet.*;
import javax.servlet.http.*;
import sun.server.http.pagecompile.filecache.*;
import sun.server.http.pagecompile.ParamsHttpServletRequest;
import sun.server.http.pagecompile.*;

public class _sample4
extends HttpServlet{

//-------------------------------
  static {
  }

  //-------------- The service method
  public void service (HttpServletRequest request,
                       HttpServletResponse response)
      throws ServletException, IOException
  {
    PrintWriter out = new PrintWriter(new OutputStreamWriter(
response.getOutputStream(), "8859_1"));
    response.setContentType("text/html");
    CharFileData __fileData = null;
    try {
      __fileData = (CharFileData)ServletUtil.getFileCache(this).getFile(
"C:\\WWW\\HTML\\pcom\\sample4.jhtml", "8859_1", 887413706000L);
      if (__fileData == null) throw new ServletException("FileChanged");

      /*** lines: 1-8 */
      __fileData.writeChars (0, 101, out);

int x = 2;
out.println ("<p> Value of the variable x = " + x);
      /*** lines: 11-13 */
      __fileData.writeChars (181, 4, out);

if (x == 1) {       /*** lines: 14-16 */
      __fileData.writeChars (214, 23, out);
 }

else  {       /*** lines: 18-20 */
      __fileData.writeChars (264, 27, out);
 }

      /*** lines: 22-25 */
      __fileData.writeChars (310, 20, out);
      out.close();
    }
    finally {
      if (__fileData != null) __fileData.close();
    }
  }
}
```

Figure 163. Resulting Java Code

2. The source code can be simplified using out.println to generate the HTML statements, as in the following example:

```
<html>
<head>
<title>Control Structures (if/else)</title>
</head>
<body>
<h1>Control Structures (if/else)</h1>

<java>
int x = 2;
out.println ("<p> Value of the variable x = " + x);
</java>

<java>

if (x == 1) {
   out.println ("<p> What is the value of x?");
   out.println ("<p> Value of x is 1");
}
else  {
   out.println ("<p> May be x has a different value");
   out.println ("<p> x is not equal to 1");
}

</java>

</body>
</html>
```

Figure 164. Using out.println

Both ways of managing the mix of codes can be applied to all the Java control statements.

4.5 Using Java Classes

In this section we show how to import and extend Java classes as well as create Java methods within your HTML/Java code mix.

4.5.1 Importing Java Classes

The tag <java type=import>, allows you to import Java classes in your page. Let us see how it works with the following example:

```
<java type=import>
java.util.Random
</java>

<html>
<head>
<title>A Random Number</title>
</head>

<body>
<h1>A Random Number</h1>

<h3>
<java>
Random myrandom = new Random();
out.println(myrandom.nextInt());
</java>
</h3>
</body>
</html>
```

Figure 165. Import Java Classes

As you see in the example we imported the Random class from the java.util package. We then created a random type object. Finally, we printed out the outcome of the method nextInt.

4.5.2 Extending the Page Class

Sometimes it is useful to extend the page class HttpServlet to create functions to be used in many Web pages. This helps you to avoid repeating and copying code.

First, we need to extend the class HttpServlet. Look at the code for the new class in the following example:

```
package COM.mysite;

import java.util.*;
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;


public abstract class RandomHttpServlet extends HttpServlet {
  public void faceTails(HttpServletResponse response)
             throws IOException {
             ServletOutputStream out = response.getOutputStream();
              Random random = new Random();
             if(random.nextInt()>=0)
               out.println ("<h2>Face!</h2>");
             else
               out.println ("<h2>Tails!</h2>");

  }

}
```

Figure 166. Extend the Class HttpServlet

Pay attention to the following:

- Since the code in this class is pure Java, we do not use pageCompile to compile it. Instead, we use the normal way of calling javac from the command line: javac RandomHttpServlet.java.
- The package COM.mysite is a generic address. You must be sure that your package is found by pageCompile. Review 4.1.1, "Classpath and Other Java Parameters for ServletExpress" on page 111 for more information.
- This class must import javax.servlet.http, so our pages are able to use all of the Java classes.
- The function throws the IOException since it prints to out.
- Since RandomHttpServlet is a subclass of HttpServlet all variables and methods in HttpServlet can be used in our pages.

Now let's use the new class in pageCompile. We do this by means of the <java type=extends> tag (see the following example).

```
<html>
<java type=extends>COM.mysite.RandomHttpServlet</java>
<head><title>Extended page</title></head>
<body>
<java>
faceTails(response);
</java>
</body>
</html>
```

Figure 167. Using a New Class in pageCompile

You need to take into account that HttpServlet must always be a superclass in the hierarchy of classes from which we extend our page.

4.5.3 Creating Methods in pageCompile

Using the <java type=class> tag we can create methods inside a page class. These methods are local and accessible only in the page they are created. If we take the example in the previous section and put the method faceTails in the same page that it was invoked from:

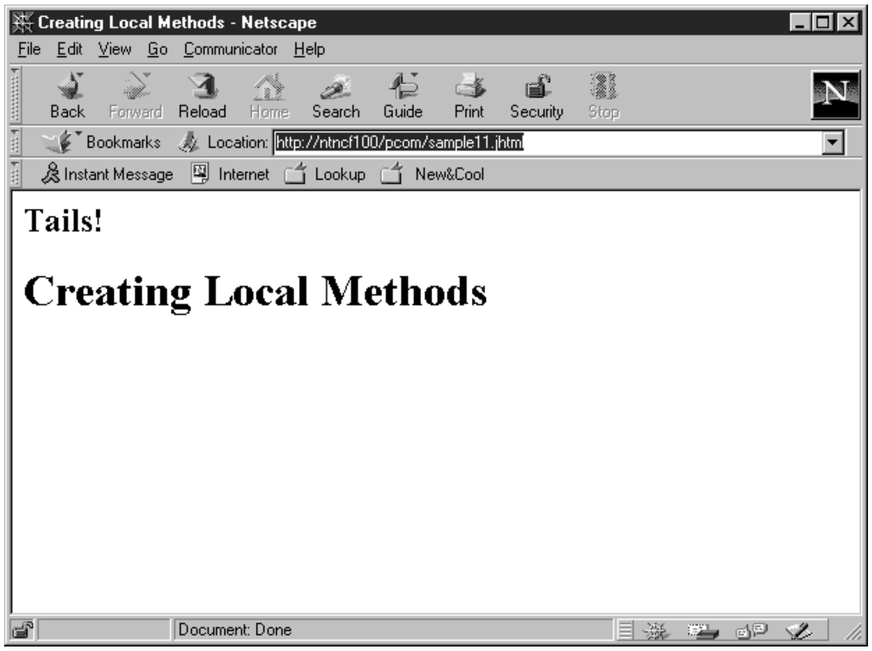
```
<html>
<java type=import>
  java.util.*
  java.io.*
</java>
<java type=class>
  public void faceTails(HttpServletResponse response)
         throws IOException {
         ServletOutputStream out = response.getOutputStream();
         Random myrandom = new Random();
         if(myrandom.nextInt()>=0)
           out.println ("<h2>Face!</h2>");
         else
           out.println ("<h2>Tails!</h2>");
  }
</java>
<head>
<title>Creating Local Methods</title>
</head>
<body>
<h1>Creating Local Methods</h1>

<java>
faceTails(response);
</java>

</body>
```

Figure 168. Method faceTails Added

See the result in the browser in Figure 169 on page 129.

4.5.4 Additional Tip When Using Classes

If you call the page in the previous example, you will see that the output from the method is displayed first and then the rest of the HTML code, no matter which order we established in our code (see Figure 169).


Creating Local Methods - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample11.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Tails!

Creating Local Methods

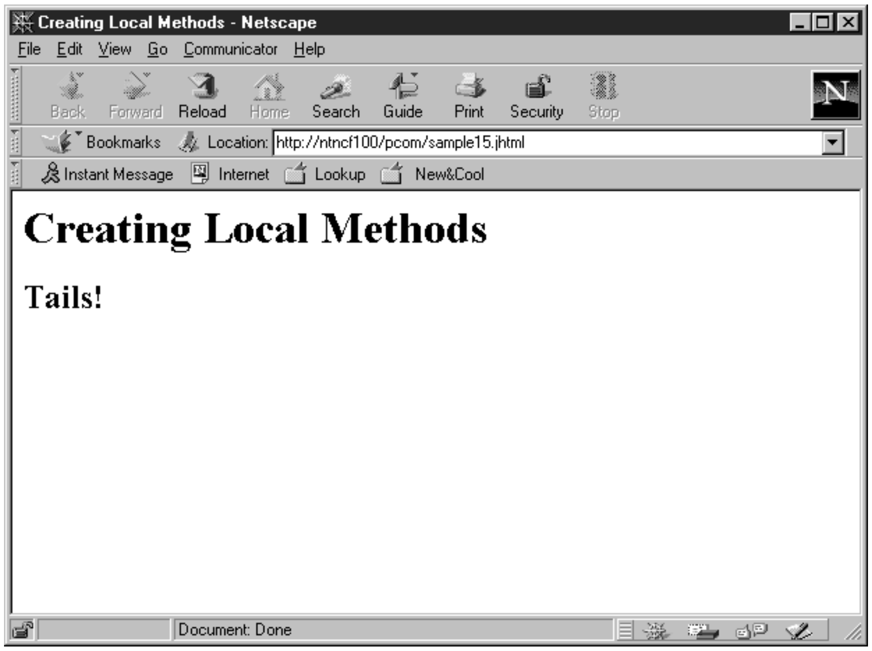
Figure 169. Output from faceTails Method

If you want to have control over what is sent to the browser and to make sure that everything shows up in the right place, you should avoid using out.println inside methods. Instead, make sure that the methods return a variable and generate the HTML code directly from the page. In the following example, see the changes we made.

```
<html>
<java type=import>
  java.util.*
  java.io.*
</java>
<java type=class>
  public String faceTails(HttpServletResponse response)
         throws IOException {
         ServletOutputStream out = response.getOutputStream();
         Random myrandom = new Random();
         if(myrandom.nextInt()>=0)
           return "<h2>Face!</h2>";
         else
           return "<h2>Tails!</h2>";
  }
</java>
<head>
<title>Creating Local Methods</title>
</head>
<body>
<h1>Creating Local Methods</h1>

<java>
out.println(faceTails(response));
</java>

</body>
</html>
```

Figure 170. Controlling Your Output

See the result in Figure 171.


Creating Local Methods - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample15.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Creating Local Methods

Tails!

Figure 171. Output from a Variable

This is applicable to tags <java type=extends> and <java type=class>.

4.6 Using Servlet Tags

Servlet tags are supported by pageCompile, on the condition that they are placed exclusively in HTML blocks of code and never generated from out.print expressions.

You might wonder why this is so. Remember that the output from pageCompile is HTML code that is sent directly to the browser. Therefore, all server-side processing has to be done before generating this HTML code.

For this reason servlet tags are compiled in pure Java code that has a reference to the servlet. It then builds a dictionary of parameters to pass to the servlet and invokes the service method for the specified servlet before sending anything to the browser.

Therefore, it is not possible to dynamically generate servlet tags or parameters. However, it is possible to dynamically generate names and values of parameter tags.

The following example shows the right way to use servlet tags and how to assign names and values to the parameters. Note the use of the back quotes to insert the contents of the Java variables in the HTML code:

```
<html>
<body>

<java>
  String myName = "file";
  String myValue = "file1.html";
</java>

<servlet code="myServlet">
  <param name="`myName`" value="`myValue`">
</servlet>

</body>
</html>
```

Figure 172. Assigning Names and Values to Parameters

You may wonder how you can dynamically manage the execution of different alternative servlets if it is not possible to dynamically generate the servlet tag. The answer is to use Boolean variables that are understood by the servlet. You can not avoid the servlet being called by the servlet tag, but you can set the variable to false and pass it to the servlet as a parameter.

4.7 Accessing the Request and Response Objects

From pageCompile servlets it is possible to access the request and response objects of the HttpServlet class, from which all pageCompile servlets are subclasses.

The following example shows how to access the HttpServlet request object:

```
<java>
String message;
message = request.getParameter("parameter1");
out.println ("<p>" + message);
</java>
```

Figure 173. HttpServlet Request Object

The following example shows how to access the HttpServlet response object:

```
<java>
if (request.getParameter("parameter1") == "Hello")
  response.sendRedirect("HelloWorld.jhtml");
</java>
```

Figure 174. Accessing the HttpServlet Response Object

4.8 Debugging

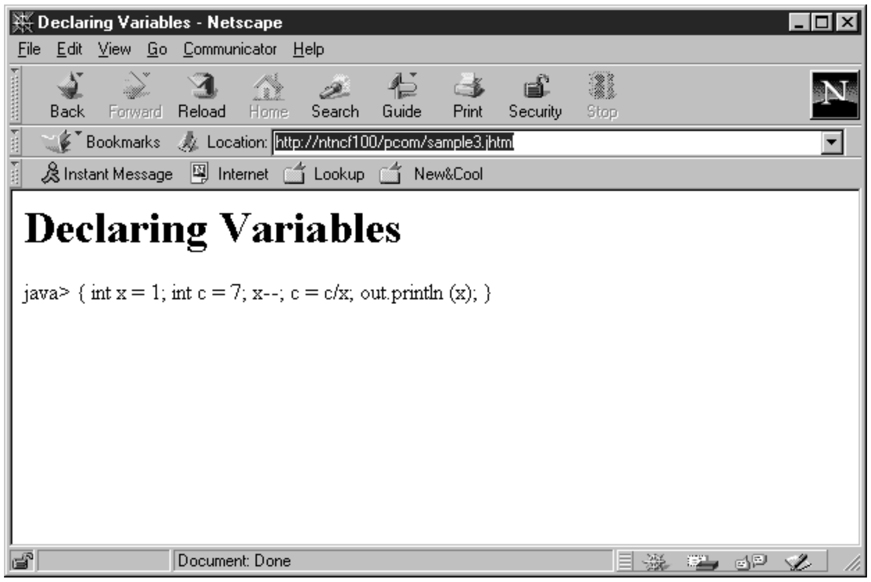
When debugging a servlet created with pageCompile we have to take into account the fact that the source code is a hybrid of HTML/Java and its resulting HTML.

On the other hand you may find other types of errors:

- You might have syntax errors in the source code which could compile to generated code. Some of the errors in the Java code will get detected at compile time. Errors that are related to the <java> tags may result in the Java code itself, being displayed in the browser. See the following example, in which the first tag for Java is written java>. Then, look at the result in Figure 176 on page 133:

```
<html>
<head>
<title>Declaring Variables</title>
</head>
<body>
<h1>Declaring Variables</h1>

java>
{
  int x = 1;
  int c = 7;
  x--;
  c = c/x;
  out.println (x);
}
</java>
</body>
</html>
```

Figure 175. Bad Java Tag

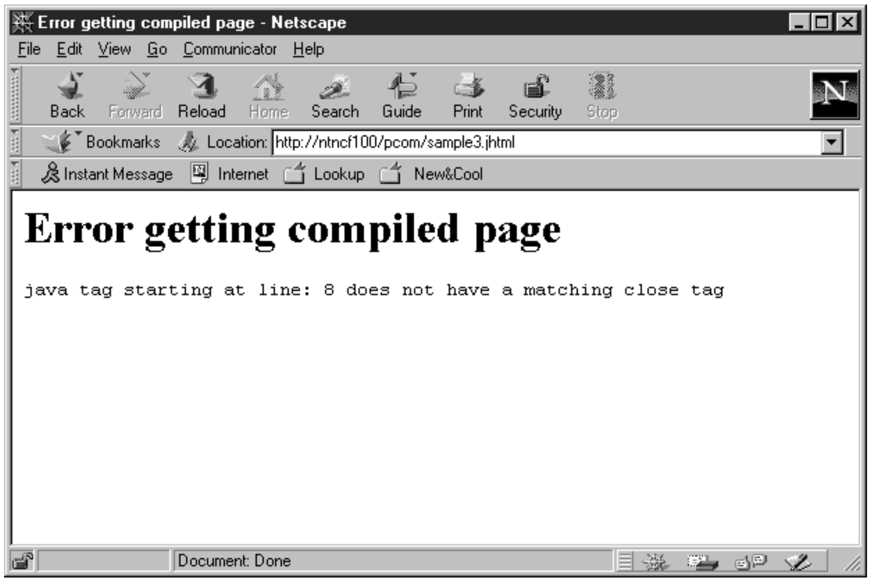

Declaring Variables - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample3.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Declaring Variables

java> { int x = 1; int c = 7; x--; c = c/x; out.println (x); }

Figure 176. Error in <java> Tag

Other errors with Java tags are detected and displayed. For example, misspelling the end Java tag may result in the error shown in Figure 177 on page 134.

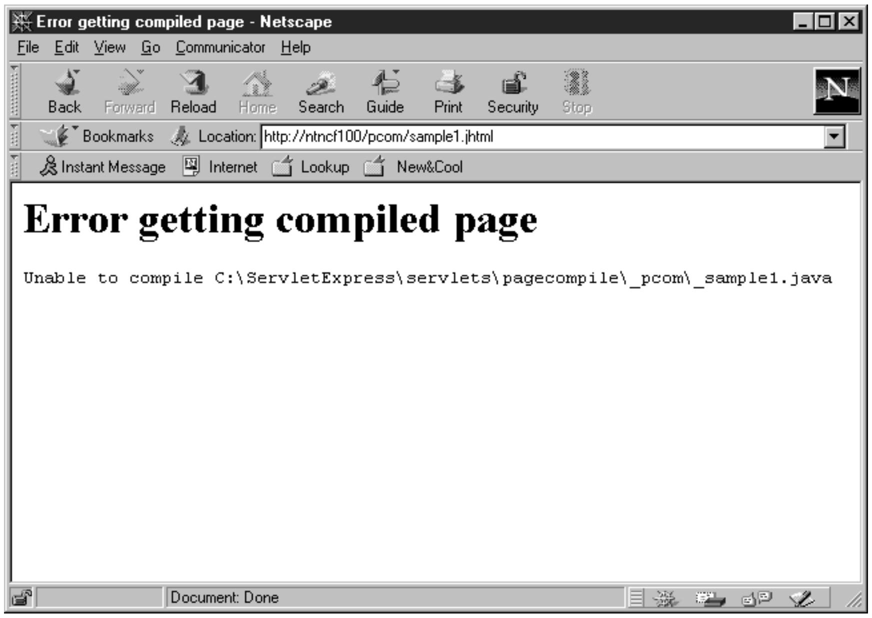

Error getting compiled page - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample3.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Error getting compiled page

```
java tag starting at line: 8 does not have a matching close tag
```

Figure 177. Error in the End Java Tag

When syntax errors are related to the pure Java code, pageCompile sends a message to the browser that is similar to the one shown in Figure 178. Unfortunately, it does not tell you very much about the nature of the error other than it is a compilation type error.


Error getting compiled page - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://ntncf100/pcom/sample1.jhtml
Instant Message Internet Lookup New&Cool
Document: Done

Error getting compiled page

```
Unable to compile C:\ServletExpress\servlets\pagecompile\_pcom\_sample1.java
```

Figure 178. Java Compilation Error

- When the code does not do what it is supposed to do it is typically caused by a logic error. These types of errors are related to the Java coding and are not detected by the compiler, thus require specific tools such as VisualAge for Java to monitor the execution of the code.
- You have to correct all of your syntax errors, otherwise you won't be able to execute your application. Sometimes, logic errors are not thoroughly debugged or maybe you get some unexpected data in your results. These type of results are called run-time errors, that is to say, errors that come up when the end user

is working with the application. When run-time errors appear you may need to recreate the errors in your development or testing environment in order to be able to fix them.

4.8.1 Debugging the Java Code

If the page is very complex, you may need a specific tool to debug both the syntax and the logical errors. If the page is a simple one, you can try to debug the syntax errors using the Java command line compiler javac. Logical errors can be detected by looking at the results in the browser or inspecting the generated HTML code as shown in 4.8.2, “HTML Errors” on page 136.

To debug an HTML/Java page with the javac compiler, you need to focus on the Java file generated by pageCompile. To see an example of this, please look at Figure 178 on page 134 and notice the details of the file we tried to compile. We tried to compile a page called sample1.jhtml, which is in the directory C:\www\html\pcom. pageCompile generated a Java file with the name _sample1.java and placed it in the directory C:\ServletExpress\servlets\pagecompile_pcom.

The source hybrid code is the following.

```
<html>
<head>
<title>Declaring Variables</title>
</head>
<body>
<h1>Declaring Variables</h1>

<java>
{
  int x = 1
  int c = 7;
  c = c/x;
  out.println (x);
}
</java>

</body>
</html>
```

Figure 179. Debugging

Note: We did not put a semicolon at the end of the expression `int x = 1`.

To debug the generated Java file, do the following from a command line:

1. Make the directory C:\ServletExpress\servlets\pagecompile_pcom the current directory.
2. Type `javac _sample1.java` and press Enter.
3. You should get the following result:

```
C:\ServletExpress\servlets\pagecompile\_pcom>javac _sample1.java
_sample1.java:34: ';' expected.
  int x = 1
           ^
1 error
```

Figure 180. Error Detected

This indicates the need for a semicolon at the end of the line 34 in the generated file.

4. As the source file is short enough, you can easily locate the line lacking the semicolon. Should the file be more complex or the errors more complicated, you may need to inspect the lines in the generated file to see the expressions in error. Blank lines are also numbered.
5. Correct the error in the source HTML/Java file and reload the page in the browser so pageCompile can generate and compile a new file.

4.8.2 HTML Errors

Due to the static nature of HTML, all HTML errors are syntax errors, but they may come from the original source HTML/Java file or from the HTML generated by the Java blocks. In either case we can look at the behavior of the page in the browser and inspect the source code.

To inspect the source code in Netscape Navigator click on **View** in the action bar and then select **Page Source**.

To see the source code in Microsoft Internet Explorer click on **View** in the action bar and then select **Source**.

4.8.3 Additional Tips

When debugging HTML/Java applications, there is a need for the browser to reload the latest version or the page from the server instead of displaying the one in the cache. Use the reload icons in Netscape Navigator and Microsoft Internet Explorer to get the page from the server.

Complex applications may reuse existing classes. When a class is modified all the classes and servlets using the modified class need to be recompiled. To recompile an HTML/Java page:

1. Edit the page source with your text editor and save it. Take into account that some editors require that the file be modified before saving it. If this is your situation, make some simple changes such as adding and then deleting some blanks and save the file. Do not forget that the goal is to get the file date changed.
2. Open the page in your browser. When pageCompile detects that the date of the source file is more recent than the date of the servlet, it generates all the Java code again and compiles it.

These two cases may not be the only ones that require recompilation if you had been working with the modified Java class you imported or extended in your jhtml page. pageCompile has very powerful features to avoid errors. For example:

- If pageCompile detects that the class does not exist in the package, but the Java source code exists, it automatically compiles the source code and gets the corresponding class before compiling your jhtml page.
- pageCompile keeps in its cache the Java classes it has recently been using and looks in the cache before looking on the disk, thus discarding the most recent changes in your classes.

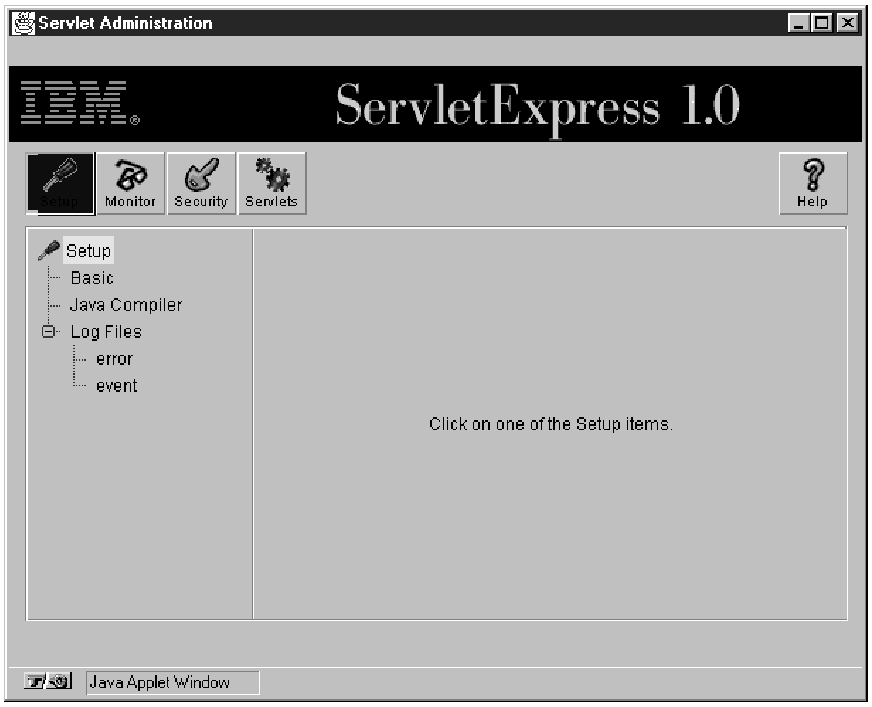
  Note: This is probably a bug. When compiling, it should verify that the class version it uses is the latest. In fact it checks thoroughly the status of the class files, but discards the most important: its date. Thus forcing to stop and start the Web server. This will probably be fixed in the production version of the code.
- When recompiling a jhtml page, if the classes your are importing or extended are in the cache but there are no Java applications or classes with that name on the disk, pageCompile creates a directory with the name of the package and saves in it the class file it has in the cache. The new directory is created under the ServletExpress\servlet directory.

All the above are some very helpful features to improve performance and sometimes allow you to recover some classes deleted from the system. But when you are debugging or changing applications they are not so helpful. If you need to be sure that pageCompile takes the right classes, do the following:

1. Be sure that the modified classes are in the right directory and properly compiled.
2. Be sure that there are no unwanted copies of your classes anywhere in your system.
3. Clear the classes in the pageCompile cache. To do this the only alternative available is to stop and start the Web server.

When pageCompile cannot generate the Java file due to errors in the jhtml code, the jhtml file gets locked preventing you from correcting the errors. To unlock them you need to unload and reload pageCompile. The following steps show how do this:

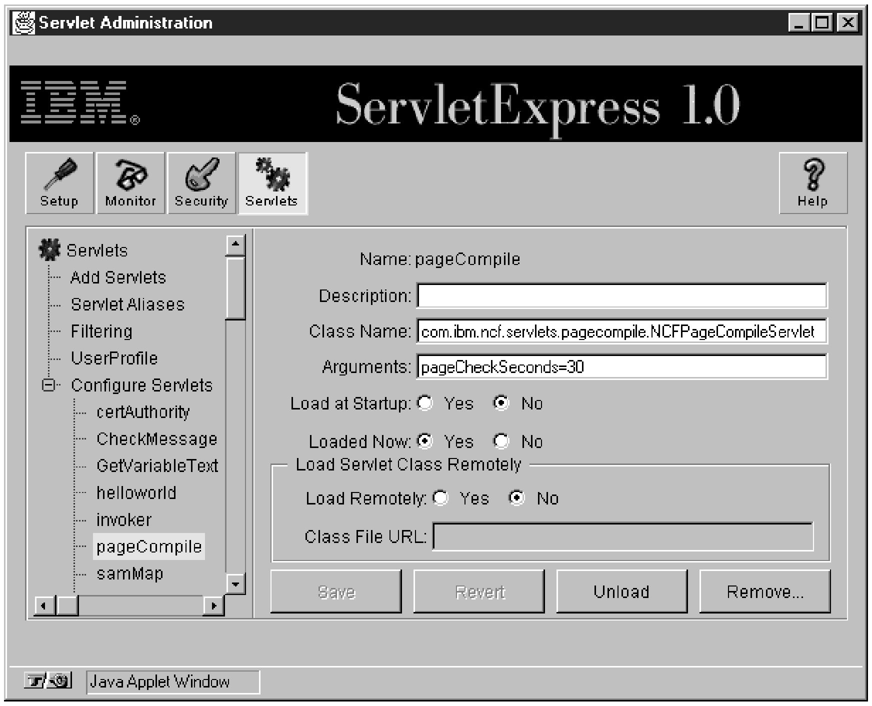
1. Connect to the ServletExpress Administration Tool and open the ServletAdministration window (see 4.1, "Installation and Configuration" on page 107 steps 1 to 3).
2. Click on the **Servlets** icon.



Click on one of the Setup items.

Figure 181. Servlet Administration Window

3. Click on **pageCompile**.

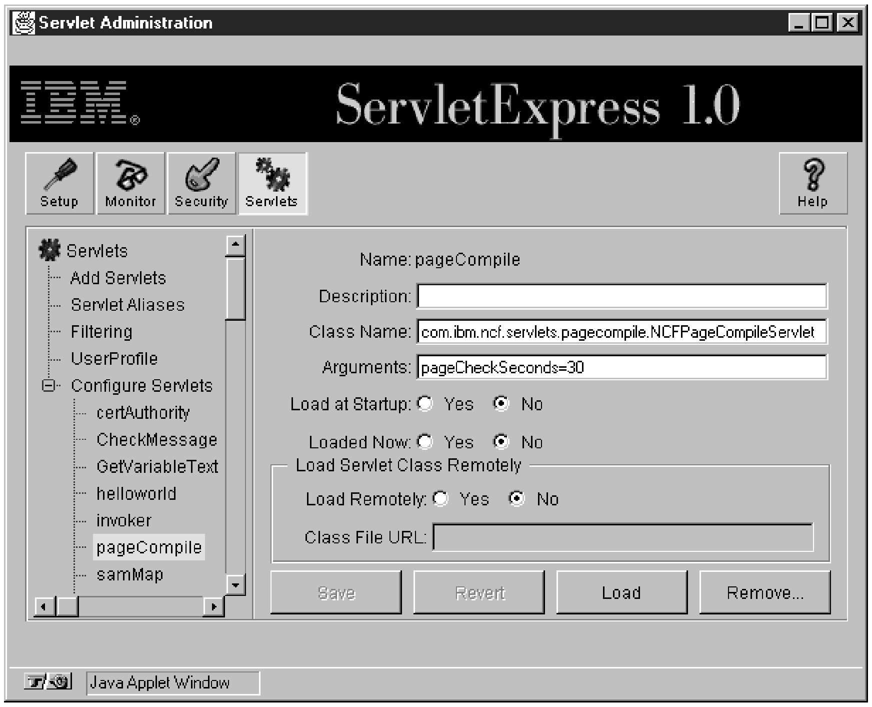


Name: pageCompile
Description:
Class Name: com.ibm.ncf.servlets.pagecompile.NCFPageCompileServlet
Arguments: pageCheckSeconds=30
Load at Startup: Yes [✓ No]
Loaded Now: [✓ Yes] No
Load Servlet Class Remotely
Load Remotely: Yes [✓ No]
Class File URL:

Figure 182. pageCompile Parameters

4. Click on **Unload**.

5. Click on **Load**.



Name: pageCompile
Description:
Class Name: com.ibm.ncf.servlets.pagecompile.NCFPageCompileServlet
Arguments: pageCheckSeconds=30
Load at Startup: Yes [✓ No]
Loaded Now: Yes [✓ No]
Load Servlet Class Remotely
Load Remotely: Yes [✓ No]
Class File URL:

Figure 183. Loading pageCompile

You can also unlock your .jhtml file by stopping and starting the Web server. But unless you need to perform this operation for other reasons it is enough to unload and load pageCompile.

4.9 Additional Tips for Complex Pages

Anything that can be understood by a Web browser can be managed or generated by pageCompile. Occasionally, you may find that some expressions in HTML blocks, syntactically correct for HTML, are not well converted from jhtml to Java and thus they lead to syntax errors when compiling the page. To avoid these errors you may bundle the conflicting code in out.println Java expressions. For example, let us consider the following JavaScript code in our jhtml page:

```
<script language = JavaScript 1.1>

master = new Array();
dx = new Array();
dy = new Array();
var max_jump = 10;
var steps = 20;
var delay = 1;

function anyFunction() {
  for (var ctr = 0; ctr < master.length; ctr++) {
    dx[ctr] = Math.ceil(Math.random() * max_jump);
    if (Math.random() > .5) {
      dx[ctr] *= -1;
    }
    dy[ctr] = Math.ceil(Math.random() * max_jump);
    if (Math.random() > .5) {
      dy[ctr] *= -1;
    }
  }
}

</script>
```

Figure 184. Sample JavaScript Code

Should you find that pageCompile gets confused with this, you can convert it to the following code in your jhtml source:

```
<java>
String JSversion = " 1.1";
out.println ("<script language = JavaScript " + JSversion + ">");
out.println ("master = new Array();");
out.println ("dx = new Array();");
out.println ("dy = new Array();");
out.println ("var max_jump = 10;");
out.println ("var steps = 20;");
out.println ("var delay = 1;");
out.println ("  ");
out.println ("function anyFunction() {");
out.println ("  for (var ctr = 0; ctr < master.length; ctr++) {");
out.println ("    dx[ctr] = Math.ceil(Math.random() * max_jump);");
out.println ("    if (Math.random() > .5) {");
out.println ("      dx[ctr] *= -1;");
out.println ("    }");
out.println ("    dy[ctr] = Math.ceil(Math.random() * max_jump);");
out.println ("    if (Math.random() > .5) { ");
out.println ("      dy[ctr] *= -1;");
out.println ("    }");
out.println ("  }");
out.println ("}");
out.println ("</script>");
</java>
```

Figure 185. JavaScript Code Sent to Out

Remember that you can always see the code received by browsers and consequently inspect it and make the corrections it might need.

Chapter 5. Other Tools

From the many tools available to perform Web-related tasks we selected two of them covering different, but, complementary areas:

- Page editing - The tool selected is Page Composer from Netscape, a very easy but powerful tool.
- Site administration - Which is an essential and sometimes forgotten area, is represented in this chapter by Build-IT from Wallop.

We provide in this chapter a description of the main functions of both tools and how they can be used followed by some examples.

5.1 Netscape Page Composer

Netscape Page Composer is a tool that is used to build or edit static Web pages in a "what you see is what you get" (WYSIWYG) fashion. It supports a wide variety of elementary HTML controls that allow you to easily build simple static pages.

5.1.1 Installation and Configuration

Netscape Page Composer is a part of Netscape Communicator, so it is available when Netscape Communicator is installed without any additional steps.

To configure Netscape Page Composer, do the following:

1. From the **Edit** option from the action bar of any of the Netscape Communicator components, select **Preferences** as shown in the following window:

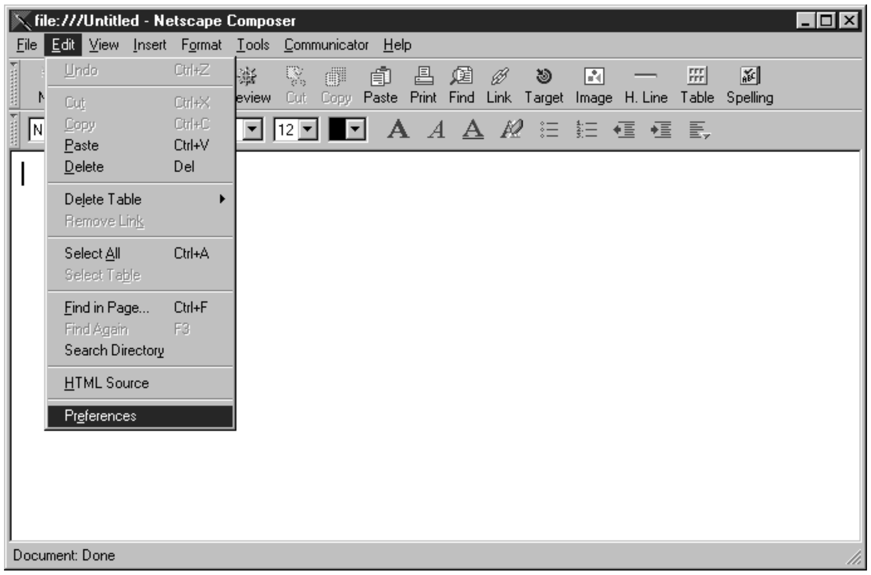
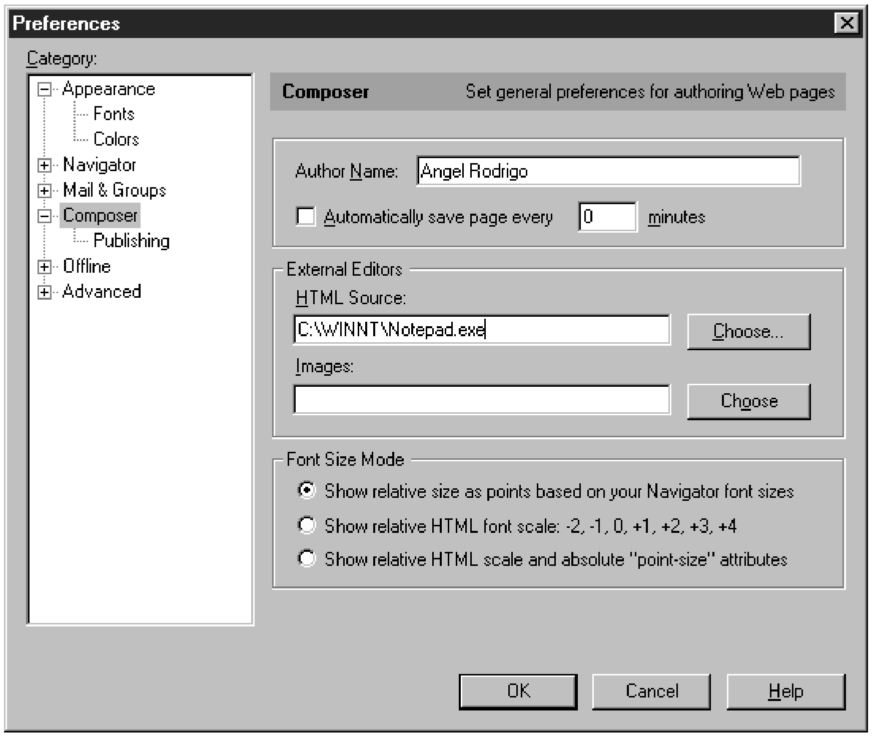


Figure 186. Accessing Configuration Windows in Netscape Page Composer

2. Set the General Preferences by filling in the following:
   a. The author's name.
   b. External editors for HTML and images.

c. Font Size Mode (This is only applicable to the Windows platform.)



Author Name: Angel Rodrigo

☐ Automatically save page every 0 minutes

External Editors

HTML Source: C:\WINNT\Notepad.exe

Images:

Font Size Mode

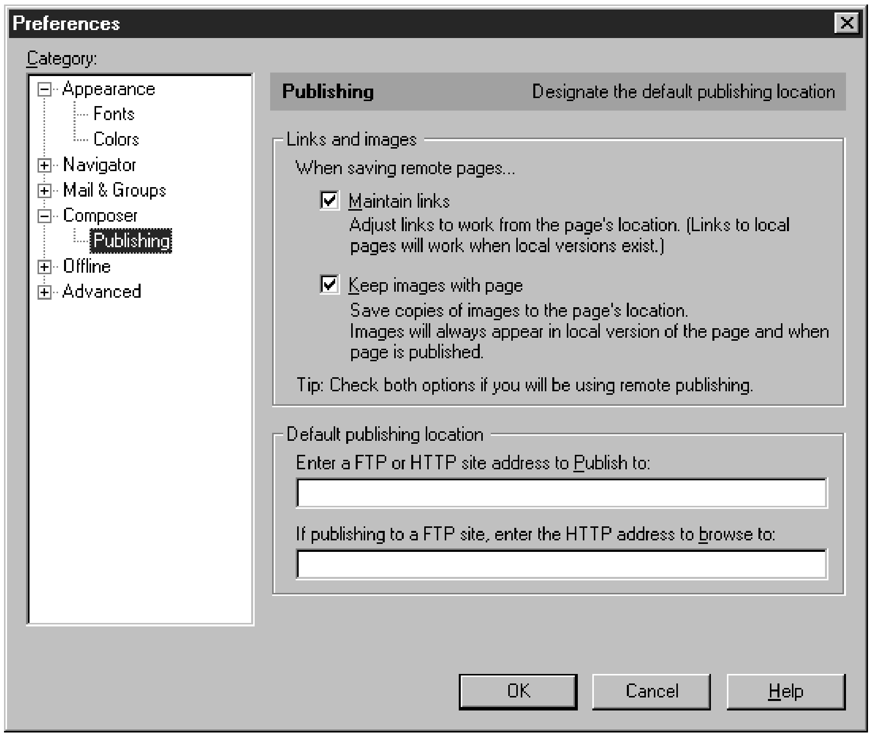
● Show relative size as points based on your Navigator font sizes

○ Show relative HTML font scale: -2, -1, 0, +1, +2, +3, +4

○ Show relative HTML scale and absolute "point-size" attributes

Figure 187. Setting the General Preferences

3. Set the Publishing options:
   a. Link and images.
   b. FTP or HTTP address of the default site where you publish your pages. Netscape Page Composer will upload your pages to this location.
   c. Default HTTP address where your pages are published.


Preferences

Category:

- Appearance
  - Fonts
  - Colors
- Navigator
- Mail & Groups
- Composer
  - Publishing
- Offline
- Advanced

Publishing — Designate the default publishing location

Links and images

When saving remote pages...

☑ Maintain links

Adjust links to work from the page's location. (Links to local pages will work when local versions exist.)

☑ Keep images with page

Save copies of images to the page's location.
Images will always appear in local version of the page and when page is published.

Tip: Check both options if you will be using remote publishing.

Default publishing location

Enter a FTP or HTTP site address to Publish to:

If publishing to a FTP site, enter the HTTP address to browse to:

Figure 188. Setting the Publishing Options

5.1.2 Starting Netscape Page Composer

There are several ways to start the Netscape Page Composer.

1. From the Navigator or any other component in Netscape Communicator:
   - Select the icon for Page Composer from the right bottom bar.
   - From the action bar choose **Communicator** and then select **Page Composer**.

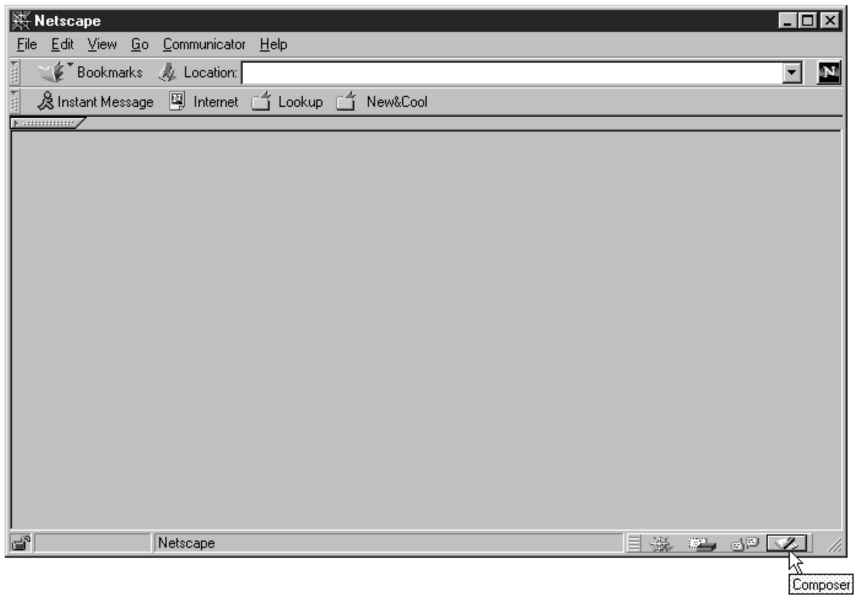


Figure 189. Selecting the Icon for Page Composer

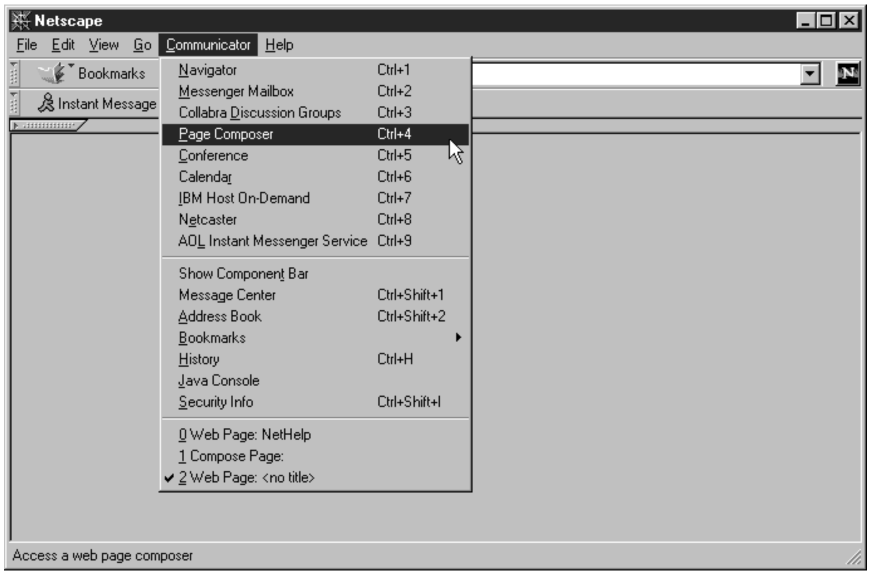


Figure 190. Starting the Page Composer from the Pull-Down Menu

- You can also start it from the action bar by choosing **File** and **New**. Then, a new menu appear providing you with three alternatives:
  a. To start with a blank page.
  b. To start from a template in a server or a file.
  c. To access the Wizard in the Netscape site, which provides a guide to create a page step-by-step.

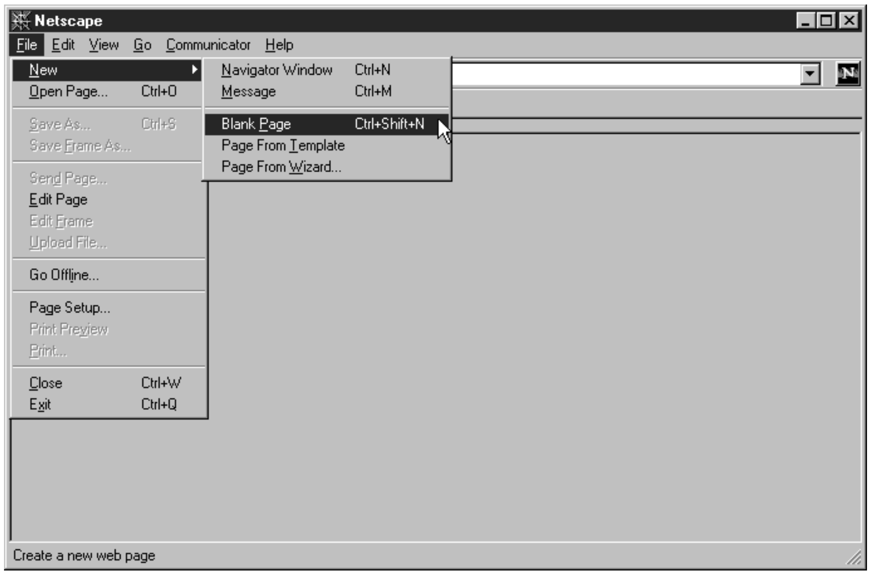


Figure 191. Starting the Page Composer by Creating a New Page

2. Editing a page from the Web or from a file:
   - Select from the action bar **File** and **Open Page** and when the Open Page window appears, mark **Composer**.

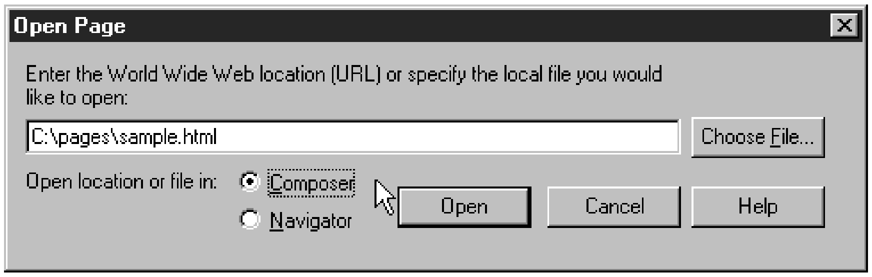

Open Page
Enter the World Wide Web location (URL) or specify the local file you would like to open:
C:\pages\sample.html
Choose File...
Open location or file in:
Composer
Navigator
Open
Cancel
Help

Figure 192. Opening a Page in the Page Composer

- Select in the Netscape Navigator action bar **File** and **Edit Page**. The current page is edited in the Page Composer.

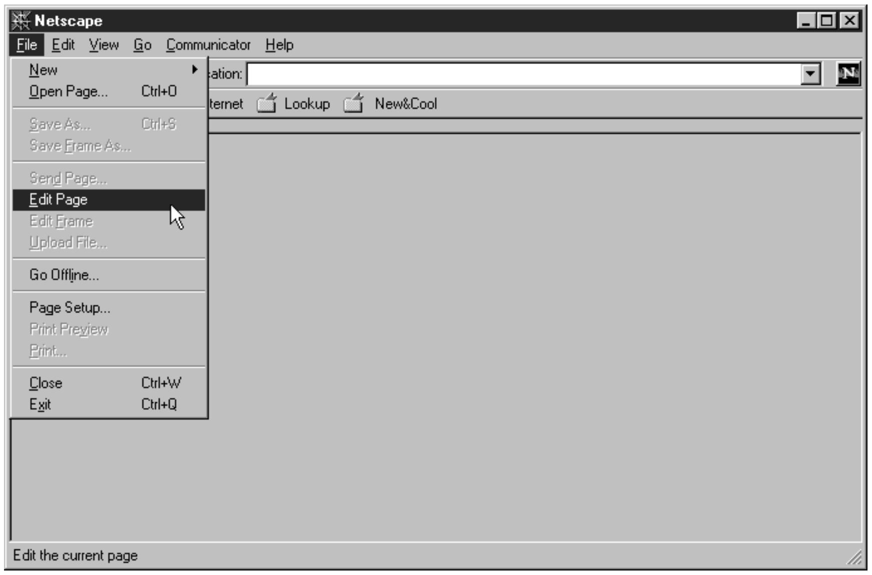


Figure 193. Opening a Page in the Page Composer

5.1.3 Editing Web Pages with the Netscape Page Composer

The help for the Page Composer in the Netscape site provides a full description of all the functions of the product. In this chapter we provide a summary of the most significant functions. To access Netscape help for Page Composer:

1. Start **Netscape Navigator**.
2. Click on **F1**.
3. In the left frame click on **About Composer**.
4. To see full help details for Page Composer, click on **Using Composer**.

5.1.3.1 Text

Netscape Page Composer provides a set of controls that are also available in most text editors: style, font, size, color, paragraph format, lists, alignment and indentation.

The controls can be accessed from the Format option in the action bar and also from the tools bar.

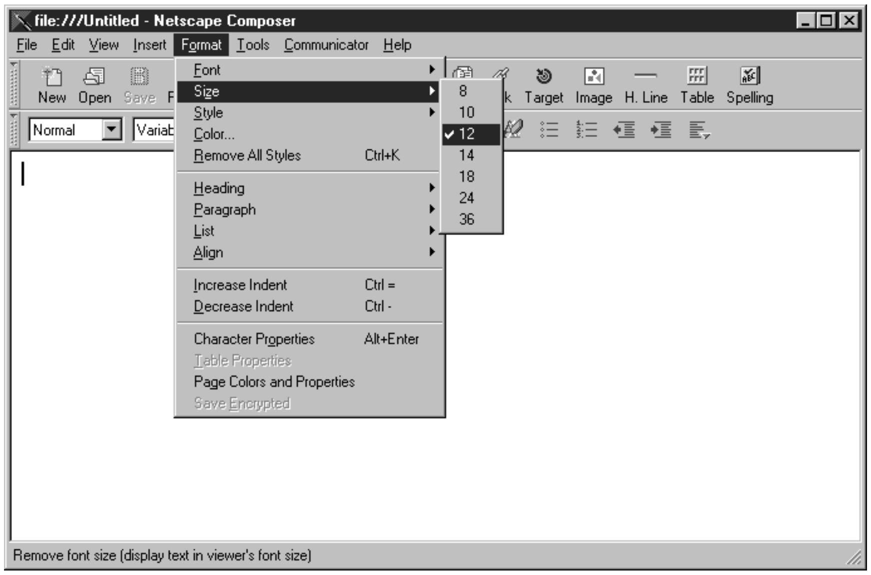

file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save
Target Image H. Line Table Spelling
Normal
Font
Size
Style
Color...
Remove All Styles Ctrl+K
Heading
Paragraph
List
Align
Increase Indent Ctrl =
Decrease Indent Ctrl -
Character Properties Alt+Enter
Table Properties
Page Colors and Properties
Save Encrypted
8
10
✓ 12
14
18
24
36
Remove font size (display text in viewer's font size)

Figure 194. Text Controls from the Action Bar

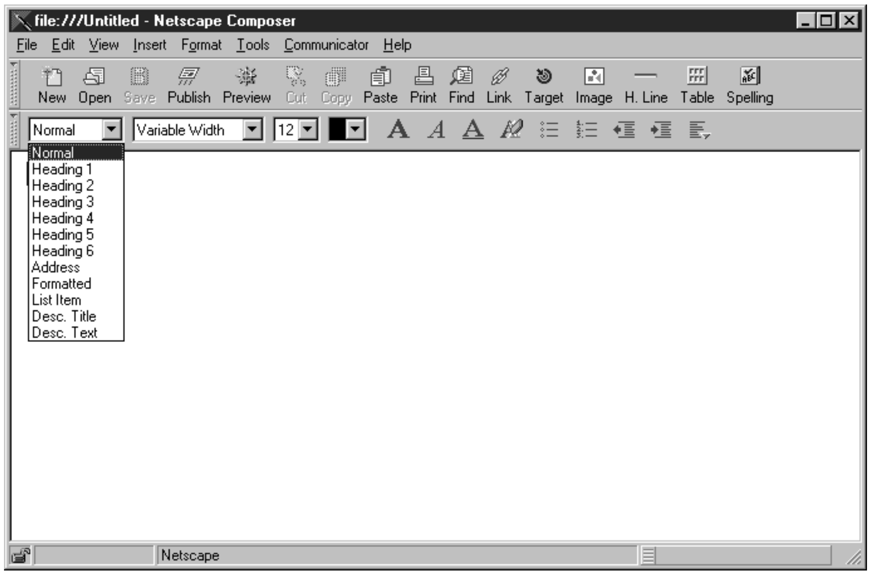
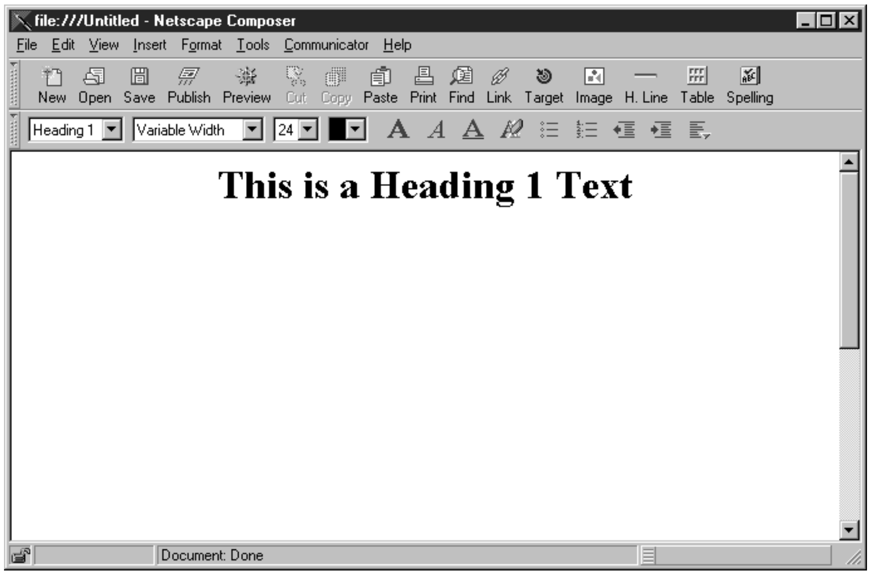

file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
Variable Width
12
Normal
Heading 1
Heading 2
Heading 3
Heading 4
Heading 5
Heading 6
Address
Formatted
List Item
Desc. Title
Desc. Text
Netscape

Figure 195. Text Controls in the Tools Bar

Text properties are assigned before you start typing, when a style has been selected. Normal is the default. To change the style of an existing text, highlight the desired portion of text and then select the property or style to apply.

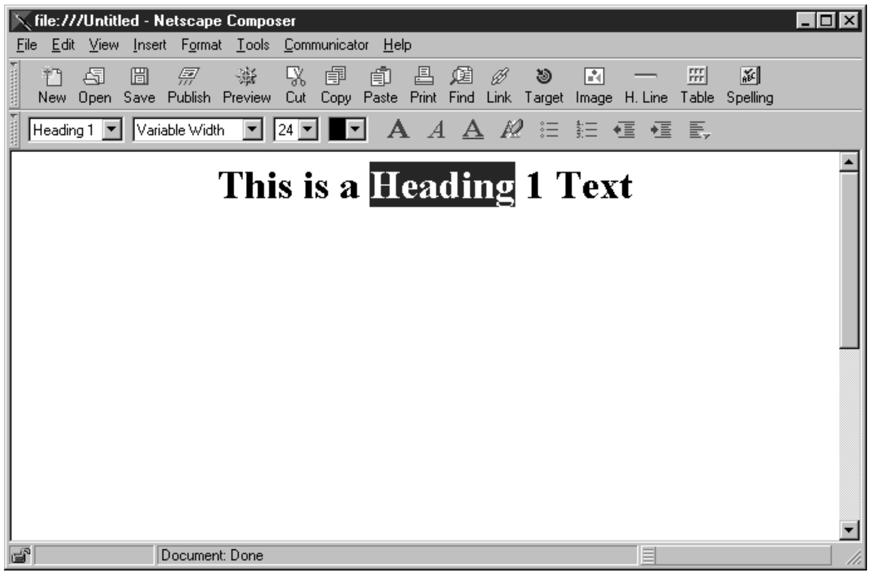
For example, to italicize a word in a header do the following:


file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Heading 1
Variable Width
24
Document: Done

This is a Heading 1 Text

Figure 196. Example of Text to Modify

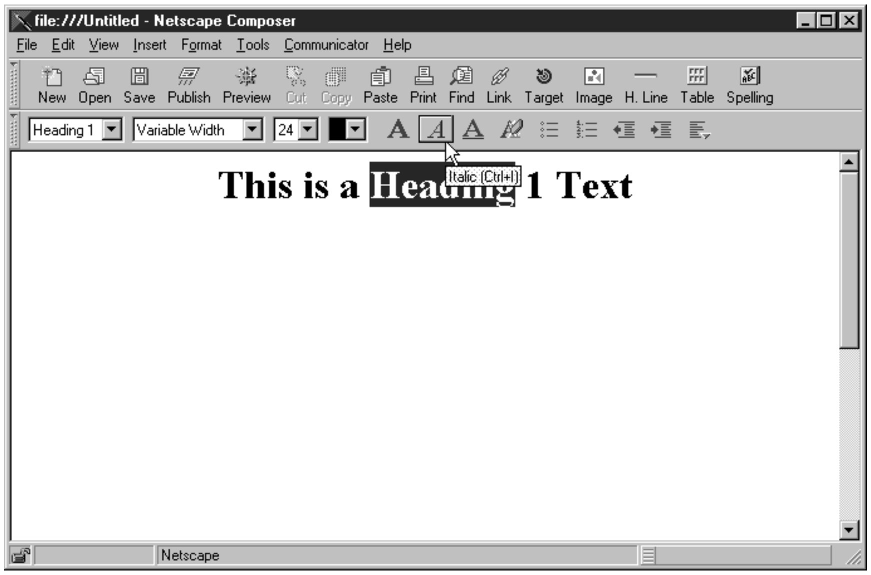
1. Highlight the desired word, Heading in this example.


file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Heading 1
Variable Width
24
Document: Done

This is a Heading 1 Text

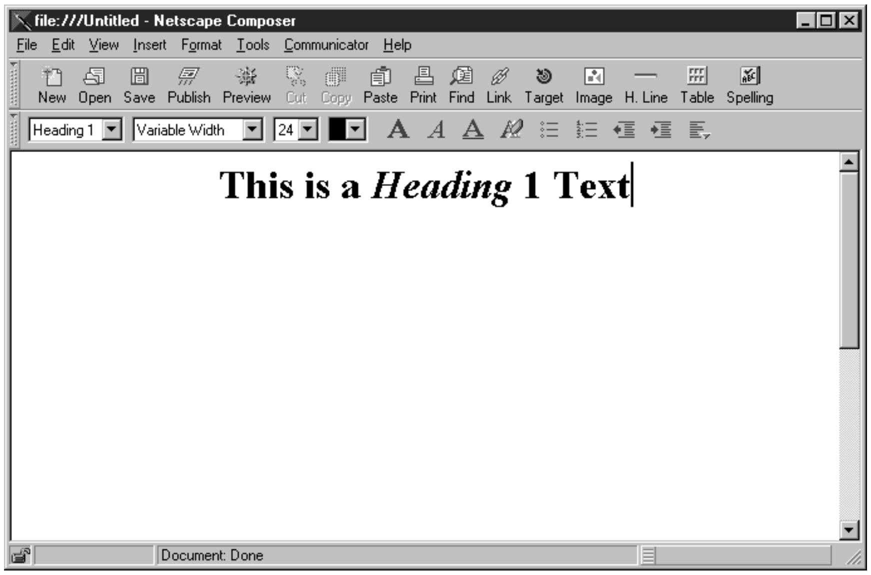
Figure 197. Highlighting the Desired Word

2. Click on the italic A in the tools bar.


file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Heading 1 Variable Width 24
Italic (Ctrl+I)
Netscape

This is a Heading 1 Text

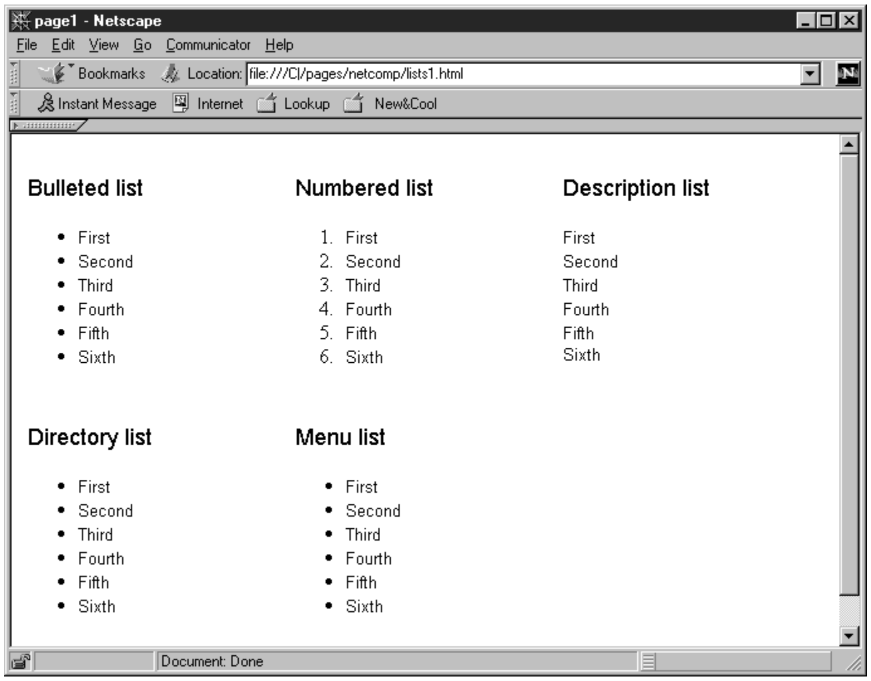
Figure 198. Assigning the New Style


file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Heading 1 Variable Width 24
Document: Done

This is a *Heading* 1 Text

Figure 199. Result of the Change

Here are some examples of different types of lists as they look in two different browsers.


page1 - Netscape
File Edit View Go Communicator Help
Bookmarks
Location: file:///C|/pages/netcomp/lists1.html
Instant Message
Internet
Lookup
New&Cool
Document: Done

Bulleted list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Numbered list

1. First
2. Second
3. Third
4. Fourth
5. Fifth
6. Sixth

Description list

First
Second
Third
Fourth
Fifth
Sixth

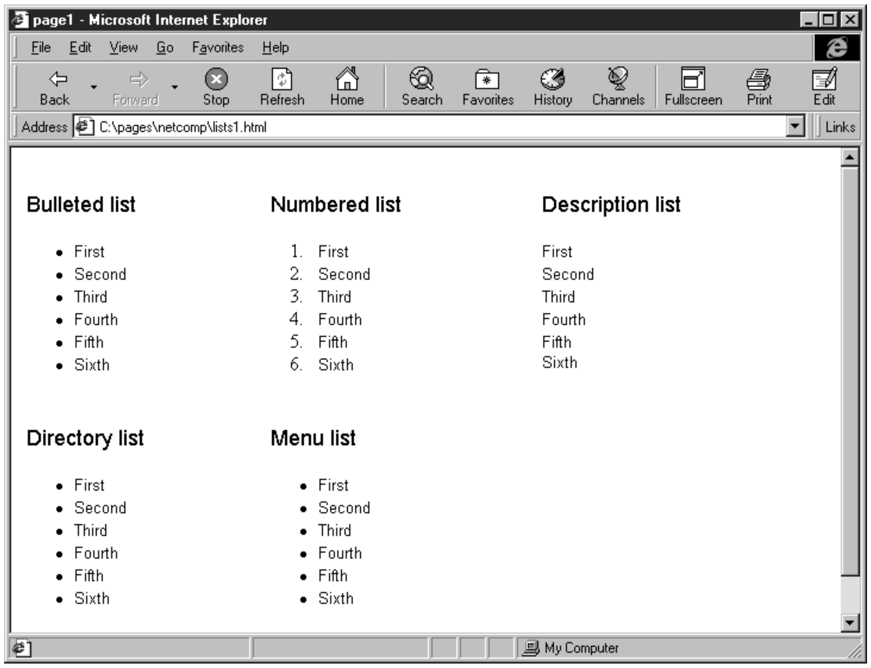
Directory list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Menu list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Figure 200. List Samples in Netscape Navigator V4.04


page1 - Microsoft Internet Explorer
File Edit View Go Favorites Help
Back
Forward
Stop
Refresh
Home
Search
Favorites
History
Channels
Fullscreen
Print
Edit
Address C:\pages\netcomp\lists1.html
Links
My Computer

Bulleted list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Numbered list

1. First
2. Second
3. Third
4. Fourth
5. Fifth
6. Sixth

Description list

First
Second
Third
Fourth
Fifth
Sixth

Directory list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Menu list

- First
- Second
- Third
- Fourth
- Fifth
- Sixth

Figure 201. Look of List Samples in Microsoft Internet Explorer V4.0

Netscape Page Composer provides a function to check your spelling. There are two ways to start it:

1. From the **Tools** menu from the action bar, click on **Check Spelling**.
2. Click on the **Spelling** icon in the tools bar.

5.1.3.2 General Rules for Inserting Other Objects

In Netscape Page Composer, objects other than text are placed in the page following similar to the way you insert text. As an example, we show how to insert an image. The types of objects we are referring to could be:

- Images
- Tables
- Links and targets
- Horizontal lines
- HTML tags

To insert an image, position the cursor in the desired place on the page and then to display the image properties window you can:

1. Select **Insert** from the action bar and **Image**.
2. Click on the **Image** icon in the tools bar.

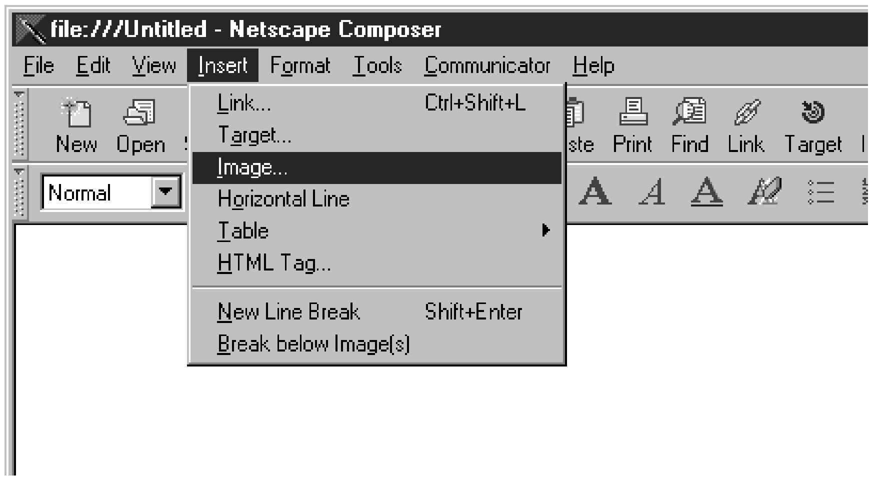


Figure 202. Inserting the Image from the Action Bar

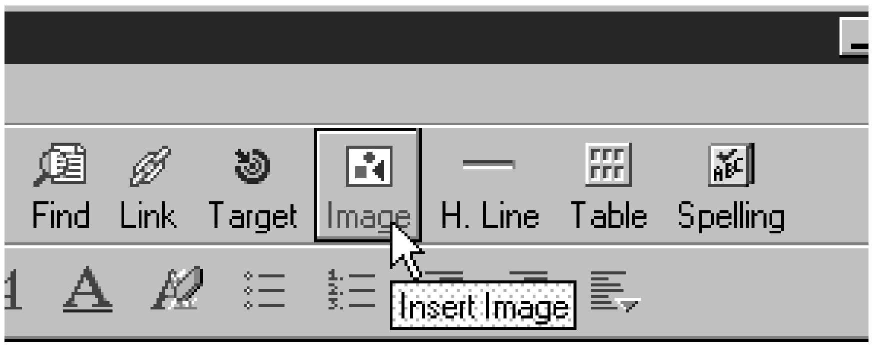


Figure 203. Inserting the Image from the Tools Bar

In either case the Image Properties window is displayed so that you can define the properties for that object.

There is an exception with horizontal lines. They are inserted according to the default parameters, but they can be modified later on.

To modify any object properties, simply click on the object with the mouse right button and a pop-up menu will appear allowing you to select the properties window for that particular object.

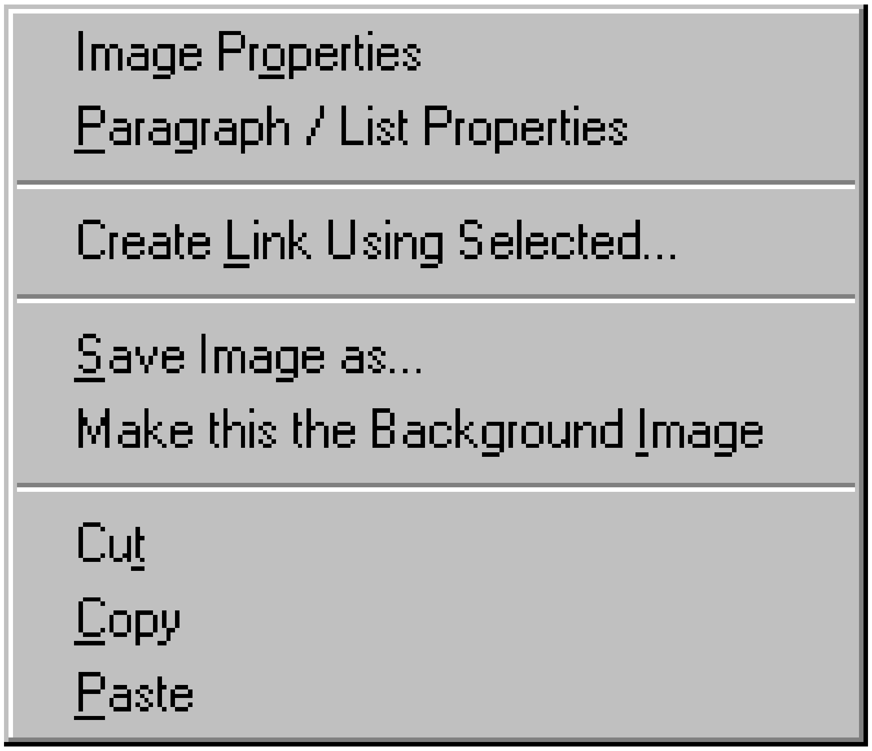


Image Properties
Paragraph / List Properties
Create Link Using Selected...
Save Image as...
Make this the Background Image
Cut
Copy
Paste

Figure 204. Image Pop-Up Menu

5.1.3.3 Drag and Drop

Netscape Page Composer allows you to drag-and-drop text hyperlinks and images from the bookmark, mail, news or browser windows to a document in the editor. This function is available in Windows and MAC OS only.

Note: With drag-and-drop images having links, the links are not moved, thus you need to open the Image Properties window and fix the link.

In Windows, it is possible to drag an HTML or image file from the File Manager or Explorer and drop it in a document in the editor. The HTML file appears as a link to that file.

5.1.3.4 Images

When inserting an image, Netscape Page composer displays the Image Properties window, where you can define:

1. Image location - Note that if the image is used as the page background further changes to it need to be made from the page pop-up menu.
2. Text alignment.

3. Dimensions and space around the image - The effect is different when selecting a number of pixels instead of a percentage of the window. Selecting a window percentage allows the image to fill the window regardless of its size.
4. Link, page or file to link when the image is clicked.
5. Properties of the paragraph where the image is located.

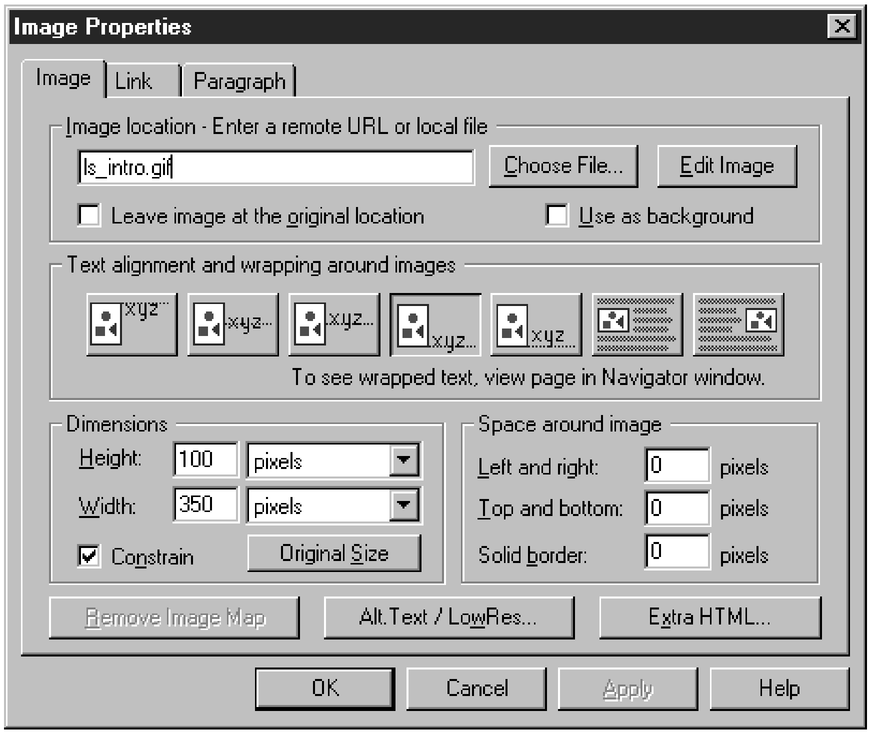


Image Properties

Image | Link | Paragraph

Image location - Enter a remote URL or local file: ls_intro.gif

Choose File... | Edit Image

☐ Leave image at the original location

☐ Use as background

Text alignment and wrapping around images

To see wrapped text, view page in Navigator window.

Dimensions

Height: 100 pixels

Width: 350 pixels

☑ Constrain

Original Size

Space around image

Left and right: 0 pixels

Top and bottom: 0 pixels

Solid border: 0 pixels

Remove Image Map | Alt.Text / LowRes... | Extra HTML...

OK | Cancel | Apply | Help

Figure 205. Image Properties

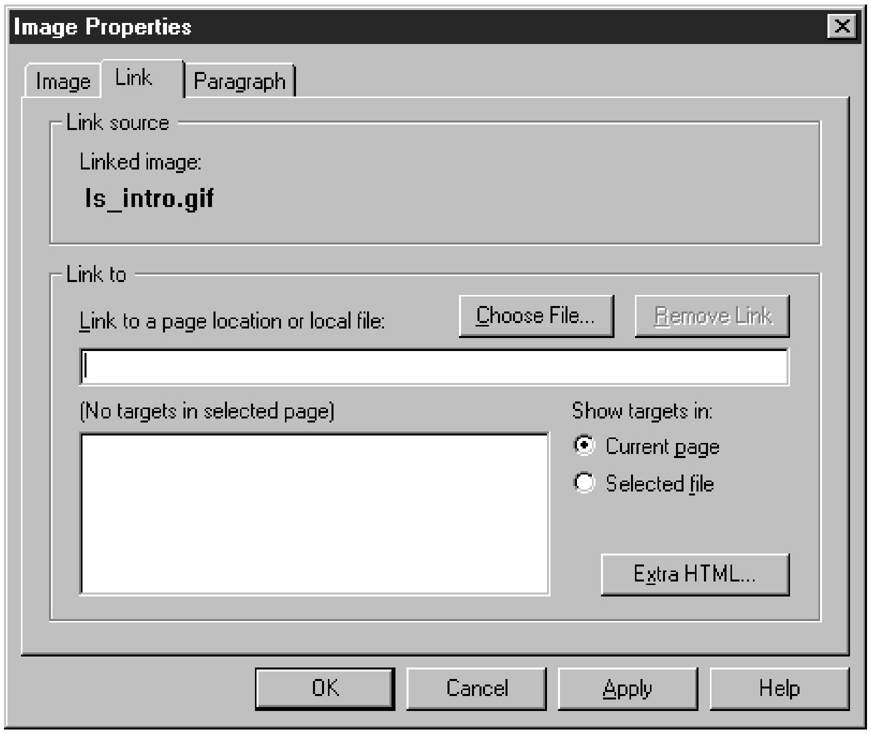


Figure 206. Link Section of the Image Properties Window

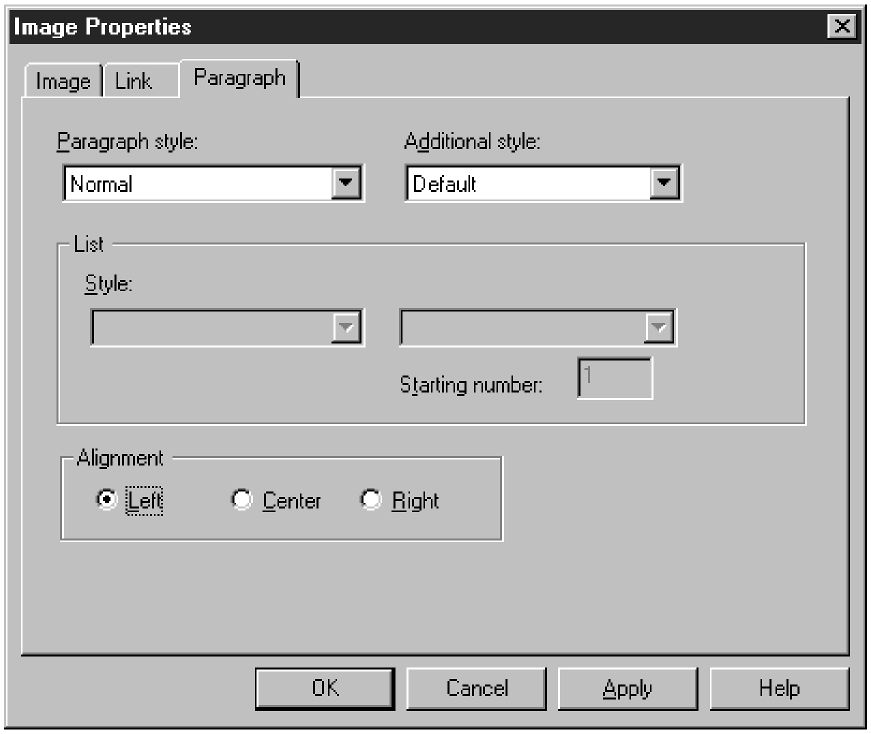


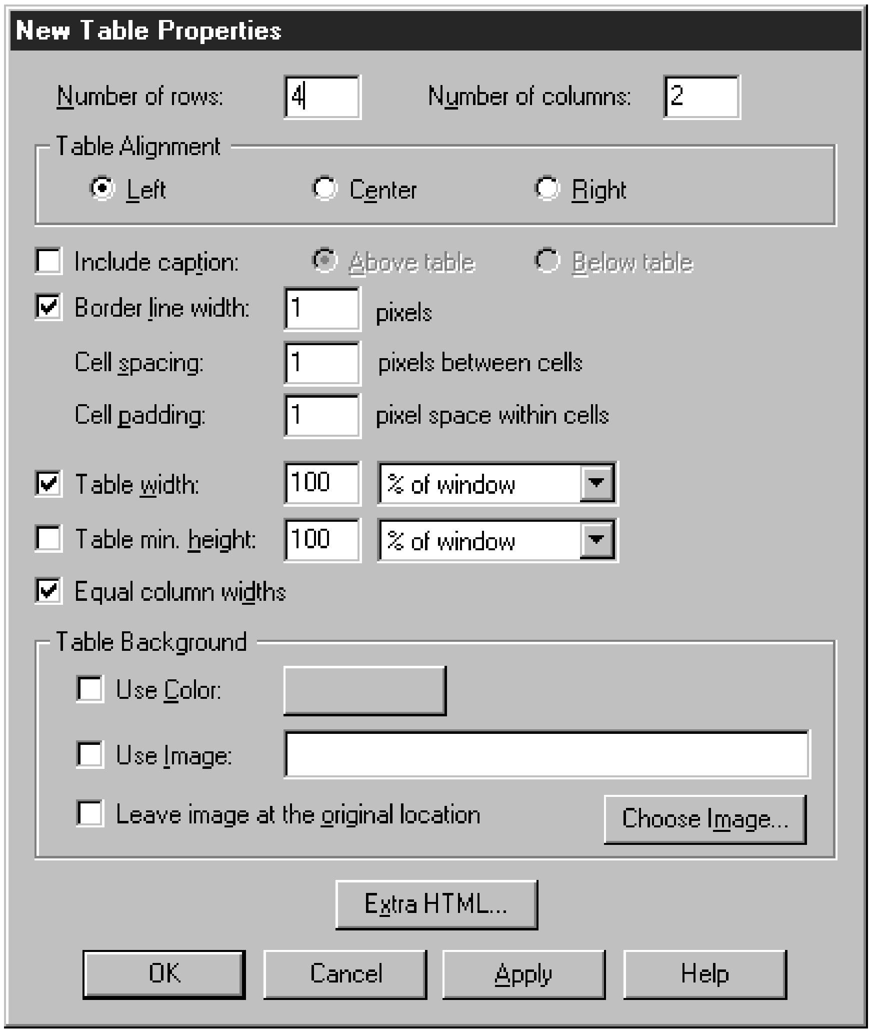
Figure 207. Paragraph Section of the Image Properties Window

To see the effects of image and text alignment you need to choose **Save** and **Preview**.

5.1.3.5 Tables

Tables are a very powerful tool not only to display data in a tabular form but to create the structure for the entire page.

When a table is inserted, the New Table Properties window is displayed so that you can fill in the table characteristics, as shown in Figure 208. The table dimensions can be defined in pixels, thus giving an absolute size to the table regardless of the browser resolution or size. They can also be relative to the window size, therefore, adjusting the table size to that of the browser window.


New Table Properties

Number of rows: 4 Number of columns: 2

Table Alignment: [✓ Left] Center Right

☐ Include caption: [✓ Above table] Below table

☑ Border line width: 1 pixels

Cell spacing: 1 pixels between cells

Cell padding: 1 pixel space within cells

☑ Table width: 100 % of window

☐ Table min. height: 100 % of window

☑ Equal column widths

Table Background

☐ Use Color:

☐ Use Image:

☐ Leave image at the original location

Figure 208. New Table Properties Window

After they have been inserted, tables can be modified. For example, to change the arrangement of the cells:

1. Click inside the table with the right mouse button and select **Table Properties** from the pop-up menu.
2. Select the cell and change Cell spans to 2 rows. Then click on **OK** (see Figure 209 on page 157).
3. Observe the result in Figure 210 on page 157. There is a remaining cell that needs to be deleted. To do that click on that cell with the right mouse button. After a pop-up menu appears, select **Delete** and the cell will be removed.

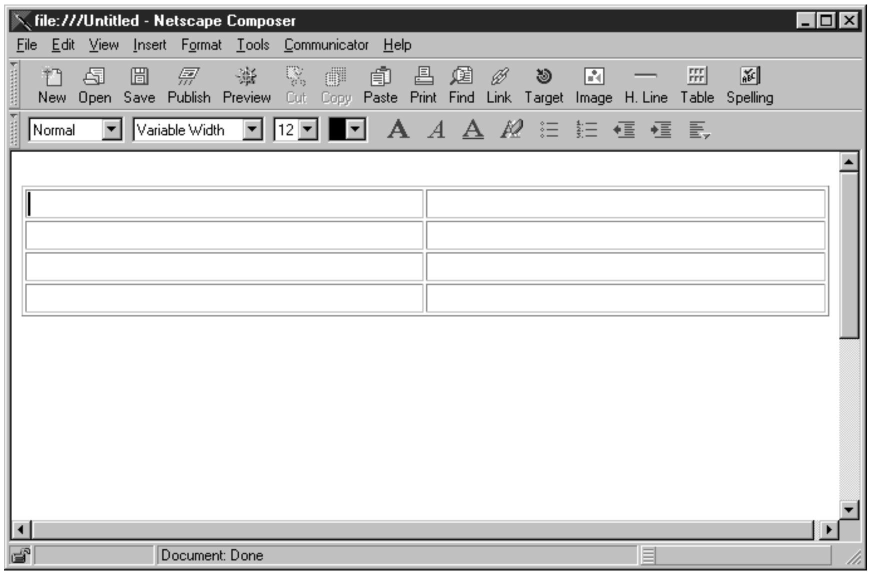

file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
Variable Width
12
Document: Done

Figure 209. Table to Be Modified

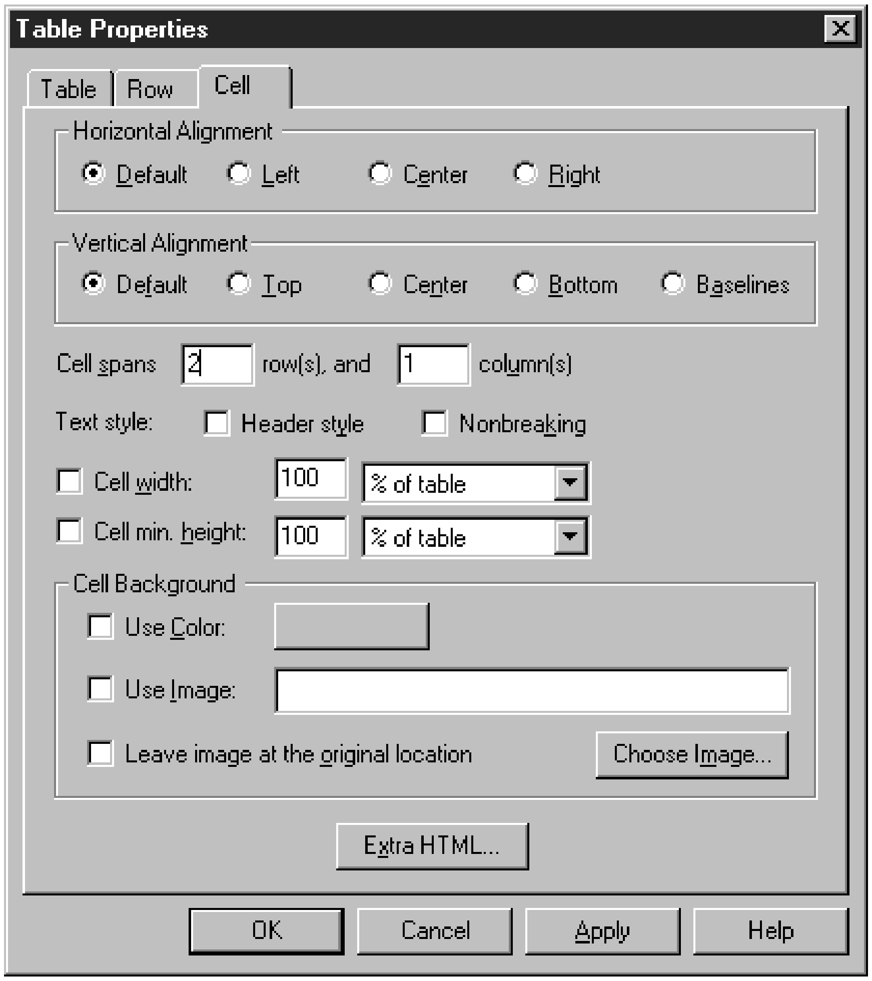


Table Properties

Table | Row | Cell

Horizontal Alignment

[✓ Default] Left Center Right

Vertical Alignment

[✓ Default] Top Center Bottom Baselines

Cell spans 2 row(s), and 1 column(s)

Text style: ☐ Header style ☐ Nonbreaking

☐ Cell width: 100 % of table

☐ Cell min. height: 100 % of table

Cell Background

☐ Use Color:

☐ Use Image:

☐ Leave image at the original location

Figure 210. Table Properties Window

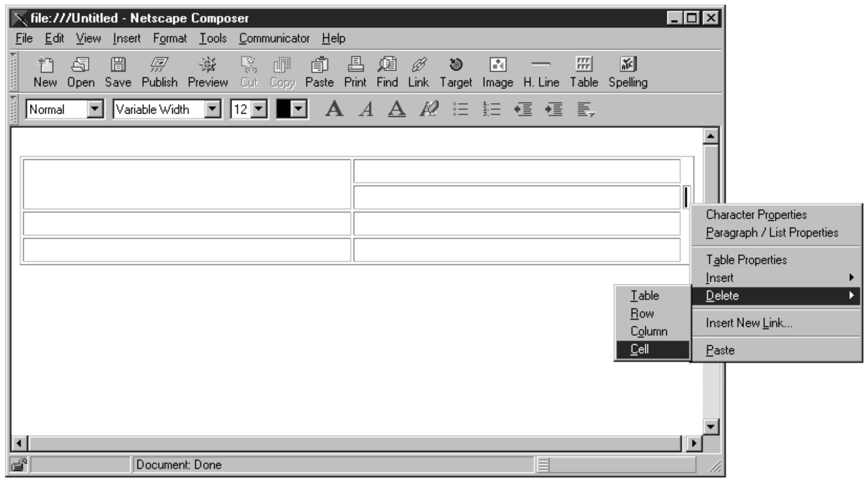

file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal Variable Width 12
Character Properties
Paragraph / List Properties
Table Properties
Insert
Delete
Insert New Link...
Paste
Table
Row
Column
Cell
Document: Done

Figure 211. Deleting the Remaining Cell

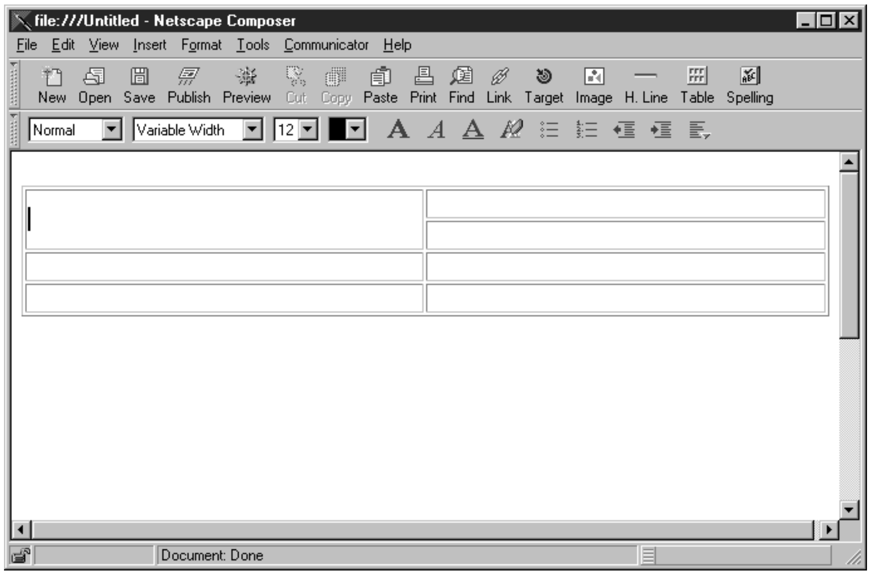

file:///Untitled - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal Variable Width 12
Document: Done

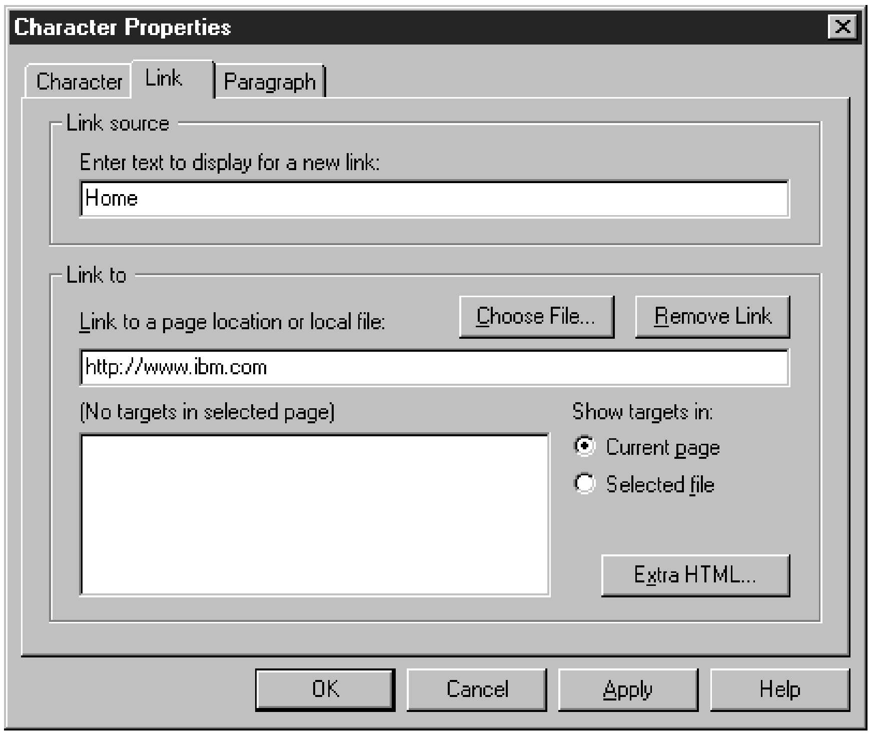
Figure 212. New Arrangement of the Table

Tables can be nested. To do this, position the cursor in the desired cell and insert the new table.

5.1.3.6 Links and Targets

Links can be inserted by drag-and-drop, directly from the action bar or from the tools bar. If inserted directly, the Character Properties window is displayed allowing you to:

- Type the text representation for the link.
- Specify the link location.


Character Properties

Link source

Enter text to display for a new link: Home

Link to

Link to a page location or local file: http://www.ibm.com

(No targets in selected page)

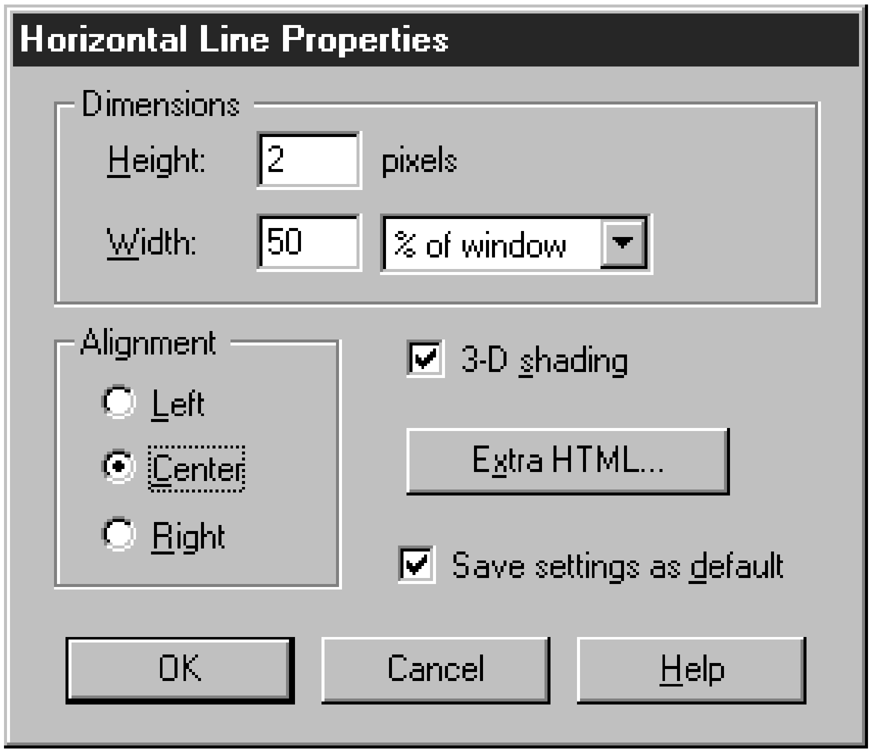
Show targets in: [✓ Current page] Selected file

Figure 213. Character Properties Window for Links

Targets are labels that define entry points for links in the same page. When inserting a target, Netscape Page Composer will require some text to identify it. After the target is inserted a small symbol is shown in the entry point when editing the page in the Page Composer.

5.1.3.7 Horizontal Lines

When inserting horizontal lines no Properties window is displayed. Page Composer uses the default parameters to modify them after the line is drawn. Click on the **H. Line** icon with the right mouse button to display the Horizontal Line Properties window as shown in Figure 214 on page 160.



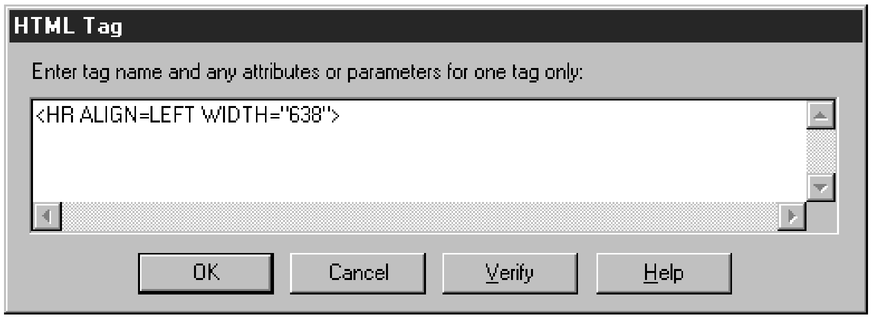
Height: 2 pixels
Width: 50 % of window
Alignment: Center
3-D shading [✓]
Save settings as default [✓]

Figure 214. Horizontal Line Properties Window

Note: Horizontal lines are very thin objects and sometimes it is hard to select them.

5.1.3.8 HTML Tags

To insert a specific HTML tag that cannot be generated by Netscape Page Composer, select **Insert** from the action bar and **HTML Tag**, and then type the HTML code into the HTML Tag window as follows:



Enter tag name and any attributes or parameters for one tag only:

```
<HR ALIGN=LEFT WIDTH="638">
```

Figure 215. Inserting an HTML Tag

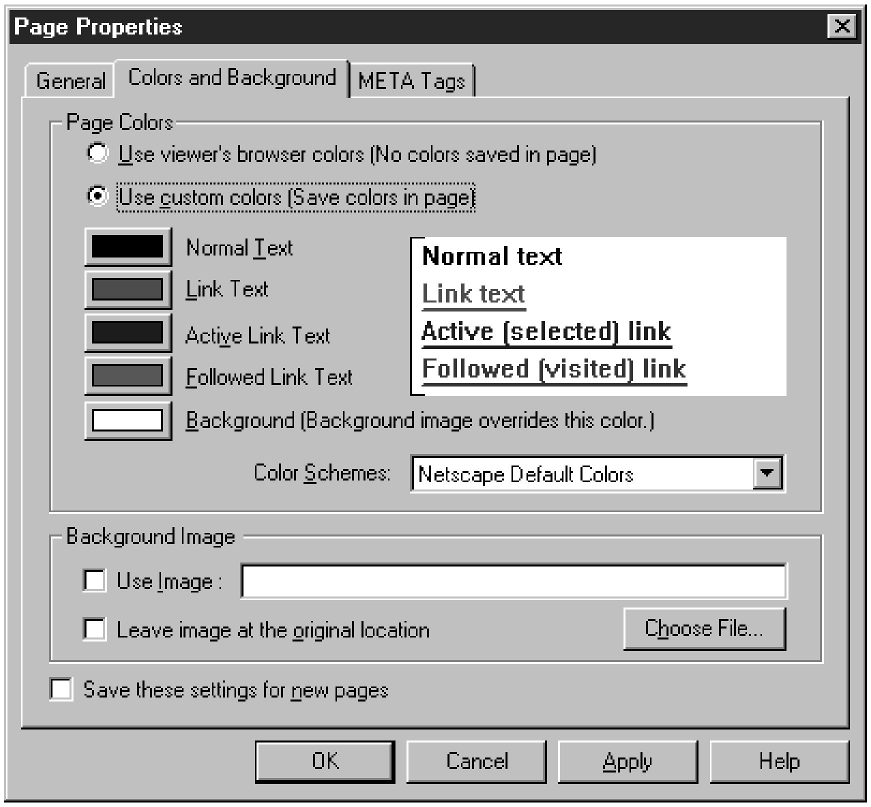
5.1.3.9 Page Properties Window

To display the Page Properties window select **Format** and then **Page Colors and Properties** from the Page Composer window.

The Page Properties window consists of three sections:

1. General - Information useful for Web searchers.
2. Colors and background of the page.

3. Meta tags - Information required for the Internet Service Provider.


Page Properties

General | Colors and Background | META Tags

Page Colors

( ) Use viewer's browser colors (No colors saved in page)

(●) Use custom colors (Save colors in page)

Normal Text

Link Text

Active Link Text

Followed Link Text

Background (Background image overrides this color.)

Normal text

Link text

Active (selected) link

Followed (visited) link

Color Schemes: Netscape Default Colors

Background Image

☐ Use Image :

☐ Leave image at the original location

Choose File...

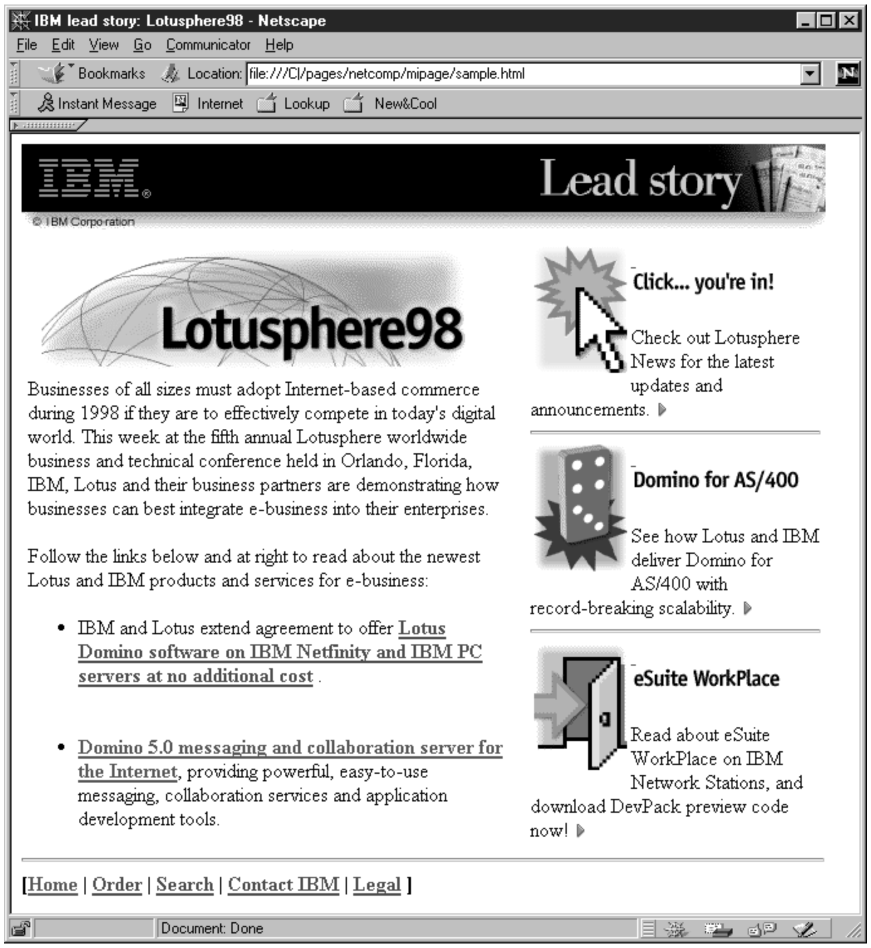
☐ Save these settings for new pages

OK | Cancel | Apply | Help

Figure 216. Colors and Background Section of the Page Properties Window

5.1.4 How to Build a Page Step-By-Step

In this example we show how to build a Web page step-by-step. The page, taken from an IBM site, has been shortened to better show the results of the exercise. The page to build is shown in Figure 217 on page 162. As you see it has an image in the header, two columns and a footer with links. To fit the two column layout we used a table.


IBM lead story: Lotusphere98 - Netscape

File Edit View Go Communicator Help

Bookmarks Location: file:///C|/pages/netcomp/mipage/sample.html

Instant Message Internet Lookup New&Cool

IBM. Lead story

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eSuite WorkPlace

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[Home | Order | Search | Contact IBM | Legal]

Document: Done

Figure 217. Web Page to Build in the Example

To start building our page from scratch do the following:

1. Start Netscape Page Composer in a blank page.
2. Insert the header image. Since the image has the IBM logo, it has to keep its original size, which appears in the box Dimensions when inserting the image. See the parameters in Figure 218 on page 163 and the result in Figure 219 on page 164.

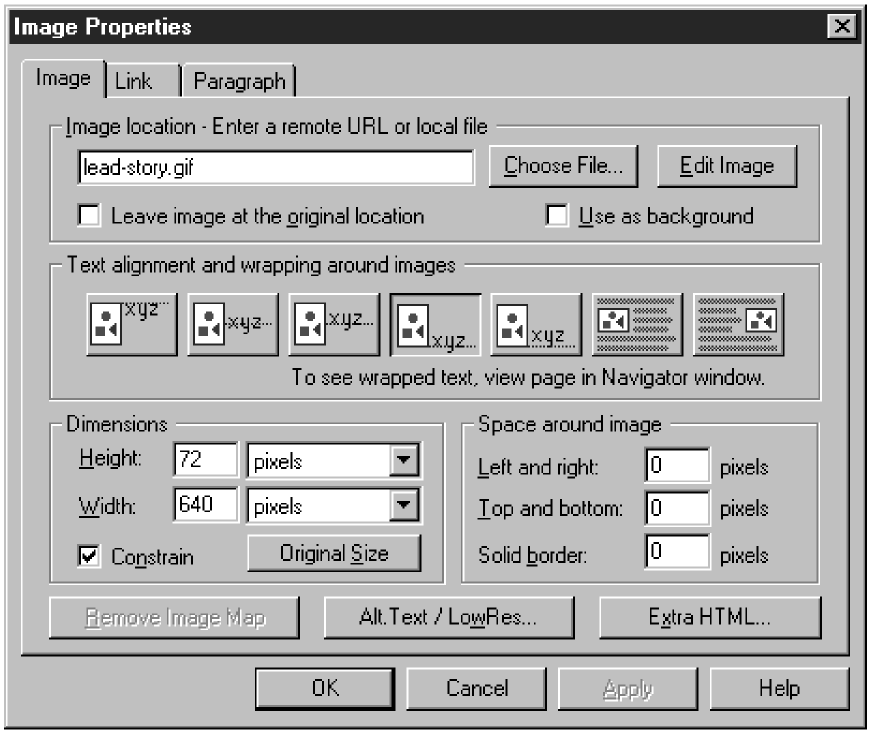

Image location - Enter a remote URL or local file: lead-story.gif

☐ Leave image at the original location
☐ Use as background

Text alignment and wrapping around images

Dimensions
Height: 72 pixels
Width: 640 pixels
☑ Constrain

Space around image
Left and right: 0 pixels
Top and bottom: 0 pixels
Solid border: 0 pixels

Figure 218. Image Properties Window for the Header Image

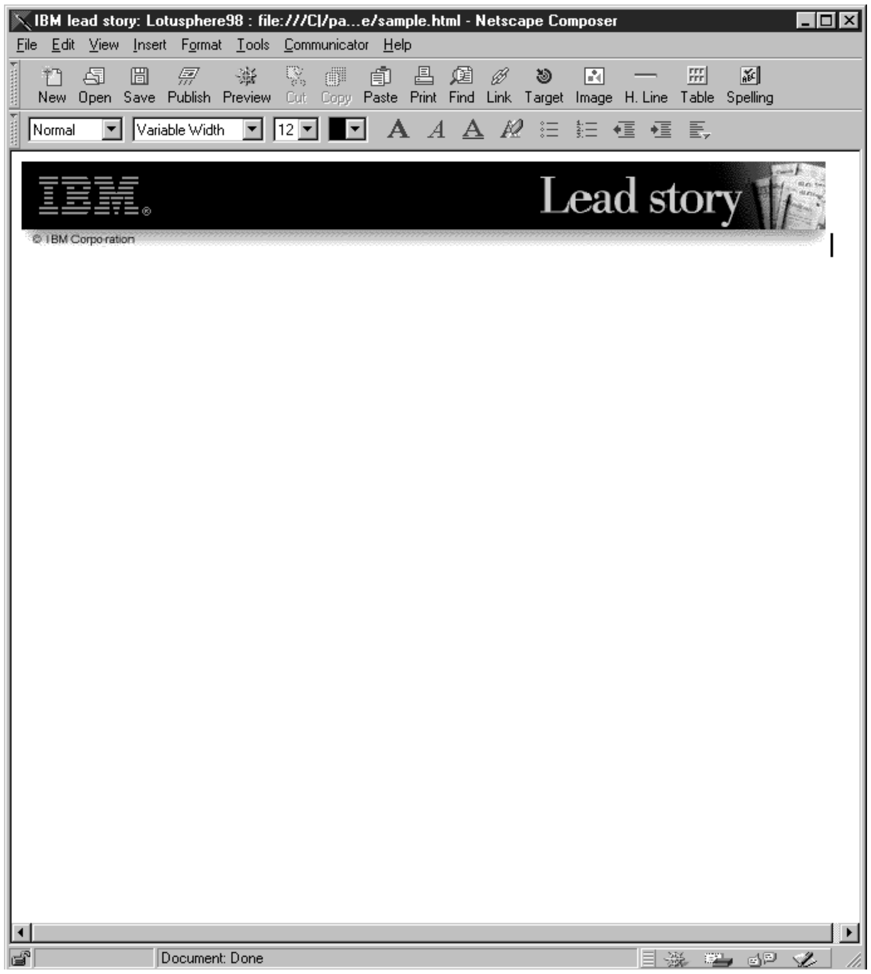
IBM lead story: Lotusphere98 : file:///C|/pa...e/sample.html - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
Variable Width
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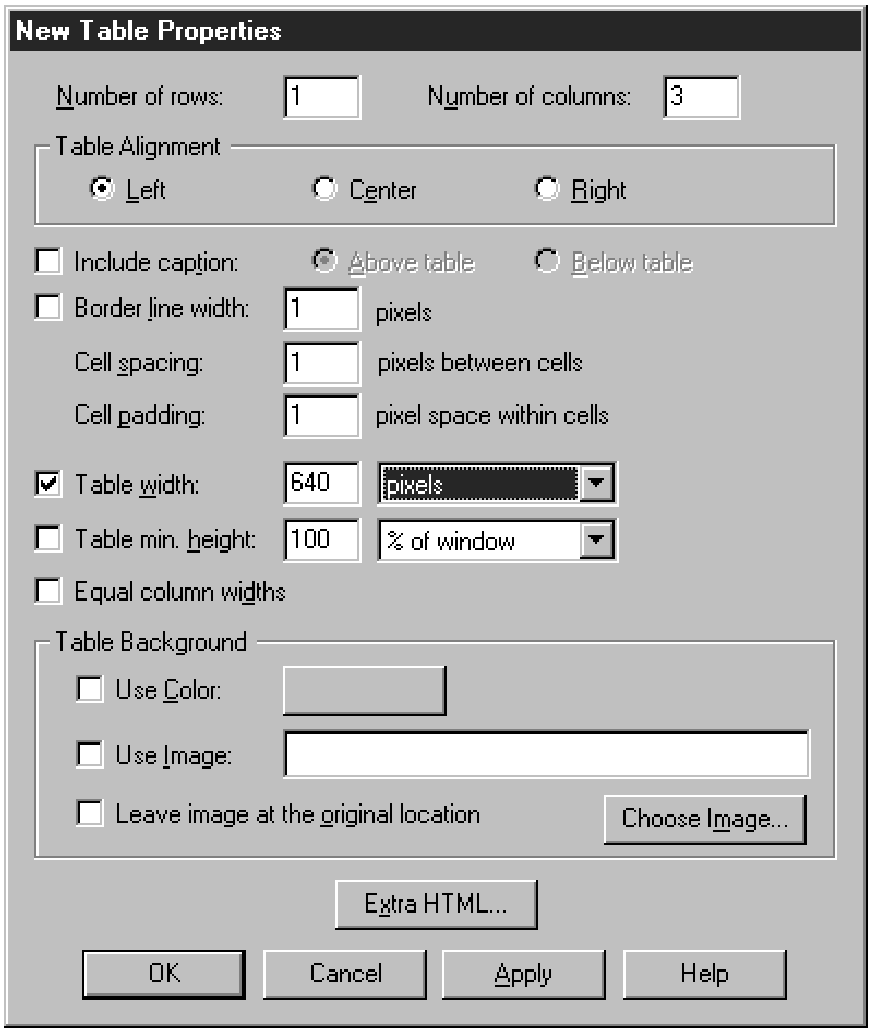
Figure 219. Page after Inserting the Header Image

3. Insert the table to keep the alignment with the header image regardless of the browser window. We assigned this table a fixed width of 640 pixels. Since we do not want to show the table in our page the Border line width box is not checked. To provide some extra space between the significant columns, we added an additional column. Note that the Equal column width box is not checked (see Figure 220 on page 165).


New Table Properties

Number of rows: 1 Number of columns: 3

Table Alignment: [✓ Left] Center Right

☐ Include caption: [✓ Above table] Below table

☐ Border line width: 1 pixels

Cell spacing: 1 pixels between cells

Cell padding: 1 pixel space within cells

☑ Table width: 640 pixels

☐ Table min. height: 100 % of window

☐ Equal column widths

Table Background

☐ Use Color:

☐ Use Image:

☐ Leave image at the original location

Figure 220. Properties of the New Table

In Figure 221 on page 166, observe that the three columns show the same width. We need to make further changes to adjust the width of the columns.

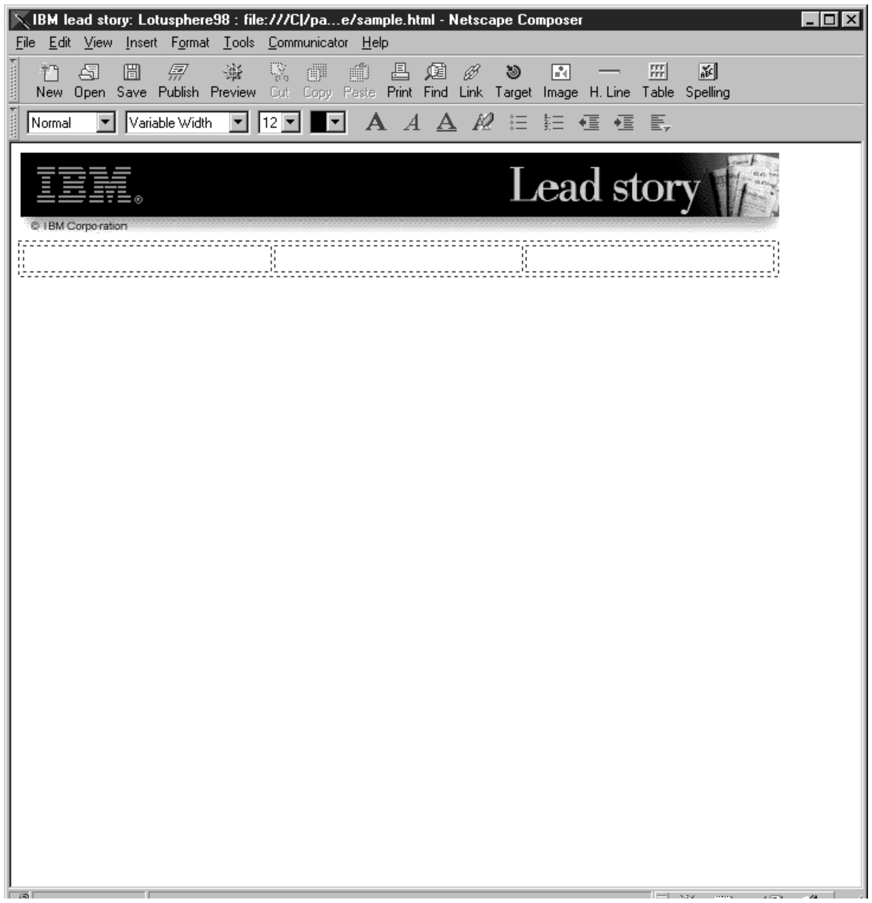

IBM lead story: Lotusphere98 : file:///C|/pa...e/sample.html - Netscape Composer
File Edit View Insert Format Tools Communicator Help
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Figure 221. Initial Look of the Table

4. To adjust the column width, click with the right button on the first cell of the table and select **Cell**. Change the cell width to 380 pixels. Click on **OK** and repeat the process with the other two cells, assigning them a width of 20 and 240 pixels respectively.

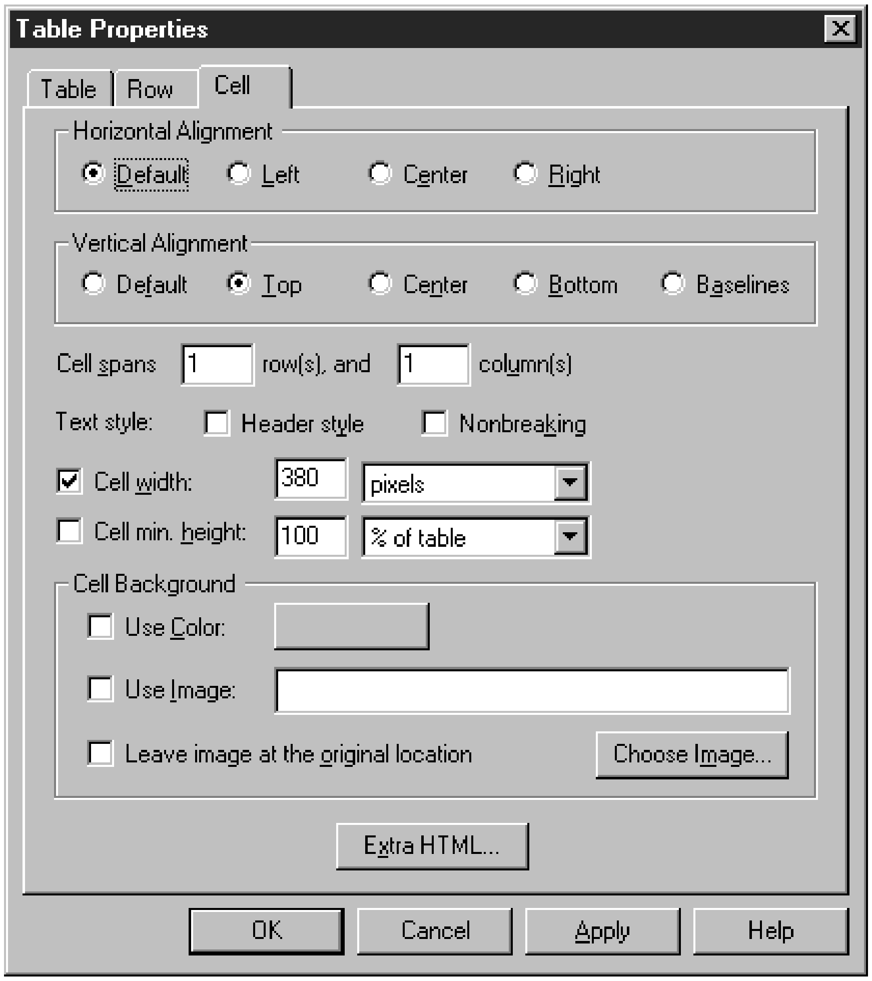


Table Properties

Table | Row | Cell

Horizontal Alignment: [● Default] ○ Left ○ Center ○ Right

Vertical Alignment: ○ Default [● Top] ○ Center ○ Bottom ○ Baselines

Cell spans 1 row(s), and 1 column(s)

Text style: ☐ Header style ☐ Nonbreaking

☑ Cell width: 380 pixels

☐ Cell min. height: 100 % of table

Cell Background

☐ Use Color:

☐ Use Image:

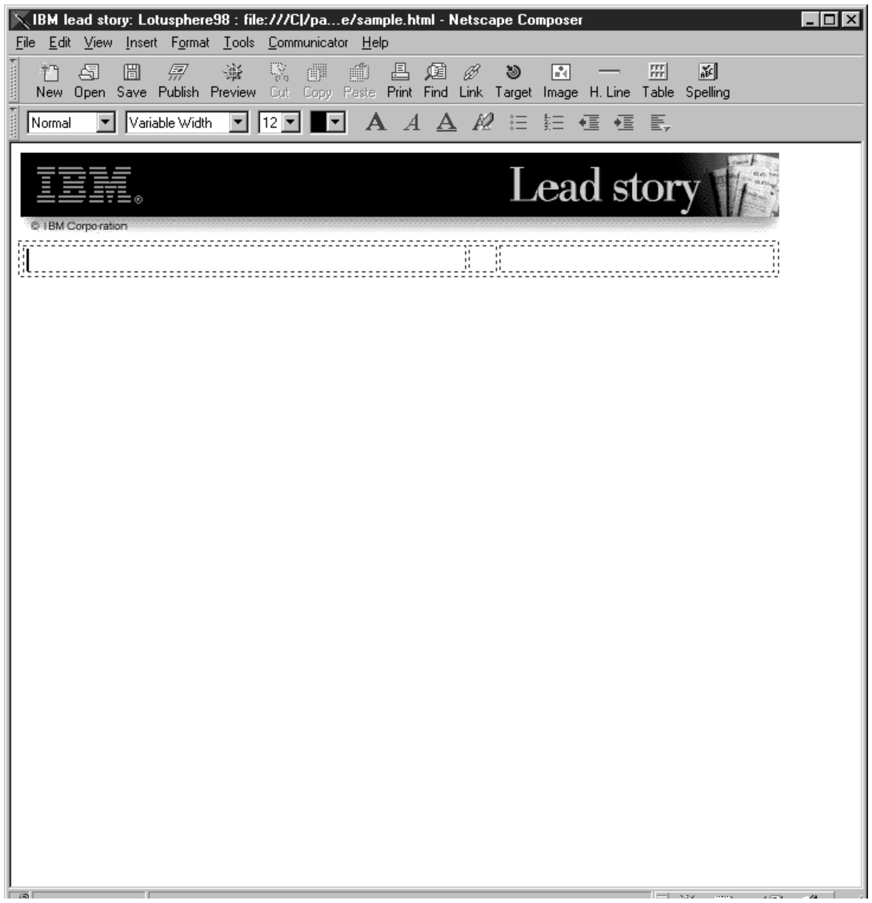
☐ Leave image at the original location

Choose Image...

Extra HTML...

OK | Cancel | Apply | Help

Figure 222. Changing the Width of the Cells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File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
Variable Width
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Figure 223. The Table with the Proper Cell Widths

5. Insert the image at the top of the first column. Do not change the default parameters. Observe the result in Figure 225 on page 169.

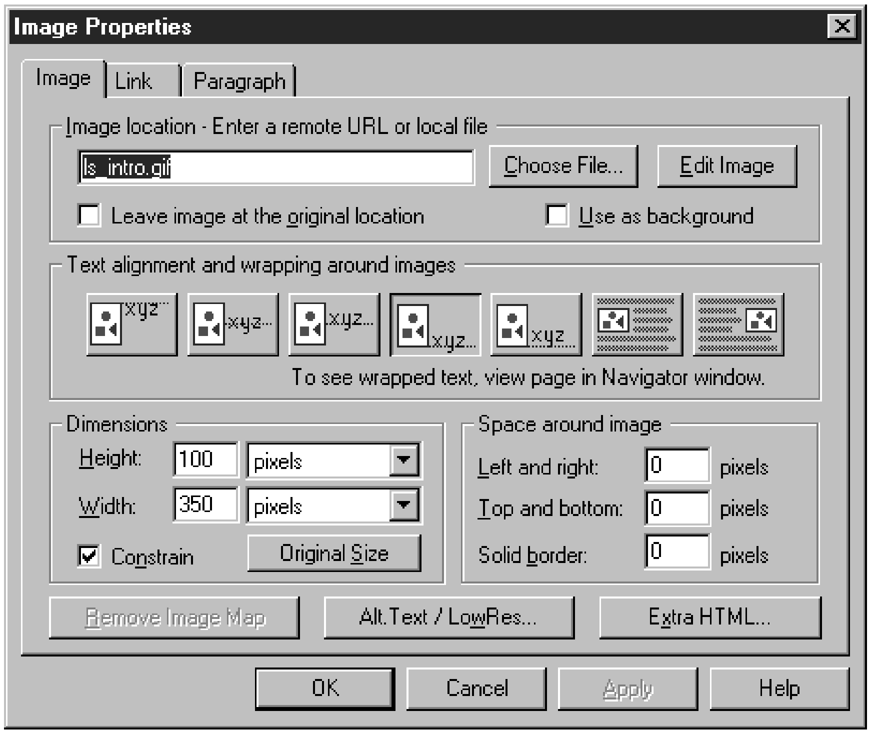


Image location - Enter a remote URL or local file: ls_intro.gif

☐ Leave image at the original location ☐ Use as background

Text alignment and wrapping around images

Dimensions

Height: 100 pixels

Width: 350 pixels

☑ Constrain

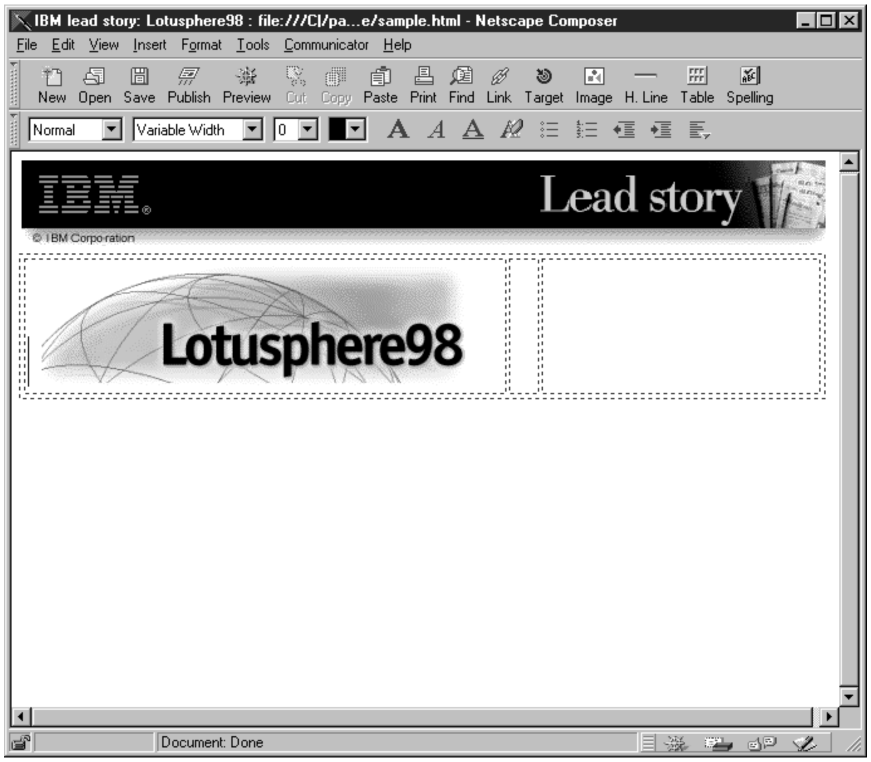
Space around image

Left and right: 0 pixels

Top and bottom: 0 pixels

Solid border: 0 pixels

Figure 224. Inserting the Image at the Top of the First Column


IBM lead story: Lotusphere98 : file:///C|/pa...e/sample.html - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
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Document: Done

Figure 225. The Page after Inserting the Image

6. Type the two paragraphs in the first column below the image.

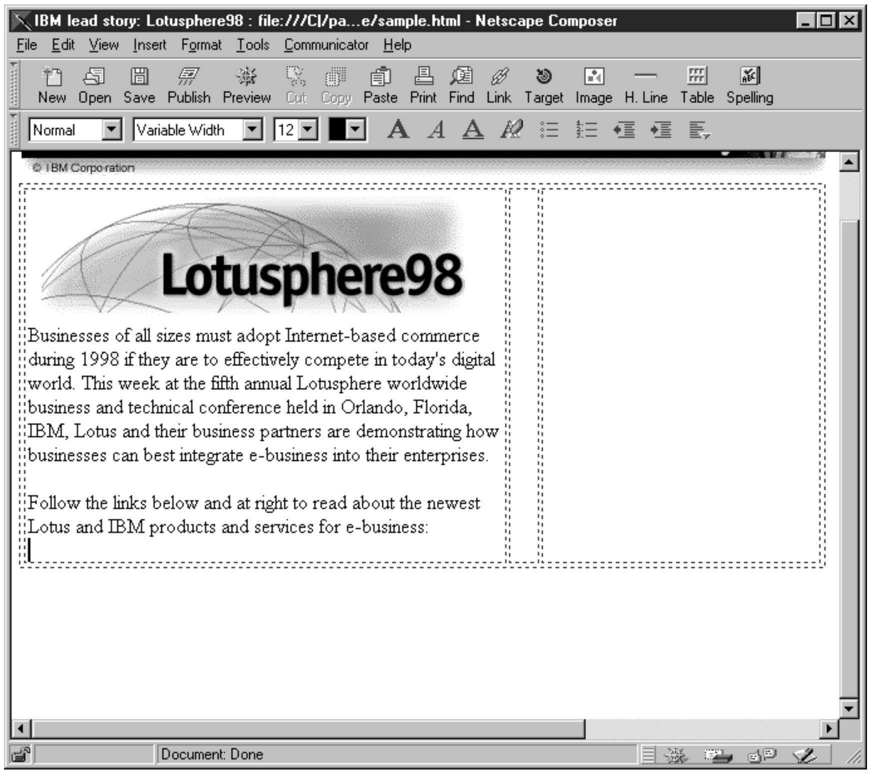
IBM lead story: Lotusphere98 : file:///C|/pa...e/sample.html - Netscape Composer
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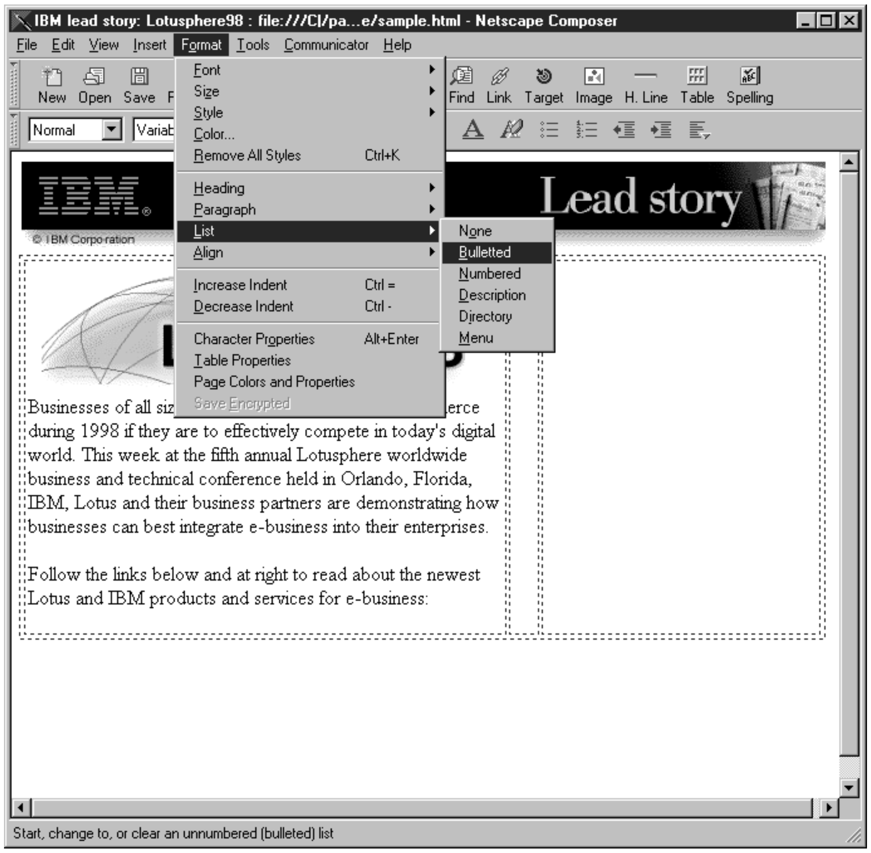
Figure 226. Look of the Page after Typing the Text

7. Change the text style. Select **Format** from the action bar and then **List**. Then click on **Bulletted**.



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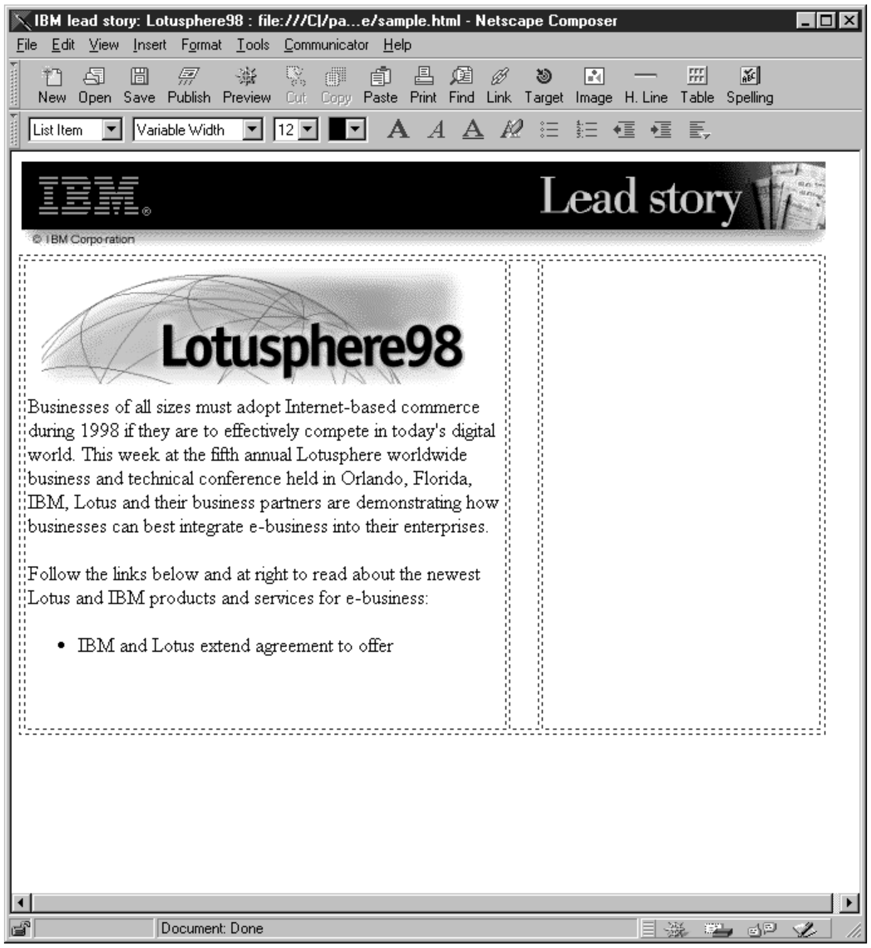
Follow the links below and at right to read about the newest Lotus and IBM products and services for e-business:

Start, change to, or clear an unnumbered (bulleted) list

Figure 227. Changing the Text Style

8. Type in the text for the first bullet until the word `offer` and stop there.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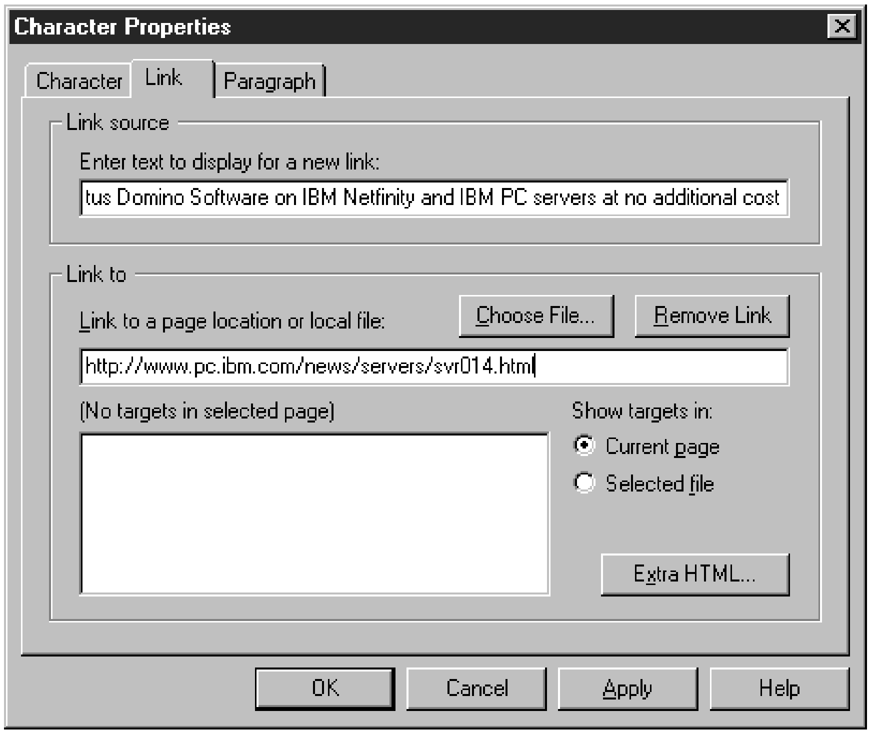
Follow the links below and at right to read about the newest Lotus and IBM products and services for e-business:

- IBM and Lotus extend agreement to offer

Figure 228. Before Adding the Link

9. Insert the link in this bullet just after the word `offer`. Page Composer will show the Character Properties window for the link as shown in Figure 229 on page 173. Type the whole text in the Link source field and the URL or the file name to link to in the Link to section.



Link source

Enter text to display for a new link:

tus Domino Software on IBM Netfinity and IBM PC servers at no additional cost

Link to

Link to a page location or local file:

http://www.pc.ibm.com/news/servers/svr014.html

(No targets in selected page)

Show targets in:

[✓ Current page]

Selected file

Figure 229. Inserting the Link

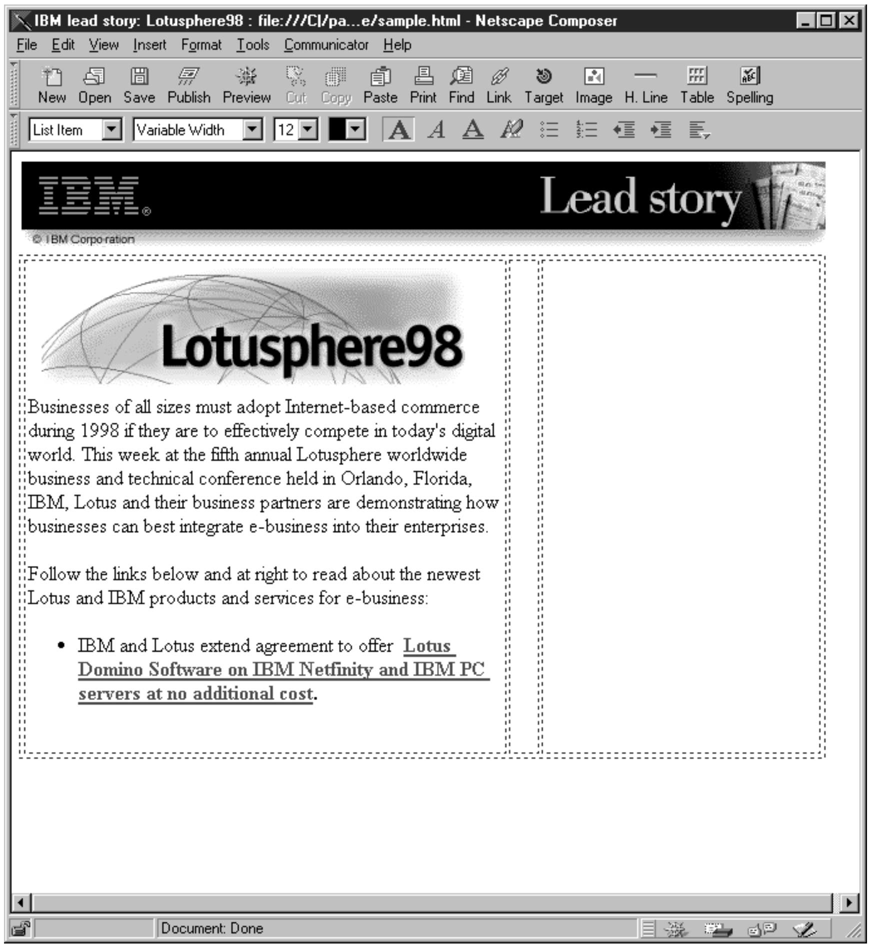

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Figure 230. Status of the Page after Inserting the Link

10. Press Enter to add a new bullet. Insert the other link and type in the rest of the text for that bullet. When this step is completed, the first column is finished (see Figure 231 on page 175).

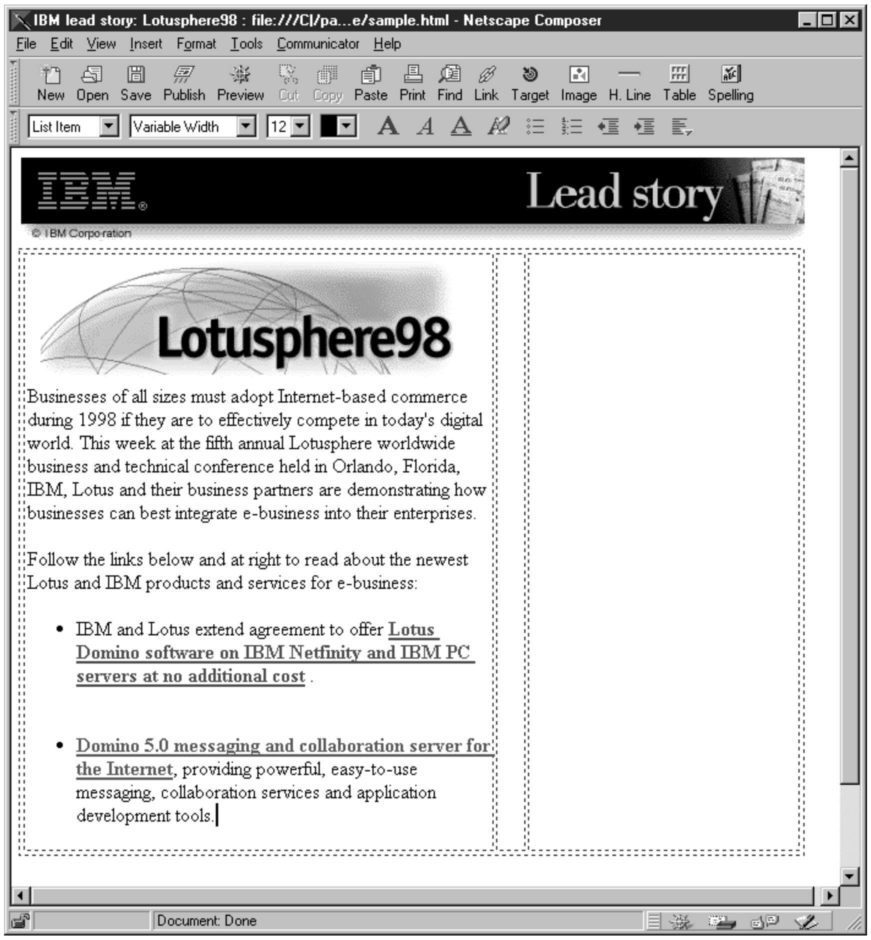
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Figure 231. The Page after the First Column Completed

11. Click on the rightmost cell and insert the first image. Look at Figure 232 on page 176 and note the selection made in the section Text alignment and wrapping around images. This will distribute the text and the image. Do not click on OK at this point.

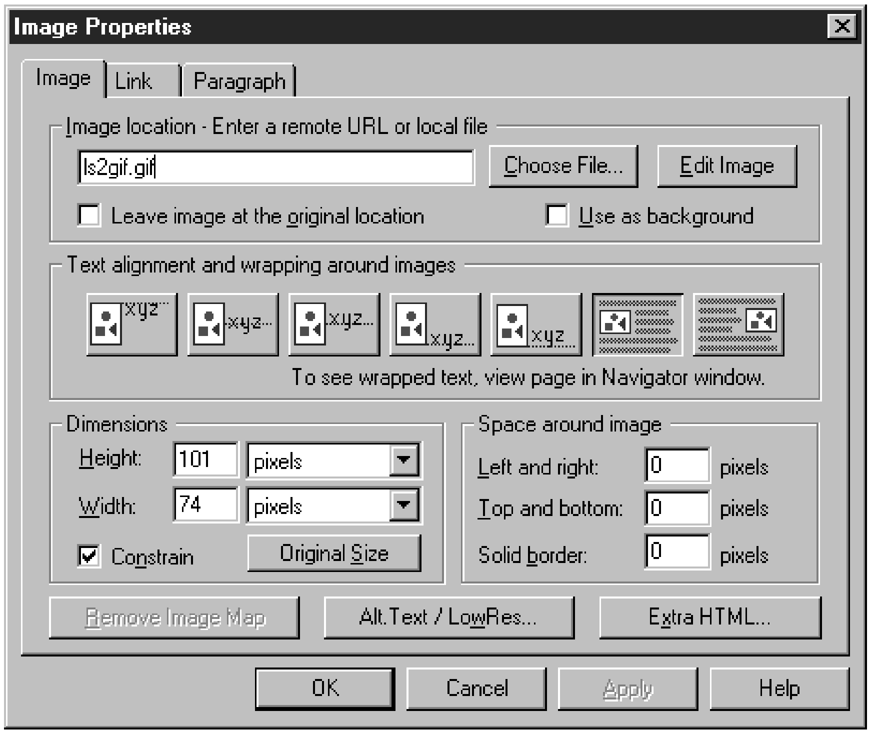
Image Properties

Image | Link | Paragraph

Image location - Enter a remote URL or local file: ls2gif.gif

☐ Leave image at the original location ☐ Use as background

Text alignment and wrapping around images

To see wrapped text, view page in Navigator window.

Dimensions

Height: 101 pixels

Width: 74 pixels

☑ Constrain

Space around image

Left and right: 0 pixels

Top and bottom: 0 pixels

Solid border: 0 pixels

Figure 232. Inserting the First Image in the Right Column

12. Click on the **Link** tab in the Image Properties window and add the link for this image (see Figure 233).

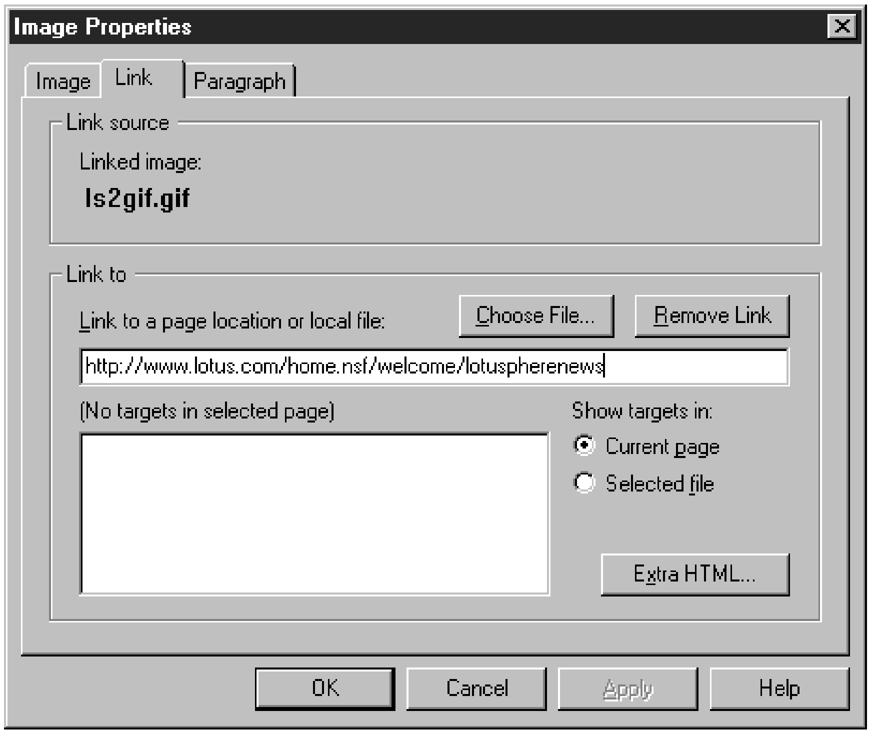
Image Properties

Image | Link | Paragraph

Link source

Linked image:

ls2gif.gif

Link to

Link to a page location or local file:

http://www.lotus.com/home.nsf/welcome/lotuspherenews

(No targets in selected page)

Show targets in:

(● Current page) ○ Selected file

Figure 233. Adding the Link for the Image

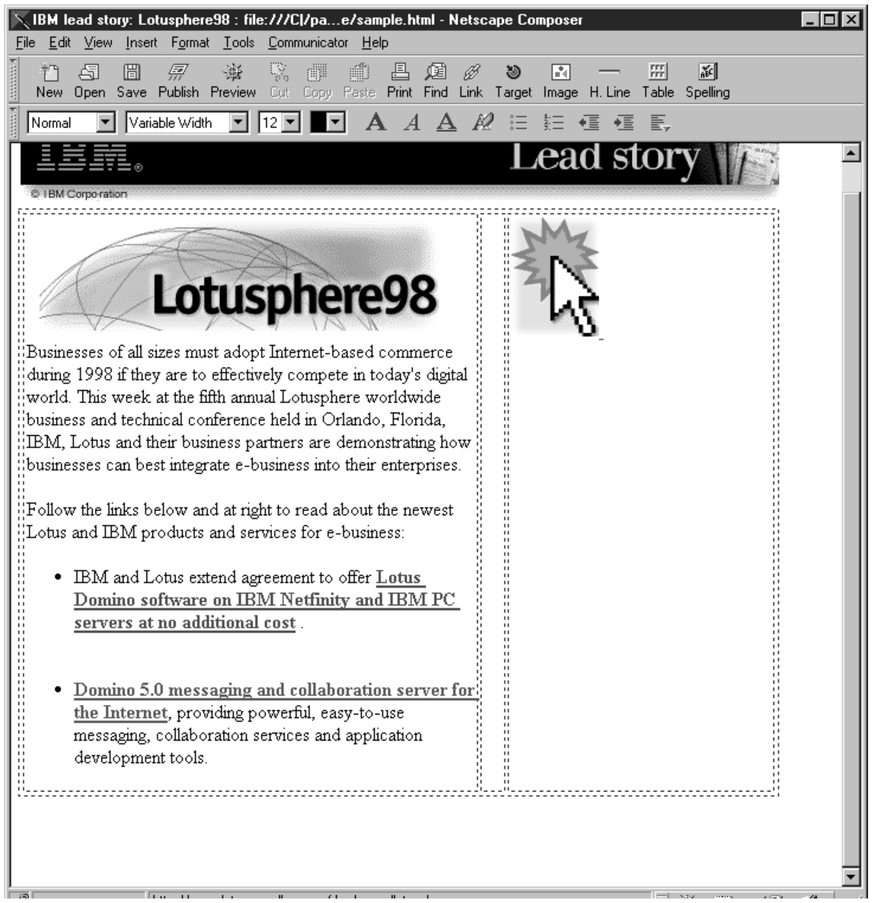
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Figure 234. Status of the Page after Adding the Image

13. The text Click... you're in! is an image. Insert it the same way but do not change the text alignment (keep the default). Add the same link as the previous image in this column.

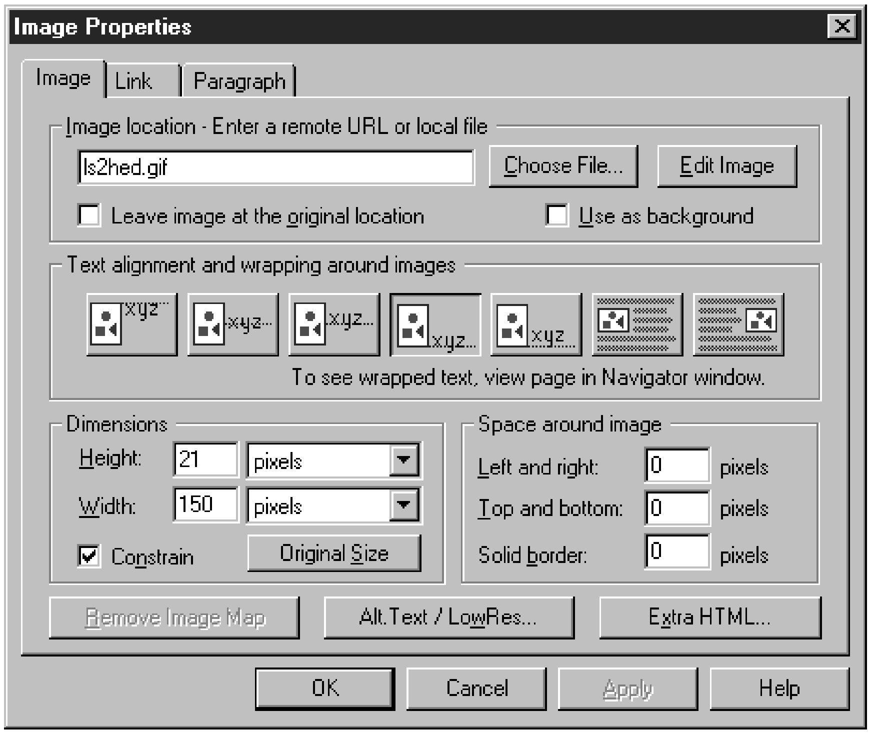

Image Properties

Image | Link | Paragraph

Image location - Enter a remote URL or local file: ls2hed.gif

[ ] Leave image at the original location
[ ] Use as background

Text alignment and wrapping around images

To see wrapped text, view page in Navigator window.

Dimensions
Height: 21 pixels
Width: 150 pixels
[✓] Constrain

Space around image
Left and right: 0 pixels
Top and bottom: 0 pixels
Solid border: 0 pixels

Figure 235. Properties of the New Image

14. Press Enter to start a new line and type in the rest of the text.

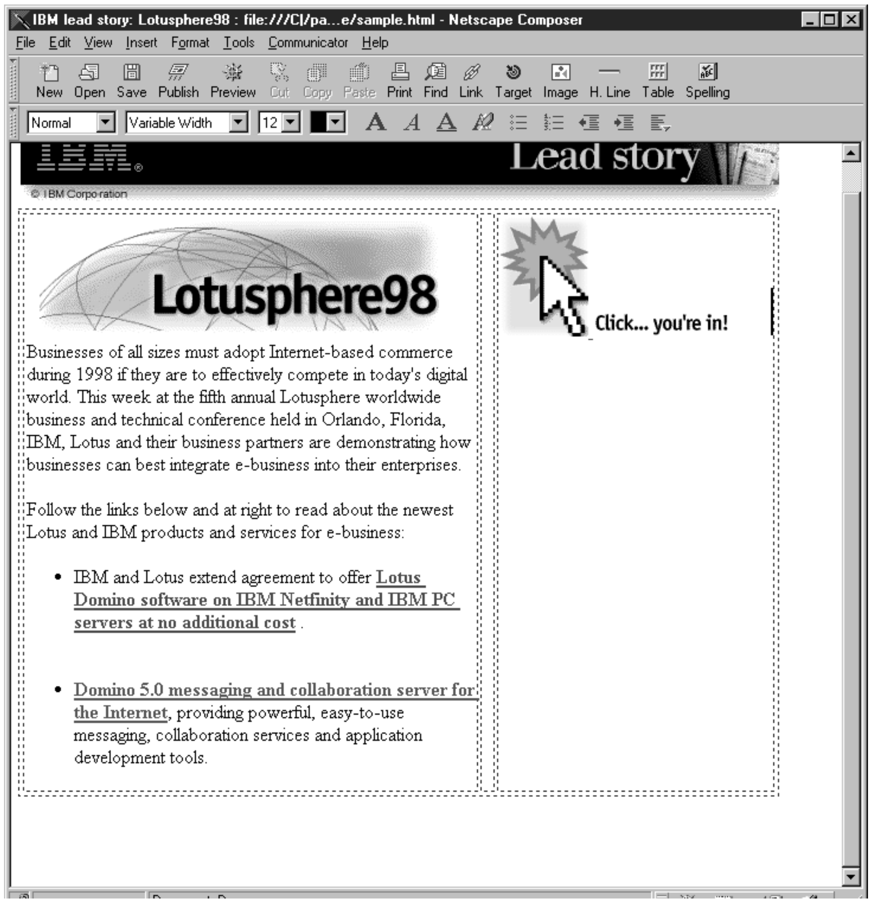
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Figure 236. Results of the Page Construction So Far

15. Insert the image of the arrow at the end of the text, just after the last word, but don't insert a new line (see Figure 237 on page 180). Note the selection for Text alignment. This is to keep the image in the same line as the text. Add the same link as the other images in this column.

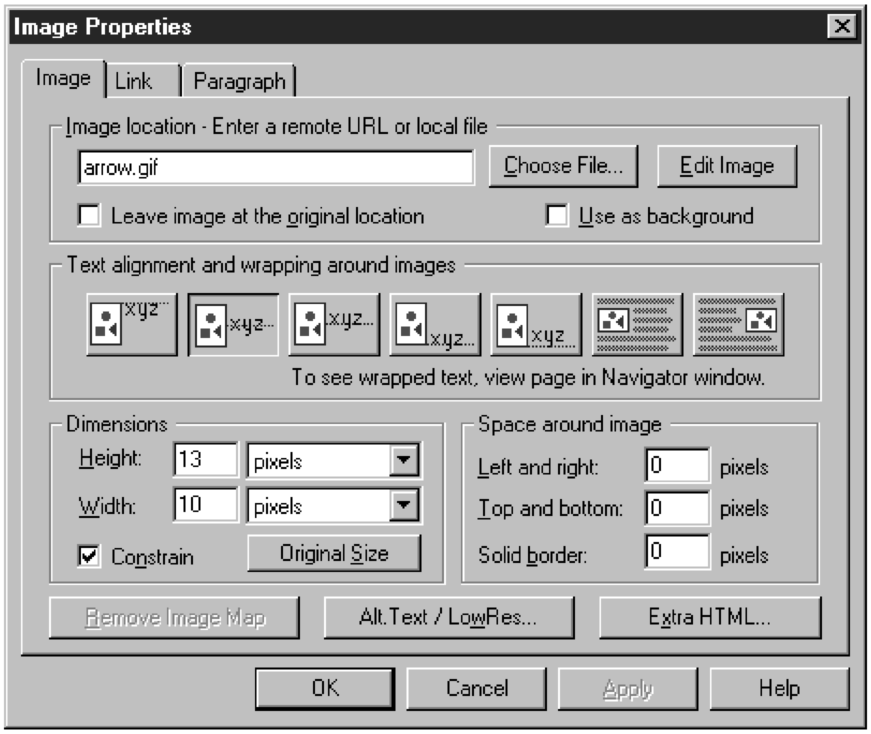
Image Properties

Image | Link | Paragraph

Image location - Enter a remote URL or local file: arrow.gif

Choose File... | Edit Image

☐ Leave image at the original location ☐ Use as background

Text alignment and wrapping around images

To see wrapped text, view page in Navigator window.

Dimensions

Height: 13 pixels

Width: 10 pixels

☑ Constrain Original Size

Space around image

Left and right: 0 pixels

Top and bottom: 0 pixels

Solid border: 0 pixels

Remove Image Map | Alt.Text / LowRes... | Extra HTML...

OK | Cancel | Apply | Help

Figure 237. Image Properties for the Arrow Image

16. Press Enter to start a new line and insert a horizontal line. Change the width of the line to 230 pixels and align it to the center of the cell.

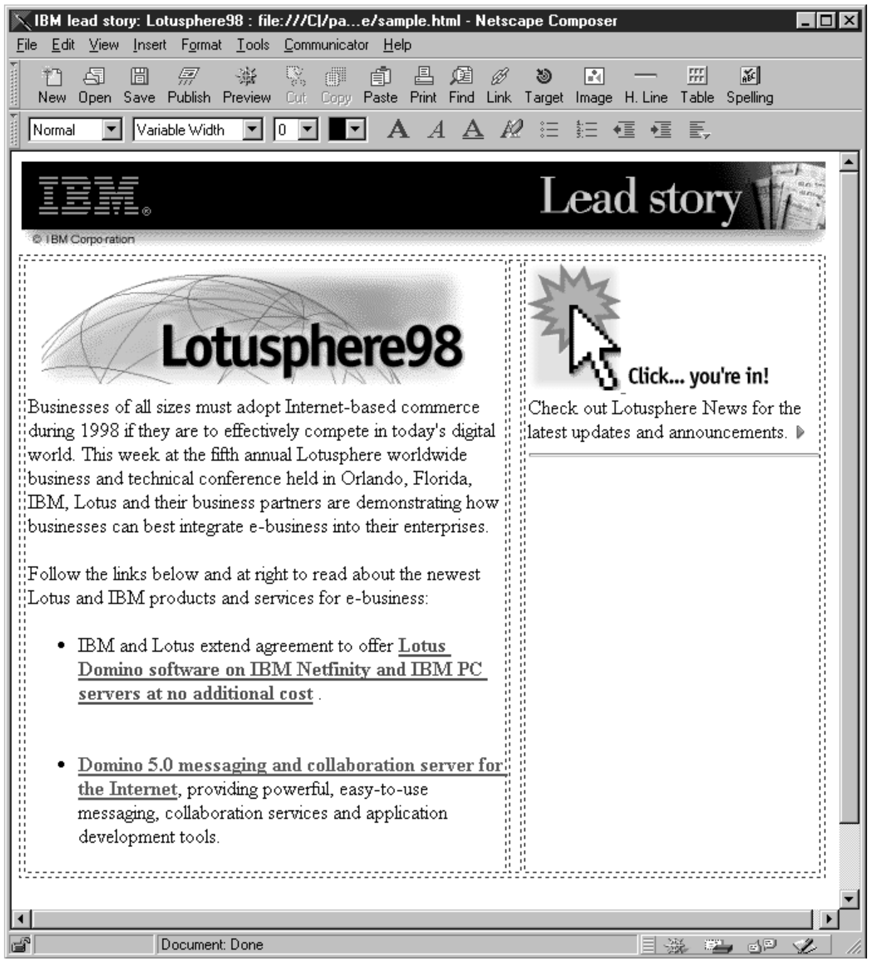
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Figure 238. Status after Inserting the Horizontal Line

17. To compare the look of the page in the Page Composer and the real look in the Navigator, click on the **Save** button and then **Preview**. Both can be found in the tool bar. See in Figure 239 on page 182 how Netscape Navigator V4.04 shows the page.

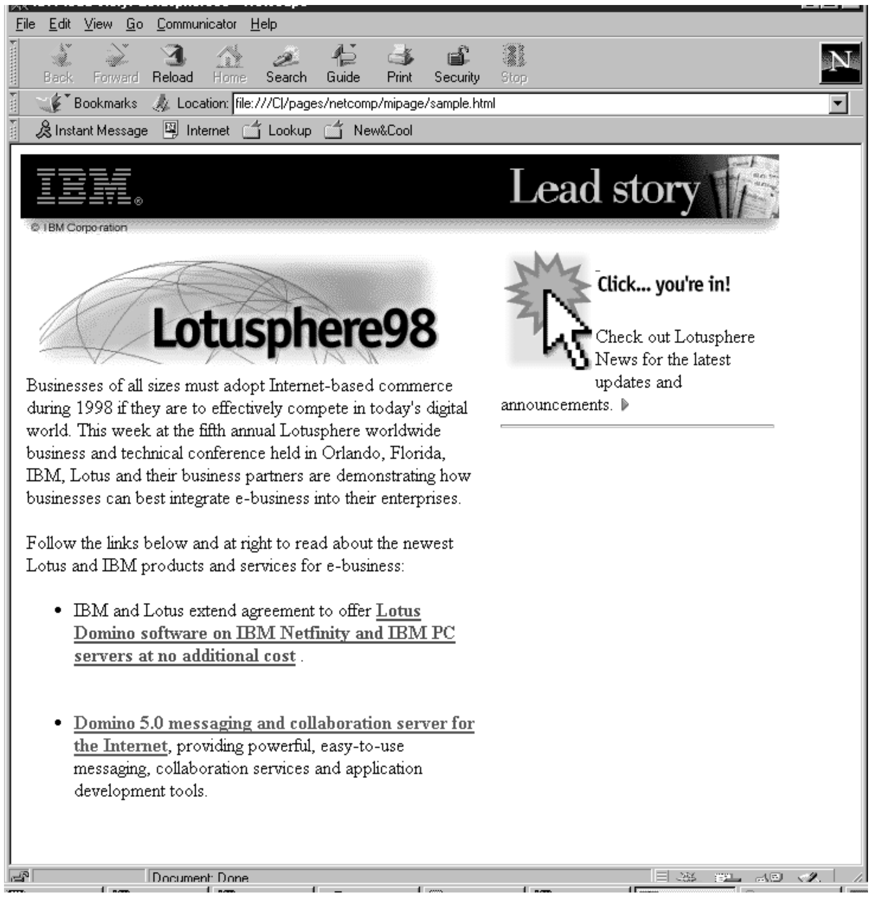
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: file:///C|/pages/netcomp/mipage/sample.html
Instant Message Internet Lookup New&Cool
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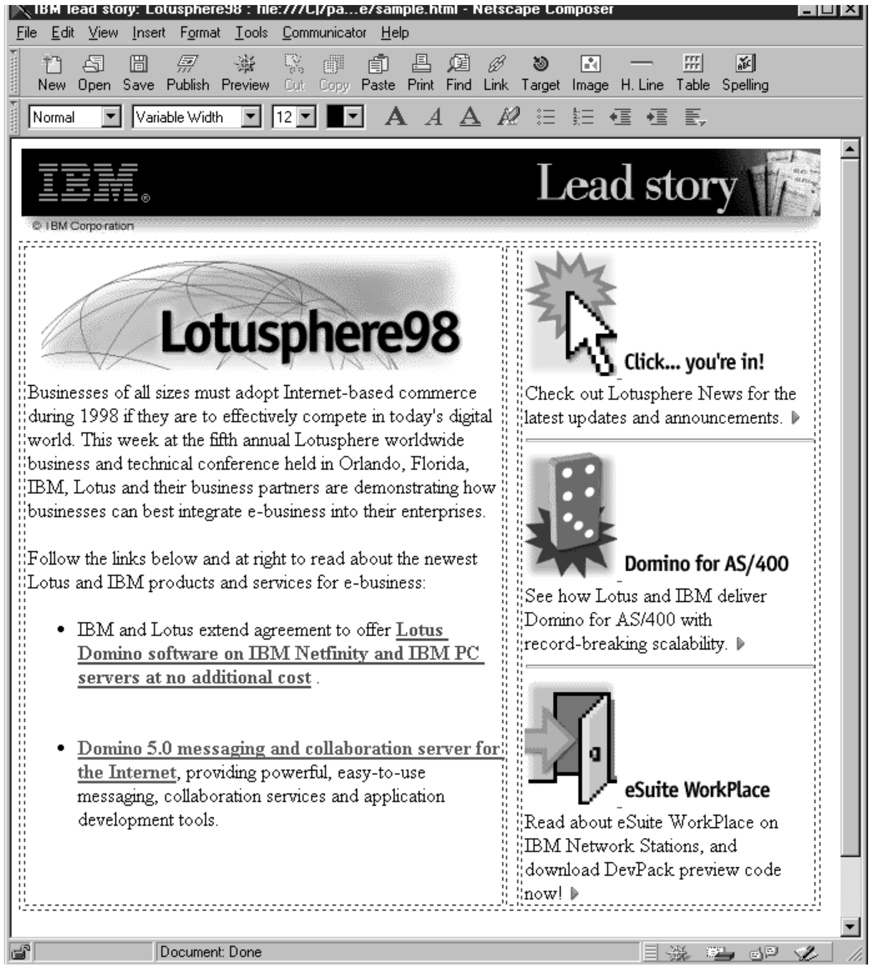
Figure 239. Preview of the Page in the Navigator

18. Insert the rest of the images and text in the column. See the result in Figure 240 on page 183.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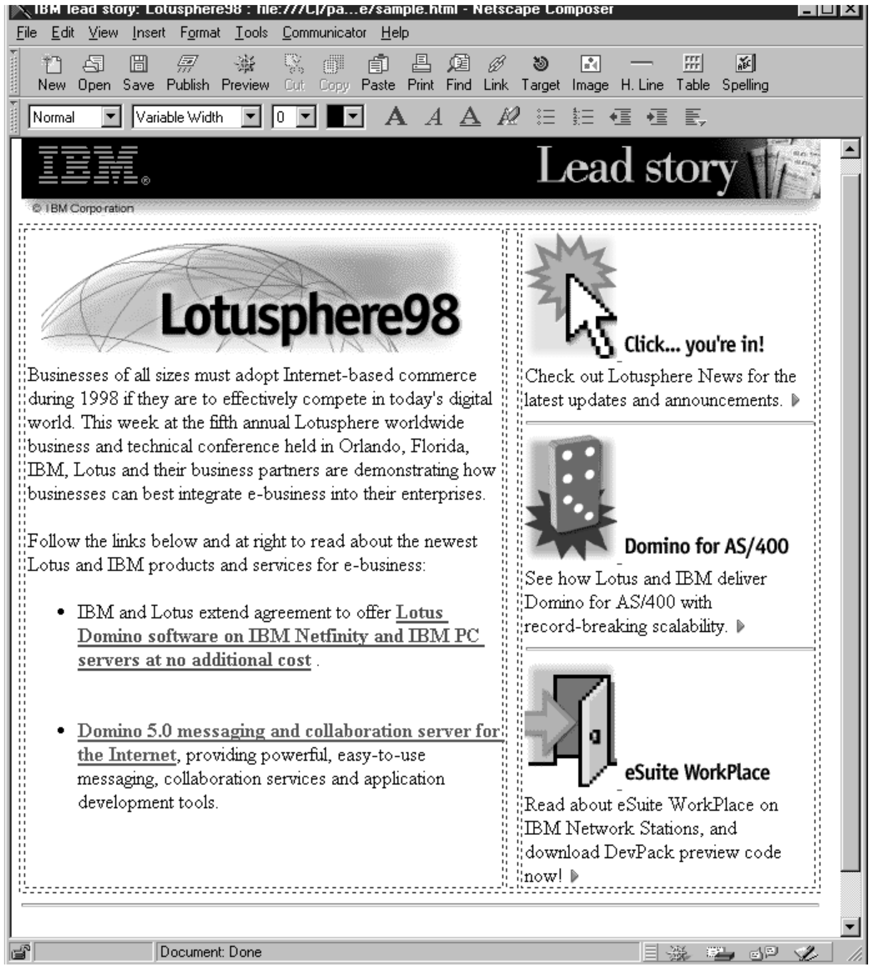
See how Lotus and IBM deliver Domino for AS/400 with record-breaking scalability.

Read about eSuite WorkPlace on IBM Network Stations, and download DevPack preview code now!

Figure 240. Before Inserting the Horizontal Line at the Bottom

19. Click just below the table and insert the horizontal line behind it. Change the line width to 640 pixels (the same width as the table) and align it to the left of the page to avoid misalignments due to the size of the browser window.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New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal Variable Width 0
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Click... you're in!
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eSuite WorkPlace
Document: Done

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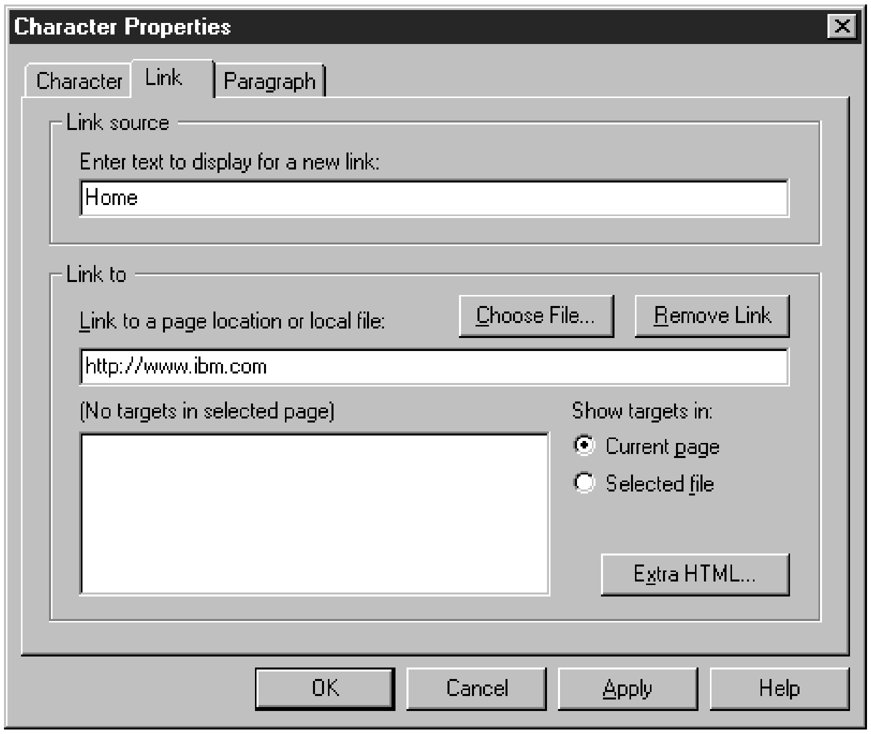
Figure 241. After Adding the Horizontal Line at the Bottom of the Page

20. Press Enter to start a new line. Type an open square bracket and insert the first link of the footer. Then type a vertical line as a separator and add the rest of the links and vertical lines. Finally, type a closed square bracket.



Link source

Enter text to display for a new link: Home

Link to

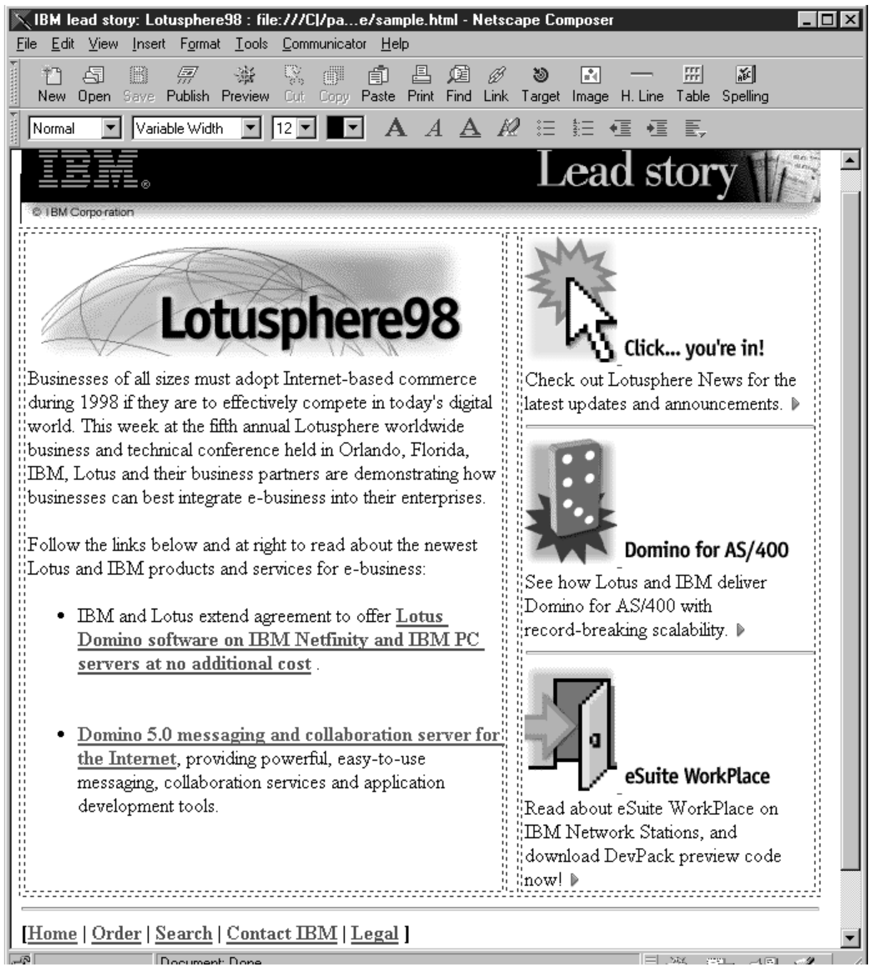
Link to a page location or local file: http://www.ibm.com

(No targets in selected page)

Show targets in: [✓ Current page] Selected file

Figure 242. Properties of the First Link in the Footer

21. Save and publish your page.


IBM lead story: Lotusphere98 : file:///C|/pa...e/sample.html - Netscape Composer
File Edit View Insert Format Tools Communicator Help
New Open Save Publish Preview Cut Copy Paste Print Find Link Target Image H. Line Table Spelling
Normal
Variable Width
12
IBM
Lead story
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Click... you're in!
Domino for AS/400
eSuite WorkPlace
Document: Done

Businesses of all sizes must adopt Internet-based commerce during 1998 if they are to effectively compete in today's digital world. This week at the fifth annual Lotusphere worldwide business and technical conference held in Orlando, Florida, IBM, Lotus and their business partners are demonstrating how businesses can best integrate e-business into their enterprises.

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Figure 243. Look of the Finished Page in the Editor

5.2 Wallop Build-IT

Wallop Build-IT is a product that provides a set of tools whose main purpose is to assure the integrity of Web applications in any stage of their life cycle. It focuses on two main areas:

1. Availability and correct location of all components.
2. Availability of all the links.

Build-IT does not provide tools for editing components (for example, text or image editors) but integrates well with most of them. It also integrates with some version control tools to reinforce the integrity of the applications.

5.2.1 Installation

Wallop Build-IT may be installed in a single or multi-user environment. The image that we used here was downloaded from http://www.wallop.com.

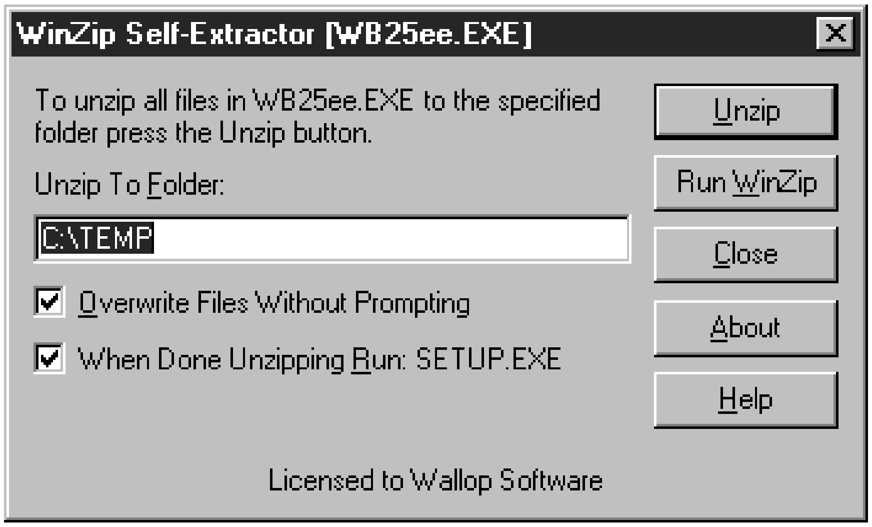
5.2.1.1 Single User Environment Installation

The following description on how to install Wallop Build-IT corresponds to the evaluation version for Windows NT downloaded from the Web. Therefore, there might be small changes when installing a full version.

To install Build-IT in Windows NT, take into account that you need a user with administrator privileges and that Wallop Build-IT cannot be installed in the same machine as Quarterdeck CleanSweep.

1. From the Windows NT Explorer locate the directory where the evaluation copy is and double-click on **WB25ee**. Build-IT files will start to unzip, requesting a directory to store the files.

   Note: The temporary files and directories that are created by the unzip operation are not deleted by the installation program. You will need to do that yourself.



WinZip Self-Extractor [WB25ee.EXE]

To unzip all files in WB25ee.EXE to the specified folder press the Unzip button.

Unzip To Folder: C:\TEMP

- [✓] Overwrite Files Without Prompting
- [✓] When Done Unzipping Run: SETUP.EXE

Licensed to Wallop Software

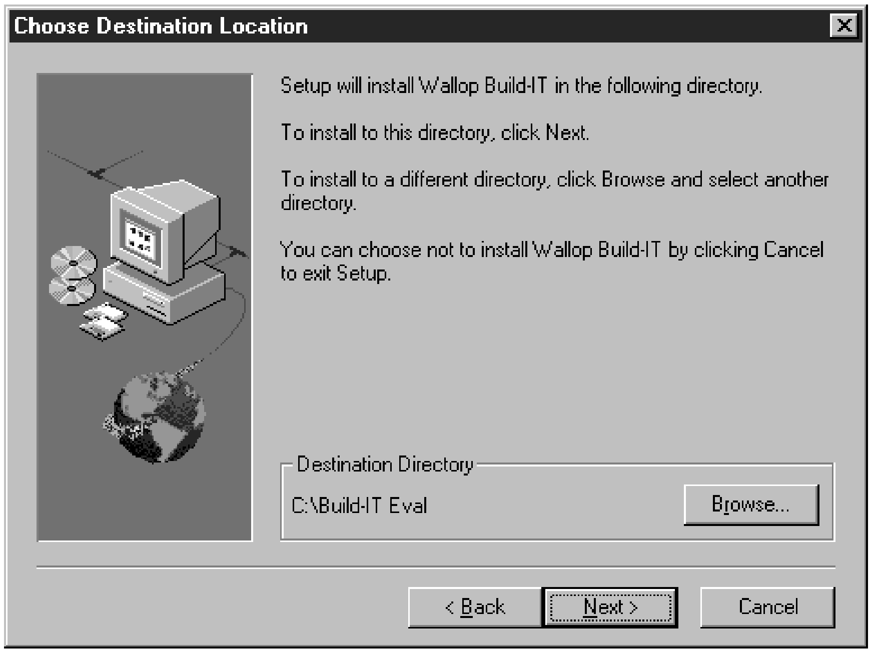
Figure 244. Unzipping the Installation Files

2. Once the files are fully unzipped, the setup program starts and displays the Welcome window. Look at the installation notes and click on **Next**. The following are displayed:

   a. At the License Agreement, click on **Yes** to continue.

   b. For User Information, type in your name and your company name and select **Next**.

   c. For Destination Location, the setup program suggests Build-IT as the default. Should you want to change it click on **Browse** to select another location for the code. If the directory does not exist, you are asked to confirm its creation. Click on **Yes**. After it creates the directory it will bring you back to the the same window showing the new directory. Click on **Next**.


Choose Destination Location

Setup will install Wallop Build-IT in the following directory.

To install to this directory, click Next.

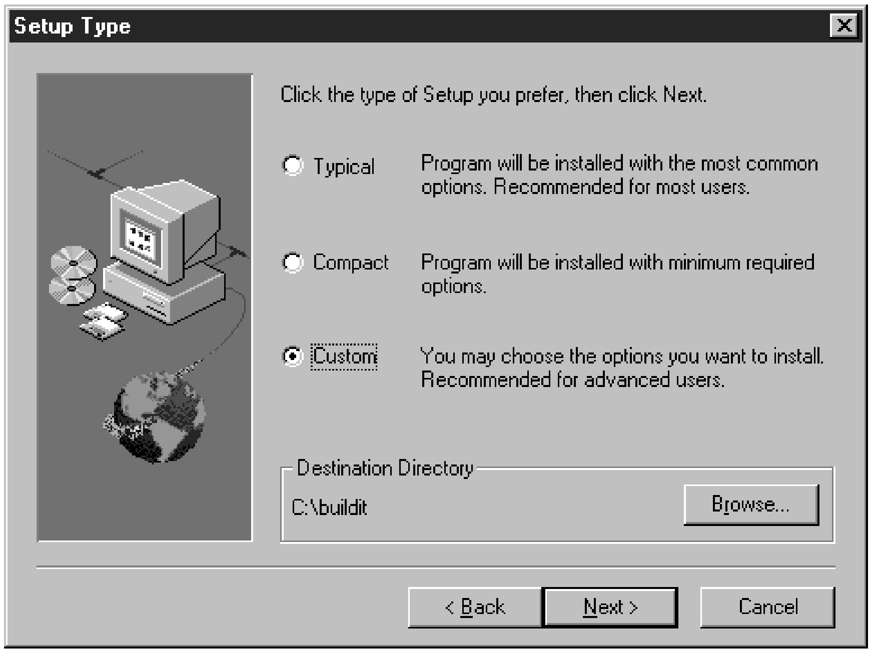
To install to a different directory, click Browse and select another directory.

You can choose not to install Wallop Build-IT by clicking Cancel to exit Setup.

Destination Directory: C:\Build-IT Eval

Figure 245. Destination Location Window

d. In the Setup Type window (see Figure 246), select **Custom**. This will allow you to choose the components you want. Click on **Next**.


Setup Type

Click the type of Setup you prefer, then click Next.

Typical — Program will be installed with the most common options. Recommended for most users.

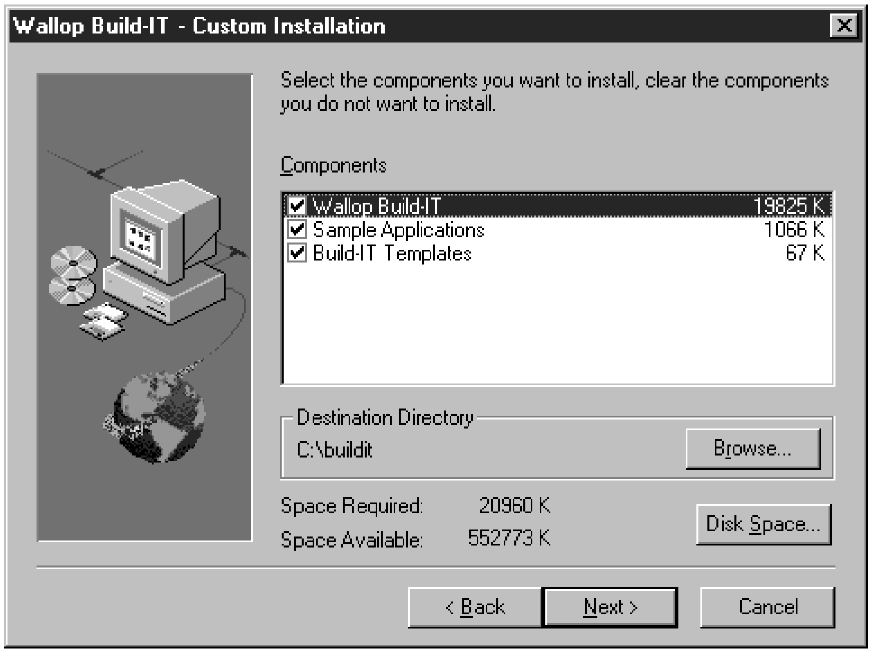
Compact — Program will be installed with minimum required options.

[✓ Custom] — You may choose the options you want to install. Recommended for advanced users.

Destination Directory: C:\buildit

Figure 246. Installation Type

e. We left all the components checked, thus the full evaluation product was installed. Then click on **Next**.


Wallop Build-IT - Custom Installation

Select the components you want to install, clear the components you do not want to install.

Components

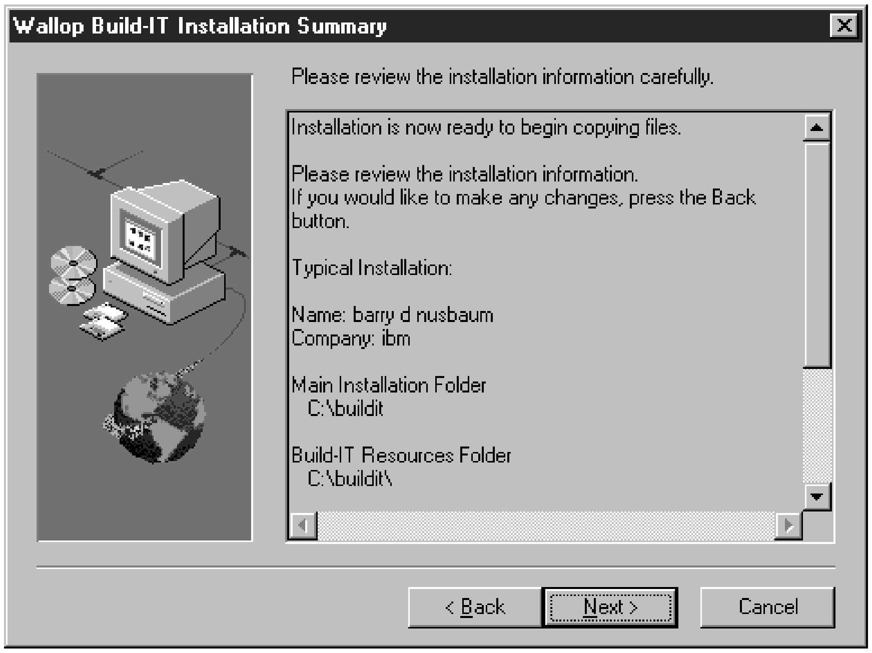
✓ Wallop Build-IT	19825 K
✓ Sample Applications	1066 K
✓ Build-IT Templates	67 K

Destination Directory
C:\buildit

Space Required: 20960 K
Space Available: 552773 K

Figure 247. Selected Components

f. Review all of the options and if changes are needed click on **Back** until you get to the window that you need to make your changes to. When everything is as you want it, click on **Next** to continue the installation.


Wallop Build-IT Installation Summary

Please review the installation information carefully.

Installation is now ready to begin copying files.

Please review the installation information.
If you would like to make any changes, press the Back button.

Typical Installation:

Name: barry d nusbaum
Company: ibm

Main Installation Folder
C:\buildit

Build-IT Resources Folder
C:\buildit\

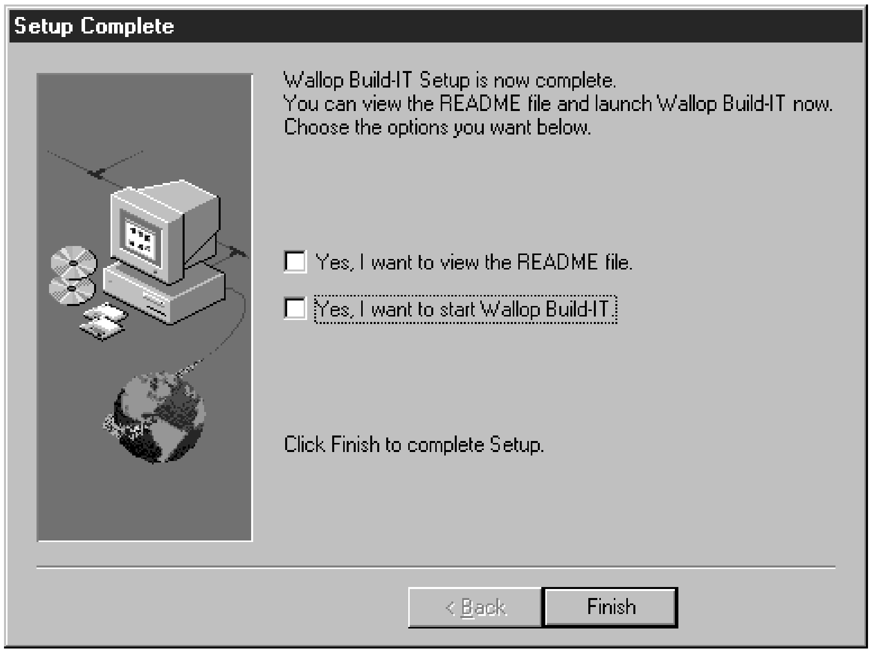
Figure 248. Installation Summary Window

3. At the end of the installation process, the Build-IT setup program will display a final window with two options:

   a. View the README file.

   b. Start Wallop Build-IT.

Select **Finish** and the installation is over. Remember to clean up the temporary directory used by Build-IT to unzip the installation files.


Setup Complete

Wallop Build-IT Setup is now complete.
You can view the README file and launch Wallop Build-IT now.
Choose the options you want below.

☐ Yes, I want to view the README file.

☐ Yes, I want to start Wallop Build-IT.

Click Finish to complete Setup.

Figure 249. Finishing the Installation

5.2.1.2 Multi-User Environment Installation

Build-IT is not a client/server product with different components for servers and clients, but it allows you to share directories in a central file server location. To do this, two folders need to be in the file server:

- Resources - All the files with the definitions for applications, libraries, components, templates and reports.
- Templates - Provided by Build-IT for a wide variety of components: HTML, JPEG, GIF, audio, video and Java.

  In addition, the Wallop Build-IT Enterprise version allows users to install the product from a central location.

5.2.2 Uninstallation

Wallop Build-IT provides a utility to uninstall the product. This utility is accessible from the Windows NT Explorer. To uninstall Wallop Build-IT do the following:

1. Close all Build-IT sessions.
2. Open Windows NT Explorer.
3. Locate the folder for Build-IT (c:\buildit in our installation). Open it and double-click on **Uninstall Wallop Build-IT**.

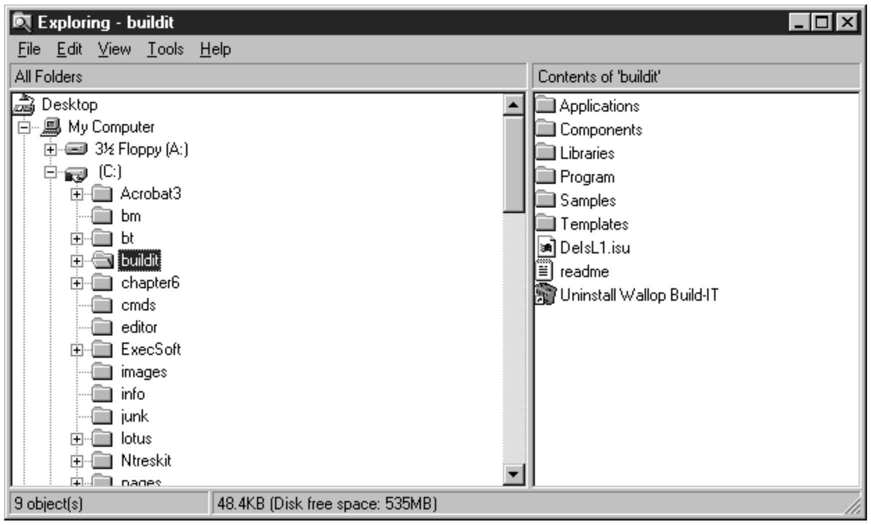
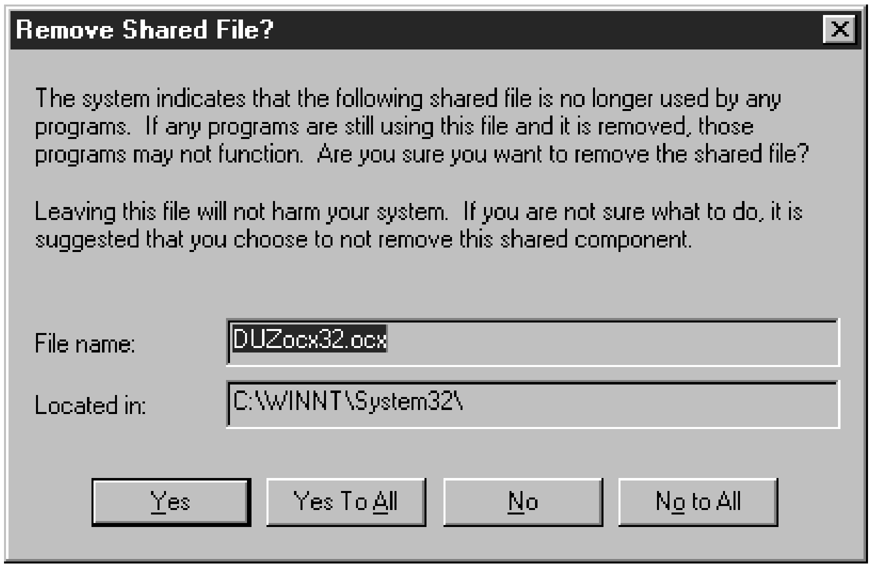


Figure 250. Locating Uninstalling Utility

4. A confirmation is requested. Click on **Yes**.
5. Then a new confirmation is requested to remove the shared files. Click on **Yes To All**.


Remove Shared File?

The system indicates that the following shared file is no longer used by any programs. If any programs are still using this file and it is removed, those programs may not function. Are you sure you want to remove the shared file?

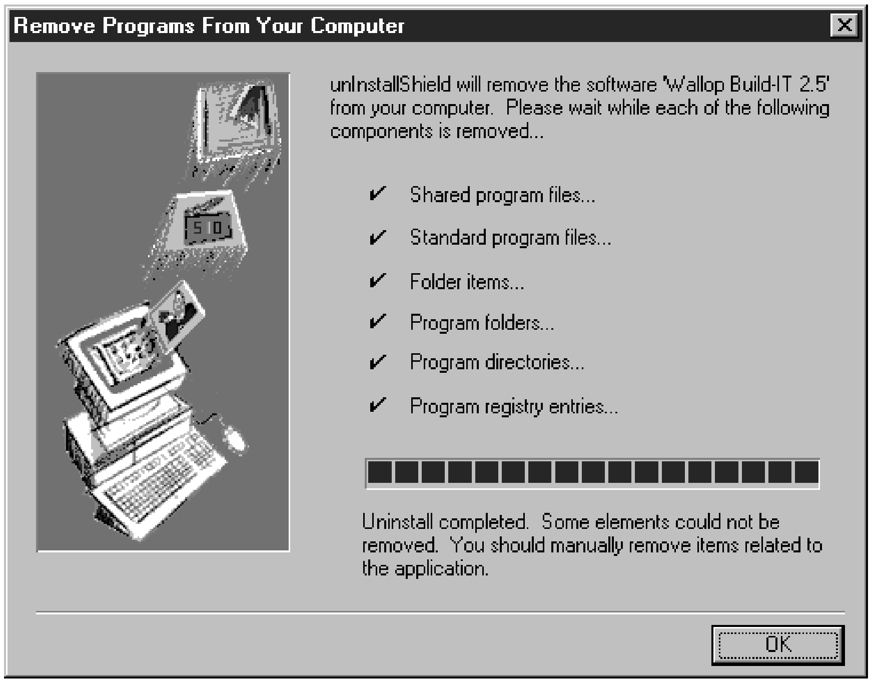
Leaving this file will not harm your system. If you are not sure what to do, it is suggested that you choose to not remove this shared component.

File name: DUZocx32.ocx

Located in: C:\WINNT\System32\

Figure 251. Removing Shared Files

6. Another confirmation to remove the shared files is displayed. Select **Yes**.
7. The utility starts to uninstall the product. When it finishes the last window is displayed (see Figure 252 on page 192). Notice that in the last paragraph it indicates that there are still some elements to remove manually. Click on **OK**.


Remove Programs From Your Computer

unInstallShield will remove the software 'Wallop Build-IT 2.5' from your computer. Please wait while each of the following components is removed...

✓ Shared program files...

✓ Standard program files...

✓ Folder items...

✓ Program folders...

✓ Program directories...

✓ Program registry entries...

Uninstall completed. Some elements could not be removed. You should manually remove items related to the application.

Figure 252. Last Window in the Uninstall Process

8. To remove the remaining elements, drag the buildit folder and drop it into the Recycle Bin.

5.2.3 Configuration

To configure Build-IT we must first start the product. Double-click on the **Wallop Build-IT** icon on the desktop.

When it is started for the first time, the evaluation version searches for an application, but it won't find one. To bypass this obstacle:

1. Click on **Create New** in the first window.
2. Accept the suggested application (untitled.vao) in the second window and click on **OK**.

The Build-IT working environment should be displayed. Do not worry about the untitled application for now. You can delete it later on.

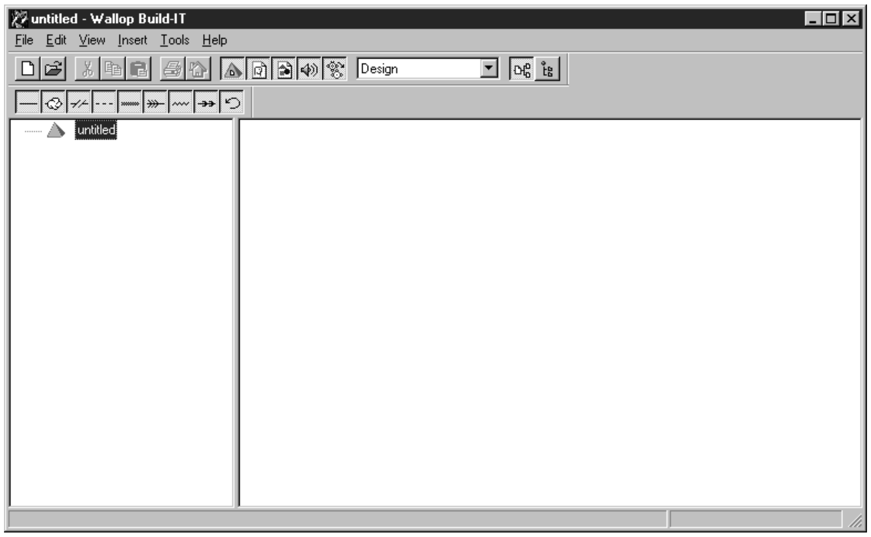


Figure 253. Build-IT Working Environment

Wallop Build-IT needs the following items to be configured:

- System Folders
- Authoring Tools
- Version Control System Tools. This is an optional feature.

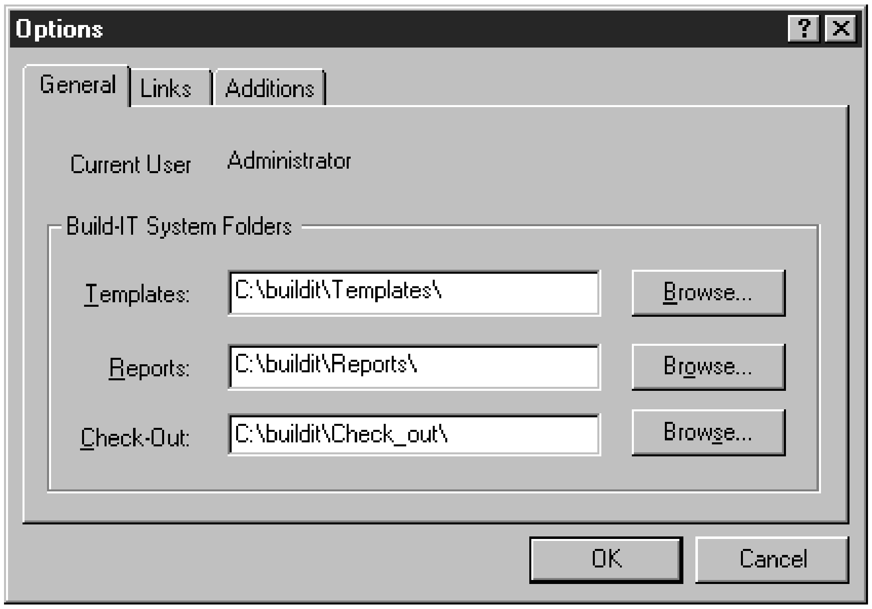
  Build-IT integrates with the following version control tools:

  – Microsoft Visual SourceSafe 4.0
  – Intersolv PVCS Version Manager 5.0
  – MKS Source Integrity 7.2
  – Pure Atria ClearCase 2.1 (Windows NT only)

  Version control tools will not be configured in this example.

To set up the system folders, do the following:

1. Select **Tools** from the action bar and then **Options**.
2. Click on the **General** tab.
3. Change the folders to the way you want them to be. For this example, we left them as they were. Select **OK**.



Current User Administrator

Build-IT System Folders

Templates: C:\buildit\Templates\

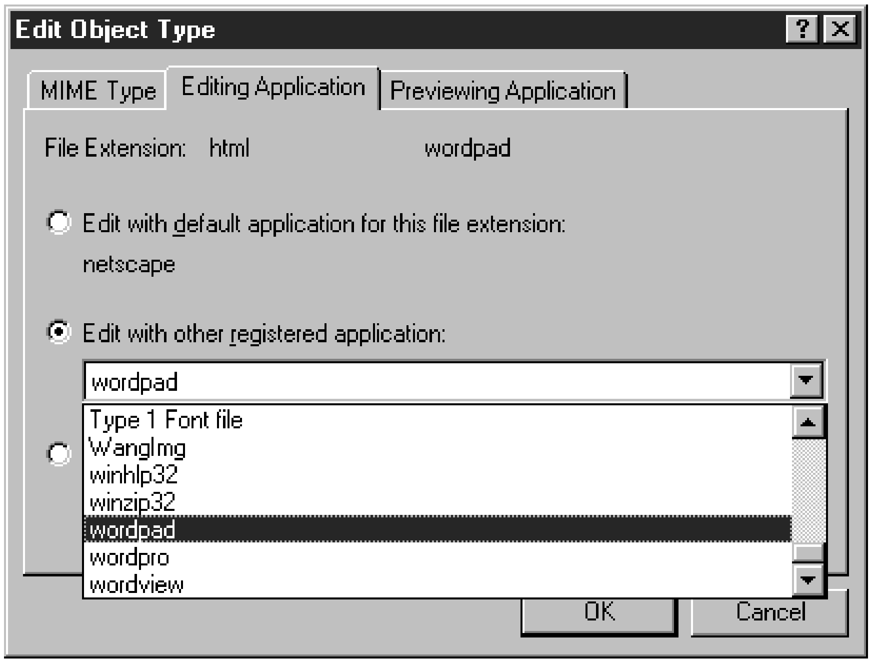
Reports: C:\buildit\Reports\

Check-Out: C:\buildit\Check_out\

Figure 254. Changing the System Folders

Now we change or add authoring tools. The steps to change the HTML editor are:

1. Select **Tools** from the action bar, and then **Component Registration**.
2. Type `HTML` in the File Extension field as shown in Figure 255.
3. Select **Edit** and click on the **Edit Application** tab. Now you can:
   - Select a registered application from the drop-down list.
   - Browse the system to search for other application (non-registered).



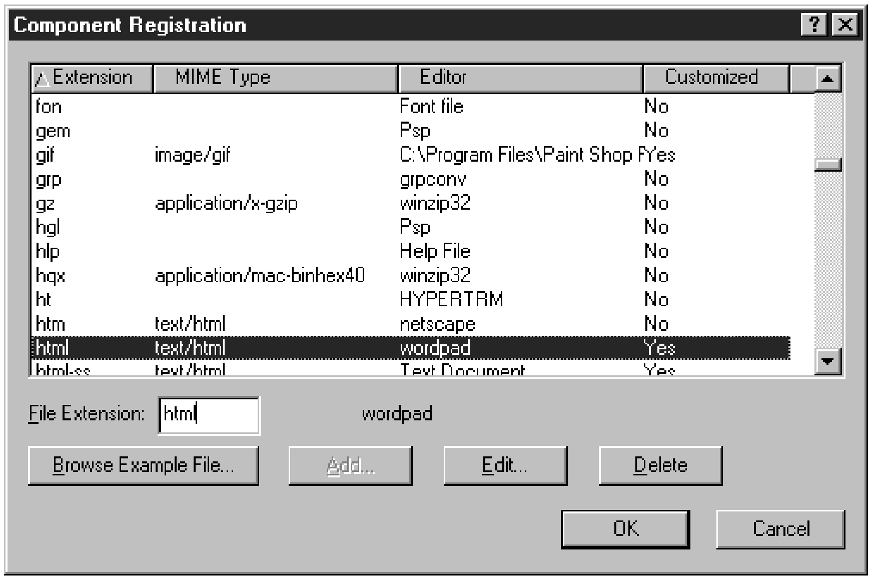
File Extension: html wordpad

Edit with default application for this file extension: netscape

Edit with other registered application: [✓] wordpad

Figure 255. Selecting an Authoring Tool

In this example we selected Wordpad from the registered application list. Click on **OK** and go back to the Component Registration window. To register more tools repeat the process. Otherwise, click on **OK**.



Component Registration

Extension	MIME Type	Editor	Customized
fon		Font file	No
gem		Psp	No
gif	image/gif	C:\Program Files\Paint Shop P	Yes
grp		grpconv	No
gz	application/x-gzip	winzip32	No
hgl		Psp	No
hlp		Help File	No
hqx	application/mac-binhex40	winzip32	No
ht		HYPERTRM	No
htm	text/html	netscape	No
html	text/html	wordpad	Yes
html-ss	text/html	Text Document	Yes

File Extension: html wordpad

Figure 256. Component Registration Window

5.2.4 Applications

Applications are the highest unit in the Build-IT hierarchy of elements. They can be built from scratch, retrieved from archives or they can be imported from existing applications into the Build-IT assembly environment.

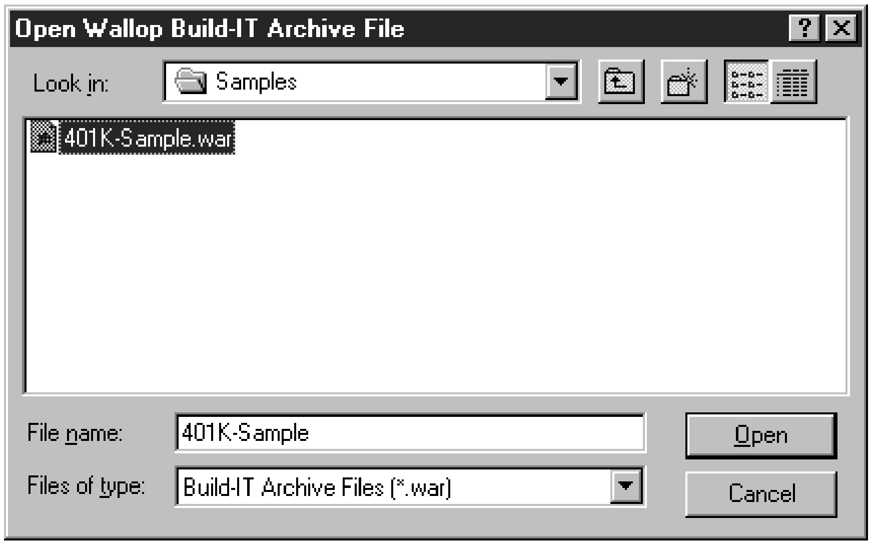
Build-IT provides a set of powerful functions to import and organize applications into its assembly environment. Since these functions were not available in the evaluation version, they are not described here.

In the next section, an example is provided to show how to retrieve an archived sample application, provided by Build-IT and then create a new one from scratch.

5.2.4.1 Retrieving Applications from the Archive

To retrieve an application from archives:

1. Select **File** from the action bar and then **Open Archive**.
2. Browse to locate the directory, C:\buildit\Samples (in our installation), and select the only application available, 401K-Sample.war. Click on **Open**. Note the type and extension of the file war. It is the extension for Build-IT archived files.


Open Wallop Build-IT Archive File

Look in: Samples

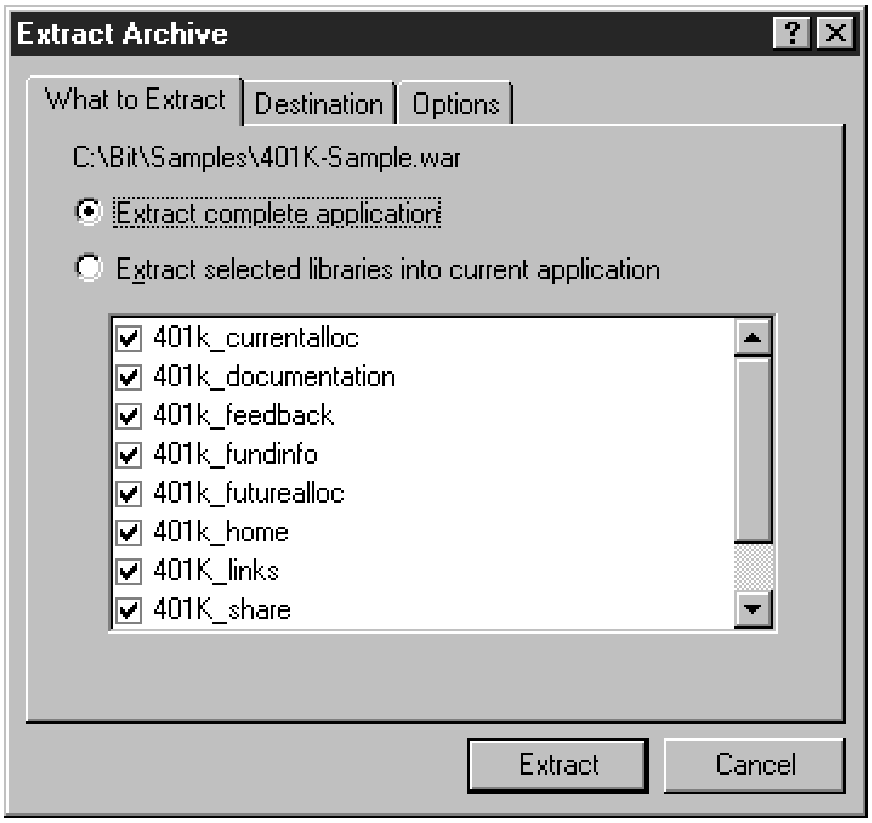
401K-Sample.war

File name: 401K-Sample

Files of type: Build-IT Archive Files (*.war)

Figure 257. Selecting the Archived Application

3. You can then select the components to retrieve. Leave all of them checked and click on the **Destination** tab.


Extract Archive

What to Extract | Destination | Options

C:\Bit\Samples\401K-Sample.war

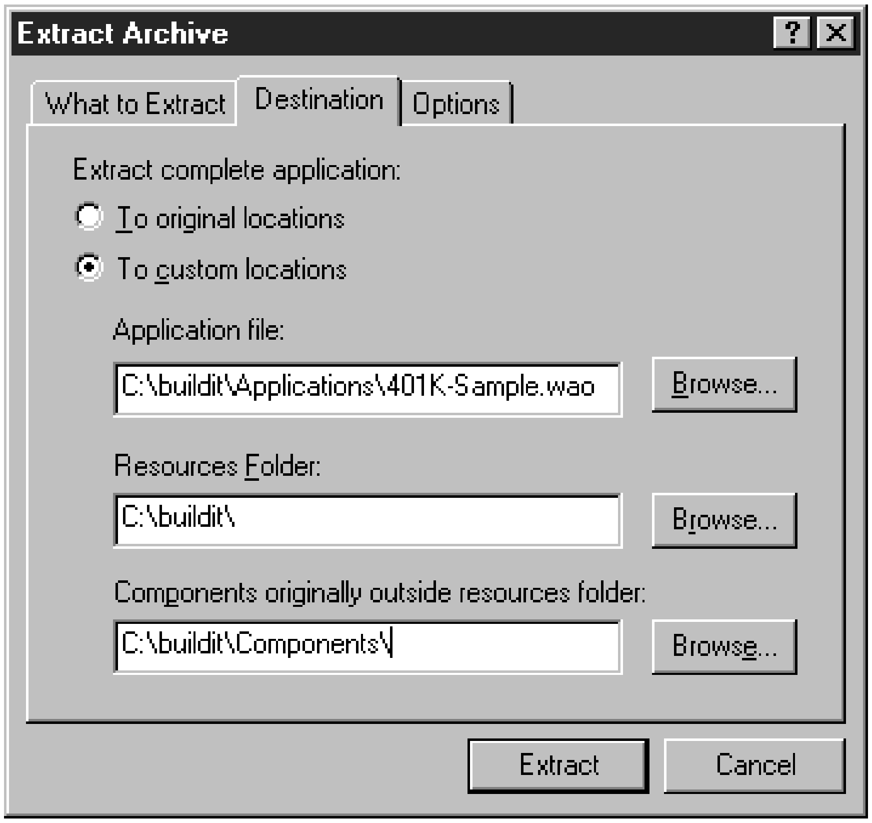
(●) Extract complete application

( ) Extract selected libraries into current application

- ✓ 401k_currentalloc
- ✓ 401k_documentation
- ✓ 401k_feedback
- ✓ 401k_fundinfo
- ✓ 401k_futurealloc
- ✓ 401k_home
- ✓ 401K_links
- ✓ 401K_share

Figure 258. Selecting Application Components

4. Unless we change the directories, the application will be written to its original directory: C:\Build-IT\. To write the files into other directories, click on the button **To custom locations**, type the new location and click on **Extract**.



Extract Archive

What to Extract | Destination | Options

Extract complete application:

- To original locations
- [✓ To custom locations]

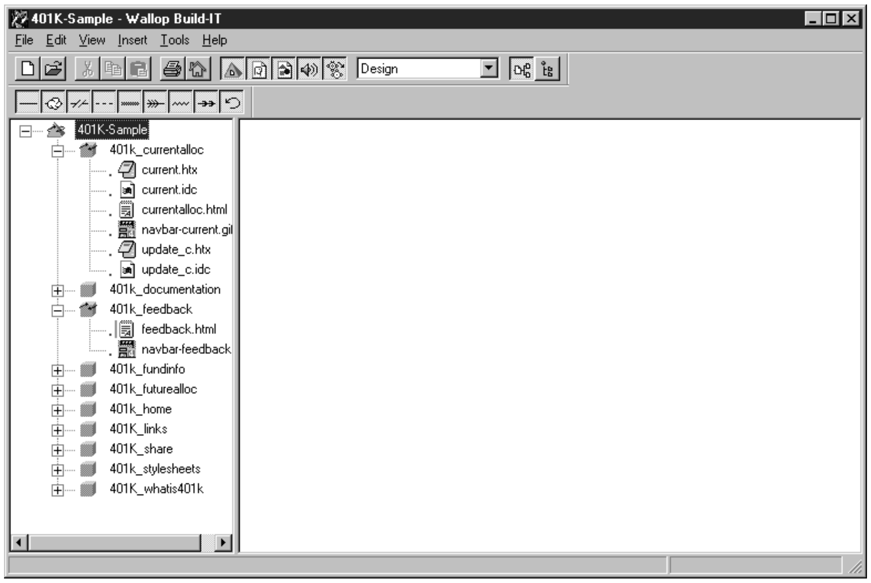
Application file: C:\buildit\Applications\401K-Sample.wao

Resources Folder: C:\buildit\

Components originally outside resources folder: C:\buildit\Components\

Figure 259. Changing the Default Locations

Look at the result in Figure 260. You can click some of the **+** symbols to expand the display for more elements. This is the hierarchical representation for the application 401K-Sample. We work with the rest of the elements in the application later on. For now, we continue on with the applications and create a new one.



401K-Sample - Wallop Build-IT
File Edit View Insert Tools Help
Design

```
401K-Sample
  401k_currentalloc
    current.htx
    current.idc
    currentalloc.html
    navbar-current.gif
    update_c.htx
    update_c.idc
  401k_documentation
  401k_feedback
    feedback.html
    navbar-feedback
  401k_fundinfo
  401k_futurealloc
  401k_home
  401K_links
  401K_share
  401k_stylesheets
  401K_whatis401k
```

Figure 260. Applications 401k-Sample in the Working Environment

5.2.4.2 Creating New Applications

To create a new application do the following:

1. Select **File** from the action bar and then **New**.
2. Type in the name of the new application, `pagecomp.vao` in our example and click on **OK**.

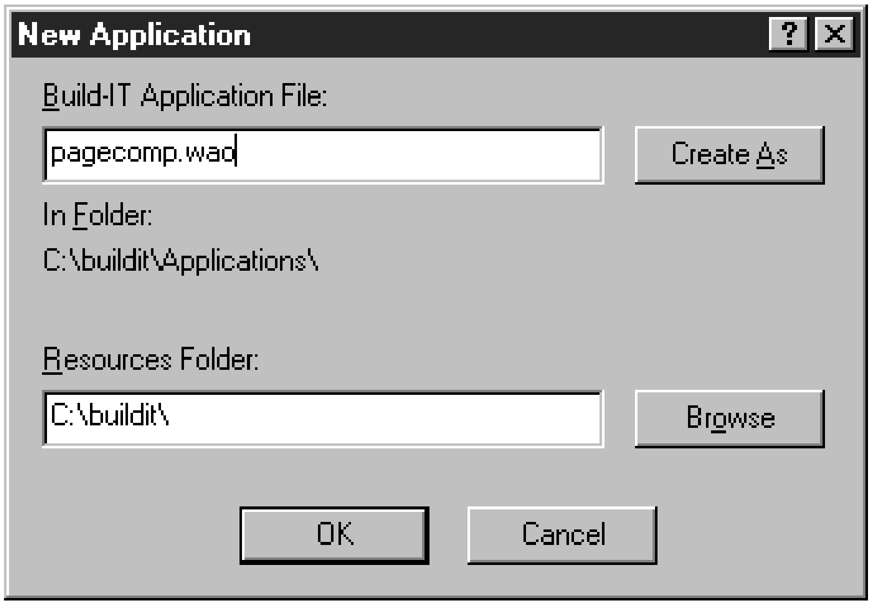


Figure 261. Creating a New Application

The new application is created. You will also need to add libraries and components which are shown 5.2.5, “Libraries” on page 199 and 5.2.6, “Components” on page 202.

5.2.4.3 Opening Applications

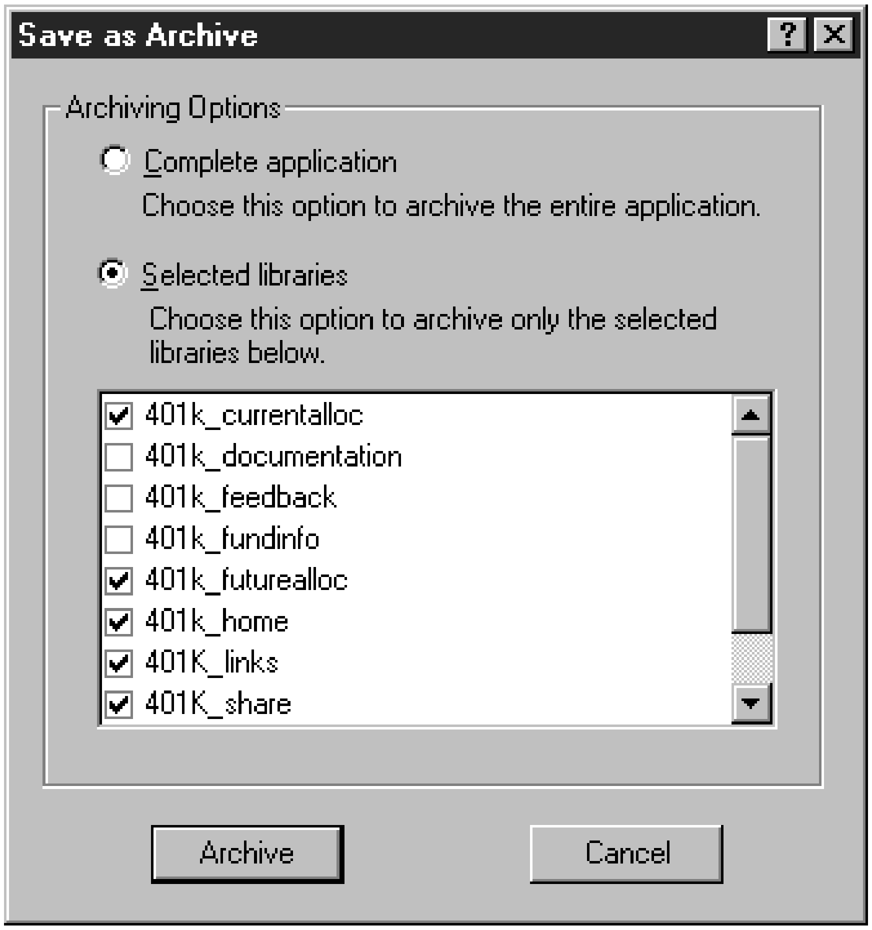
When an application is open it replaces the active application. To open an existing application:

1. Select **File** and then **Open**.
2. Select the application and click on **OK**.

5.2.4.4 Archiving Applications

Build-IT allows you to pack a complete application or a group of selected libraries from an application in a file. Incremental archiving is not supported. To archive an application do the following:

1. Open the application.
2. Select **File** and then **Save as Archive**.
3. If you want only some of the libraries to be archived, click on the button **Select libraries** and check the ones you need. Then click on **Archive** (see Figure 262 on page 199).



( ) Complete application
Choose this option to archive the entire application.

(●) Selected libraries
Choose this option to archive only the selected libraries below.

- ✓ 401k_currentalloc
- 401k_documentation
- 401k_feedback
- 401k_fundinfo
- ✓ 401k_futurealloc
- ✓ 401k_home
- ✓ 401K_links
- ✓ 401K_share

Figure 262. Selecting the Components for Archiving

4. You are then prompted for a name. Type it and click on **OK**.

5.2.4.5 Deleting an Application

To delete an application do the following:

1. Open the application.
2. Delete all the libraries in its hierarchy.
3. Delete the application by selecting **Edit** as the action and then **Delete** and then click on **Yes** to confirm.

As Build-IT needs to always have an active application you will be prompted to create a new application, open an existing one or exit Build-IT.

5.2.5 Libraries

In the Build-IT hierarchy, components within an application are grouped in libraries. Look at the hierarchy of the 401K-Sample application in the following window:

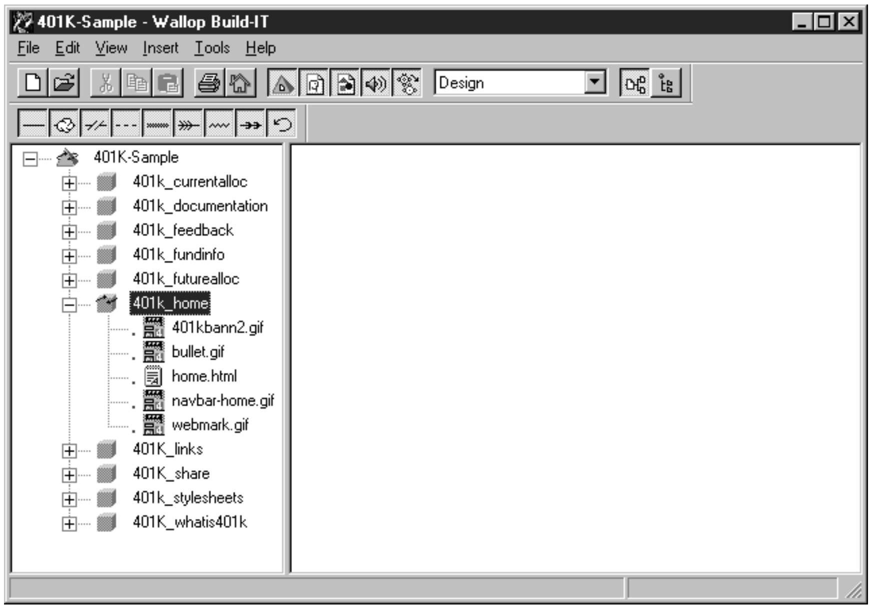
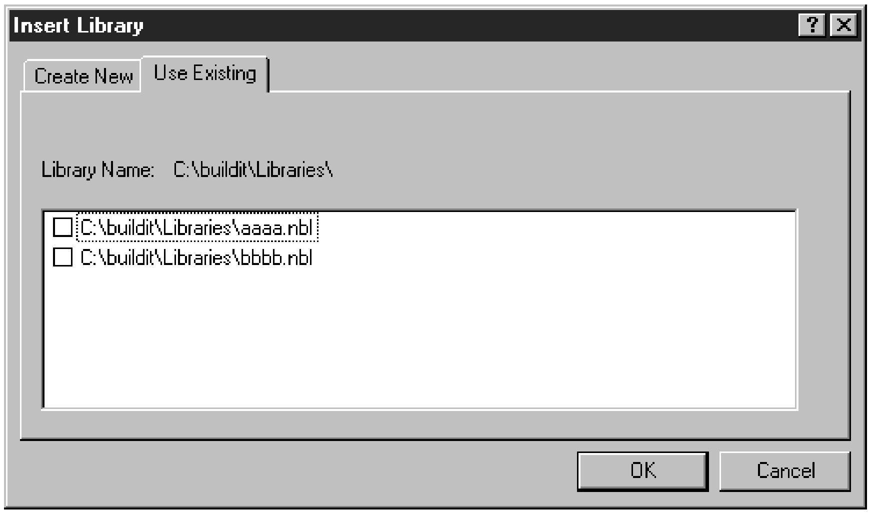


Figure 263. Libraries in 401K-Sample

5.2.5.1 Inserting and Creating Libraries

Libraries can be inserted at the root of the application or nested within another library. To insert a library in a hierarchy:

1. Click on the insertion point (application or library) to highlight it. Otherwise the Insert library option will not be enabled.
2. Select **Insert** from the action bar and then **Library**.
3. Click on the **Use Existing** tab. Observe that only the libraries not included in the hierarchy of 401K-Sample are displayed.



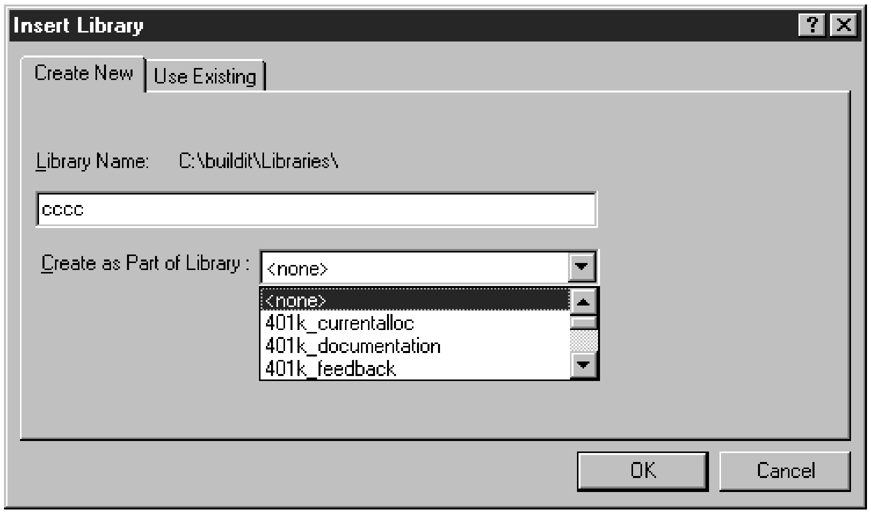
Library Name: C:\buildit\Libraries\

C:\buildit\Libraries\aaaa.nbl
C:\buildit\Libraries\bbbb.nbl

Figure 264. Inserting Existing Libraries

4. Check the first one and then click on **OK**.

To insert a new one, repeat steps 1 to 3 and in step 4 select **Create New**. Type in the name of the new library and then click on the drop-down list to display it. Note that it is possible to override the insertion point, leave the existent choice or make a new one and click on **OK**. The library is created and ready to receive components.



Library Name: C:\buildit\Libraries\

cccc

Create as Part of Library : <none>

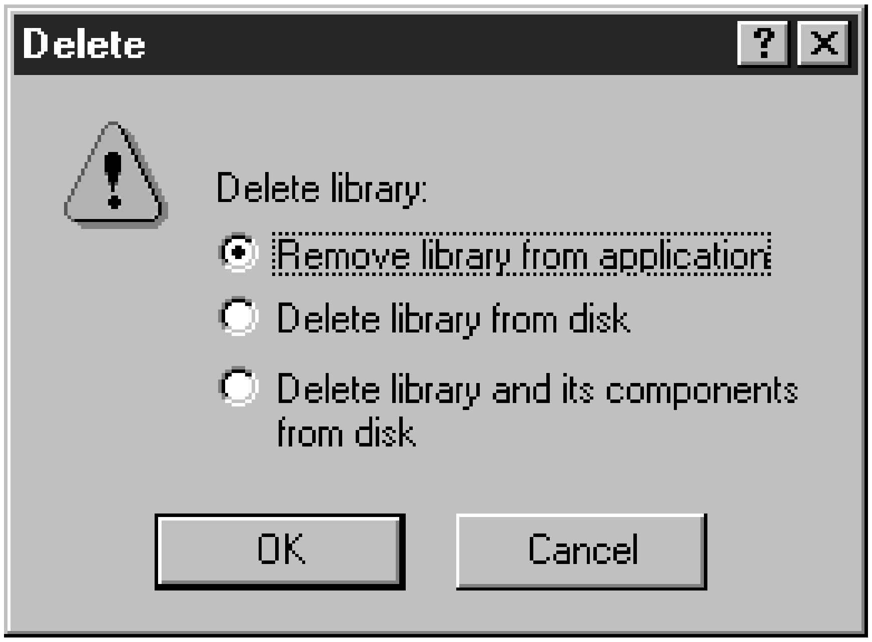
<none>
401k_currentalloc
401k_documentation
401k_feedback

Figure 265. Inserting a New Library

5.2.5.2 Deleting Libraries

There are three levels of library deletion in Build-IT:

1. Remove the library from the active application. The library is not deleted but it is detached from the application.
2. Delete the library from disk. This option detaches and deletes the library.
3. Delete the library and its components from disk, which detaches and deletes not only the library but all its components also.



Delete library:

(●) Remove library from application
( ) Delete library from disk
( ) Delete library and its components from disk

Figure 266. Deleting Library Options

To delete a library:

1. Highlight it.
2. Select **Edit** from the action bar, then **Delete**.
3. Select the type of deletion and click on **OK**.

5.2.6 Components

Components are the active elements that make up Web applications, for example, HTML, images, CGIs and Java. Build-IT applications and libraries are only a way to organize and manage components.

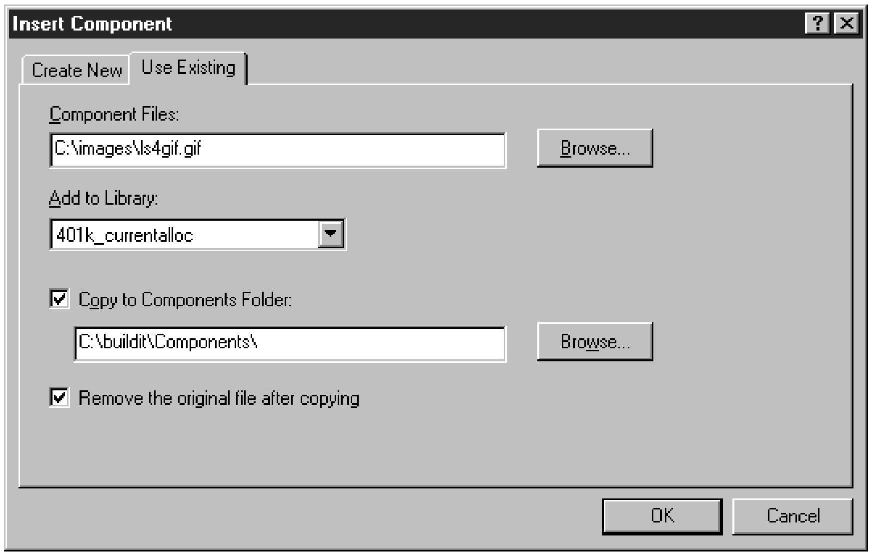
Since components are created and managed by external tools, we describe in this section how to insert and delete them from the Build-IT hierarchy.

5.2.6.1 Inserting and Creating Components

To insert an existing component into a library:

1. Highlight the target library.
2. Select **Insert** from the action bar and then **Component**.
3. Click on the **Use Existing** tab.
4. Type in the components full path and name. Select an insertion point and check **Copy to Components Folder** and **Remove the original file after copying**. Then click on **OK**.

   Look at Figure 267. Note that the component was not in the Build-IT folder for components in our installation. Since components are created by external tools, they can exist outside the scope of Build-IT. This makes it difficult to have the proper control for deployment of applications. The last two options checked in this window allow you to correct those situations.



Component Files: C:\images\ls4gif.gif

Add to Library: 401k_currentalloc

☑ Copy to Components Folder: C:\buildit\Components\

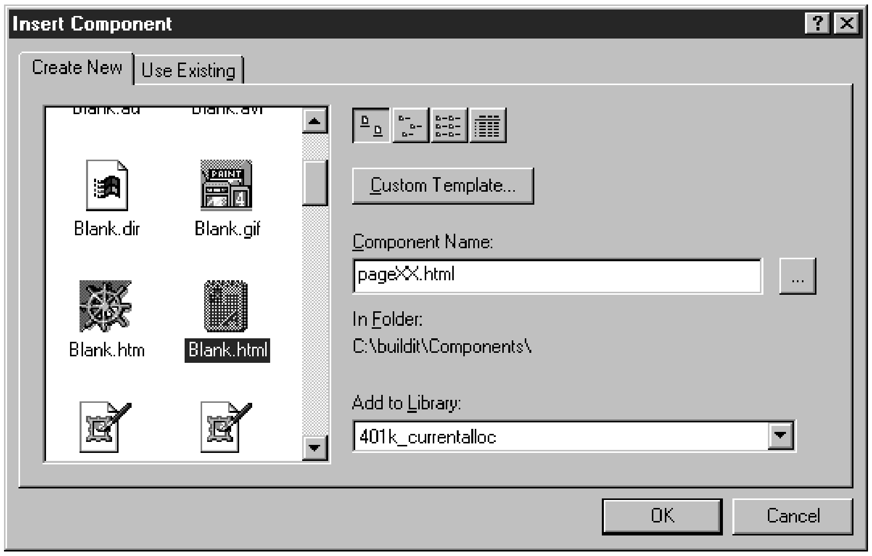
☑ Remove the original file after copying

Figure 267. Inserting an Existing Component

To insert a new component, repeat steps 1 and 2, and then in the Create New tab:

1. Select the template for the component according to its type. In this case, it is HTML.
2. Type in the name.

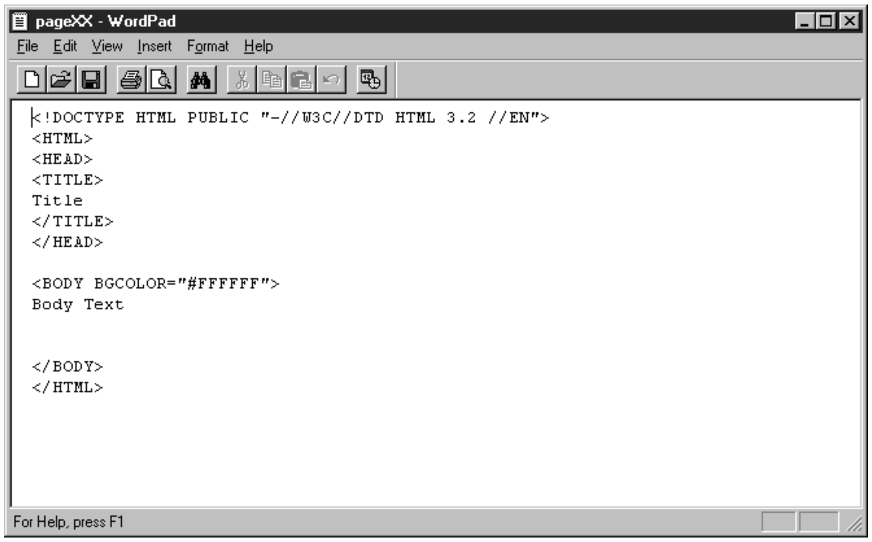
3. Change the insertion point if necessary by means of the Add to Library field.
4. Click on **OK**.



Component Name: pageXX.html
In Folder: C:\buildit\Components\
Add to Library: 401k_currentalloc

Figure 268. Changing the Insertion Point for a Component

Note that Build-IT starts editing the file in the external tool. Look at the contents of the template. Close the text editor for now.

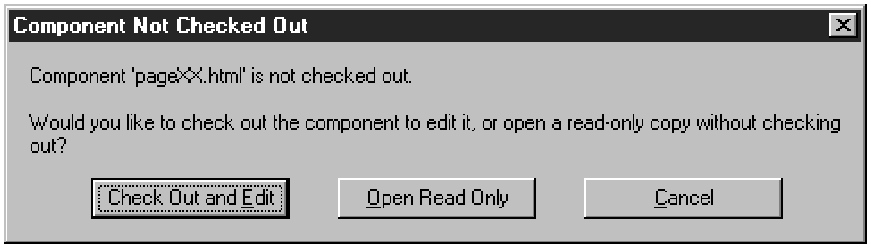


```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 //EN">
<HTML>
<HEAD>
<TITLE>
Title
</TITLE>
</HEAD>

<BODY BGCOLOR="#FFFFFF">
Body Text


</BODY>
</HTML>
```

Figure 269. Contents of a HTML Template

5.2.6.2 Editing and Previewing Components

To edit a component double-click on it. To edit it, Build-IT forces the component to be checked out, otherwise it is open in read-only mode. When a component is checked out it stays locked for all other users. Therefore, do not forget to check it in when your editing is over.


Component Not Checked Out

Component 'pageXX.html' is not checked out.

Would you like to check out the component to edit it, or open a read-only copy without checking out?

Figure 270. Prompting to Check Out a Component

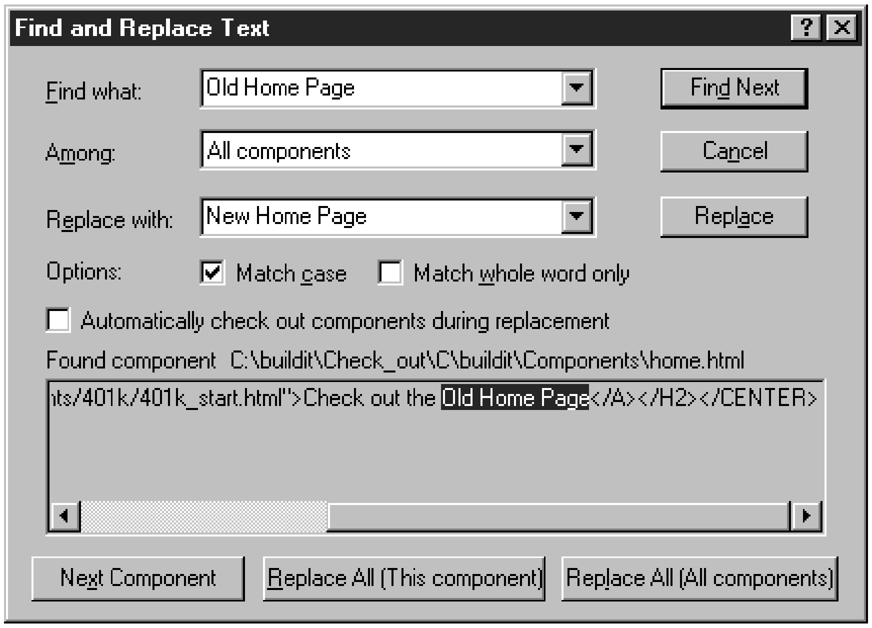
To preview a component select **Tools** from the action bar and the **Preview Component** or press F8. This will start the default browser and execute or show the component.

5.2.6.3 Finding Components

Build-IT provides some functions to find components within an application using some search options. When checking the integrity of applications we look at this function and provide some examples.

It is also possible to find and replace text in all the application or only in some components. Let us look at an example:

1. Select **Edit** from the action bar and then **Find and Replace Text**.
2. Type `Old Home Page` in the field Find what and any other text in the field Replace with. Then click on **Find**.


Find and Replace Text

Find what: Old Home Page

Among: All components

Replace with: New Home Page

Options: [✓ Match case] Match whole word only

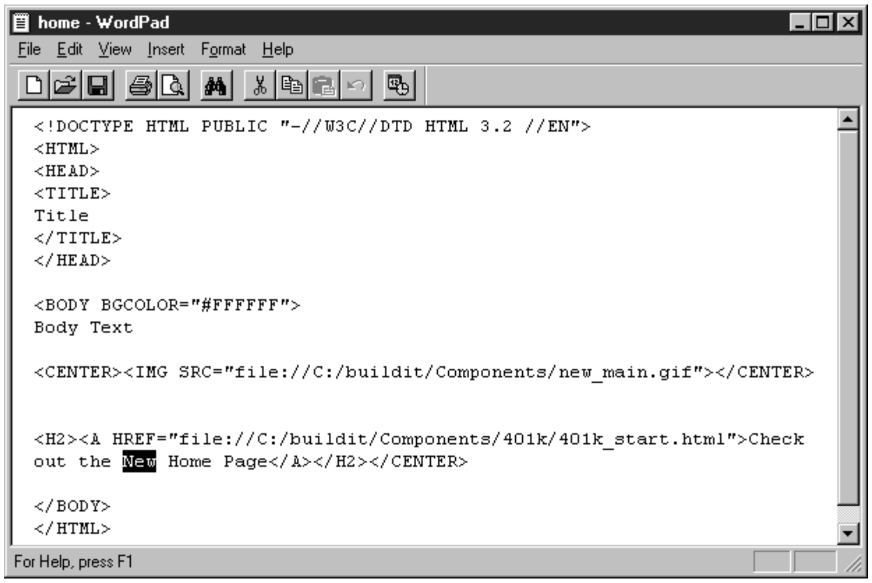
Automatically check out components during replacement

Found component C:\buildit\Check_out\C\buildit\Components\home.html

```
nts/401k/401k_start.html">Check out the Old Home Page</A></H2></CENTER>
```

Figure 271. Finding and Replacing Text in Components

3. Click on the button **Replace All (This component)** and edit the component to see the result.



```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 //EN">
<HTML>
<HEAD>
<TITLE>
Title
</TITLE>
</HEAD>

<BODY BGCOLOR="#FFFFFF">
Body Text

<CENTER><IMG SRC="file://C:/buildit/Components/new_main.gif"></CENTER>


<H2><A HREF="file://C:/buildit/Components/401k/401k_start.html">Check
out the New Home Page</A></H2></CENTER>

</BODY>
</HTML>
```

Figure 272. Result of the Change

5.2.6.4 Assigning Status to Components

Build-IT facilitates the use of a manual workflow by means of the status of the components which graphically shows the step of the component in the development/deployment cycle. A status is manually assigned for the people working with Build-IT. There are no automatic controls for the status to be corrected assigned.

To set the status of a component:

1. Right click on the component and select **Set status** in the pop-up menu.
2. Click on the desired status. A vertical bar with the corresponding color is showed to the left of the component.

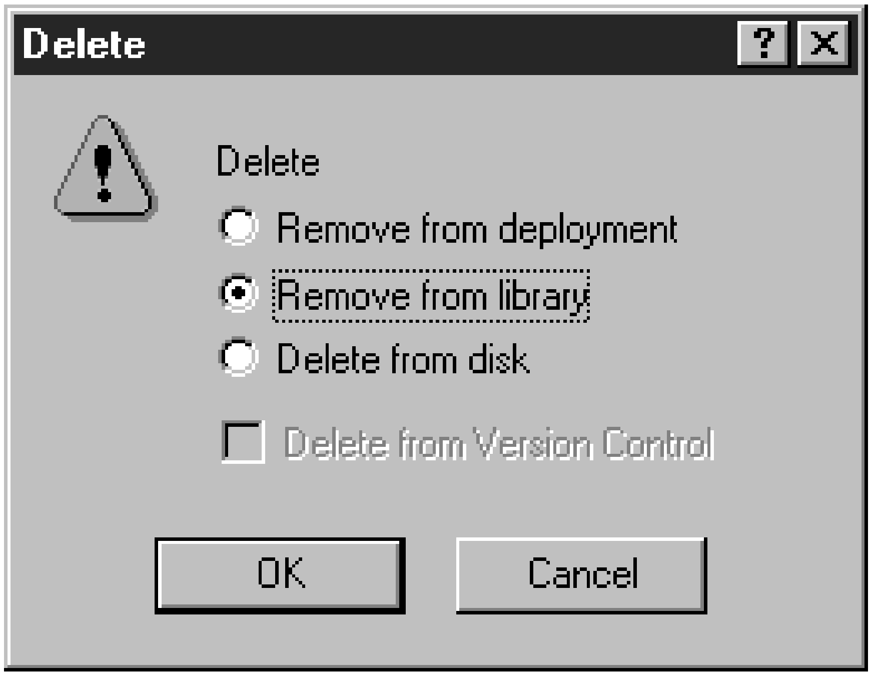
In 5.2.8, “Setting the Application for Deployment” on page 208 we show examples of finding components according to their status.

Colors and text for the status can be customized.

5.2.6.5 Deleting Components

There are three levels of component deletion:

1. Deleting the component from deployment, which keeps the component in the original library but prevents the component from being deployed.
2. Deleting the component from the library. The component is also deleted from deployment if it is not referenced from any other library.
3. Deleting the component from disk.



Delete

Delete

( ) Remove from deployment [✓ Remove from library] ( ) Delete from disk

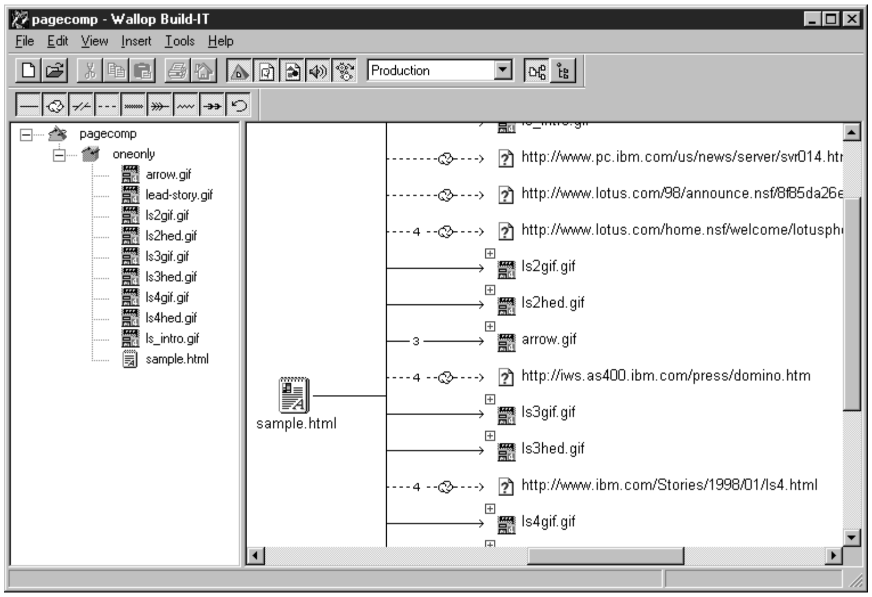
☐ Delete from Version Control

Figure 273. Options When Deleting Components

To delete a component, click on it and select **Edit** from the action bar and then **Delete**. Click on the button for the type of deletion and select **OK**.

5.2.7 Links

Build-IT recognizes and automatically manages all links that follow industry standards in HTML, JavaScript, VBScript, Perl and other languages. Look at Figure 274, which shows all the links in the page built with Netscape Page Composer in the previous section.



pagecomp - Wallop Build-IT
File Edit View Insert Tools Help
Production
pagecomp
oneonly
arrow.gif
lead-story.gif
ls2gif.gif
ls2hed.gif
ls3gif.gif
ls3hed.gif
ls4gif.gif
ls4hed.gif
ls_intro.gif
sample.html
sample.html
http://www.pc.ibm.com/us/news/server/svr014.htr
http://www.lotus.com/98/announce.nsf/8f85da26e
4
http://www.lotus.com/home.nsf/welcome/lotusph
ls2gif.gif
ls2hed.gif
3
arrow.gif
4
http://iws.as400.ibm.com/press/domino.htm
ls3gif.gif
ls3hed.gif
4
http://www.ibm.com/Stories/1998/01/ls4.html
ls4gif.gif

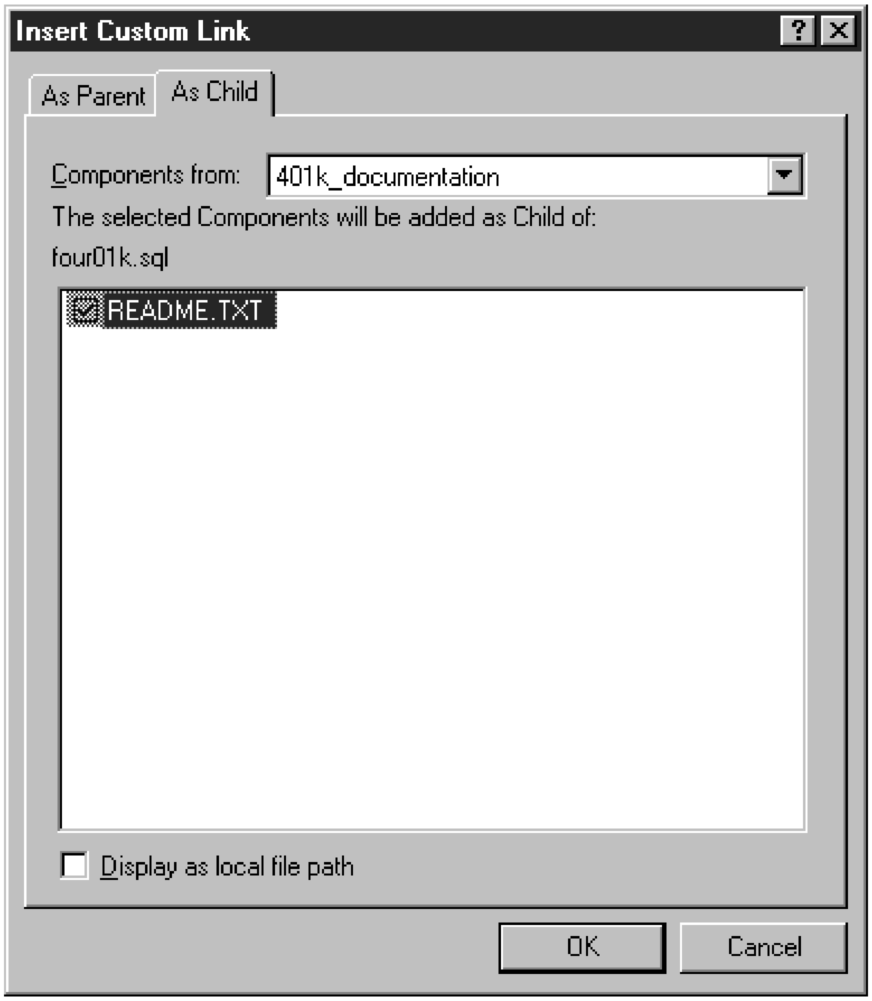
Figure 274. Links in Sample Page

Build-IT allows users to manually create additional types of links to facilitate their control over the application. These link types are called by Build-IT:

- Generated - When some components are parameters for others.
- Source - Intended to keep track of the source files of some components.
- Custom - For other use.

To show how to create a custom link, let us expand the library 401k_documentation. It contains two components with no links. Let us establish a link in which the component four01k.sql is the parent and the component README.TXT is the child.

1. Click on **four01k.sql**, select **Insert** in the action bar and then **Custom Link**.
2. To shorten the search for the other, select in the Components from drop-down list **library 401k_documentation**. Now check **README.TEXT** and click on **OK**.


Insert Custom Link

Components from: 401k_documentation

The selected Components will be added as Child of:

four01k.sql

☑ README.TXT

☐ Display as local file path

Figure 275. Creating a Custom Link

Look at the result in Figure 276 on page 208. It shows graphically the custom link between the two components.

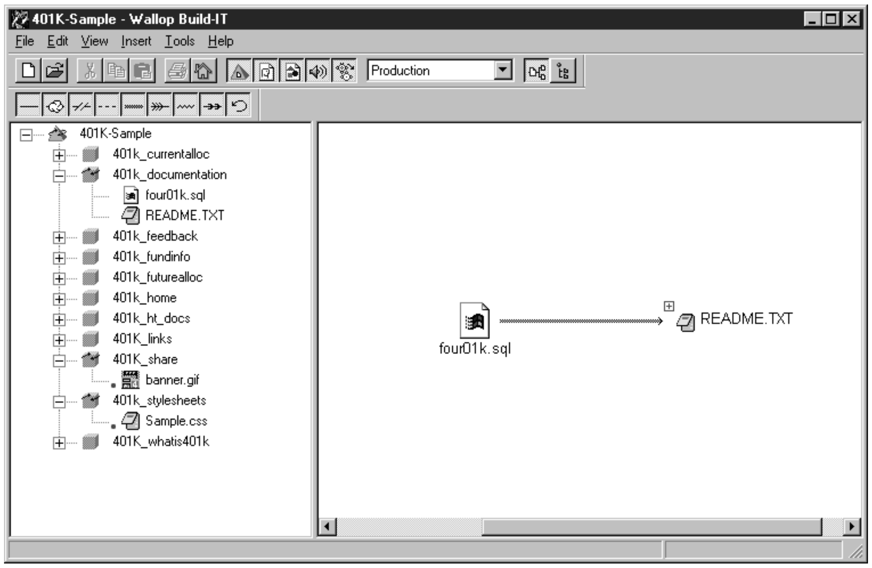


Figure 276. Graphical Display of the Custom Link

5.2.8 Setting the Application for Deployment

There are two main tasks to perform on the application before deployment:

1. Set all the components to the right status.

   In our sample we have four significant statuses for components:

   a. Work in progress

   b. Ready for editing

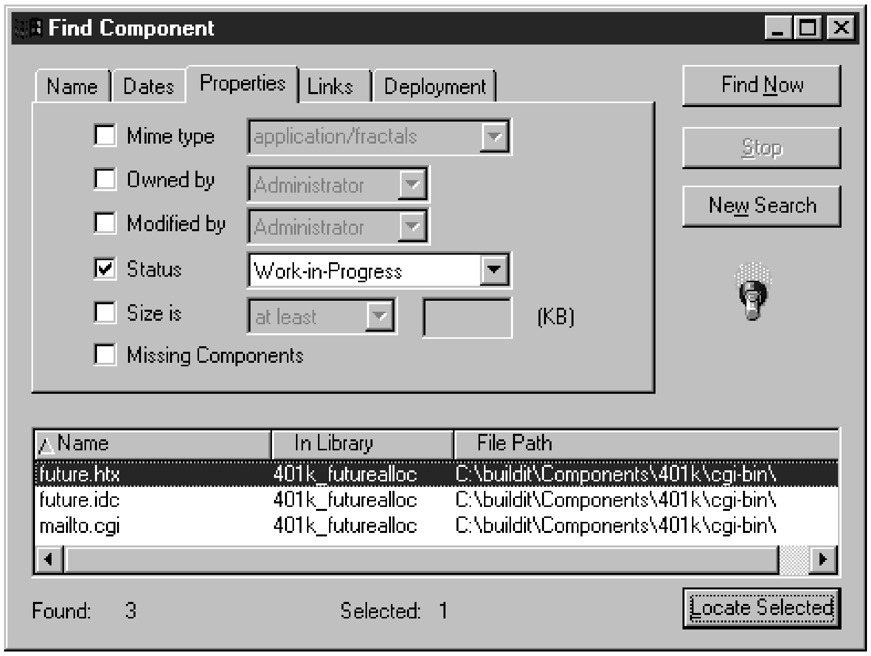
   c. Requires approval

   d. Ready for deployment

   Thus the task will consist of performing all the activities needed to set all the components to Ready-for-deployment status.

   We can use the Build-IT facility for finding components. To see what components are not yet ready for deployment:

   - Select **Edit** from the action bar and then **Find Component**.
   - Click on the **Properties** tab, check **Status**, select **Work-in-Progress** and click on **Find Now**. See the result in Figure 277 on page 209.



Find Component

- [ ] Mime type: application/fractals
- [ ] Owned by: Administrator
- [ ] Modified by: Administrator
- [✓] Status: Work-in-Progress
- [ ] Size is: at least (KB)
- [ ] Missing Components

Name	In Library	File Path
future.htx	401k_futurealloc	C:\buildit\Components\401k\cgi-bin\
future.idc	401k_futurealloc	C:\buildit\Components\401k\cgi-bin\
mailto.cgi	401k_futurealloc	C:\buildit\Components\401k\cgi-bin\

Found: 3 Selected: 1

Figure 277. Finding Components by Status

- Click on **Locate Selected** to get the components with Work-in-Progress status in the working environment of Build-IT. Now we are able to work with them and change their status as shown in the following window:

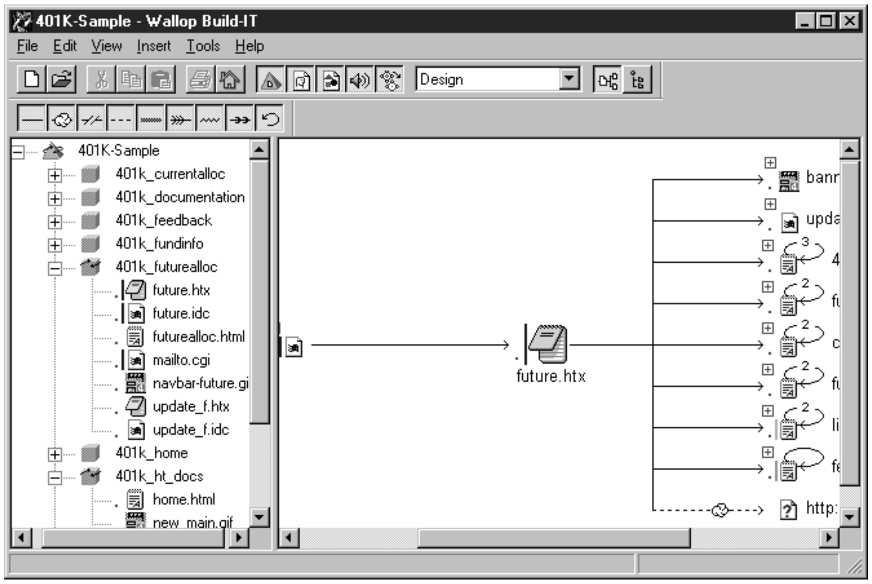


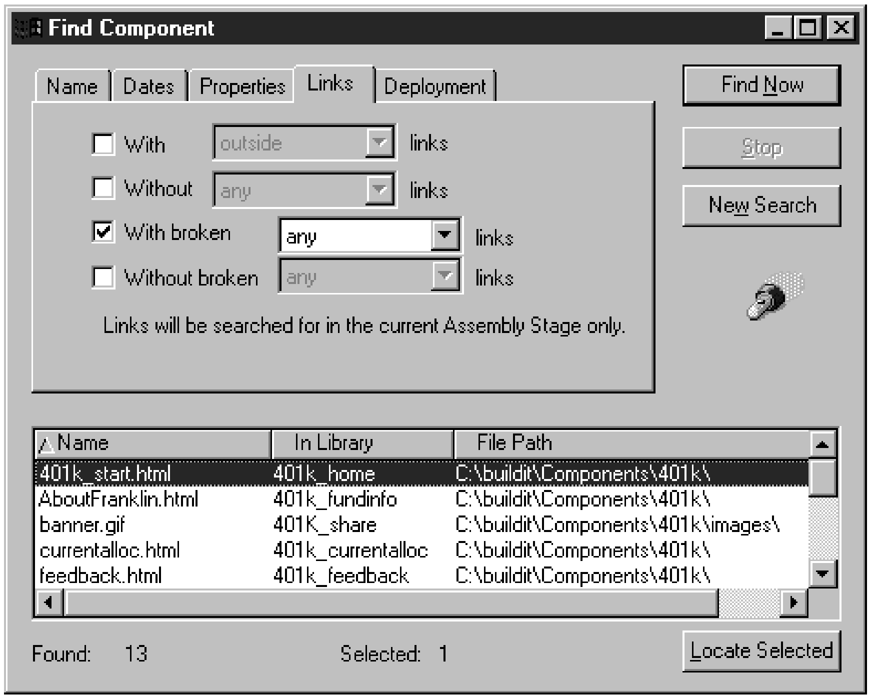
Figure 278. View of the Work-in-Progress Components

2. The second major task is to check the integrity of the application. Build-IT will verify that all the links needed for the application to properly execute are working.

   Select **Tools** and then **Check Application Integrity** and Build-IT will immediately start to check the application. This process may take awhile and all of the components will be locked while verified. Once it is finished Build-IT issues a report to the default browser with the results.

To have a look at all the broken links we made use of the utility to find components:

- Select **Edit** and then **Find Component** and click on the tab **Links**. Check **With broken** and select **any** from the list. Then click on **Find Now**.



[ ] With outside links
[ ] Without any links
[✓] With broken any links
[ ] Without broken any links

Links will be searched for in the current Assembly Stage only.

Name	In Library	File Path
401k_start.html	401k_home	C:\buildit\Components\401k\
AboutFranklin.html	401k_fundinfo	C:\buildit\Components\401k\
banner.gif	401K_share	C:\buildit\Components\401k\images\
currentalloc.html	401k_currentalloc	C:\buildit\Components\401k\
feedback.html	401k_feedback	C:\buildit\Components\401k\

Found: 13 Selected: 1

Figure 279. Finding Components with Broken Links

- Select the components you want and click on **Locate Selected**. The working environment will display the components and its links.

5.2.9 Setting the Deployment Environment

Before deploying the application, we need to prepare the deployment environment:

1. Click on the **Deployment View** icon in the tool bar. Select **Production** from the assembly stage list in the tool bar (see Figure 280). Build-IT will show the directory tree for the production environment.

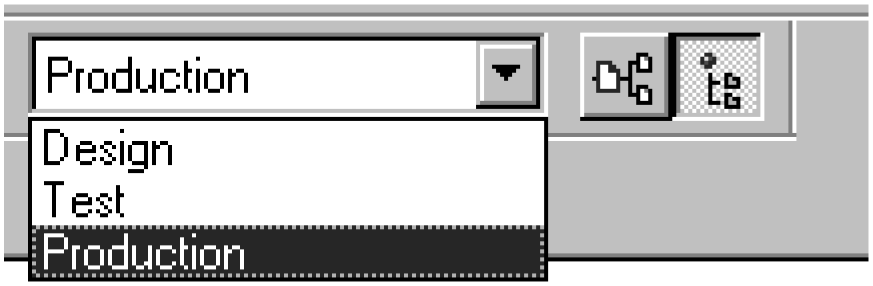


Figure 280. Icon for the Deployment View

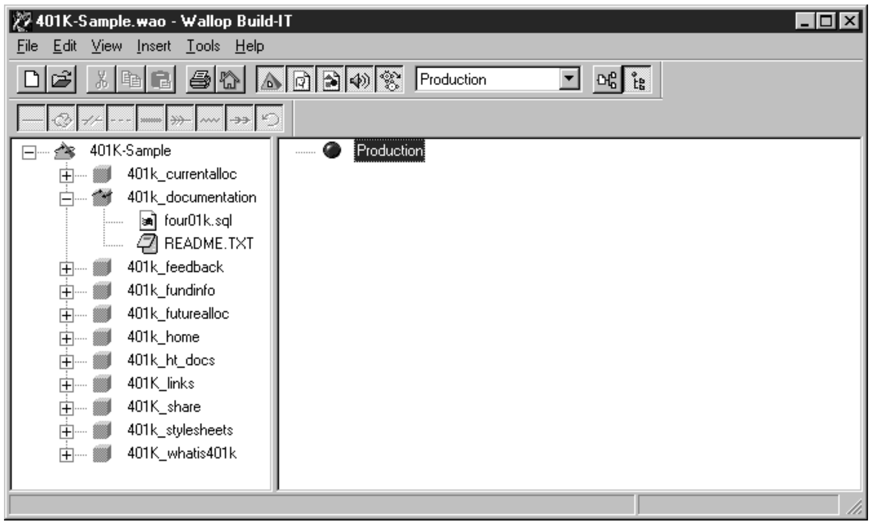
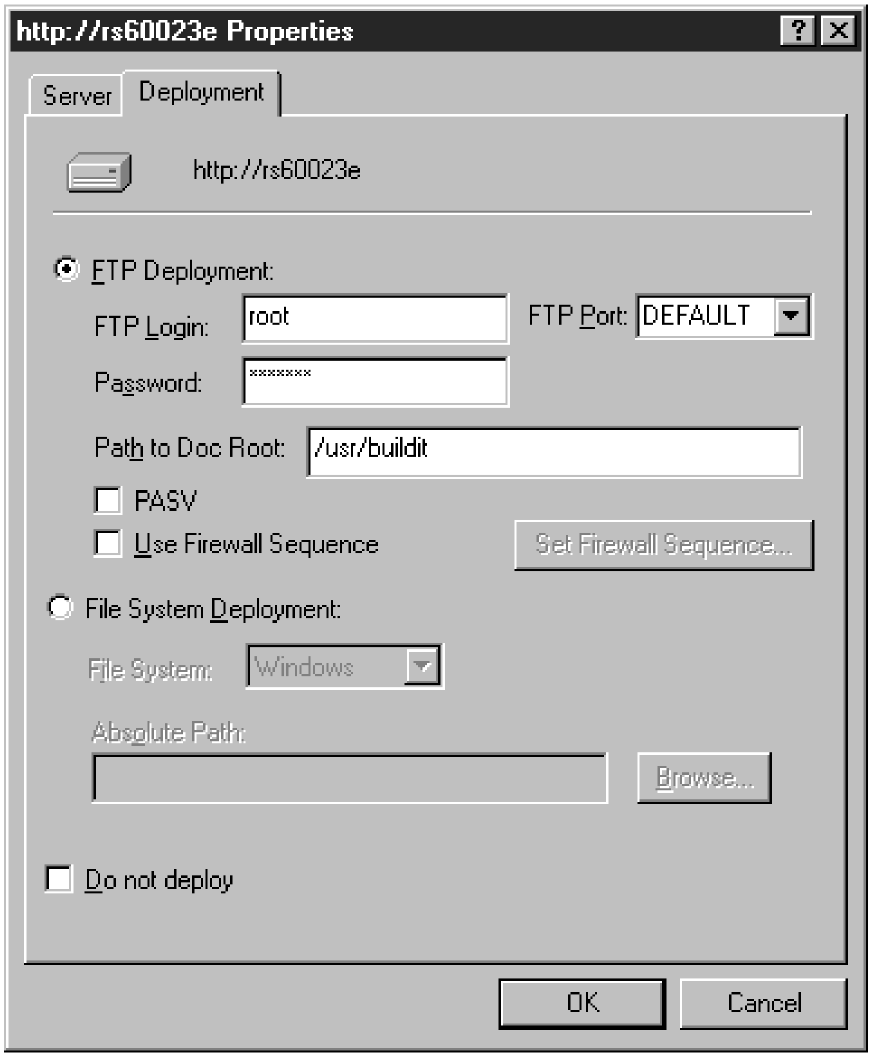


Figure 281. Deployment View of the Production Stage

2. Insert a server. Right click on **Production** and select **Insert** and then **Server.**
3. Type in the name of the server, http://rs600023e in our example, and click on **OK**.
4. To set the properties of the server, right click on the server symbol and select **Properties**, then click on the **Deployment** tab and fill in:
   - User ID for FTP login
   - Password
   - Path to the root directory for our directory structure
5. Click on **OK**.


http://rs60023e Properties

http://rs60023e

[● FTP Deployment:]

FTP Login: root

FTP Port: DEFAULT

Password: *******

Path to Doc Root: /usr/buildit

☐ PASV

☐ Use Firewall Sequence

○ File System Deployment:

File System: Windows

Absolute Path:

☐ Do not deploy

Figure 282. Production Server Properties

6. To start inserting folders, right click on the server symbol and select **Insert** from the pop-up menu. Then select **Folder**. Type in the name of the folder and click on **OK**.

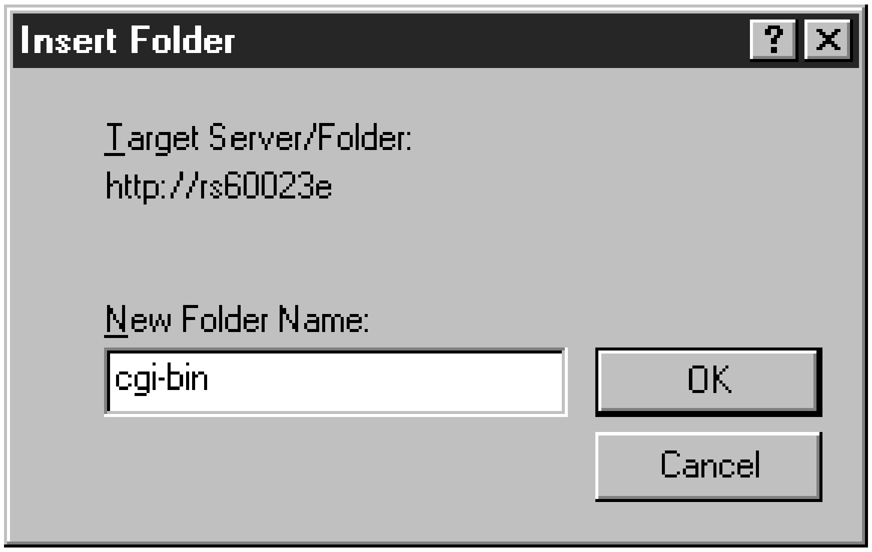


Figure 283. Inserting a New Folder

7. Repeat the process until all of the structure is built.
8. Now drag the components from the left side of the Build-IT window and drop them on the corresponding directories at the right side of the window.

Everything is now ready to start deploying the application.

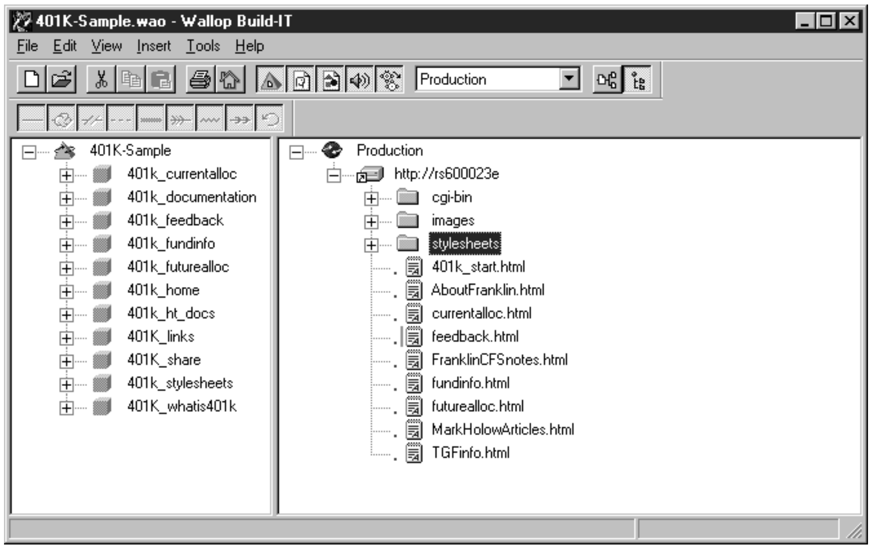


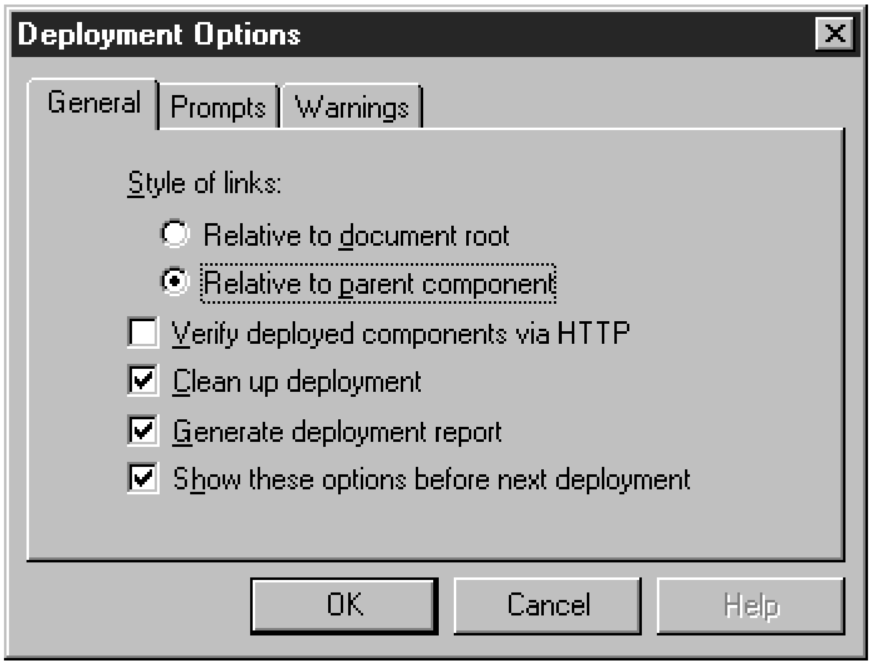
Figure 284. Directory Structure in the Production Server

5.2.10 Deploying the Application

We can deploy all of the application, or only some folders or components. To deploy any element just right click on it and select **Deploy this ...** in the pop-up menu.

In order for Build-IT to create all of the directory structure in the destination server, we deployed all of the application. Do the following:

1. To set the deployment options, select **Tools** in the action bar and then **Deployment Options**.
2. Since the HTTP server is not yet pointing at the Build-IT directory, uncheck Verify deployed components via HTTP. Select the button for **Relative to parent component** and click on **OK**.

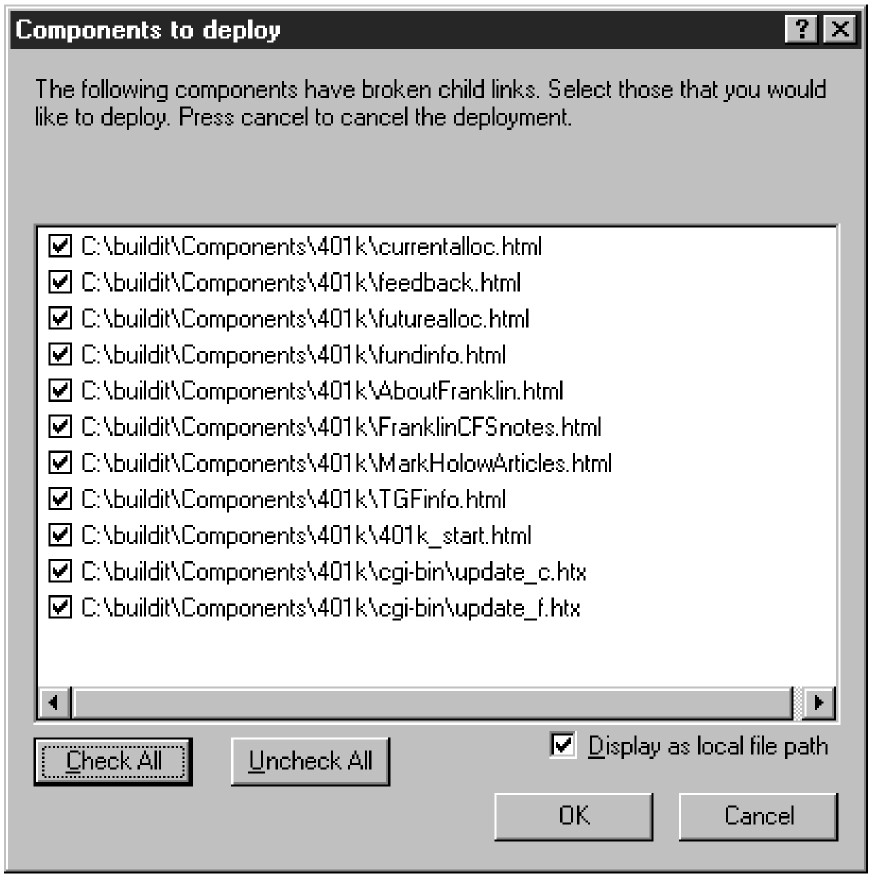

Deployment Options

General | Prompts | Warnings

Style of links:
- ○ Relative to document root
- ● Relative to parent component
- ☐ Verify deployed components via HTTP
- ☑ Clean up deployment
- ☑ Generate deployment report
- ☑ Show these options before next deployment

Figure 285. Deployment Options

3. To start the deployment click on the **Production** icon and select **Deploy whole Application** in the pop-up menu.
4. You are requested to confirm the deployment option. Click on **OK**.
5. Now we are asked to confirm the components to deploy. Check all of them and click on **OK**.



Components to deploy

The following components have broken child links. Select those that you would like to deploy. Press cancel to cancel the deployment.

- ☑ C:\buildit\Components\401k\currentalloc.html
- ☑ C:\buildit\Components\401k\feedback.html
- ☑ C:\buildit\Components\401k\futurealloc.html
- ☑ C:\buildit\Components\401k\fundinfo.html
- ☑ C:\buildit\Components\401k\AboutFranklin.html
- ☑ C:\buildit\Components\401k\FranklinCFSnotes.html
- ☑ C:\buildit\Components\401k\MarkHolowArticles.html
- ☑ C:\buildit\Components\401k\TGFinfo.html
- ☑ C:\buildit\Components\401k\401k_start.html
- ☑ C:\buildit\Components\401k\cgi-bin\update_c.htx
- ☑ C:\buildit\Components\401k\cgi-bin\update_f.htx

☑ Display as local file path

Figure 286. Components to Deploy

Build-IT shows a window with the progress of the file transfer.

6. We are required to confirm the creation of the folders. Click on **Yes to All**.

The process of deploying the application is finished. See in Figure 287 on page 216 the directory tree created by Build-IT on the destination server.

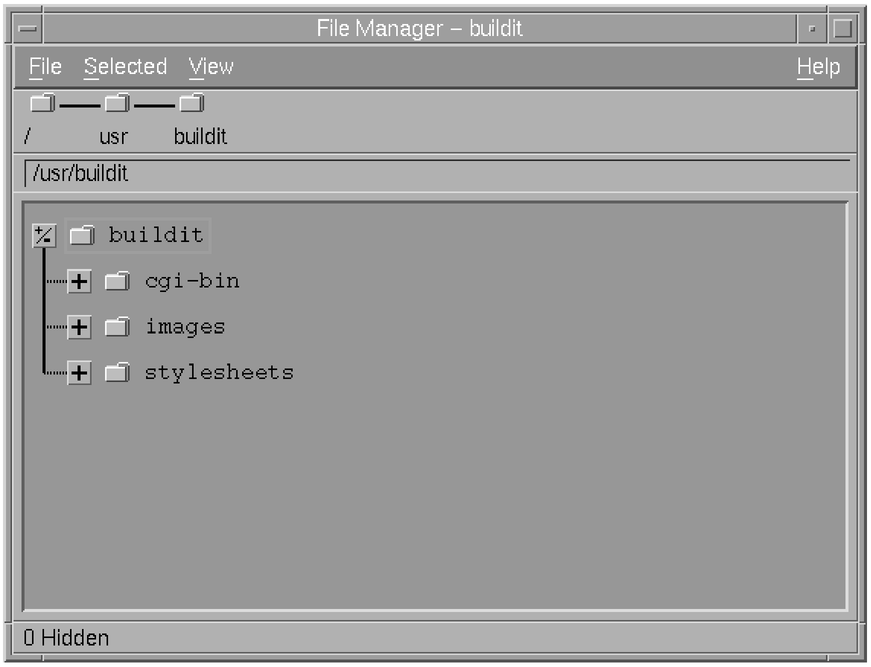


Figure 287. Directories in the Destination Server

Chapter 6. Special Notices

This publication is intended to help programmers and analysts who are new to the Network Computing Framework understand how to use some of IBM's tools to do Web publishing. The information in this publication is not intended as the specification of any programming interfaces that are provided by Lotus Domino Go Webserver, NetObjects Fusion, Lotus BeanMachine or ServletExpress. See the PUBLICATIONS section of the IBM Programming Announcement for Lotus Domino Go Webserver, NetObjects Fusion, Lotus BeanMachine and ServletExpress for more information about what publications are considered to be product documentation.

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Chapter 7. Related Publications

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

7.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see "How to Get ITSO Redbooks" on page 221.

- *Network Computing Framwork Component Guide*, SG24-2119

7.2 Redbooks on CD-ROMs

Redbooks are also available on CD-ROMs. **Order a subscription** and receive updates 2-4 times a year at significant savings.

CD-ROM Title	**Subscription Number**	**Collection Kit Number**
System/390 Redbooks Collection	SBOF-7201	SK2T-2177
Networking and Systems Management Redbooks Collection	SBOF-7370	SK2T-6022
Transaction Processing and Data Management Redbook	SBOF-7240	SK2T-8038
Lotus Redbooks Collection	SBOF-6899	SK2T-8039
Tivoli Redbooks Collection	SBOF-6898	SK2T-8044
AS/400 Redbooks Collection	SBOF-7270	SK2T-2849
RS/6000 Redbooks Collection (HTML, BkMgr)	SBOF-7230	SK2T-8040
RS/6000 Redbooks Collection (PostScript)	SBOF-7205	SK2T-8041
RS/6000 Redbooks Collection (PDF Format)	SBOF-8700	SK2T-8043
Application Development Redbooks Collection	SBOF-7290	SK2T-8037

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- **GOPHER link to the Internet** - type `GOPHER.WTSCPOK.ITSO.IBM.COM`
- **Tools disks**

  To get LIST3820s of redbooks, type one of the following commands:

  ```
  TOOLS SENDTO EHONE4 TOOLS2 REDPRINT GET SG24xxxx PACKAGE
  TOOLS SENDTO CANVM2 TOOLS REDPRINT GET SG24xxxx PACKAGE (Canadian users only)
  ```

  To get BookManager BOOKs of redbooks, type the following command:

  ```
  TOOLCAT REDBOOKS
  ```

  To get lists of redbooks, type the following command:

  ```
  TOOLS SENDTO USDIST MKTTOOLS MKTTOOLS GET ITSOCAT TXT
  ```

  To register for information on workshops, residencies, and redbooks, type the following command:

  ```
  TOOLS SENDTO WTSCPOK TOOLS ZDISK GET ITSOREGI 1998
  ```

  For a list of product area specialists in the ITSO: type the following command:

  ```
  TOOLS SENDTO WTSCPOK TOOLS ZDISK GET ORGCARD PACKAGE
  ```

- **Redbooks Web Site on the World Wide Web**

  `http://w3.itso.ibm.com/redbooks/`

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  `http://www.elink.ibmlink.ibm.com/pbl/pbl`

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