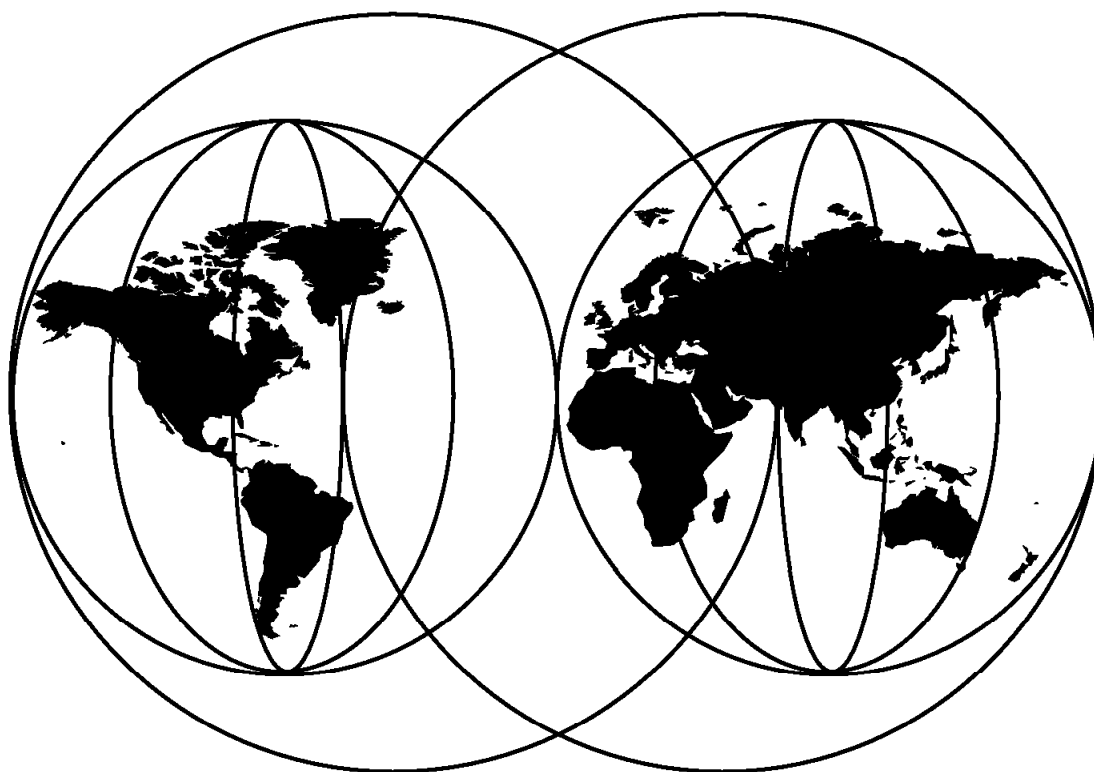




AS/400 e-commerce: Net.Commerce

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International Technical Support Organization

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International Technical Support Organization

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AS/400 e-commerce: Net.Commerce

February 1999

Take Note!

Before using this information and the product it supports, be sure to read the general information in Appendix B, "Special Notices" on page 239.

First Edition (February 1999)

This edition applies to Version 2 of Net.Commerce for AS/400, Program Number 5798-NC2 for use with the OS/400 Operating System.

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Preface

This redbook helps you install, tailor, and configure IBM Net.Commerce for AS/400. IBM Net.Commerce for AS/400 is based on Net.Commerce Version 2. IBM Net.Commerce provides the infrastructure around which an online shopping mall can be built. This shopping mall may be a mall of many stores or a single store mall.

Net.Commerce has two main components: the Net.Commerce Server and the Net.Commerce Administrator. The Net.Commerce Server receives and executes requests from the Web using a secure Web server for AS/400. The Net.Commerce Administrator provides Web browser-based tools for creating and maintaining the online mall and stores. The redbook looks in detail at both the Net.Commerce Server and the Net.Commerce Administrator.

This redbook targets the needs of system and network administrators who plan, configure, and maintain AS/400 networks. It also addresses the needs of application designers who create Net.Commerce sites.

Note

This document was developed using Version 4 Release 2 of the AS/400 Web server implementation. Net.Commerce can run with the Version 4 Release 2 and Release 3. Because of the continuous improvements to the Web server on the AS/400 system, some descriptions in this document do not apply to Release 3. Throughout this document, we add notes where V4R3 implementations are different from V4R2.

The following list summarizes the major differences in the Web server implementations for the two releases.

1. To achieve a secured Web server, you need the following products:
 - V4R2: Internet Connection Secure Server (5769-NC1 or 5769-NCE)
 - V4R3: HTTP Server (5769-DG1) and Cryptographic Access Provider (5769-AC1, 5769-AC2 or 5769-AC3)
2. SSL (Secured Socket Layer) configuration:
 - V4R2: This is done both in the ICSS configuration tasks and in the Digital Certificate Manager (DCM) task. More detailed descriptions of the DCM follow.
 - V4R3: This is done as a separate configuration step in a Web server (HTTP Server). To configure the SSL with V4R3, select the "Digital Certificate Manager" task from the AS/400 Tasks Administrative Page on your browser screen. Then follow the instructions. Appendix A, "SSL Configuration for V4R3" on page 221 shows you the detailed steps for this configuration. You can also get the detailed information in the AS/400 Information Center by typing the following URL for the configuration steps:
<http://publib.boulder.ibm.com/pubs/html/as400/ic2924/info/index.htm>
Then select the topics "Internet" and "Digital Certificate Management".
3. The HTTP server jobs are running under a different subsystem with V4R3. When you want to make sure the HTTP server jobs are running, look at the following subsystem depending on the release you are using:
 - V4R2: The subsystem name is QSYSWRK.
 - V4R3: The subsystem name is QHTTPSVR.
4. Net.Data is packaged differently in V4R3 than V4R2. You may have to consider this difference when you install Net.Commerce.
 - V4R2: As a part of TCP/IP (5769-TC1)
 - V4R3: As a part of the HTTP Server (5769-DG1)

The Team That Wrote This Redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization, Rochester Center.

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Comments Welcome

Your comments are important to us!

We want our redbooks to be as helpful as possible. Please send us your comments about this or other redbooks in one of the following ways:

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- Use the online evaluation form found at <http://www.redbooks.ibm.com/>
- Send your comments in an Internet note to redbook@us.ibm.com

Chapter 1. Introduction to Net.Commerce for AS/400

Welcome to Net.Commerce for AS/400. This document will describe the various aspects of Net.Commerce for AS/400 as implemented with OS/400 Version 4, Release 2 and Version 4, Release 3.

As the Internet becomes more common and in many cases essential to today's society, it becomes important for businesses to be capable of exploiting the opportunities represented by the Internet. It is no longer sufficient to simply provide access to the Internet or perhaps even have a static presence. The real potential of the Internet lies with going beyond those early uses to actually conducting business transactions - conducting commerce. The Internet related technologies including TCP/IP, HTTP, browsers, etc., are generally capable of three primary implementation scenarios. One is an intranet, which typically means the users connected together using the protocols are within an organization or business. A second use is connecting to the Internet, with typical functions being internal users having the capability to access other Internet sites, as well as a Web presence. Finally, many businesses are establishing extranets - using the Internet technologies to connect to other businesses with whom they have a relationship.

The Internet implementation is generally thought of as providing business-to-consumer value. Net.Commerce is IBM's premier offering that allows many businesses to quickly conduct consumer-to-business transactions through the Internet.

The Net.Commerce system enables merchants to create electronic stores where they can sell their products and services globally over the Internet's World Wide Web (WWW). Using Net.Commerce, merchants can update their product information easily and tailor the way information is presented; create "shopper groups" and offer their members special promotions or unique store views; track demographic information that is provided by shoppers; and view purchasing statistics. Shoppers around the world can browse online catalogs of products and services, complete with descriptions and multimedia objects such as graphics, photos, and video and sound clips. They can place items in an electronic "shopping cart", and then order them by providing credit card and shipping information. With Net.Commerce, shoppers can complete transactions from their own computers while avoiding crowds and checkout lines.

While Net.Commerce is new to the AS/400, it is not a new offering from IBM. Net.Commerce is an application solution available from IBM to run on all IBM server platforms, including RS/6000 (AIX), S/390, PC servers (running Microsoft's NT) and the AS/400.

Before jumping right into Net.Commerce, a review of how the Internet-related technologies have achieved their current status as tools of choice for applications may be helpful. This will provide a base on which Net.Commerce makes sense as the application of choice for business transactions. Two of the primary factors that have occurred are the evolution of client/server computing to Web technologies, and the maturation of technologies that enable business transactions to utilize the Internet as a business medium.

1.1 An Evolution to the Web

Over the past 10 years or so, an evolution in the computing paradigm has been occurring. Indeed, the evolution has been going on even longer, but with regards to client/server computing, an evolution that began with the personal computer (PC) has come to dominate much of the data processing industry. When PC's were first introduced, they were largely a curiosity, in which only a select few were interested. As their capabilities increased, so did the number of people using them, and eventually the mainstream IS professionals took notice. PC's quickly became an alternative for host dependent terminals, which allowed integration into the network, although the applications which they accessed remained largely unchanged.

Soon however, applications that were the domain of the PC's and their users caught the eye of businesses. Many were "personal productivity" applications, such as word processors, spreadsheets and the like. This new breed of application was difficult if not impossible to replicate on host or centralized computers, and became increasingly important to the daily operations of businesses. The transition from terminal emulator to "workstation" was beginning to take hold. Some groups envisioned the transition would end with the complete elimination of the central or host computers, although we now know that vision was short-sighted.

Many true visionaries had a different view - one that allowed both the PC as a workstation and the central or host computer to maximize their respective values. This view held that applications should not be specific to a single system, but should work in concert on both types of systems - the PC workstation (client) and the central or host system (server). The tasks that required task-specific CPU-intensive functions such as graphical presentation would be done on the client, while the host would serve the data and (some) applications from a managed system. This client/server computing model was touted as the next great evolution of the data processing industry.

1.1.1 Client/Server Detour

Something happened on the way to client/server computing. As the early adopters began implementing applications in a true client/server model, they found that it was more difficult than envisioned. The difficulties included inconsistent splitting of the application between the client and server, lack of mature tools for application development, and less than expected, or more accurately, inconsistent performance between the various client and server systems. Some of the difficulties were addressed by defining client/server models to help guide the split of the application, while tools for development got better and better. Still, the actual process of successfully implementing and deploying a true client/server application remained difficult. Additional changes were required if this model was to become pervasive in the industry.

During this time of rapid change, as many "experts" tried to solve the client/server challenges, several attempts were made to simplify the client/server environment. One way to simplify a difficult task is to standardize the client/server platforms. Indeed, some progress was made, especially on the client side. Most businesses standardized their client hardware and software platform on "win-tel", the platform represented by Intel-based hardware personal computers (PCs) and Microsoft's Windows family of operating systems (Windows 3.1x and Windows 95).

Similar attempts at standardizing the server were never really universally accepted, though not for lack of effort. First came the cry for "open" systems, which varied so much in meaning that no-one could really define "open". Some viewed an open server as one where the hardware vendor and software vendor were by definition two distinct entities (following the Intel - Microsoft model on the client). Others held that open was anything but IBM, which during this time was going through challenging business changes. After a while, the "open" label was put on systems running the UNIX operating system, giving hope to many that some standardization was finally occurring. What they did not realize was that there was so much variability among UNIX operating systems (there were/are dozens of variations), that even UNIX could not carry the open banner by itself. Smaller-scale efforts to define APIs or interfaces to systems made some headway as well, but standardizing the server side of the client/server model remained elusive.

In the meantime, businesses kept running their businesses, and the specific technologies they used remained important, but were not the central issues that drove business decisions. Businesses were still hoping to accomplish client/server computing, but realized the process would be difficult. As such, they began taking small steps toward the goal of client/server computing, without a complete switch from their traditional processing models. These steps included getting their various systems to at least communicate with each other, sharing data, and in some cases, deploying basic client/server applications while steadily populating the desktop environment with PCs. These steps would become the foundation for client/server computing, but still more change would be required.

1.1.2 Parallel Web Development

During this time, a seemingly unrelated set of developments were occurring. A community of computer users, largely based in research and academia, were continuing to share data over a network. As the PC became popular in this community as well, the sharing of data began to evolve. The users found it more convenient to simply access remote data than to continually move it around their network. This was in part due to the limits of the day, which were primarily the speed of the network and the capacity of the individual systems. In order to more effectively work together in this arrangement, their network, or inter-connected network of systems, adopted a standard protocol.

This network, now evolved into the Internet, and protocol, TCP/IP, were the foundations on which one more piece was to be added. The missing piece was a way of dynamically sharing the information on various systems in the network. An application, including protocol, was developed to dynamically link information from these systems together, and was dubbed the hyper-text transfer protocol application (HTTP). The application was developed in a client/server model, with the client being responsible for end-user interaction and presentation management, and the server largely responsible for storing and transmitting data. The client was given a special name called a browser, while the server was simply referred to as an HTTP server. During this time, the network protocol (TCP/IP) emerged from the research and academic community into the commercial business world. In addition, the applications and protocols soon followed, including the newest one, HTTP.

The application/network combination was referred to as the world wide Web (WWW or Web), and in an almost fad-like fashion, people began to use it, play with it, experiment with its capabilities, and more. Of special interest was the

client software, the browser. While the first browsers simply accessed and displayed information from a remote system, their limit was the style of presentation. They were text-based, much like host-dependent terminals. Since most client platforms of the day were fast becoming intelligent workstations such as PCs, the text-based limitation did not last. Seemingly overnight, an industry segment developed with a sole focus on the browser. The browser revolution was beginning.

Browser software quickly became a hot commodity, and the pace of development of browser-based tools, applications, and function was unlike any environment up to this time. Even so, few would predict what was to happen next. As the client/server development process was still bogged down, the opportunity presented by the browser was poised to revive it. Most people had given up on standardizing the server. The further standardization of the client to a specific application, the browser, changed the direction of client/server computing. Now application developers could use the browser as the generic or universal client, and would only have to focus on the server. And since the server application was already defined via HTTP, a quantum leap in simplicity in the client/server application development environment had seemingly occurred overnight.

The evolution is continuing, but clearly the Web and the browser to HTTP-server model of computing has surpassed the client/server application model to become a de facto standard in the data processing industry. Further evidence of this is the continuing development and maturing of application development tools for this specific environment.

1.2 Maturing Technologies

Many of the early applications developed for the Web environment were simple in nature, often providing access to publicly available information. Perhaps due to its roots in research and academia, these library-like uses were to be expected. However, with the whole realm of application development moving to this environment, the nature of the applications soon diversified. Businesses looked to this new environment to supplement and in some cases replace traditional applications. One example of this is the area of customer service. With the proliferation of PCs in the home, business found it viable to move some customer service functions to the Web environment, effectively providing for customer self-service.

A limiting factor to which applications were appropriate for this environment was security. Accessing publicly available information and perhaps some customer service applications were OK, but without security, specifically data privacy, other applications would likely not be appropriate for the Web. Prior to the Internet and Web phenomena, data privacy in the industry was a concern to only one company at a time - as their applications and systems were deployed. With the Web being a public network, data privacy had now become a universal concern. Fortunately, since the browser had become the universal client, the solution to data privacy was quickly implemented. Existing data encryption technologies simply had to be incorporated into the HTTP browser to server protocol, and the application developers would individually not have to worry about data privacy. HTTPS (secure HTTP) is the protocol that was developed to provide data privacy over the Internet.

One other area of maturing technology that continues to develop is the area of application development tools. The Web environment has given rise to a whole new development environment, JAVA. While the promise of the JAVA environment where an application can be written once to run on a variety of hardware and software platforms has long been desired, the Web environment has provided the momentum to make the promise a reality.

1.3 Ready for Net.Commerce

Finally, all the pieces were in place. The network, protocols, security and development environment were mature enough to develop commercial applications. And while many businesses develop their applications in-house, more and more businesses are purchasing applications. One such application, Net.Commerce, is specifically designed for the business-to-business and business-to-consumer retail environment through the Web. It requires the universal client, a browser, and provides all the server-side application components. It can be described as a table-driven generic retail application, with the tables to be filled in by the businesses using it. It is highly customizable and scalable, and is lauded in the industry as perhaps the best retail application for the Web environment.

The rest of this document describes the specific way in which this state-of-the-art application is implemented on the AS/400.

1.4 Additional Information

While it is important to know what is in this document, it might also be of interest to know what this document does not contain. Sufficient documentation exists for the base Net.Commerce product itself, and is not duplicated here. The Net.Commerce products are packaged with extensive online documentation, including both cross-platform and platform-specific reference manuals, and so on. Those sources should be used in conjunction with the material found in this publication.

Chapter 2. IBM e-commerce Offerings

The IBM Payment Suite family of e-commerce offerings offer products and services for building secure, end-to-end commerce solutions. Those products and offerings include the following:

- Net.Commerce
- Payment

2.1 Net.Commerce

IBM Net.Commerce enables merchants to create electronic stores where they can sell their products and services globally over the Internet's World Wide Web (WWW). Using Net.Commerce, merchants can update their product information easily and tailor the way information is presented: create "shopper groups" and offer their members special promotions or unique store views; track demographic information that is provided by shoppers; and view purchasing statistics. Shoppers around the world can browse online catalogs of products and services, complete with descriptions and multimedia objects such as graphics, photos, and video and sounds clips. They can place items in an electronic "shopping cart", and then order them by providing credit card and shipping information. With Net.Commerce, shoppers can complete transactions from their own computers while avoiding crowds and checkout lines.

IBM Net.Commerce Version 3 and Version 2 are available. IBM Net.Commerce Version 3 is available in two offerings. For business-to-business and business-to-consumer, IBM Net.Commerce *Start* is the solution for companies investigating online opportunities. IBM Net.Commerce *Pro* is designed for those who want to maximize the benefits of their current electronic commerce strategies.

IBM Net.Commerce Start and Pro can operate on either an IBM AIX, Windows NT, or Sun Solaris platform. IBM Net.Commerce Pro is available on the OS/390 platform. Net.Commerce Version 2 is available on the AS/400 platform. Net.Commerce, unlike many other electronic commerce software products, can operate on a configuration that combines operating systems. With this cross-platform compatibility, you can integrate IBM Net.Commerce with existing systems and platforms, thereby minimizing resource needs and costs.

2.2 Payment

IBM Payment Suite and SET provide an end-to-end solution for secure payments. Customers can shop the Internet with a bankcard. Bankcard data is passed to the merchant in a digital envelope. This method prevents the merchant from viewing the card number. The merchant passes the envelope, along with its own digital identity, to its payment card processor for verification. The payment card processor opens the envelope and submits the card information to the card issuer for approval. Approval is communicated to the acquirer, the merchant, and the cardholder. Each step of the process is included in the certification authority digital identification process.

The SET Secure Electronic Transaction protocol has been jointly developed by MasterCard International and Visa as a method to secure bankcard transactions

over public networks. SET is being published as an open specification for the industry. IBM is a significant contributor to MasterCard and Visa's effort in providing application code and testing resources. Interoperability is the key to the ultimate success of SET. IBM Payment Suite products are therefore intended to work with any other SET-certified product.

IBM Payment Suite is offered through four distinct software packages:

- Consumer Wallet (for consumers)
- Payment Server (for merchants)
- Payment Gateway (for payment card processors)
- Payment Registry (certification for SET protocol transactions)

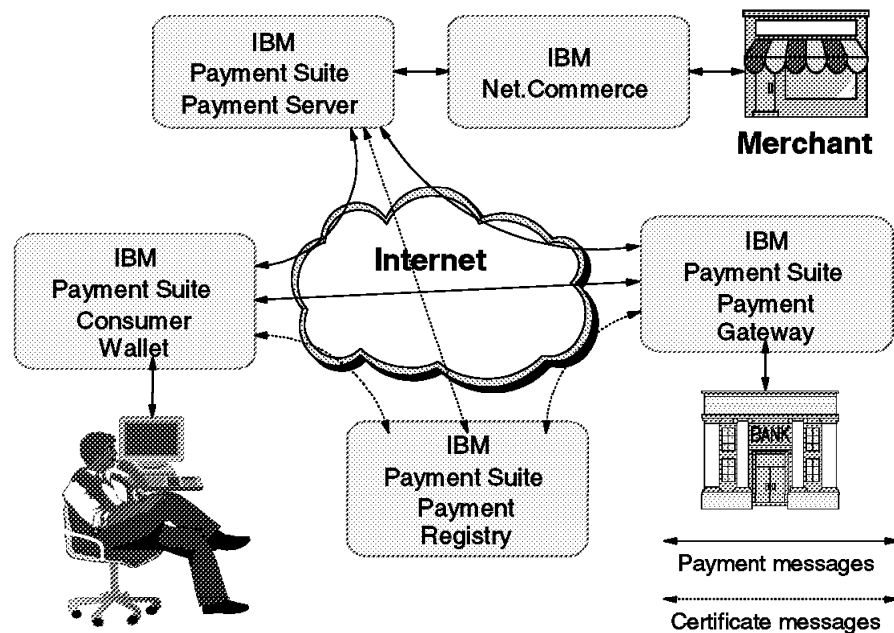


Figure 1. Payment Suite

2.2.1.1 Consumer Wallet

Consumer Wallet is a browser plug-in that provides everything needed to shop with confidence on the World Wide Web: enhanced security, SET protocol utilization, more convenience, and transaction routing (including certification).

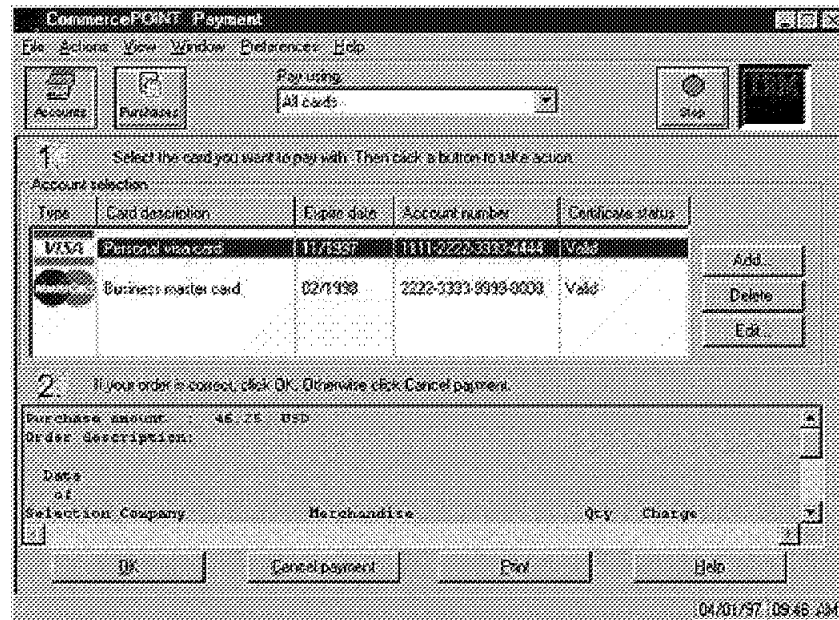


Figure 2. Consumer Wallet: Sample Wallet Screen

The Consumer Wallet application can't be launched without first entering a personal password or PIN so payment cards get an extra level of protection to help keep them safe. All transaction data for a purchase is transmitted in encrypted form (encrypted by SSL) on the Internet and can only be opened by the card processor. Once the payment card processor has verified the card purchase, the merchant is informed that payment has been approved, and the purchase is complete. After the transaction, a Receipt of Order window opens and displays the purchase requests and acknowledgments by merchants.

2.2.1.2 Payment Server

IBM Payment Server is a cash register on the Internet. For example, using IBM Payment Server, credit cards can be accepted just as a salesperson accepts a credit card in a store. Consumers wishing to make a purchase from the Web site simply choose from a list of available payment methods. IBM Payment Server is then activated. IBM Payment Server will handle the necessary authorization requests and recording of the transaction in the company's database. This process happens automatically. With IBM Payment Server money can be collected from consumers easily and with security. IBM's flexible framework ensures that the capabilities of the IBM Payment Server will grow with the Internet: be enhanced as new methods of payment become available. IBM Payment Server also manages the payment process, from communicating with the consumer to drafts with your financial institution. Records of transactions are maintained to facilitate later reconciliation and reporting. IBM Payment Server includes a component to process digital certificates from an organization using certificate authority software such as IBM Payment Registry. IBM Payment Server is easily tailored to an industry, a way of doing business and any existing technologies. IBM Payment Server supports the following payment protocols available on the Web today:

- SET protocol for credit/charge card transactions
- SET debit card transactions

IBM has developed payment cassettes containing the protocol for using each type of payment. A new payment option is obtained by plugging in a new cassette. Changes to the existing system are kept to a minimum. New payment cassettes are being created as the technology becomes available on the Internet.

Payments made by consumers flow to IBM Payment Server which communicates with back-end systems such as financial institutions and payment processors. IBM Payment Server handles all the payment transactions for the merchant and acts as a "payment server" (using established network payment protocols) alongside the merchant server or Web page. IBM Payment Server can be customized to work with a merchant system using Web-based interfaces or APIs. It is an open system, written in Java, and can run on multiple platforms.

IBM Payment Server contains a common payment API which is used for all payment types and functions: receipt, approval, deposit and refund. This API is implemented by the payment cassettes that contain the various types of payment protocols. Based on the consumer's selection of payment type, IBM Payment Server selects the appropriate payment cassette to start the payment process.

IBM Payment Server is currently available for the following platforms:

- An IBM S/390 running OS/390 Version 2 Release 4
- An IBM RS/6000 workstation running AIX Version 4.1.5, or later with 64MB of RAM
- An Intel-based (or compatible) processor running Windows NT
- A Sun SPARC (or compatible) system running Sun Solaris 2.5.1, or later with 64MB of RAM

And soon will be available for the AS/400.

2.2.1.3 Payment Gateway

IBM Payment Gateway is a payment processing application based on SET standards that offers credit card protection for merchants and buyers. It allows a merchant to be confident that customer approval and payment processing have been performed with security. The buyer is similarly protected because the merchant has been verified and the buyer's credit card number has been hidden from everyone except the acquiring bank. IBM Payment Gateway supports the existing relationships of cardholders and merchants with their respective banks.

The IBM Payment Gateway is a part of IBM's solution for SET which allows protocol conversion and transaction routing for credit card processors. This payment gateway enables the processor's current transaction systems to accept SET enabled transactions over the Internet with security.

IBM Payment Gateway is currently available for the following platforms:

- An IBM S/390 Parallel Enterprise Server - Generation 3 or 4 and S/390 Multiprise 2000 models with Cryptographic Co-processor feature running OS/390 Version 2 Release 4 with Integrated Cryptographic Services Facility Version 2 Release 1

- An IBM RS/6000 workstation running AIX Version 4.1.5, or later with 128 MB of RAM and an IBM 4758 PCI Cryptographic Co-processor running AIX Version 4.1.5 or 4.2

2.2.1.4 IBM Payment Registry

IBM Payment Registry provides a certificate management infrastructure for cardholders, merchants, and acquirers to facilitate more secure payments over the Internet using the SET protocol. IBM Payment Registry allows issuing banks to issue certificates to their cardholders and acquiring organizations to issue certificates to their merchants.

IBM Payment Registry is a server-based application that provides issuing and acquiring banks with the software needed to issue and manage digital certificates within SET. It can operate as individual Certificate Authorities (CAs), for example, a Cardholder CA and a Merchant CA, on separate machines. Or it can be configured to allow multiple CAs to run simultaneously on a single machine.

IBM Payment Registry supports online requests using protocols defined by the SET specification for HTTP transmissions. Approval requests are completed through a customer tailored interface. This interface allows the certificate request to be processed immediately or deferred for further review by the approver application. If approval is deferred, subsequent inquiries are required to determine the status of the certificate request.

IBM Payment Registry is currently available for the following platforms:

- An IBM S/390 Parallel Enterprise Server - Generation 3 or 4 and S/390 Multiprise 2000 models with Cryptographic Co-processor feature running OS/390 Version 2 Release 4 with Integrated Cryptographic Services Facility Version 2 Release 1
- An IBM RS/6000 workstation running AIX Version 4.2, or later with 128MB of RAM, the IBM 4755 Cryptographic Adapter, and the IBM 4754 Security Interface Unit

2.3 Useful URLs

The following Web site provides useful additional IBM e-commerce information:
<http://www.software.ibm.com/commerce>

Chapter 3. Net.Commerce Overview

Net.Commerce is available for S/390, AIX, AS/400, Sun Solaris and Windows NT. It is a merchant solution which provides a framework to conduct business on the Internet in a *secure* and *scalable* manner. It supports both business-to-business as well as business-to-consumer environments. Net.Commerce works together with a relational database and Secure Web Server to give users and companies a simple and secure environment. Net.Commerce is architected to be scalable to meet the needs of the small to very large business. Merchants can take advantage of their existing operating environment and expand to larger systems as their electronic traffic grows.

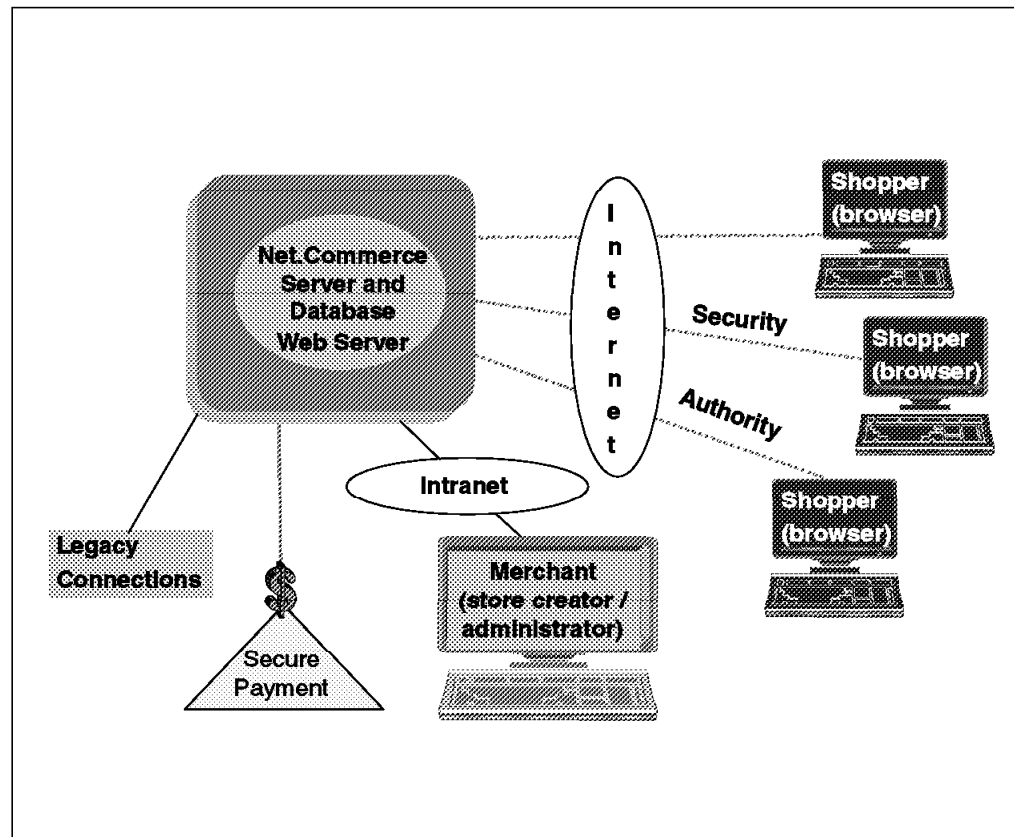


Figure 3. Net.Commerce Overview

Net.Commerce is a solution that allows merchants to set up stores and malls to sell around the clock and around the world without risk. Better customer relationships are built by providing what shoppers want, when they want it, and by reducing response time.

Using the sophisticated Net.Commerce tools, merchants create customized, real-time, dynamic catalogs, and allow consumers to perform shopping tasks, such as selecting and ordering products, all on the Web. Setting up an electronic store with Net.Commerce requires less time and money than traditional marketing media and merchandising vehicles. Electronic shopping is fun compared to fighting traffic jams, waiting in checkout lines, and carting parcels.

3.1 What Net.Commerce Offers

Net.Commerce offers the following functions and features.

3.1.1 Building an Electronic Site on the Internet

Whether a business is a small shop or a large department store, whether it offers products or services, wholesale or retail, a business can be put on the Web with Net.Commerce. You can build one store or a mall that showcases several stores.

Net.Commerce provides a demo mall that can be used as a template to speed up the development of an operation or the customization of a mall or stores.

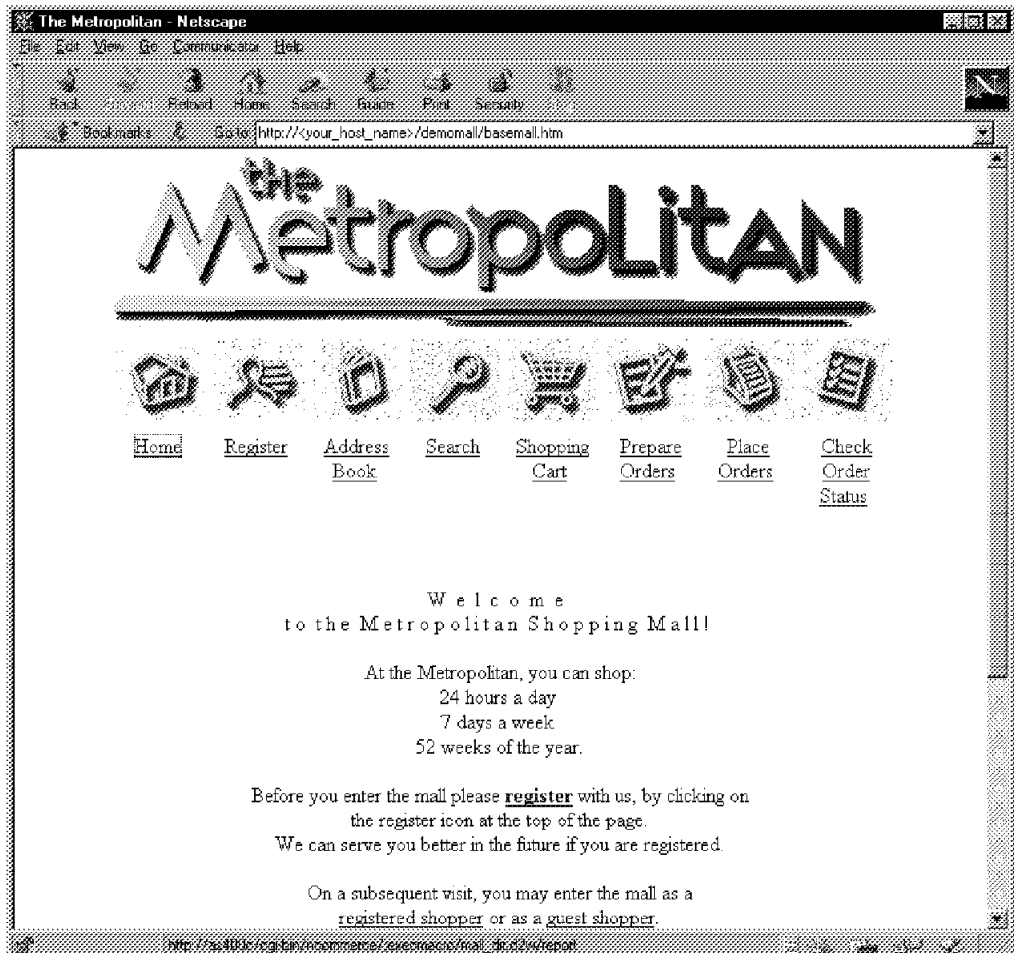


Figure 4. Net.Commerce Demomall Front Page

3.1.2 Dynamic Shopping Trip

With Net.Commerce, information about merchandise is dynamically extracted from the database each time a shopper views the online store. A store can be quickly tailored to changing markets and profit from emerging trends.

With Net.Commerce, a merchant can build relationships with shoppers using the information collected during shoppers' visits and then develop and implement consumer-centered direct marketing strategies within the online store. Different

promotion schemes can be applied for the same product for different shopper groups.

A template designer tool is provided to aid the creation of visually appealing windows and pages. Specially designed effects can be included such as 3D graphics, animation, sound, and Java Applets to create a unique look to the store front.

Using APIs, the electronic store can be linked to existing legacy applications such as an inventory management system.

Net.Commerce allows for different shipping carriers and lets the customer define the shipping charges.

3.1.3 Easy Way to Manage the Electronic Store

Net.Commerce provides tools to allow the store to be easily managed. These tools allow store information to be quickly updated, such as product descriptions or prices with an online form.

3.1.4 Protecting Site Information

The Net.Commerce database is protected against unauthorized access. Only authorized people with the correct password have access to the database. The shopper's data is also protected. Each shopper logs on with a unique ID and password.

The shopper's credit card data is protected using SSL.

3.2 Net.Commerce Components

IBM Net.Commerce has two main components:

- Net.Commerce Server
- Net.Commerce Administrator

The following figure shows the complete Net.Commerce system.

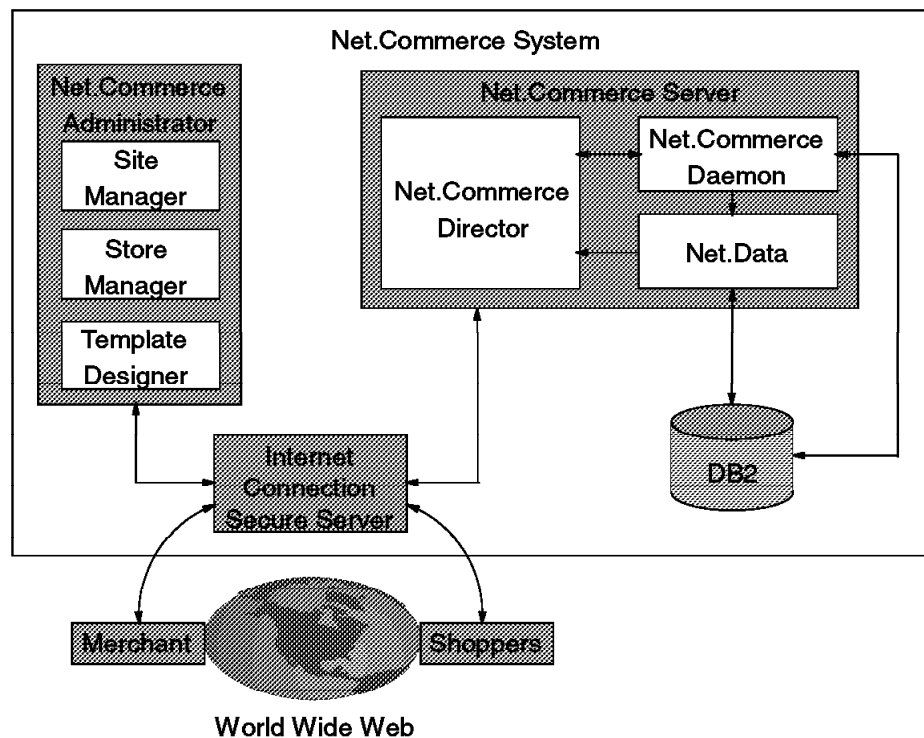


Figure 5. The Net.Commerce System

3.2.1 Net.Commerce Server

The Net.Commerce Server is composed of the Net.Commerce Server Director and the Net.Commerce Server Daemon.

Server Director: Using the Transmission Control Protocol/Internet Protocol (TCP/IP), the server director receives requests from the Secure Web Server and directs them to the Server Daemon, returning responses to the Secure Web Server. The Server Director is a Common Gateway Interface (CGI) program.

Server Daemon: The server daemon receives requests from the server director, executes macros, and returns results from the database to the server director controlling the shopping process.

3.2.2 Net.Commerce Administrator

The Net.Commerce administrator consists of three tools for creating and maintaining an electronic store: the Site Manager, the Store Manager, and the Template Designer. These tools use HTML, Java, and JavaScript pages. To access them, you need Netscape Navigator 4.04 (or above) with JDK 1.1 or equivalent. Each tool is described briefly below.

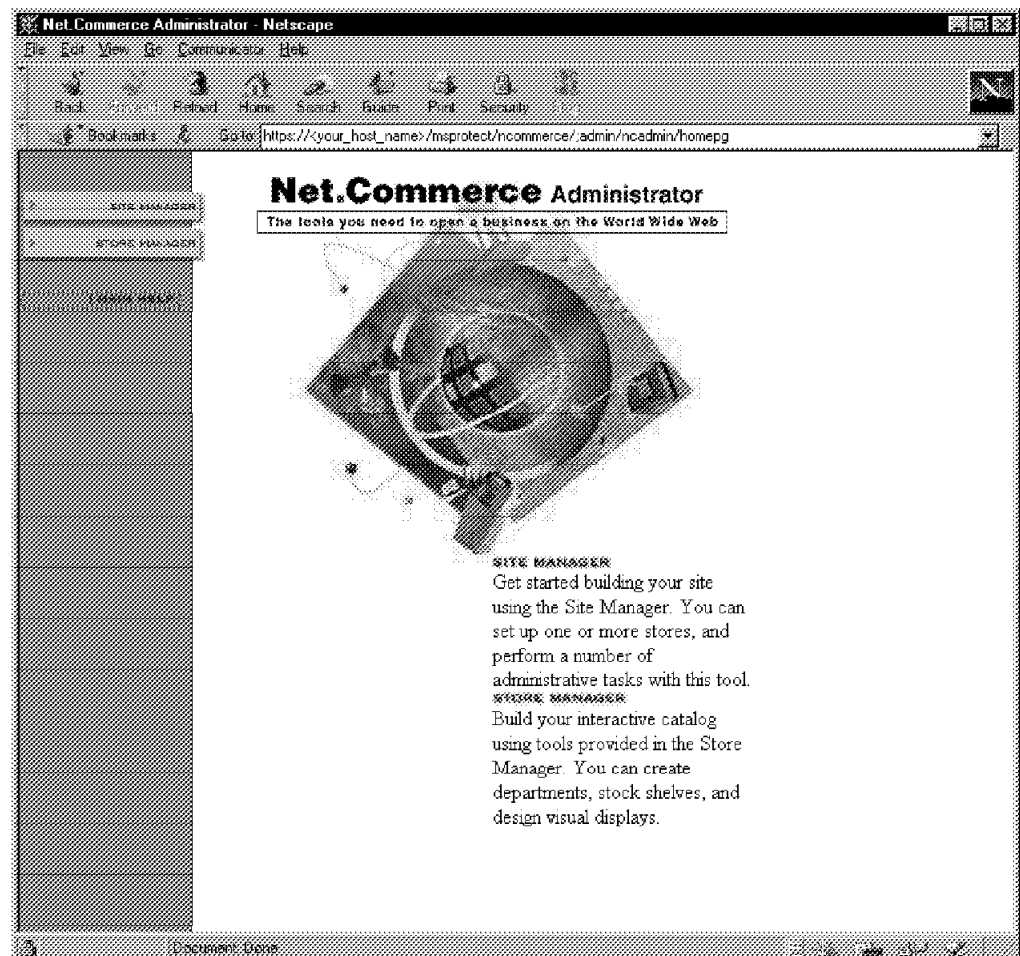


Figure 6. Net.Commerce Administrator

The Net.Commerce Administrator is comprised of:

Site Manager	Used to create and maintain the overall site.
Store Manager	Used to create and maintain stores within the site.
Template Designer	Used to create and maintain site and store Web pages.

Net.Commerce Site Manager: The Net.Commerce site manager is used by the mall administrator to create the infrastructure for the online mall or store(s).

The site manager is used to perform these tasks:

- Create and manage the mall's home page.
- Assign site and store access, to ensure that only authorized individuals are given access to the database.
- Add and delete stores from the site.
- Maintain a list of shipping carriers.

- Assign scope to tasks, which dictates whether some aspects of the shopping process, such as ordering, can be customized by stores.
- Manage site-based data, including any customized store APIs or macros.
- Change shopper information in the database.
- Use all the functions in the Store Manager.

To run the site manager functions, click on the SITE MANAGER button.

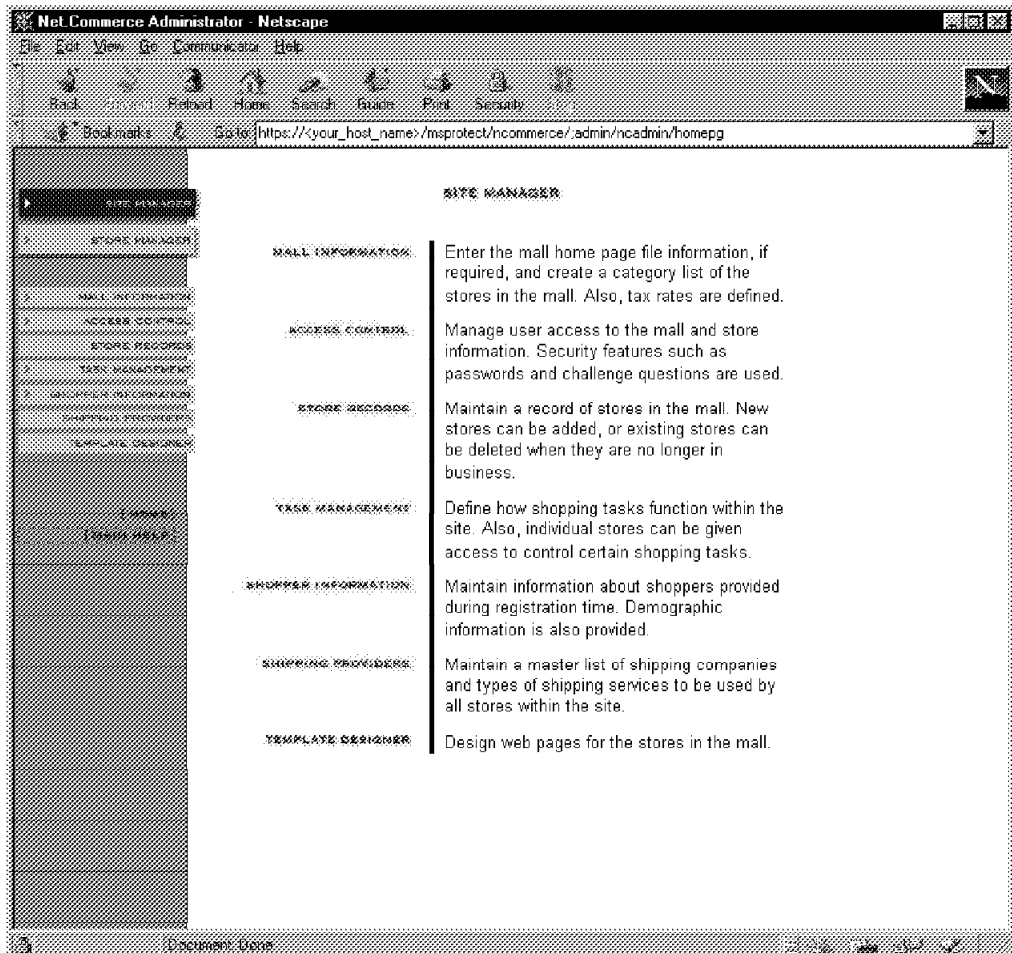


Figure 7. Net.Commerce Site Manager

Mall Information	Defines the mall front page and directory of stores and specifies the various directories for the appropriate files.
Access Control	Displays the access control form and the store authorities form.
Store Records	The store records form.
Task Management	Customizes mall, store or shopping tasks.
Shopper Information	Displays the shopper information form.
Shipping Providers	Creates and maintains a list of shipping companies.
Template Designer	Creates and modifies templates for your mall home page.

Net.Commerce Store Manager: The Net.Commerce store manager is used to create and maintain online catalogs inside the store with different product categories, to assign shopper groups and to view shopper information.

The store manager is used to perform these tasks:

- Create and maintain store pages, product categories, and shopper groups.
- Enter and update information about the store and its products or services.
- View information about shoppers, add shoppers to shopper groups, and assign numbers to shoppers if desired for record-keeping purposes.
- Delete stock from the store.

To run the store manager functions, click on the STORE MANAGER button.

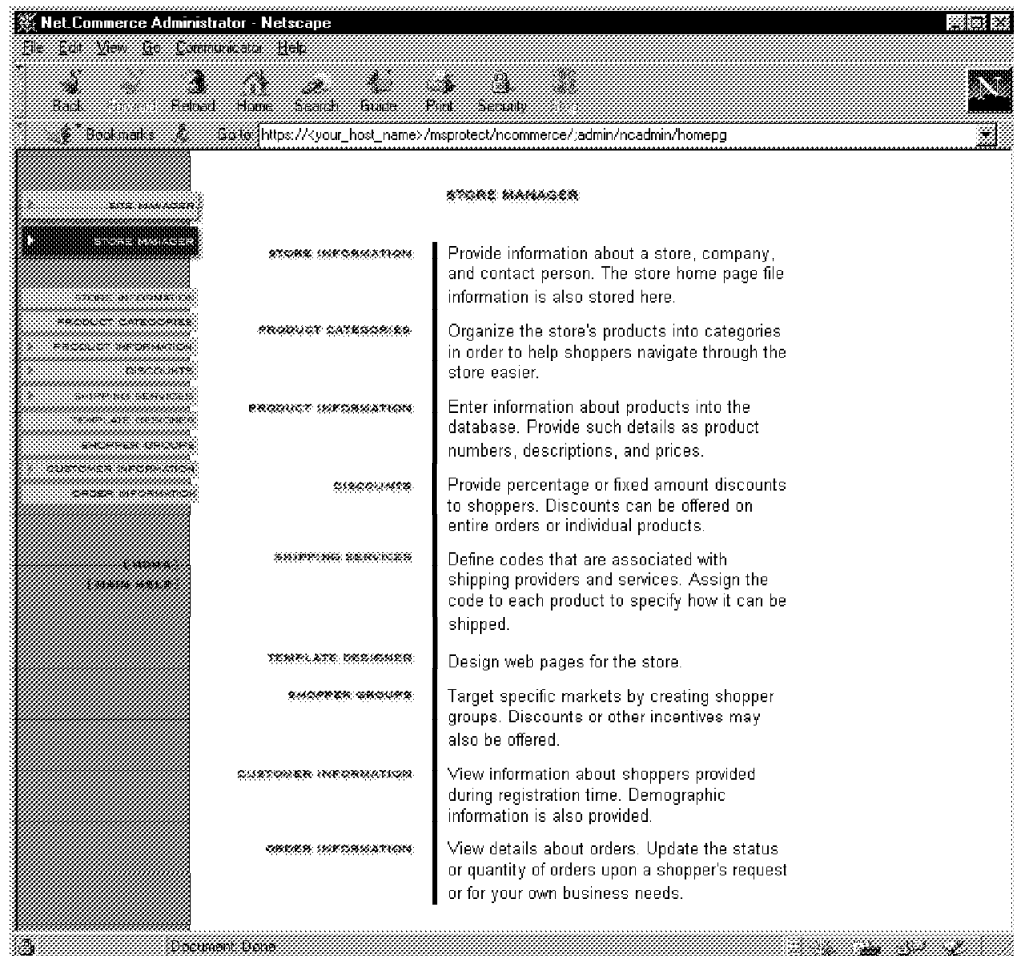


Figure 8. Net.Commerce Store Manager

Store Information	Add and update store information.
Product Categories	Creates paths to navigate through your store.
Product Information	Add and maintain products and services information.
Discount	Defines different discounts which may apply at different times, for different shopper groups.
Shipping Services	Displays shipping codes and defines the way products will be shipped.

Template Designer	Allows for the design of Web pages for the store.
Shopper Groups	Allows for the creation or modification of store shopper groups.
Customer Information	Displays all customer data.
Order Information	Displays the status of all orders.

Net.Commerce Template Designer: The Net.Commerce template designer is a tool for creating and updating the dynamic Web pages that shoppers will see. Each Web page is dynamically linked to the Net.Commerce database, ensuring that shoppers will always see up-to-date product information. By establishing consistent designs, shoppers will be presented with a consistent “look and feel” for the store. The template designer provides a semi-WYSIWYG (What You See Is What You Get) interface that displays the designs as they are developed (see Figure 9 on page 21). It converts the designs into the appropriate HTML tags and SQL statements, thereby saving significant programming effort. Each template can be reused for multiple store products and items. Once a design is created it can be saved as a template and used for different pages with the same nature. For example, regularly priced products may use the same template and discounted products may use another one.

The template designer is used to perform these tasks:

- Automatically add database information to Web pages.
- Include HTML tags.
- Create tables and forms.
- Add hypertext links.
- Move, drag, and cut and paste objects.
- Include multimedia objects.
- Change SQL statements.
- View and test created pages.

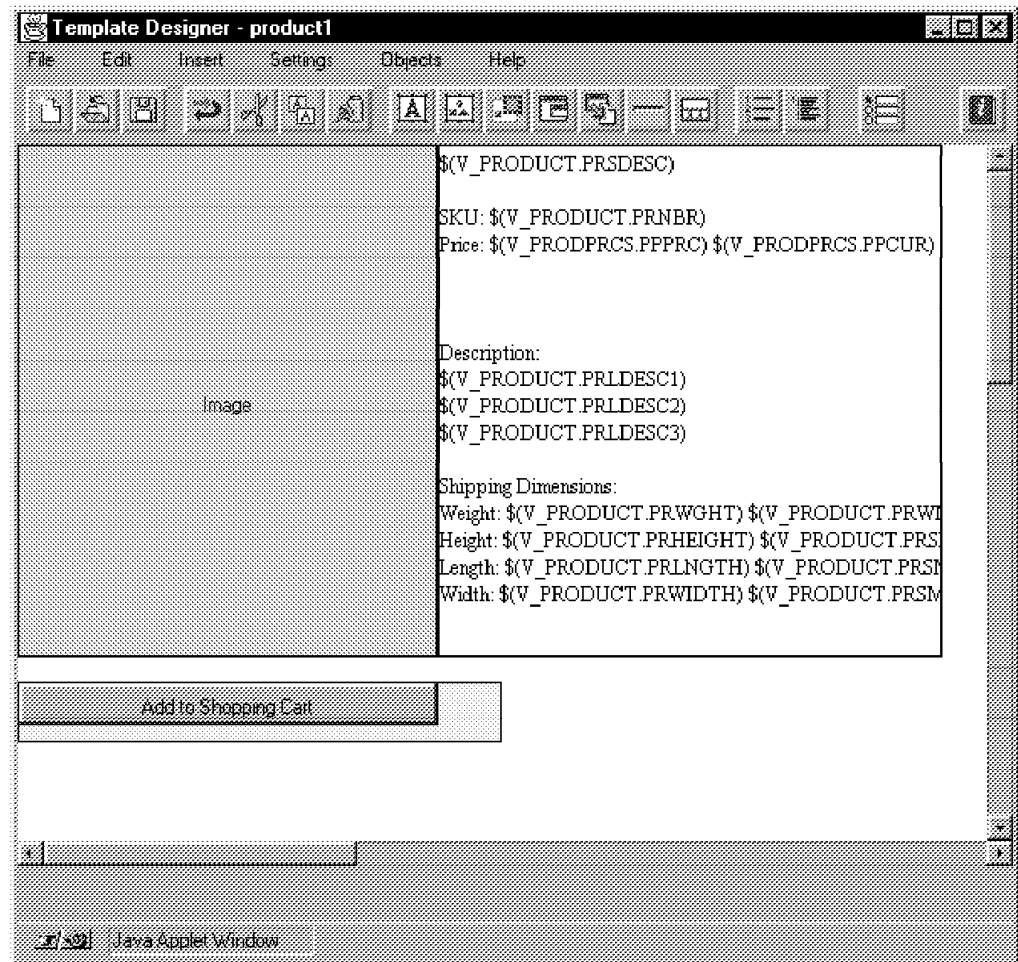


Figure 9. Template Designer

The designer's WYSIWYG interface translates your design into HTML. Also, you can customize the macros that work with SQL and HTML for accessing information from the database. As a result, the Net.Commerce site works with dynamic pages allowing a store to be quickly and easily set up and maintained on the World Wide Web.

3.3 Net.Commerce Additional Components

The following additional products are required with the Net.Commerce Server:

- IBM **Secure Web Server** establishes a secure connection between the Net.Commerce Server and the Shopper. Order 5769-NC1 (US and Canada) or 5769-NCE (International) IBM Internet Connection Secure Server.

V4R3

For V4R3, order 5769-DG1 IBM HTTP Server for AS/400 plus one of the following Cryptographic Access Providers:

- 5769-AC1 Cryptographic Access Provider 40-bit
- 5769-AC2 Cryptographic Access Provider 56-bit
- 5769-AC3 Cryptographic Access Provider 128-bit

- IBM **DB2 Relational Database** holds mall, stores, catalogs, products, and shopper information. This is supplied as a part of the operating system (OS/400).
- IBM **Net.Data** is an IBM environment that retrieves data from the relational database and formulates it in an HTML format for Internet display. This is a part of the OS/400 TCP/IP connectivity utilities for V4R2.

V4R3

It is a part of the HTTP Server for AS/400 V4R3 and is shipped with OS/400.

All the above mentioned components communicate with each other using the TCP/IP protocol.

3.4 Net.Commerce APIs

To allow for the integration of Net.Commerce with back-end or other legacy applications, APIs are provided. Some of the APIs supplied with Net.Commerce are:

- Registration management
- Inquire and update inventory
- Orders tracking
- Selling and cost price calculation
- Tax calculation
- Discount schemes
- Shipping charges calculation and shipping selection criteria
- Payment checking

For more information on Net.Commerce APIs, please refer to the online help on *http://<your_host_name>/nchelp/index.htm*.

3.5 Useful URLs

The following Web sites provide useful, additional IBM Net.Commerce information:

- <http://www.software.ibm.com/commerce>
- <http://advisor.internet.ibm.com>

Chapter 4. Net.Commerce for AS/400

Net.Commerce for AS/400 consists of the following major components:

- Net.Commerce Administrator
- Net.Commerce Server
- IBM Internet Connection Secure Server (ICSS) for AS/400, Version 4.2 (a licensed product that must be purchased separately)

V4R3

HTTP Server for AS/400 Version 4.3 with one of the Cryptographic Access Providers, 5769-AC1, 5769-AC2 or 5769-AC3.

- IBM DATABASE 2 for OS/400 (which comes with the system and does not need to be installed separately)
- IBM Net.Data for AS/400 (part of the TCP/IP Connectivity Utilities for AS/400)

V4R3

This is a part of the HTTP Server for AS/400 V4R3.

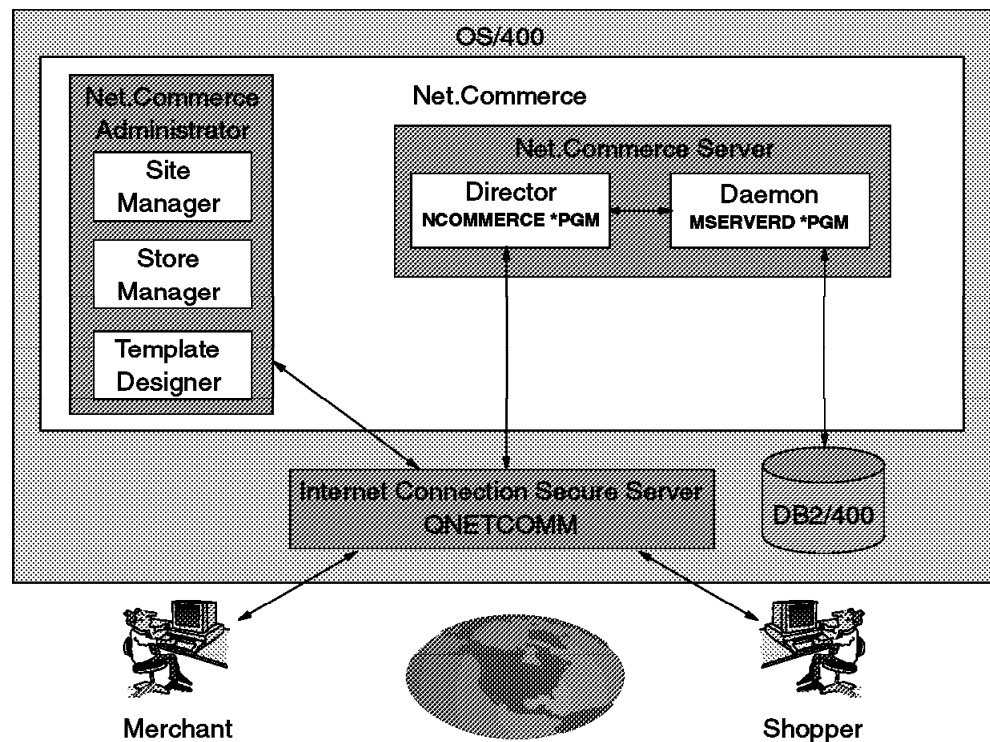


Figure 10. Net.Commerce Components

The first two components, Net.Commerce Administrator and Net.Commerce Server, serve to tie the whole system together and provide the functionality needed to conduct commerce over the Internet. The last three components are separate products that can be used to meet a variety of requirements in many computing environments.

4.1 The AS/400 Net.Commerce Server

The Net.Commerce Server consists of the following components:

- The Net.Commerce director
- The Net.Commerce daemon

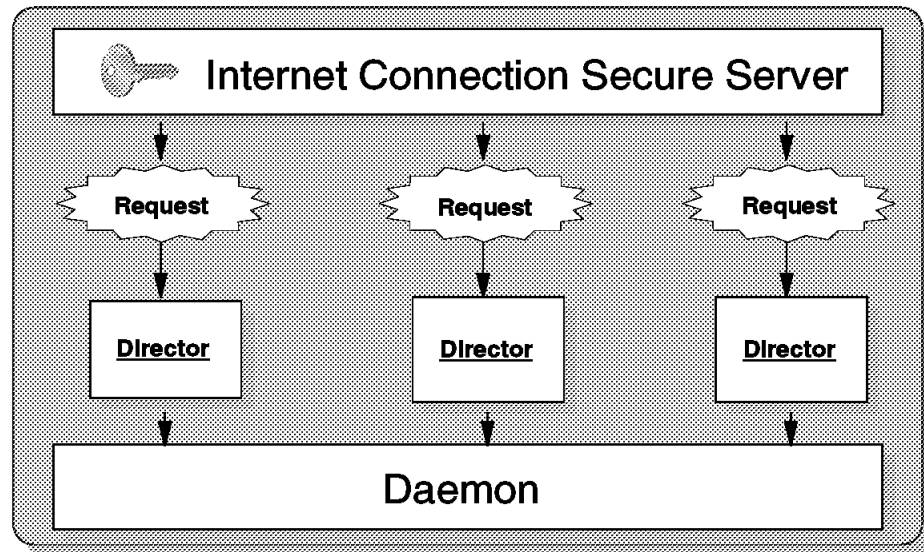


Figure 11. The Net.Commerce Server

4.1.1 Net.Commerce Daemon

The Net.Commerce daemon is the component that actually services the requests coming from the shopper. The Net.Commerce director, on receiving a command decides what has to be done, such as the execution of an API, and hands it over to the Net.Commerce daemon for execution. The Net.Commerce daemon allows a single Net.Commerce director to handle multiple shoppers in multiple malls easily, while still providing good response times to the shoppers.

The Net.Commerce server daemon displays store pages dynamically by retrieving the current data from the Net.Commerce database. It maintains a continuous connection with the database. The daemon controls the process of shopper registration. It uses the Secure Sockets Layer (SSL) protocol and access control, which provides security to shoppers through the use of keys.

Note: Throughout this book, the server daemon will be referred to as the Net.Commerce server.

Net.Commerce Server Instances: The Net.Commerce product can service multiple shopping malls from the same AS/400 Server. Each shopping mall is serviced by one instance of the Net.Commerce application, which keeps the data and operations of shops and shoppers in each mall separate from the other malls.

You can have more than one instance of the Net.Commerce daemon running on both a single-machine and multiple-machine configuration. A machine with multiple instances on it is called a **multi-home machine**, because it can be referenced by more than one IP address. Each Net.Commerce instance is connected to a separate database collection. Each database collection holds only one mall or store.

Note

A separate license must be purchased for each Net.Commerce instance on a multi-home machine.

Each Net.Commerce instance has a unique name, is tied to a unique IP address and has a unique HTML root. The HTML root is the path where instance specific data is stored for the proper operation of the Net.Commerce instances. All data for the shopping mall is stored in a library of the same name as the instance.

Every Net.Commerce server instance shares the Web Server instance QNETCOMM and the Net.Commerce director program. Each Net.Commerce instance is associated with its own service processes, which help execute the request. When the instance is created you can specify the number of service processes that are to service that instance. You can request that more than one service process be created for each Net.Commerce instance. The more service processes there are for an instance, the better the instance is at servicing multiple requests at the same time. However, the number of processes has to be balanced with the capabilities of the AS/400 used. By default, two service processes are created per instance of Net.Commerce.

When a Net.Commerce instance is started, the daemon starts one job for the instance called QNETCOMM, and one or more service processes called MSERVERD under the username of the instance in the QSYSWRK subsystem. For example, when the MALL1 instance is started, there are (assuming that two service jobs were requested) two active MSERVERD jobs in the QSYSWRK subsystem, as shown in Figure 12.

Work with Active Jobs						AS1
						11/24/97 15:18:07
CPU %:	12.3	Elapsed time:	00:26:57	Active jobs:	120	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
	QSYSWRK	QSYS	SBS	.0		DEQW
	MSERVERD	MALL1	BCI	1.4		MTXW
	MSERVERD	MALL1	BCI	2.1		TIMW
	QNETCOMM	MALL1	BCH	.1	PGM-QNETSTRNCS	EVTW

Figure 12. WRKACTJOB: Verifying that Net.Commerce Server is Running

4.1.2 Net.Commerce Director

The director is the component of Net.Commerce that receives requests from the QNETCOMM Web server instance and decides what action to take based on the request. Then, it passes the request to the daemon associated with the Net.Commerce server instance for the action to be executed. When the request has completed, the director then sends the results to the QNETCOMM Web server for display to the user who requested the action. The director communicates via a TCP/IP port with the daemon. The port used is specified in the Net.Commerce configuration.

On the AS/400, the director is a CGI-BIN program called NCOMMERCE.PGM. The QNETCOMM Web server passes commands to the director which then does one of the following:

- Executes the command directly via the daemon
- Invokes a Net.data macro
- Invokes an API task
- Any combination of the above

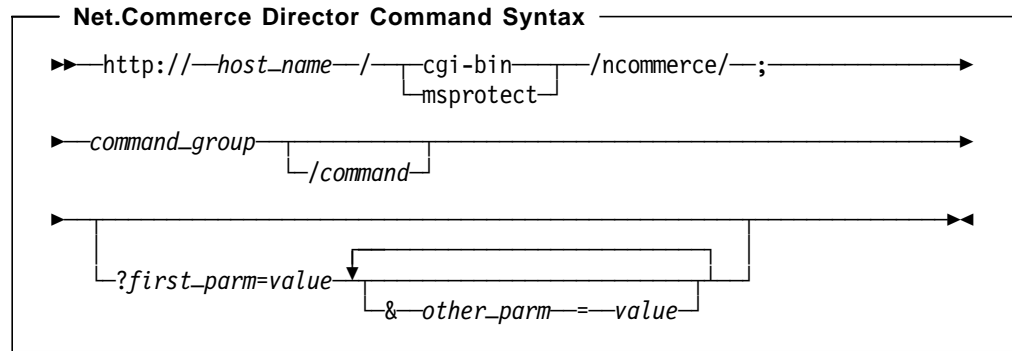
Commands can either be User Interactive (UI) or Non-Interactive (non-UI). Non-UI commands do not require any user interaction and do not return anything directly to the user. Non-UI commands process and write information to the Net.Commerce database. For some non-UI commands, the Net.Commerce system calls APIs for part of the processing. You can create an API program to change the way such commands process information.

UI commands retrieve information from the Net.Commerce database and display it on HTML pages for a mall or store. They achieve this by calling Net.data macros that contain SQL statements, HTML tags, and Net.Data language statements, all of which you can modify to control what is being presented and how.

The director accepts commands via CGI-BIN style syntax. When you type a command in a macro, use the following conventions:

- Ensure that there are no spaces between keywords, delimiters, and variables.
- Enter parameters in any order.
- Enter keywords in lowercase.
- Enter variables that represent column names and table names in lowercase.
- Replace spaces in values with plus signs (+).

The Net.Commerce director command syntax is as follows:



Where:

host_name The fully-qualified name of your server.

cgi-bin An indicator that the command is to be processed for nonsecure sessions. A nonsecure session is one in which the shopper does not provide a password. This includes shoppers who have not registered with your mall, and registered shoppers who access your store anonymously as unregistered shoppers. In most situations, the Net.Commerce system automatically detects whether a session is secure, and substitutes msprotect in the URL if appropriate. Always specify cgi-bin in the URL, except in the situation that is described under msprotect.

msprotect An indicator that the command is to be processed for secure sessions. A secure session is one in which the shopper provides a password. msprotect forces the Web server to authenticate the user by asking for a user ID and password. This is achieved by the msprotect Protect block in the Web server configuration file. For a secure session, Net.Commerce replaces cgi-bin with msprotect in the URL. The only situation in which you must specify msprotect explicitly is for the button or hyperlink for which you want the shopper to enter a logon user ID and password.

command_group There are seven command groups:

addrbk Non-interactive commands related to the address book

display Commands related to catalog browsing

execmacro Commands related to executing macros

order	Commands related to order handling
--------------	------------------------------------

register	Commands related to shopper registration
-----------------	--

shipto Commands related to shipping

shopcart Commands related to the shopping cart

command Commands are available for some command groups. A command performs a specific task in the command group. For example, the Add command in the Addrbk command group adds an address book entry. The following is a list of all commands under their command groups.

addrbk add, update, delete

display category, item

execmacro commands related to executing macros

order cancel, display, list, process, unlock

register form, modify, new

shipto delete, display, list, process, update

shopcart delete, display

Detailed documentation of command groups and commands, and how they map to various macros and API tasks is available in the online documentation for Net.Commerce at the following URL:
http://<your_host_name>/nchelp/nav/rnavindx.htm

first_parm=value The first parameter value pair of a command, if any, is separated from the command by a question mark.

other_ parm=value All other parameter value pairs, if any, are separated in the command line with the '&' symbol. The first and other parameter value pairs are used to pass parameters to the command.

Example

You can tell the director to add an entry to the address book of the shopper with the reference number ABCD and nickname XYZ by using the following command:

```
http://www.mall1.com/msprotect/ncommerce.pgm/;  
adrbk/add?sashnbr=ABCD&sanick=XYZ
```

An exception to this syntax is the Execmacro command, which has a syntax of the form:

```
http://<your_host_name>/[cgi-bin | msprotect]/ncommerce/;  
execmacro/macro_name /[HTML_section]/parameters
```

Figure 13 shows how the Net.Commerce director commands are used during a typical shopping trip.

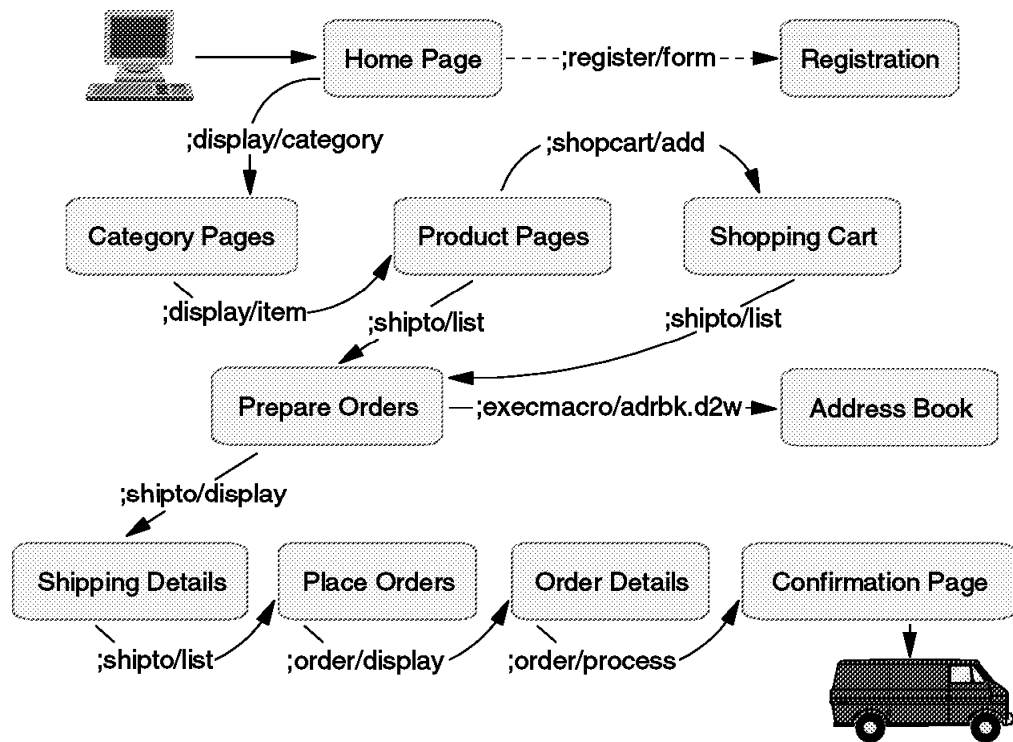


Figure 13. Net.Commerce Commands

4.2 Secure Web Server for AS/400

The secure Web server works very closely with Net.Commerce, providing the means by which Net.Commerce interacts with shoppers across the Internet.

The Internet Connection Secure Server (ICSS) is the licensed product of the AS/400, and provides the secure Web server functions.

V4R3

The HTTP Server for AS/400 with one of the following licensed products gives the secure Web server functionality:

- 5769-AC1 Cryptographic Access Provider 40-bit
- 5769-AC2 Cryptographic Access Provider 56-bit
- 5769-AC3 Cryptographic Access Provider 128-bit

The following persons use the secure Web server to interact with Net.Commerce:

- The shopper
- The Net.Commerce administrator, possibly the merchant who maintains the store or mall
- The Net.Commerce configurator, who creates, modifies and deletes Net.Commerce instances, and does other system maintenance tasks

When Net.Commerce is set up, it creates a QNETCOMM Web server instance that is used to service all interaction between a shopper and Net.Commerce. The QNETCOMM Web server instance listens for http requests on the default port 80 and for https requests on the default port 443. Whenever a page related to Net.Commerce is requested by a shopper, the Secure Web Server passes the request to the Net.Commerce director to process.

The secure Web server is also responsible for implementing password validation for Net.Commerce requests. All secure requests by a registered shopper are validated against a validation list maintained by Net.Commerce for each instance of Net.Commerce. When a shopper registers, the user ID and password are stored in this validation list. The secure Web server then ensures that private information related to that shopper requires the user ID and password to access. This is accomplished using the msprotect Protect block in the configuration file. The secure Web server also encrypts the conversation between the shopper and Net.Commerce so that sensitive information like credit card numbers can be kept safe.

The Net.Commerce Administrator, which allows access to the site manager, the store manager and the template designer is accessed through the secure Web server using Netscape 4.04 (or above) or equivalent with JDK 1.1. Access to the Net.Commerce administrator is through SSL using a validation list to authenticate the user. It is not possible to execute the Administrator from the AS/400 command line.

The secure Web server also provides the configuration interface for Net.Commerce. Net.Commerce instances can be created, modified, deleted, started or stopped using the *ADMIN instance of the secure Web server. Access to this instance is restricted by an AS/400 user ID and password that must have sufficient rights. This access is also enforced by the secure Web server.

However, it is also possible to start and stop the Net.Commerce server through the command line of the AS/400.

For additional information on the V4R2 ICSS, please refer to *Webmaster's Guide*, GC41-5434 or the redbook *AS/400 e-commerce: Internet Connection Servers*, SG24-2150.

V4R3

For additional information on the V4R3 HTTP Server for AS/400, please refer to *HTTP Server for AS/400 Webmaster's Guide*, GC41-5434.

4.3 IBM Database 2 for AS/400

The Net.Commerce database contains the information entered about the store and merchandise, and information about the shoppers who order from the store. Net.Commerce for AS/400 uses IBM Database 2 (DB2), which is included in the OS/400 operating system. For information on DB2 for AS/400, please refer to *DB2 for AS/400 Database Programming*, SC41-5701.

4.4 Net.Data for AS/400

Net.Data is a CGI program that interprets macros and allows the creation of dynamic Web pages. A dynamic Web page, unlike a static one, can contain information which changes with time and context, such as the current level of inventory of a requested item. Net.Data provides a simple macro language that incorporates HTML tags, SQL statements, logical constructs and a rich function set that helps create such pages easily.

A Net.Data macro contains Net.Data directives, HTML tags or SQL statements in plain text. This can be created with any text editor and reside either in the IFS or in an AS/400 object. The macro is invoked through the Secure Web Server, which uses the Net.Data CGI program to execute the requested macro.

Net.Commerce uses Net.Data macros to display dynamic pages for stores and malls, containing updated information customized to the shopper. You can add your own macros or modify the existing macros to refine the presentation of a mall in Net.Commerce.

Net.Data is available as part of the TCP/IP Connectivity Utilities for AS/400 V4R2 and comes with the OS/400 operating system.

V4R3

Net.Data is part of the HTTP Server for AS/400 V4R3, and also comes with the OS/400.

For additional information on Net.Data for AS/400, visit the AS/400 Net.Data Web site at: <http://www.as400.ibm.com/netdata>

4.5 Useful URLs

The following Web site provides useful additional AS/400 information:
<http://www.as400.ibm.com>

Chapter 5. Planning for Net.Commerce

In this chapter, we look at some of the planning considerations that should be taken into account before implementing Net.Commerce.

Figure 14 illustrates the steps to implementing a Net.Commerce site.

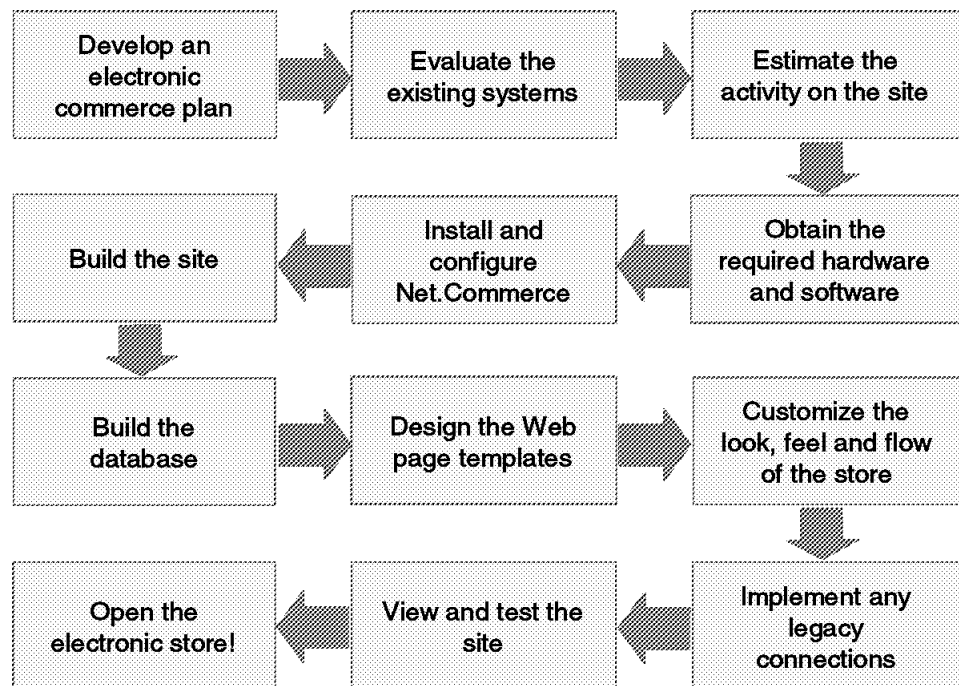


Figure 14. Net.Commerce Implementation and Planning

Net.Commerce is a powerful product that lets you sell either products or services over the Internet, whether you are a small retailer or a large wholesaler. The following are some preliminary considerations that should be taken into account prior to starting a Net.Commerce implementation. We consider the following areas:

- Presence on the Internet
- Mall or store
- Setting up an implementation plan
- Page design
- Single or multiple system implementation

5.1 Presence on the Internet

A Net.Commerce implementation can take the form of simply a presence on the Internet to shopping with electronic payment:

Presence displays products or services over the Internet.

Shopping gives shoppers the possibility to surf a site, choose products and place orders. Payment is performed separately using either electronic mailing, cash on delivery or any other non-electronic method.

Shopping and electronic payment gives shoppers the possibility to surf, choose, place orders and then securely pay for their orders over the Internet. Payment should be secured with a secure payment process such as the use of SSL and SET.

The above three ways are applicable whether the implementation is an electronic mall or a single store.

An implementation could start with just a presence then move on to shopping and ultimately electronic payment.

If implementing as a merchant, you are targeting *Internet users* with a relatively above average income.

If implementing as a wholesaler, you are targeting *your agents*.

The following is a list of some products and services sold today on the Internet:

- Books
- CDs
- Computers
- Software
- Arts and crafts
- Vacation packages
- Airline tickets
- Train tickets
- Opera tickets
- Gambling
- Propriety information
- Medical supplies

5.2 Mall or Store

Net.Commerce supports the implementation of a single store on the Internet or a complete shopping mall comprising multiple stores. With a mall implementation, stores that complement each other can be placed together such that shoppers surfing one store can search through the contents of other stores also.

5.2.1 Single Store

A store's size may vary, so we will assume that a small store consists of the following categories:

- Two main categories
- Twenty subcategories
- One hundred products

and a large store consists of the following categories:

- Ten main categories
- One hundred subcategories
- Ten thousand products
- Connection to legacy applications such as inventory management and accounts payable.

Small stores are unlikely to have specifications for all of their products in a database and in most cases are not automated.

Unlike small stores, large stores usually have a database with complete specifications of their product lines in addition to a dedicated staff to maintain it.

A small store can be maintained using Net.Commerce's built-in editing tools. Depending on the products that the merchant sells, editing may be needed more or less frequently.

In the case of a large store, the merchant probably does not rely on the HTML-based customization forms provided by Net.Commerce. Updating information of 10 000 products is a lengthy process (five pages per product) and the store administrator prefers to have direct access to the database columns and tables to change prices, description, availability, and so on.

A small store may host both the Web server and database on the same server (which does not need to be dedicated). This server may run locally or be hosted at a third party site. In that case, the system administrator is responsible for communicating the electronic orders to the merchant, either by fax or e-mail system. The administrator might also be responsible for communicating orders to manufacturers or shipping carriers.

For large stores, the company has to decide whether to use an existing database or create a new one for Net.Commerce. System security may be a consideration when making this choice. Especially for mission-critical systems, speed and reliability should not be affected by adding an online Net.Commerce application. The Web servers and the database might be on separate machines. You may use a faster machine for the front-end Web server.

If you use multiple front-end systems, there must be a way to divide the incoming requests over the multiple systems such as a network dispatcher.

5.2.2 Mall

A mall's size may vary from two stores up to 50 stores or more with a different number of categories, subcategories, and products.

In all cases, the mall is maintained by a dedicated staff, which may be a small content hosting company doing this as their main business. The mall administrator has the responsibility of running the electronic mall. Activities include:

- Keeping the hardware running and up-to-date.
- Administering the mall (site manager).
- Writing applications to run in the mall or connecting to legacy applications.
- Helping merchants design their stores.
- Running a help desk for merchants and/or customers.

Maintenance depends on the nature of stores and how merchants want to run their own stores, (for example, stores may share a common database, server, security setup, and so on). Some stores may want their own shopping cart, navigation, and ordering process while some may not. You can use the task manager to customize which macro or API to use for a specific task for each store.

The merchants may sell products of the same nature and sometimes from the same manufacturer so the use of search tools across the mall is useful to shoppers.

In all cases, the site administrator has to define each shop's front page and its personalized data.

For more information about setting up an e-business, please refer to <http://advisor.internet.ibm.com/>

5.3 Setting Up an Implementation Plan

The Net.Commerce implementation plan should include the following areas.

5.3.1 Marketing Plan

A marketing plan should be developed that outlines the current state of the business, the results expected to be achieved through electronic commerce, and a plan to achieve them. By clearly defining such things as the targeted market, customer needs, suitable products, existing and required resources, you will be better positioned to implement the processes required to achieve these goals.

5.3.2 Evaluate the Current System

The current system should be evaluated to determine whether it can be used as the basis for the electronic commerce site. For example, if there is already a Web site that contains pages displaying products, it may be possible to use these pages in the electronic commerce site.

The current fulfillment and shipping processes should be evaluated to be sure that they are capable of fulfilling the electronic orders and physically shipping products to customers.

Current back-end or legacy applications such as inventory management and accounts receivable have to be integrated with the electronic store. Net.Commerce provides APIs that allow this integration to be achieved. However, these APIs require programming skills.

5.3.3 Estimate the Site Activity

Estimating the anticipated site activity allows for the more accurate determination of hardware requirements. A single-machine configuration may not be able to handle the number of hits to an electronic store belonging to a well-known company, frustrating both the merchant and shoppers with long delays. On the other hand, a home-based entrepreneur may find such a configuration both adequate and affordable. A little research before hand can help avoid costly errors.

5.3.4 Prepare the Infrastructure

Listed below are some of the Net.Commerce infrastructure implementation steps.

1. The hardware requirements for AS/400 Net.Commerce are:
 - A minimum of 32MB of system memory (64MB is recommended)
 - A minimum of 4Gigabytes (GB) of total system DASD storage (8GB is recommended).

- A CD-ROM drive

AS/400 Model

When deciding on the AS/400 model to be used, consideration should be given for the complex nature of Net.Commerce command processing (CGI programs may run, the database accessed, etc.). The system is likely to be doing much more than simple HTML page serving!

Net.Commerce is configured through a Web browser. An additional hardware requirement is therefore a workstation, such as a Pentium, running a Web browser, such as Netscape. Plus:

- A mouse or other pointing device
- A local area network (LAN) adapter that is supported by the TCP/IP protocol
- A graphics-capable monitor

2. The software requirements for AS/400 Net.Commerce if used in conjunction with OS/400 V4R2 are:

- OS/400, Version 4, Release 2
- IBM Net.Data for AS/400, V4R2 (shipped as part of the TCP/IP Connectivity Utilities for AS/400)
- TCP/IP Connectivity Utilities for AS/400 (product 5769-TC1)
- IBM Internet Connection Secure Server (ICSS) for AS/400 V4R2 (product 5769-NC1 or 5769-NCE)
- IBM DB2 for OS/400 (shipped with OS/400)
- Net.Commerce for AS/400 (product 5798-NC2)

V4R3

The software requirements for AS/400 Net.Commerce if used in conjunction with OS/400 V4R3 are:

- OS/400, Version 4, Release 3
- IBM Net.Data for AS/400, V4R3 (shipped as part of the HTTP Server for AS/400)
- TCP/IP Connectivity Utilities for AS/400 (product 5769-TC1)
- IBM HTTP Server for AS/400 V4R3 (product 5769-DG1)
- Cryptographic Access Provider (product 5769-AC1 - 40-bit, 5769-AC2 - 56-bit or 5769-AC3 - 128-bit)
- IBM DB2 for OS/400 (shipped with OS/400)
- Net.Commerce for AS/400 (product 5798-NC2)

3. A server certificate must be acquired from a certifying authority.
4. A Web browser is required to access the Net.Commerce administration tools. The browser must support:

- Secure Sockets Layer (SSL)
- Java and JavaScript
- Tables and frames
- Cookies

Net.Commerce supports the following Web browser: Netscape Navigator 4.04 (or above) or equivalent with JDK 1.1.

5. We recommend that you install IBM AS/400 Client Access for Windows 95/NT on your workstation.

6. You need to prepare (or obtain) pictures for all the products to be made available through the electronic store.
7. Design a front page.
8. Design a product hierarchy.
9. Identify authorization and who is to act as the electronic store administrator.
10. Use the supplied APIs to cater to specific requirements. Some of the APIs that may be used are Registration management, Inventory Inquiry and update, Order tracking, Selling and cost price calculation, Tax calculation, Discount schemes, Shipping charges calculation, Shipping selection criteria and Payment checking.
11. Design product pages.
12. Enter product data into the Net.Commerce database.
13. Integrate the electronic store with legacy applications such as inventory management system and accounts receivable.
14. Before going online, you need to heavily test the site. There is nothing worse for an electronic shopper than getting an error message.
15. Do not forget also to continuously review any changes made to the linking between pictures or pages.

5.4 Tips for Page Design

It is important that the store presents a professional image. Professional looking pages are required that fit the image the store is to create. In the case of a real store, we judge the store by the way the building, staff, catalog, and advertising look. The Web pages, which substitute almost all these items, should look good as well.

For selling products over the Internet, you need to find the right balance between "hip" pages that look nice but are not functional or boring, and business-like pages. Remember, the store is selling products so make it easy to order those products.

Let a professional graphic designer who is experienced in designing interactive media and images do the page layout. Shoppers browsing the net are used to nice pictures and well-designed pages. A nice design makes them want to come back more often. *Do not underestimate the graphical design of your Web pages!*

In general, consider the following things before designing a Web page.

5.4.1 Using Recognizable Styles

Try to find a basic layout that appears on all the pages and is unique for your company. This includes headers, footers, colors, fonts, location of images and so on.

Net.Commerce provides a template designer that can be used to design macros (dynamic HTML pages that interact with the Net.Commerce database). However, the template designer may not be sufficient for professional looking HTML pages. It may be better to use a dedicated HTML editor for this task. These programs offer more control over the layout of the page and also offer the latest HTML additions. Although some editors claim WYSIWYG control over the pages they

create, it is still the browser that does the final formatting, so check the appearance of created pages regularly using popular browsers to avoid surprises.

Note: If you decide to edit the macros using a text editor, do not expect the Net.Commerce template designer to further edit the file. It is not built to interpret these changes.

5.4.2 Using Graphics and Colors

Web pages should not look the same as lists on a 5250 screen. However, the pages should not be overloaded with too many fancy pictures or animations that take a long time to load. Keep in mind that a lot of users still have slow connections to the Internet.

5.4.3 Using Templates

Use different layouts for different product categories. You certainly want to use another background picture or text font for winter coats than for summer swimsuits.

5.4.4 Using Headers and Footers

Create headers that include the company logo, colors, and slogans that are also used in other media. The footer can be used for links to the shopping cart, the order pages, and back to the product and category pages. The footer can also be used to add links to sales offerings or to general product categories that might be interesting for all shoppers (for example, candies or fancy mousepads).

More complicated designs can be created that show the shopping cart all the time, or show the category and product pages together.

Note: Not all browsers support frames, so do not forget to include a notification of some sort on pages when using advanced HTML features. Pages without frames may also be included for the benefit of those users whose browsers cannot support them.

5.4.5 Using a Common Set of HTML Features

Try to use a subset of HTML features that most browsers support. There are many HTML extensions that can be used to produce fancy graphics, animations and so on but can only be viewed with the latest browsers or special browser plug-ins. It might deter shoppers from visiting the site if they are forced to change to another browser or obtain and install additional code for viewing. Use these enhancements if that is the only way to make an impression, and only for "nice-to-have" features, not for essential information. Be aware of the target group. Is it young people that want to keep up with the latest technology or are the customers people that look at browsers as a necessary tool.

5.4.6 Using Images and Image Formats

Perhaps the most important factor in the look of a catalog is the pictures. It is important to do this right.

Produce images (photos) of all the products to be sold through the Internet. Do not underestimate this step. These pictures must be of good quality and contain just the product. Do not use photos of the whole family of products on all product pages. Likewise, do not use badly scanned images from brochures with text across the picture.

Making pictures is expensive and time consuming. Try the manufacturer of the products you are selling for good images of all products. These images need to be in JPEG or GIF format. These two image formats are different.

JPEG images can contain up to 16 million colors but they use "lossy" compression. The image degrades during compression, but the file size is just a fraction of the original. Some image-editing programs such as PaintShop Pro (available as shareware on the Internet) or Adobe Photoshop allow you to specify the compression ratio. The higher the compression ratio, the lower the file size, but also the lower the quality of the image. Also, during the editing process in some programs you lose quality every time you open a picture and save it as JPEG. In color photos, even large compression is hardly visible. You need to experiment to find the optimum level of compression.

For graphics using plain colors, JPEG images are less suitable because of the distortion that comes with the data compression. GIF images are better for these types of graphics. GIF images can contain only 256 colors and use only non-lossy data compression, so they can be fully reconstructed. Most programs allow reducing the number of colors to 128 or even less to further decrease the file size. Here also you have to try to find the best solution.

GIF images allow for a "transparent color". Some editors allow you to designate one color to be transparent, so that the background (color or image) shines through. This gives the picture a nice, integrated look. When designing your own graphics, use the anti-aliasing option that most editors have to get the edges more fluent. When using a transparent background, anti-alias to the color that best describes your background.

You might omit images for self-explaining items such as a memory extension for a PC. However, in general, your customers prefer buying things they have seen in advance.

5.4.7 Using Different Layouts for Different Customers

Net.Commerce supports registered and non-registered shoppers. If a shopper has registered and entered personal information such as age, gender, income, address, job and so on, you can use this data to show special sales offerings to them, or to use different page layouts.

5.5 IBM Service Offerings for e-commerce

A family of services is available from IBM Global Services that help companies of all sizes use networks and Internet technologies to transform their internal business processes (via intranets); their business relationships (via extranets); and the buying and selling of goods, services and information (via electronic commerce).

These services help a customer across all stages of an electronic project implementation from planning for an e-business application, to architecting, constructing and even outsourcing management and operations.

IBM's e-business Services fall into the following six categories:

- IBM e-business Advisory Services
- IBM e-commerce Services
- IBM Intranet/Extranet Services

- IBM Managed Data Network Services
- IBM Security Services
- IBM Distributed Learning Services

In this chapter, we briefly discuss the first two offerings. For more information on all offerings, please refer to the IBM internal Web page <http://w3.ibm.com/services/e-business/> or the IBM external Web page <http://www.ibm.com/services/profservices/ebus-index.html>. For global information on IBM services offerings please refer to the IBM external Web page at: <http://www.ibm.com/services>

5.5.1 IBM e-business Advisory Services

These services consist of a suite of seminars and workshops designed to satisfy a customer's requirement for an efficient and affordable way to evaluate the value of e-business to their company. This offering is composed of:

- IBM e-business Seminar
- IBM e-business Opportunity Workshop
- IBM e-business Strategy Workshop
- Additional Information

The e-business Seminar assists clients in understanding the overall value of e-business. The Opportunity Workshop takes this understanding a step further by delivering a one to two day intensive session with consultants as they guide them through the process of evaluating how e-business can directly benefit their company. Finally, the strategy workshop allows the merchant to complete his analysis and build an executable strategy and action plan.

5.5.2 IBM e-commerce Services

e-commerce services are a family of offerings designed to assist merchants in preparing and conducting Internet business transactions both with other business counterparts and with customers. Offerings range from readiness assessments and strategy workshops, to implementation of specific business solutions, to education and training. IBM e-commerce services include:

- Business Planning for e-commerce
- Electronic Retailing/Trade
- Electronic Transaction Services
- Electronic Financial Services
- Additional Information

Electronic Retailing/Trade: Specific offerings for ERT cover the entire commerce cycle from pre-trade to post-trade and provide a business with the ability to implement a secure, scalable solution to reduce the costs of doing business while broadening market reach. These offerings are grouped around the planning, design, and implementation of business-to-business or business-to-consumer transaction systems on a choice of platforms. The offerings range from helping small to medium-sized businesses get started, to implementing large and complex solutions with advanced technologies such as intelligent catalogs and personalized shopping.

- e-Commerce Solution Planning 1-3 day Workshop
- e-Commerce Functional Design 1-3 day Workshop
- e-Commerce Prototype/Solution Development

5.6 Single or Multiple System Implementation

Net.Commerce can be implemented as a single system setup or in a multiple system configuration. In this section we look at some of the planning considerations associated with selecting the appropriate setup.

5.6.1 Single System Setup

In the single system setup, both the Net.Commerce server and database are on the same system. This setup may be sufficient for a single store or small mall.

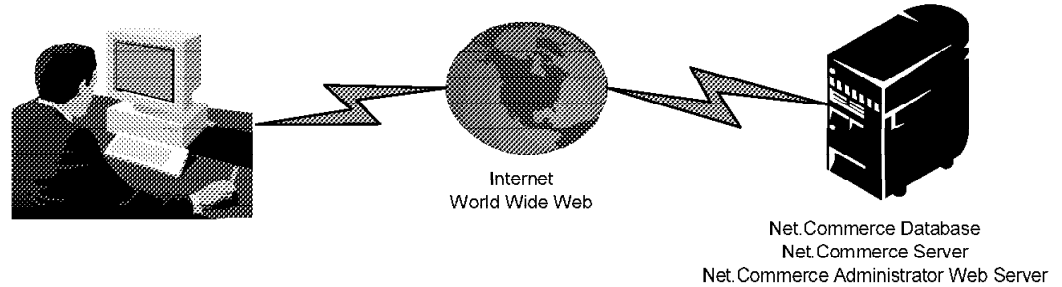


Figure 15. Single System Configuration

5.6.2 Multiple System Setup

As the database size and number of shoppers increases, a single system may not be able to cope with the load. In a multiple system setup, the workload will be spread across multiple systems. The advantages of a multiple machine configuration are:

- The workload is spread among machines.
- If one machine is down, the others can take over its workload.
- The database machine can be placed behind a firewall for additional protection.

The installation of Net.Commerce on multiple systems is similar to the single system install except that you must set up the database for remote access.

There are several ways to implement Net.Commerce on multiple systems:

1. You can have the Net.Commerce server on one system and the database collection on another system (Figure 16).

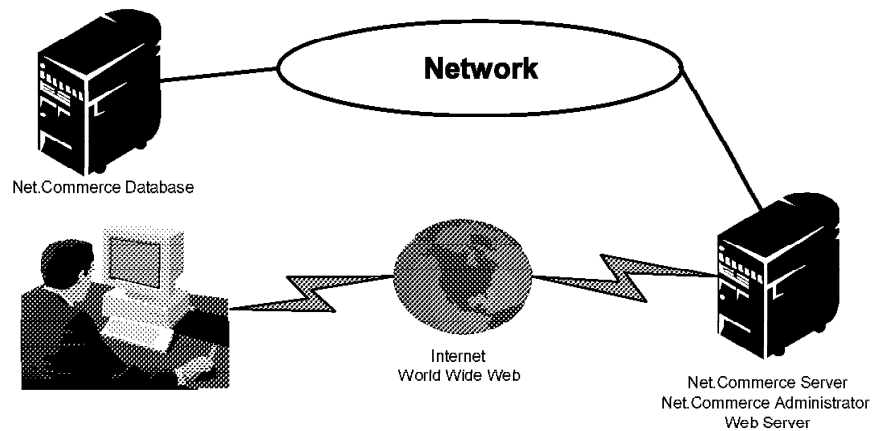


Figure 16. Multiple System Configuration Scenario 1

2. You can have multiple Net.Commerce server systems and a single database collection where the database can be on one of the server systems or on a different system (Figure 17).

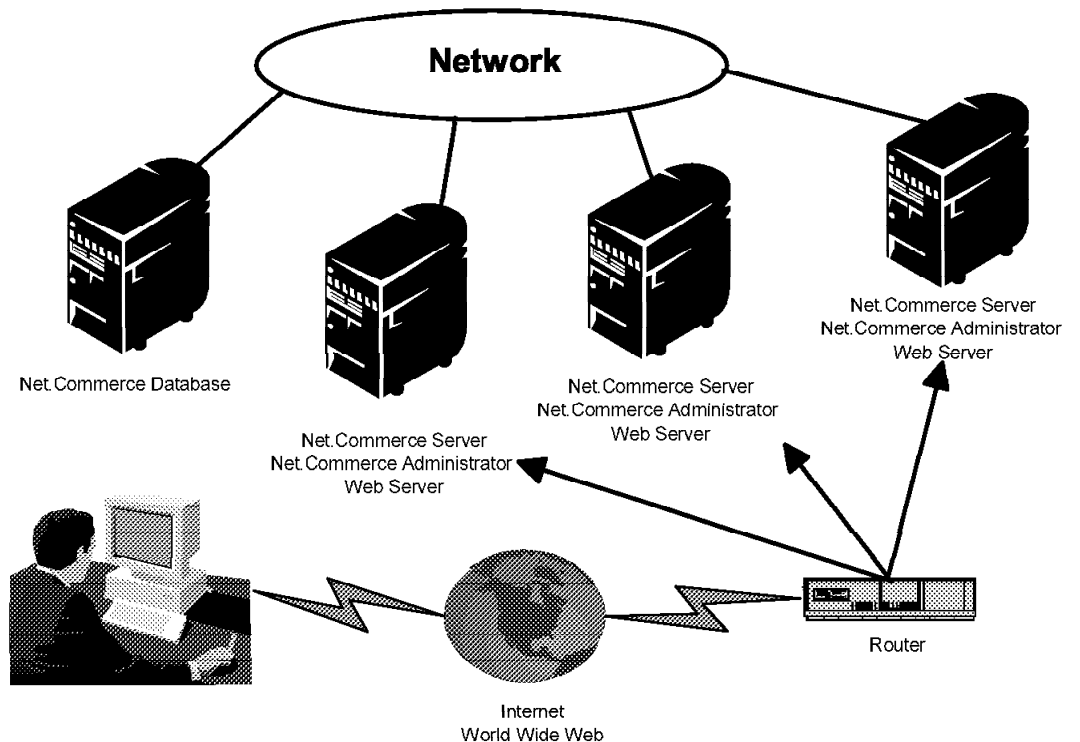


Figure 17. Multiple System Configuration Scenario 2

This scenario represents a single Net.Commerce shopping mall. The multiple Net.Commerce server systems represent a single Net.Commerce server instance. The router is balancing the load across the multiple server systems.

3. You can have a single server system with multiple instances of Net.Commerce using databases on multiple systems (Figure 18).

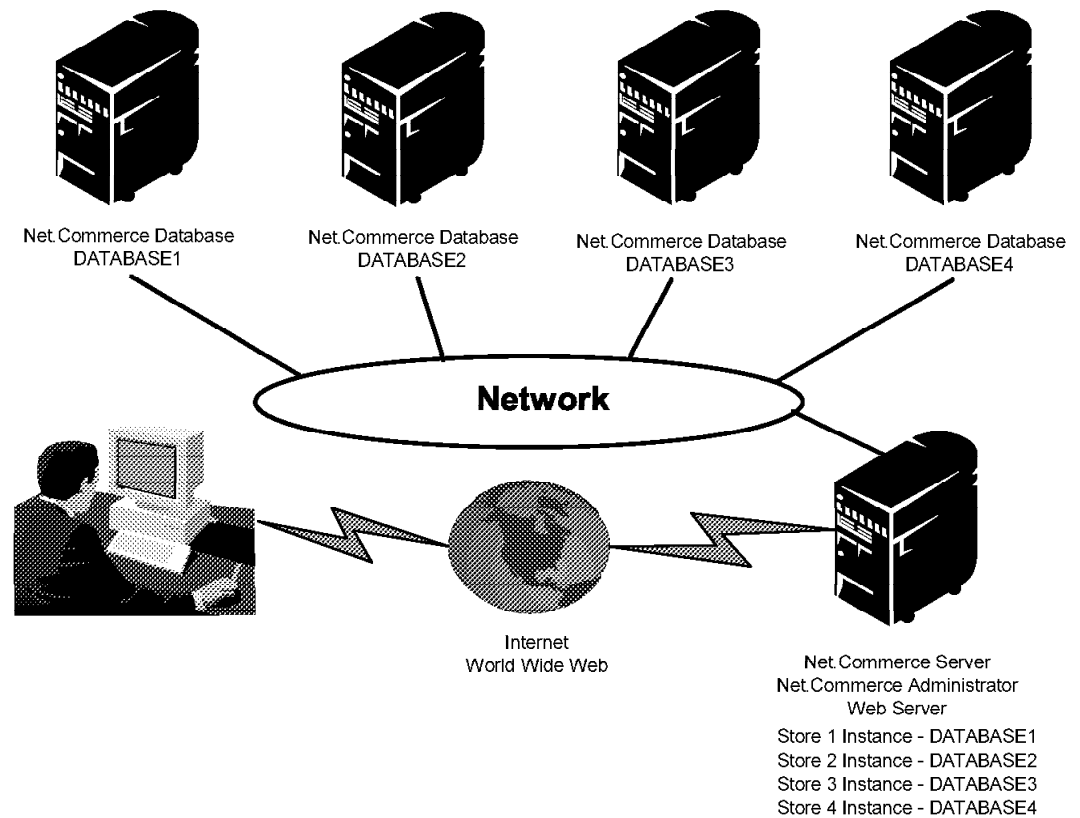


Figure 18. Multiple System Configuration Scenario 3

This scenario represents multiple Net.Commerce shopping malls. Each Net.Commerce server instance and associated database collection represents a separate mall. Each Net.Commerce server instance will be associated with a unique host name and IP address; this is called a multihome configuration.

Each Net.Commerce server system must have the Net.Commerce director and daemon, Net.Data and Secure Web Server on the same system. The database collection can reside on a different system.

The Net.Commerce product must be installed on each system that is to run the Net.Commerce Server.

Detailed instructions for these configurations are given in Chapter 8, "Net.Commerce Advanced Configuration" on page 97.

5.7 e-business Advisor

An online e-business Advisor is available at: <http://advisor.internet.ibm.com>
The areas covered by the advisor are as follows:

- Scenario 1: Thinking of creating an Internet site.
- Scenario 2: Thinking of creating an internal company intranet.
- Scenario 3: Improving the Internet site you currently have.
- Scenario 4: Creating an Internet site.
- Scenario 5: Creating an internal company intranet site.
- Scenario 6: Determining which of your products (services) have the best chance of marketing success on the Internet.
- Scenario 7: Measuring your Internet marketed products against your competitors.
- Scenario 8: Determining if an intranet solution is the right way to implement your project.
- Scenario 9: Estimating the costs and time required to create an internal company intranet.
- Scenario 10: Estimating the technical schedule required to create an internal company intranet.

Chapter 6. Net.Commerce Installation

In this chapter, we cover the Net.Commerce installation tasks after covering the preliminary tasks that must be performed before installing Net.Commerce.

6.1 Preliminary Procedures

Prior to beginning the installation, you must have the following:

- An OS/400 user ID with authority to execute the installation.

You must create or have access to a user ID with the user class of ***SECOFR** and special authority of ***USRCLS**. Use this user ID when you install the product.

- The host name for your AS/400 system.

You must know the host names of the system or systems on which you want to run Net.Commerce. If you plan to run Net.Commerce either on multiple systems or run multiple instances of Net.Commerce on a single system, it is necessary to define a host name for each system or Net.Commerce instance.

You can use the command `CFGTCP`, and select Option 12 (Change local domain and host name), to determine whether a local host name and domain name have been defined for a system. This screen will allow you to determine if a host name exists, or to define or change a host name.

```

Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name . . . . . <YOUR_HOST_NAME>_____

Domain name . . . . . <YOUR_DOMAIN_NAME>_____

Host name search priority . . . *LOCAL__ *REMOTE, *LOCAL, *SAME

Internet address . . . . . '<YOUR_DNS_IP>'__
                              '<YOUR_DNS_IP>'__
                              _____

Bottom
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display   F24=More keys

```

Figure 19. Verify Your Local Host Name and Domain Name

- The Relational Database Directory Entry for the system that will host the database collection.

To determine or create a relational database directory entry, use the command `WRKRDBDIRE` (Figure 20 on page 48). Make a note of the directory entry name. If no entry exists, you must create one by selecting Option 1

from the Work with Relational Database Directory Entries screen. You can specify either a *LOCAL database, a remote database, or both depending on whether your Net.Commerce database is going to be local (on the same AS/400 as the Net.Commerce server) or remote. For more information on setting up a remote database, refer to 8.2, “Setting Up Remote Database Access” on page 100.

Work with Relational Database Directory Entries

Position to _____

Type options, press Enter.
1=Add 2=Change 4=Remove 5=Display details 6=Print details

Option	Relational Database	Remote Location	Text
____	<YOUR_HOST_NAME>	*LOCAL	RDB ENTRY FOR *LOCAL

Bottom

F3=Exit F5=Refresh F6=Print list F12=Cancel
(C) COPYRIGHT IBM CORP. 1980, 1998.

Figure 20. Verify Your Relational Database Directory Entry

- Net.Data is included with your OS/400 system, product *TCP/IP Connectivity Utilities for AS/400*, number 5769-TC1.

V4R3

Net.Data is included with your OS/400 system, product *HTTP Server for AS/400*, number 5769-DG1.

To install it, use the command G0 LICPGM.

Note

Refer to the product’s documentation for further details about the installation and configuration.

- To install the *IBM Internet Connection Secure Server* (product number 5769-NC1 in North America, product number 5769-NCE in other countries) or *IBM HTTP Server for AS/400* (product number 5769-DG1) with 5769AC1, 5769AC2 or 5769AC3, use the command G0 LICPGM.

Note

Refer to the product’s documentation for further details about the installation and configuration.

6.2 Installation Procedures

Before proceeding with the installation of IBM Net.Commerce, please ensure that you have completed the steps described in 6.1, "Preliminary Procedures" on page 47.

To install all the components of Net.Commerce on a single system, follow the instructions in "Installation of Net.Commerce on a Single system" that follow below. If you are planning to install the Net.Commerce database on one system and the Net.Commerce server components on another system, follow the instructions below then follow the instructions in 8.2, "Setting Up Remote Database Access" on page 100.

6.2.1 Installation of Net.Commerce

The following steps describe the installation of IBM Net.Commerce on a single system (Figure 21).

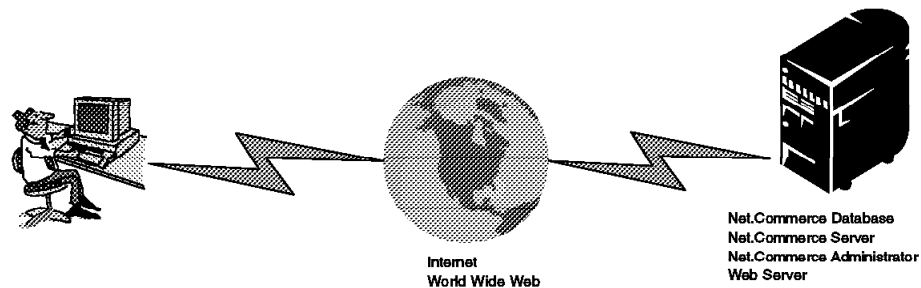


Figure 21. Single System Configuration Scenario

1. Sign on to the AS/400 using the user ID that you created in 6.1, "Preliminary Procedures" on page 47.
2. If Net.Commerce has been previously installed and you wish to retain any changes made to the Net.Commerce configuration file, initialization file, macros and HTML pages, do the following:
 - a. Copy the Net.Commerce configuration file to a path that is not used by Net.Commerce. The name and path for the file is:
`/QIBM/ProdData/HTTP/Protect/NetC/server/Admin/nccconfig.dat`
 - b. Copy the Net.Commerce initialization file to a path that is not used by Net.Commerce. The name and path for the file is:
`/QIBM/UserData/NetCommerce/instance/mserver.ini`
or for a multiple instance system:
`/QIBM/UserData/NetCommerce/instance/<instance_name>/mserver.ini`
 - c. Copy all macros that have been modified to a path that is not used by Net.Commerce.
 - d. Copy all HTML files that have been modified to a path that is not used by Net.Commerce except any that have been modified using the template designer (these are saved under UserData and will not be overwritten when Net.Commerce is reinstalled).

Having deleted and reinstalled Net.Commerce, *do not* configure Net.Commerce until the above configuration, initialization, macro and HTML files have been restored.

Note that none of the existing user data files, user profiles, database collections or Web server configuration files are deleted as part of the reinstall of Net.Commerce.

- 3. If Net.Commerce has been previously installed, use the Delete Licensed program command DLTLICPGM to delete Net.Commerce.

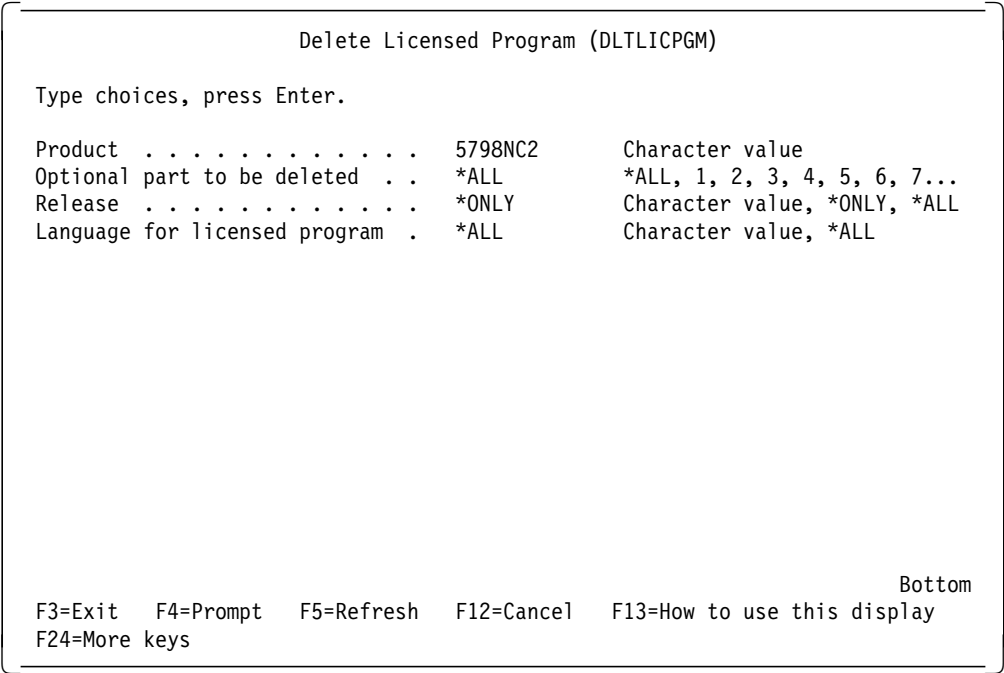


Figure 22. Delete Licensed Program Menu

Note

Do not lock any objects in QNETCOMM when you are doing the deletion. Make sure that Client Access is not attached to the IFS directories.

- 4. To install IBM Net.Commerce (product number 5798NC2), insert the product CD-ROM and use the command RSTLICPGM.

Restore Licensed Program (RSTLICPGM)

Type choices, press Enter.

Product	5798NC2	Character value
Device	OPT1	Name, *SAVF
+ for more values		
Optional part to be restored . .	*BASE	*BASE, 1, 2, 3, 4, 5, 6, 7...
Type of object to be restored .	*ALL	*ALL, *PGM, *LNG
Language for licensed program .	*PRIMARY	Character value, *PRIMARY...
Output	*NONE	*NONE, *PRINT
Release	*FIRST	Character value, *FIRST
Replace release	*ONLY	Character value, *ONLY, *NO

Bottom

F3=Exit F4=Prompt F5=Refresh
F10=Additional parameters F12=Cancel

F13=How to use this display
F24=More keys

Figure 23. Restore Licensed Program Menu

An acknowledgment message appears, indicating that you have successfully installed Net.Commerce.

Congratulations! You have now successfully installed the Net.Commerce system and all its components. To continue, go to the 6.2.3, “Post-Installation Procedures” on page 52.

6.2.2 What Was Installed

The following is a list of the files and objects that were created during the installation.

- QNETCOMM Library

Contains the main program objects, service programs, files, commands, and message files for Net.Commerce. Take note of the following:

Table 1 (Page 1 of 2). QNETCOMM Library Program Objects		
Object	Type	Description
QNETCOMM	*VLDL	Validation list
QACSRC	*FILE	Sample C source to create trigger programs used for caching
QSQLSRC	*FILE	SQL scripts used to build instance databases. The members are greater than 240 bytes and the AS/400 cannot natively edit them. You must use FTP, Client Access, or another method to modify these files.
STRNETCSVR	*CMD	Start Net.Commerce Server
ENDNETCSVR	*CMD	End Net.Commerce Server
QNEADDTR	*CMD	Add trigger
QNERMVTR	*CMD	Remove trigger
DLTNCDBE	*CMD	Net.Commerce DB2 database cleanup

<i>Table 1 (Page 2 of 2). QNETCOMM Library Program Objects</i>		
Object	Type	Description
IMPNCDATA	*CMD	Import Net.Commerce data

- IFS Root File System

Contains stream files that are stored in the "root" file system. Take note of the following:

<i>Table 2. IFS Root File System Objects</i>	
Object	Description
/QIBM/ProdData/HTTP/Protect/NetC/server	Directory containing files associated with configuration
/QIBM/ProdData/HTTP/Public/NetCommerce/Html	Directory containing Net.Commerce HTML files (including DEMOMALL samples). This directory also contains some online help printable files in PDF and postscript format.
/QIBM/ProdData/NetCommerce/macro	Directory containing Net.Commerce macros (including DEMOMALL samples)
/QIBM/ProdData/NetCommerce/MRI2924/demodata.in	Mass import input file used for DEMOMALL creation
/QIBM/ProdData/NetCommerce/MRI2924/nc_msg.cat	Net.Commerce message file
/QIBM/ProdData/NetCommerce/MRI2924/netcsrvr.cat	Net.Commerce message file

- QSYSCGI Library

Location of CGI Web objects.

<i>Table 3. QSYSCGI Library Program Objects</i>		
Object	Type	Description
WEBCONFIG	*PGM	Invoked by the Administration Server to configure Net.Commerce

6.2.3 Post-Installation Procedures

After the Net.Commerce system is installed, you must do the following:

- Configure the Net.Commerce server instance or instances. This does the following:
 - Configures the Net.Commerce Web server instance.
 - Provides and configures the Net.Data initialization file.
 - Creates the Net.Commerce database collection initialization file.
 - Populates the database with the demonstration mall (optional).
 - Creates a user profile for Net.Commerce use.
- Configure the Net.Commerce Web server for SSL (Secure Sockets Layer).
- Enable caching (optional).
- Complete the setup of remote database access, if applicable.

Instructions for configuring Net.Commerce instances is covered in detail in Chapter 7, “Net.Commerce Basic Configuration” on page 55.

Chapter 7. Net.Commerce Basic Configuration

In this chapter, we look at the configuration of Net.Commerce for AS/400. The chapter covers the following topics:

- Configuration
- Configuration details
- Verifying that the Net.Commerce installation and configuration are successful
- User-customizable server configuration

7.1 Configuration Process

Having successfully installed Net.Commerce, the next step is to create a Net.Commerce server configuration. This is performed through the ADMIN Web server instance. Follow these steps to create the Net.Commerce server configuration:

1. Sign on to the AS/400 system as administrator using an ID with *IOSYSCFG special authority.

Hint

We used a user profile with *SECOFR authority.

2. To prevent timeouts during the configuration of Net.Commerce, alter the *ADMIN Web server instance to increase the script timeout value as follows:

- a. From the command line, type:

```
WRKHTTPCFG *ADMIN
```

- b. Add the following line to the end of the configuration file:

```
ScriptTimeOut 60 minutes
```

(Use option 13 (insert) against the last line in the file.)

The file should look similar to Figure 24 on page 56.

```

Work with HTTP Configuration
System:  HOSTNAME

Configuration name . . . . . :  ADMIN

Type options, press Enter.
1=Add  2=Change  3=Copy  4=Remove  5=Display  13=Insert

Sequence
Opt   Number  Entry
---   -
00010 # * * * * * >
00020 # HTTP Admin server CUSTOMER configuration >
00030 # * * * * * >
00040 ScriptTimeOut 60 minutes

F3=Exit  F5=Refresh  F6=Print List  F12=Cancel  F17=Top  F18=Bottom
F19=Edit Sequence
Bottom

```

Figure 24. HTTP Configuration for the Administration Server

Note

This change to the configuration file should be removed when you have finished configuring the Net.Commerce Instance.

3. Start the HTTP administration Web server (*ADMIN) instance with the following command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

National Language Support

For NLS support when starting the *ADMIN server, add the -fscssid and -netccsid parameters as shown below.

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN '-fscssid xxxx -netccsid yyy')
```

Where xxxx is the DefaultFsCCSID and yyy is the DefaultNetCCSID listed for the system language feature. For a list of the available languages, see the latest Net.Commerce readme.

If the server is already started, close the server using the command:

```
ENDTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

and then start it again using the previous STRTCPSVR command.

4. Start your Web browser, and ensure that the following are *disabled*:

- Memory cache
- Disk cache

Figure 25 on page 57 displays these settings if you are using Netscape Communicator 4.03. Notice that **Every time** has been selected to ensure the browser does not use a cached page.

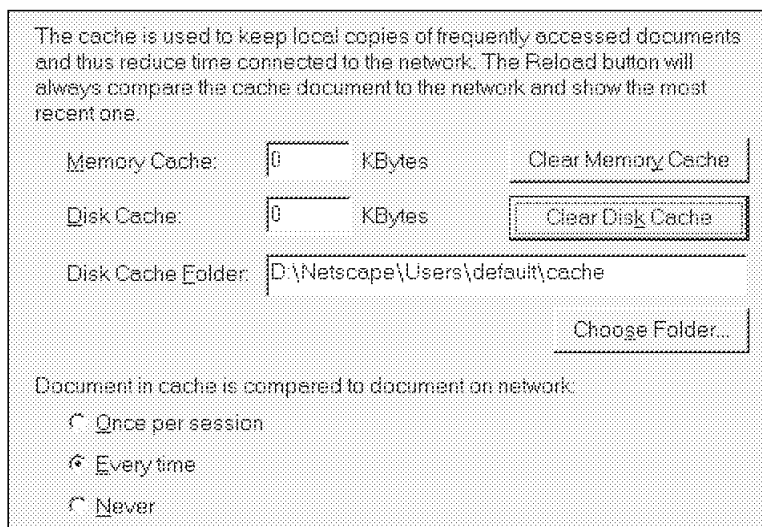


Figure 25. Netscape Communicator 4.03 Cache Settings

The panel is accessed as follows: Preferences→Advanced→Cache.

5. Also ensure the following are disabled for your Web browser:

- Proxy servers
- Socks servers

Figure 26 displays these settings if you are using Netscape Communicator 4.03. Notice that **Direct connection to the Internet** has been selected to ensure the proxy server does not use a cached page.

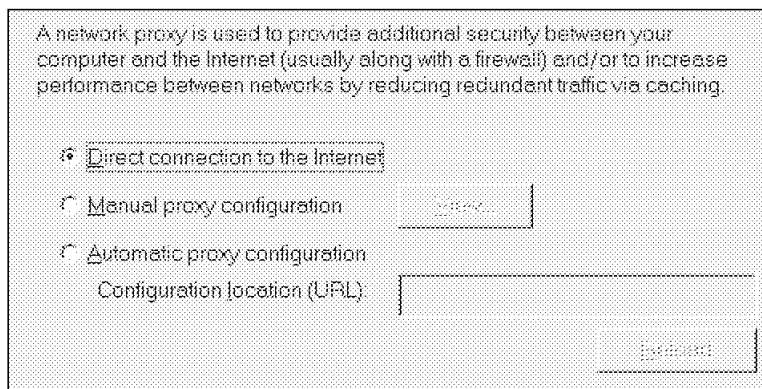


Figure 26. Netscape Communicator 4.03 Proxy Settings

This panel is accessed as follows: Preferences→Advanced→Proxies.

6. Display the main AS/400 Tasks page by loading the following URL:

http://<your_host_name>:2001

Enter your AS/400 user ID and password at the authentication prompts and click on **OK**. The AS/400 Tasks Administration page will be displayed (Figure 27 on page 58).

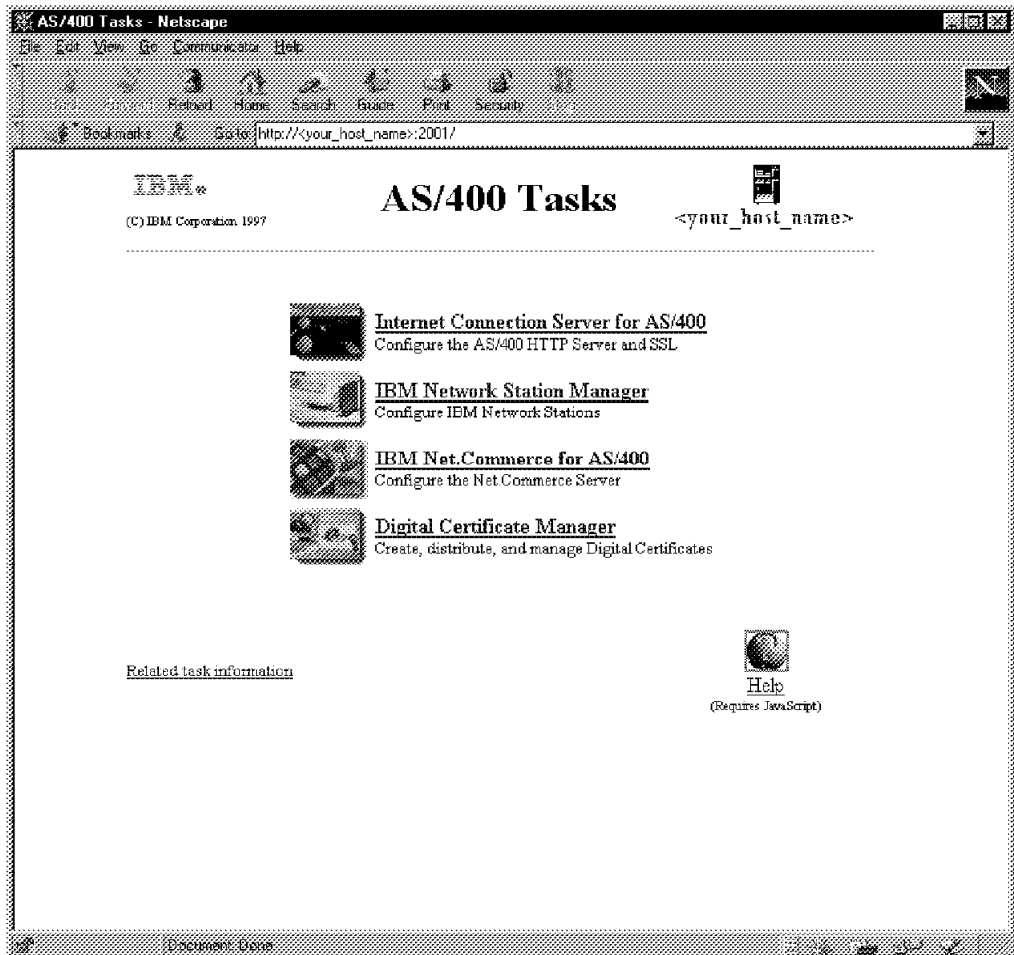


Figure 27. AS/400 Tasks Administration Page

7. Click on **IBM Net.Commerce for AS/400**. The *Configuring the Net.Commerce System* page appears (Figure 28).

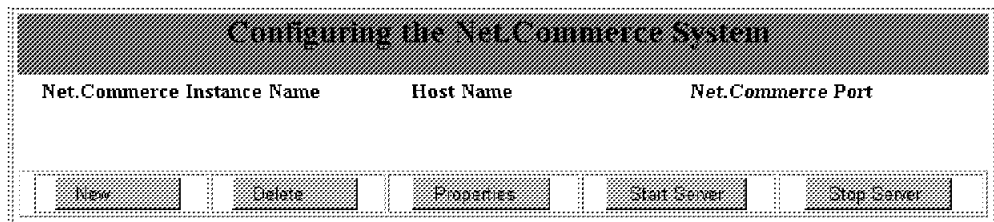


Figure 28. Net.Commerce Configuration Screen

Note: If you have already created Net.Commerce instances, and want to change an existing instance, select it by clicking on the radio button beside it, and then click on **Properties**. If you want to delete an existing instance, select it and then click on **Delete**.

8. To create a new Net.Commerce instance, click on **New**.
9. The Net.Commerce Instance Properties page appears. Fill in the following fields as shown in Figure 29 on page 59.

Net Commerce Instance Properties

Net Commerce Instance Name: An alphanumeric name used to identify each Net Commerce Server

Merchant Key: A sixteen digit Hexadecimal number used for the encryption of sensitive data in the Net Commerce DEMS

Web Server

Type: The type of Web Server to be used with the Net Commerce Server

Host Name: The hostname of the Web Server to be used with the Net Commerce Server

Database

Relational Database Name: The Relational Database where your Database Collection will reside

DEMS: The type of Database where the Net Commerce Data is to be stored

Password: The Password used to logon to the database

Confirm Password: The Password used to logon to the database

Net Commerce Server (Optional)

Processes: The number of Net Commerce Processes to be run per Net Commerce Instance

Port: The Port where the Net Commerce Server communicates with its CGI Program

Macro Path: The location of Net Data macros used in construction of your Mails

Web Server (Optional)

HTML Path: The location of your HTML document root

☒ Demo Mail **IBM DB2 Database (Optional)** Select this option if you want the Demomail Database Collection to be installed

Upon submission of this form, a database collection and user profile, of the name of the instance name provided on the first line, will be created. If these objects already exist, they will not be disturbed, and the collection will not be created. However all the other configuration actions will be performed. **Creation of the collection library and the mass import of the demomail will take substantial time to perform.**

Document Date

Figure 29. Net.Commerce Instance Properties Screen

- In the **Net.Commerce Instance Name** field, type in an alphanumeric name for the Net.Commerce instance that you want to create. This will create a user profile and a database collection of that name.
- In the **Merchant Key** field, type a key that will be used to encrypt sensitive data in the database. This key must be exactly 16 hexadecimal characters in length. It is important that you remember it and keep it confidential.

Note

If you are planning a multiple system configuration, the merchant key must be the same for all the Net.Commerce servers that have access to the same Net.Commerce database.

- c. In the **Type** field, leave the default of IBM Internet Connection Server for AS/400.
- d. In the **Host Name** field, type in the fully qualified host name that you will be using with the Net.Commerce server. See 6.1, "Preliminary Procedures" on page 47. You can leave in the current host name that appears by default. For a multihome setup, there must be a unique name for each instance you create.
- e. In the Relational Database Name field, type in the name that identifies the system's relational database. See 6.1, "Preliminary Procedures" on page 47. You can leave the default value of *LOCAL if you want your database collection on the same system.

Note

If you specify a remote relational database, your database collection will initially be created on the *LOCAL system. See 8.2, "Setting Up Remote Database Access" on page 100 for details on remote access.

- f. In the **DBMS** field, leave the default of IBM DB2/400 Server in place.
- g. In the **Password** field, type in the password for the user ID that is created; then type it again in the **Confirm Password** field.
- h. In the **Processes** field, type the number of processes that you want started for the Net.Commerce instance. Multiple processes allow the server to handle multiple concurrent requests.
- i. The **Port** field displays a unique, available, system-generated port address for your first Net.Commerce instance. Additional instances are also given unique port numbers. It is normally safe to accept the default port numbers generated by the system, however, you can select another port number. This port is used for internal communication between the Net.Commerce director(s) and daemon.
- j. In the **Macro Path** field, specify the location of your Net.Data macros. By default, these are installed in /QIBM/ProdData/NetCommerce/Macro/MRI2924.
- k. In the **HTML Path** field, specify the location of the Web Server HTML document root. For a multihome setup, there must be a unique path for each instance. It is a good practice to append the instance name subdirectory to the end. For example:
/QIBM/UserData/NetCommerce/instance/<instance_name>

Note

This path must exist before you submit this page.

- l. If you want to install the demonstration mall, select the box beside the **Demo Mall** field.
- 10. Click on **SUBMIT**. The Net.Commerce configuration and initialization files are updated, and a number of other objects are created.
 - 11. A confirmation page appears (Figure 30 on page 61) to indicate whether the configuration was successful. This page also contains success/failure messages about the database collection, validation list, the source physical file INI (member DB2WWW), and the database preparation.

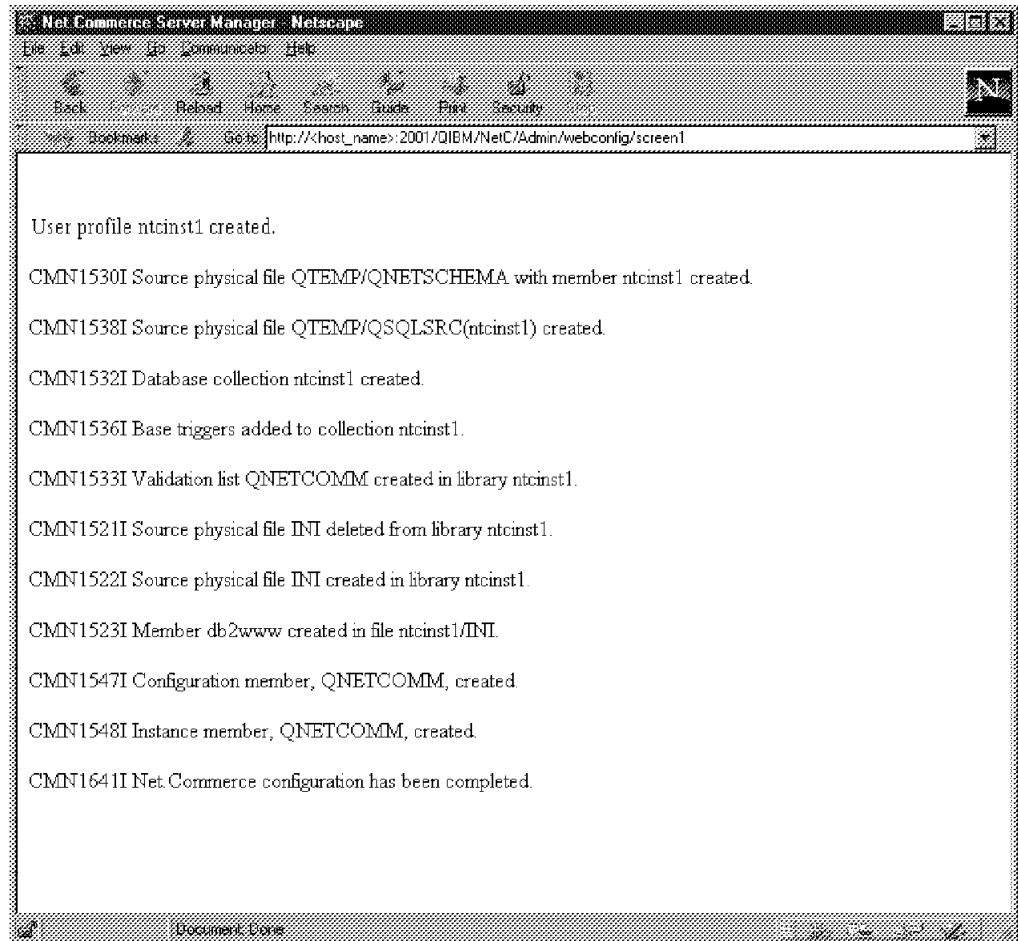


Figure 30. Net.Commerce Instance Confirmation Page

Click twice on the browser **Back** button to return to the Net.Commerce Instance Properties page.

12. To create, change or delete a Net.Commerce instance, repeat steps 6 to 11 above. The port number, HTML path, instance name, and host name must be unique for each instance.
13. Enable the following components that were disabled from your browser in step 4 and step 5.
 - Memory cache
 - Disk cache
 - Proxy servers
 - Socks servers
14. Reset the *ADMIN server to its default configuration as follows:
 - From the command line, type:
WRKHTTPCFG *ADMIN
 - Remove the line ScriptTimeOut 60 minutes that you entered to alter the server instance.
15. The above configuration process built a Web server configuration file for the Net.Commerce Web server (QNETCOMM). In this step we add an SSL configuration to that Web server configuration. SSL is required to provide a secure connection between the shopper's browser and the Net.Commerce

server. This secure connection will allow for the displaying of potentially sensitive data by the shopper and for the use of the shopper's credit card number when purchasing items using a Web browser.

V4R3

The configuration steps of SSL for V4R3 are different. It uses the Digital Certificate Manager (DCM), which is a separate task from the HTTP server configuration. See Appendix A, "SSL Configuration for V4R3" on page 221 for an overview of DCM and detailed configuration steps.

For OS/400 V4R2, follow these steps to configure Internet Connection Secure Server for AS/400. The steps given below provide a high-level overview of the SSL configuration process. For a more detailed understanding of this process, see *AS/400 e-commerce: Internet Connection Servers*, SG24-2150.

- a. Display the main AS/400 Tasks page by loading the following URL:

`http://<your_host_name>:2001/`

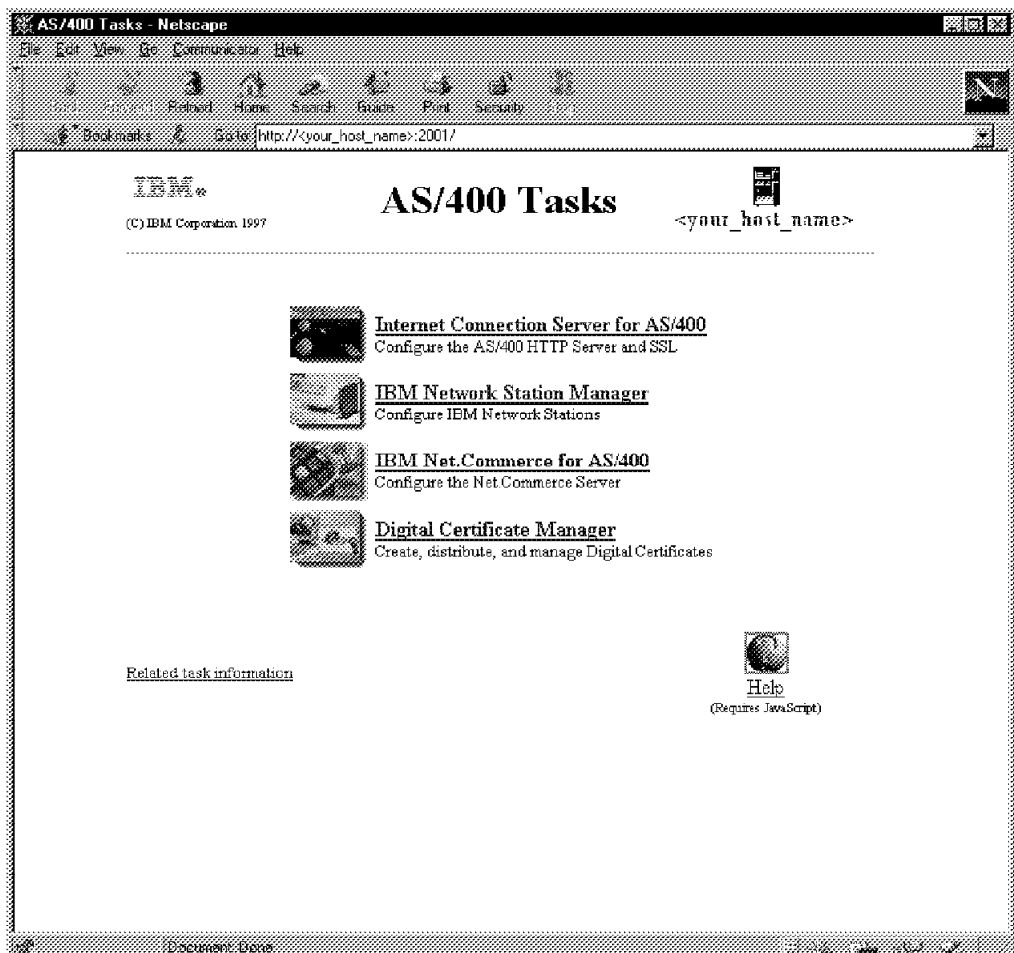


Figure 31. AS/400 Tasks Administration Page

- b. Click on **Internet Connection Server for AS/400** then **Configuration and Administration**.

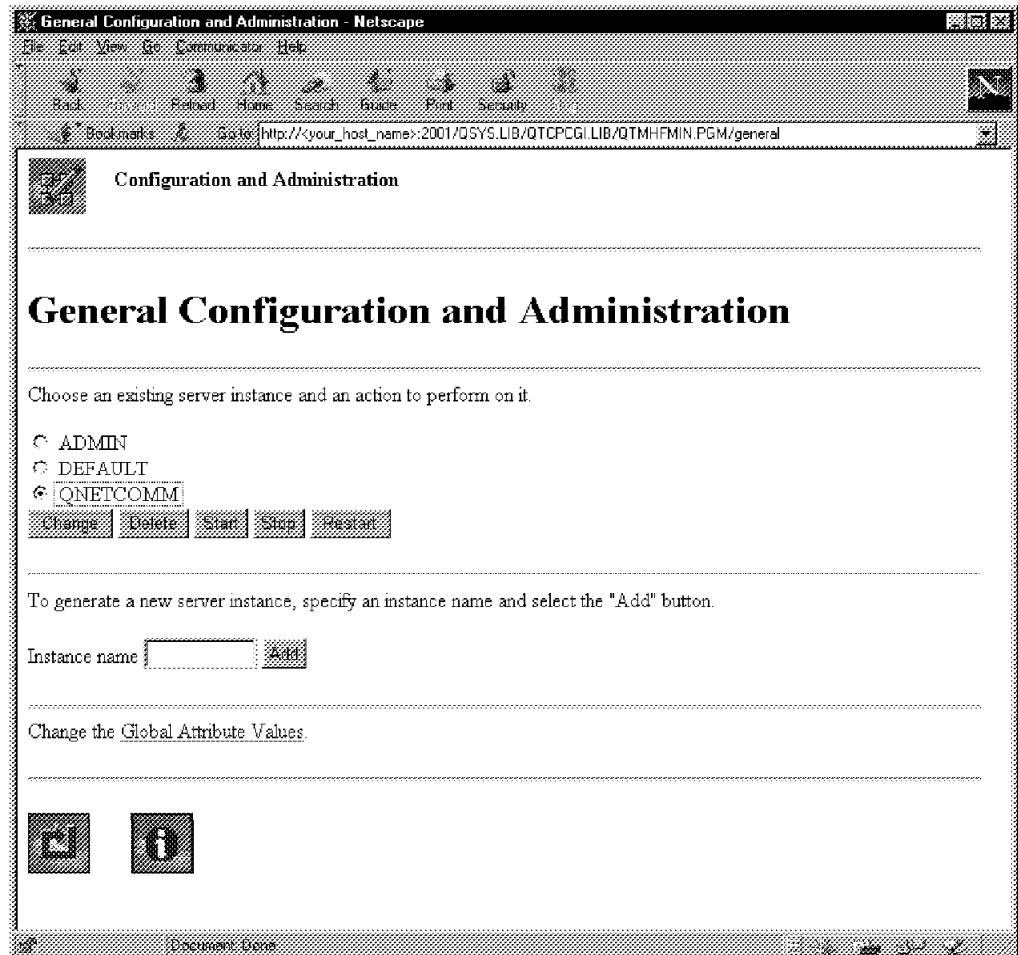


Figure 32. General Configuration and Administration

- c. Select the **QNETCOMM** Web server instance and click on **Change**.

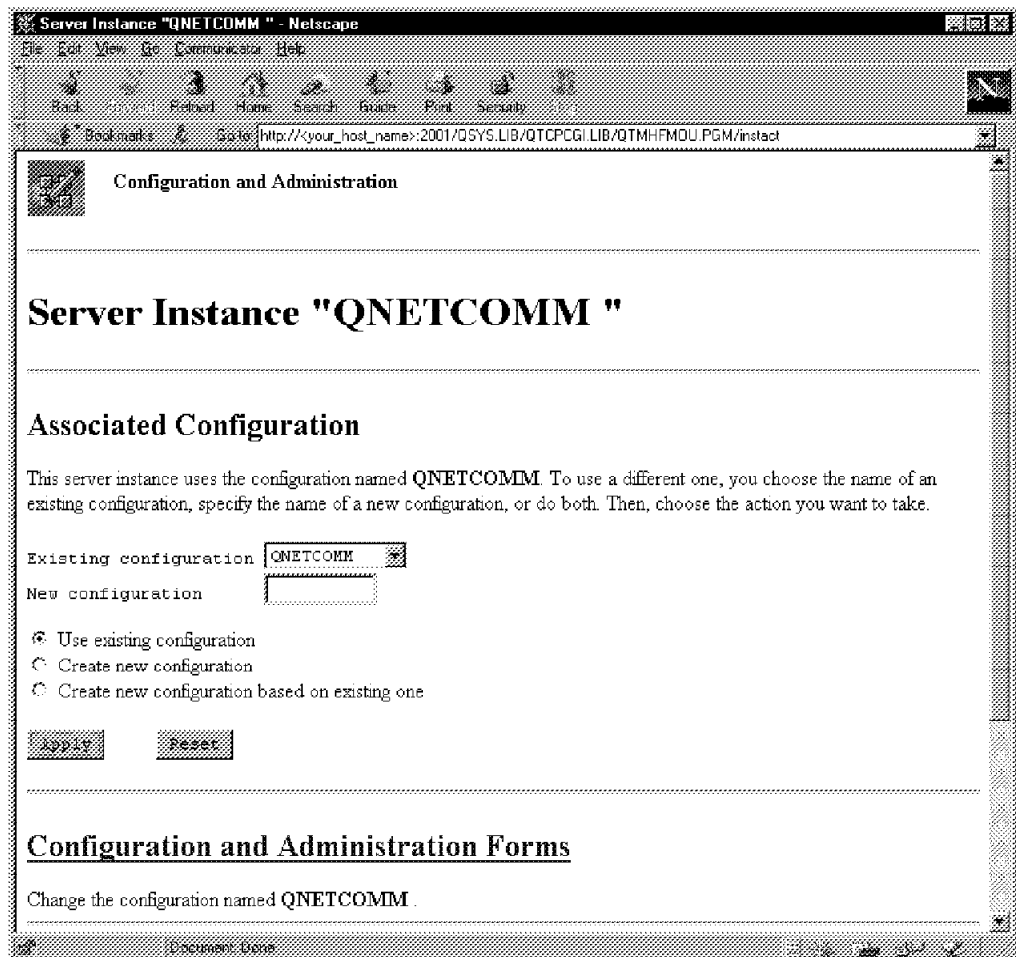


Figure 33. Server Instance QNETCOMM

- d. Verify that the existing configuration is QNETCOMM, select **Use existing configuration** and click on **Configuration and Administration Forms**.

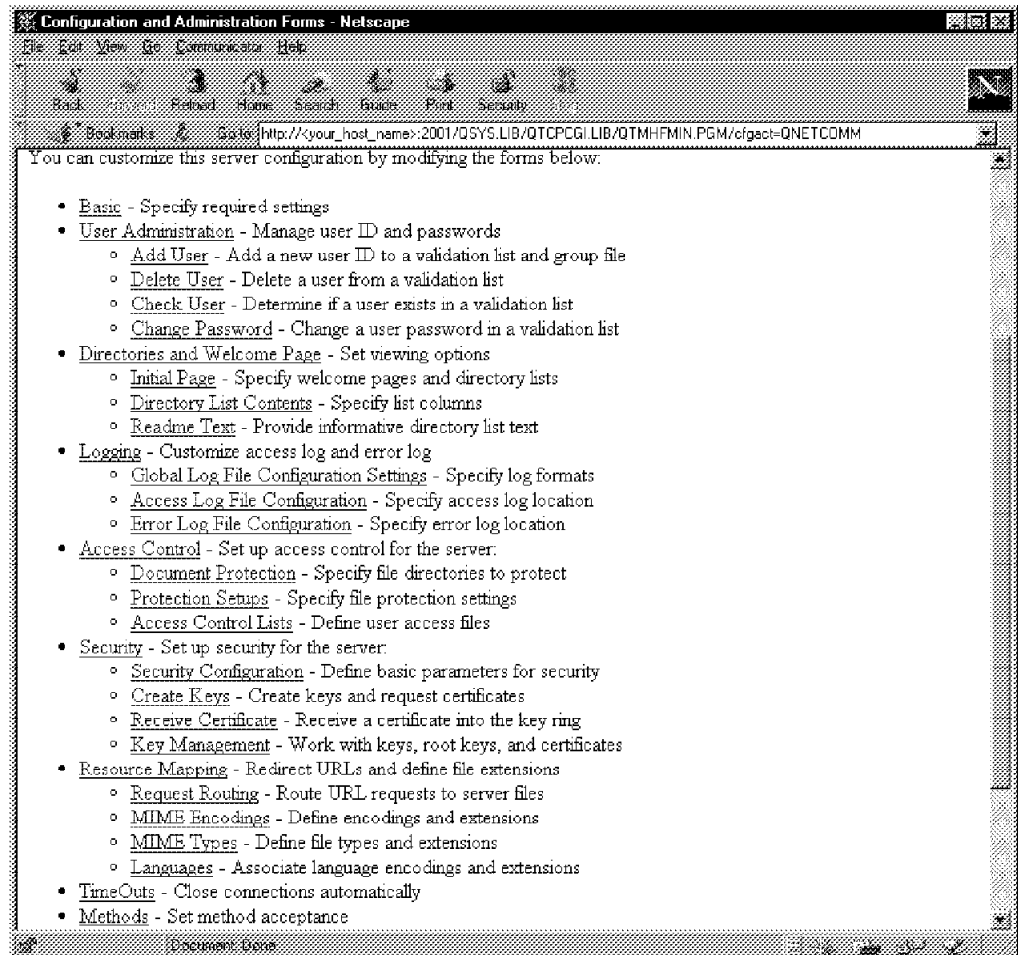


Figure 34. Configuration and Administration Form

e. Click on **Security Configuration**.

Security Configuration

Use this form to configure security options for HTTP and SSL.

Connection options:


Choose the kinds of connections you want. You can have an HTTP connection, an SSL connection, or both an HTTP connection and an SSL connection. If you allow an HTTP connection, you can define its port on the [Basic](#) configuration settings form.

☐ Allow HTTP connections
☐ Allow SSL connections
☒ Allow HTTP and SSL connections

SSL port

Figure 35. Security Configuration

f. Select **Allow HTTP and SSL**, enter SSL port number 443 and press the **Apply** button.



Directive: normalmode On

Directive: sslmode On

Directive: sslport 443

The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms.

When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it.

[Configuration Page](#)

Figure 36. Confirmation Page

- g. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Create Keys**.

Create Key and Request Certificate

Choose the certification authority (CA) from whom you want to obtain a certificate. VeriSign is a widely known CA. For information about obtaining a certificate from VeriSign, you can access the [VeriSign home page](#). If you want to use another CA or to act as your own CA for a private Web network, choose Other.

☐ VeriSign (Secure Server Certificate)
☒ Other

Figure 37. Create Key and Request Certificate

- h. Select **VeriSign** or **Other** depending on the Certificate Authority being used. If using Net.Commerce in an Internet environment (as would normally be the case), we would request a certificate from a third-party Certificate Authority. In this example we are using Net.Commerce in an intranet environment only and hence are happy to use a locally created certificate. We use the AS/400's ability to create a certificate.

Other Certificate

Use this form to request a server certificate from a CA other than VenSign and to create a public-private key pair. If you plan to act as your own CA for a private Web network, use this form either to request your CA certificate or to request this server's certificate that you will process as a CA. Please fill in all fields, unless marked optional.

Create Key

Specify a unique, meaningful name, which will be used to identify the public-private key pair. Also specify the size of the key pair and the fully qualified path and file name for the key ring where the key pair will be kept. If you are creating your CA keys, you should keep them in a unique key ring.

Key name	<input type="text" value="SERVERKEY"/>	Size	<input type="text" value="512"/> bits
Key ring	<input type="text" value="/QIEM/USERDATA/UWW/KEYFILE.KYR"/>		

Figure 38. Create Key

- i. Enter a **Key name** for the SSL key and a file name for the **Key ring** where the key file will be stored.

Key Ring Password

Specify a password for the key ring. The key ring password must be specified each time the server is started. If you check **Automatic login**, the password is automatically specified when the server is started. If you are specifying the password for the server's key ring, make sure this box is checked if you want non-interactive startup. If you are specifying the password for your CA key ring, make sure this box is not checked. If your CA keys are compromised, all the certificates you have issued are also compromised.

Password	<input type="password" value="****"/>	
Password	<input type="password" value="****"/>	(for verification)
<input checked="" type="checkbox"/> Automatic login		

Figure 39. Key Ring Password

- j. Enter a **Password** for the Key ring. This password will secure the SSL key file. The password used should be recorded in a secure location, as it will be required if any change is later required to the SSL configuration.

Request Certificate

To request this certificate, fill in the rest of this form.

Distinguished Name

The Distinguished Name is a unique name that is associated with the certificate and public key. For this certificate, the Distinguished Name is the Server name and the location of the server. Server name is the X.500 common name. It is usually the fully qualified TCP/IP host name.

Server name	<input type="text" value="www.itso.ibm.com"/>	
Organizational unit	<input type="text" value="itso"/>	(optional)
Organization	<input type="text" value="ibm"/>	
Locality/City	<input type="text" value="Raleigh"/>	(optional)
State/Province	<input type="text" value="Noth Carolina"/>	(minimum three characters)
Postal code	<input type="text" value="NC27513"/>	
Country	<input type="text" value="US"/>	

Figure 40. Request Certificate

- k. Enter a Distinguished Name for the Net.Commerce Web server.

User's e-mail address should contain the address where you want the CA to mail the certificate.

User's e-mail address

Mail To

Choose the mailing option recommended by your CA. If you are acting as your own CA, to request your CA certificate or to request this server's certificate that you plan to process as CA, choose **Don't mail**.

☐ Mail to

☒ Don't mail

Figure 41. Mail To

- l. If requesting a certificate by e-mail, enter the certificate authority's and your e-mail addresses.

Save Copy

Specify a unique, fully qualified path and file name for the file where you want to save the certificate request.

Save certificate request to file

Figure 42. Save Copy

- m. In this example we are not using e-mail to request a certificate and therefore save the request to a file which we will then send to the Certificate Authority, in our case an AS/400. Press the **Apply** button. Send this file to the Certificate Authority and have them sign it. See *AS/400 e-commerce: Internet Connection Servers*, SG24-2150 for information on how to use an AS/400 to do this in an intranet environment as we did.

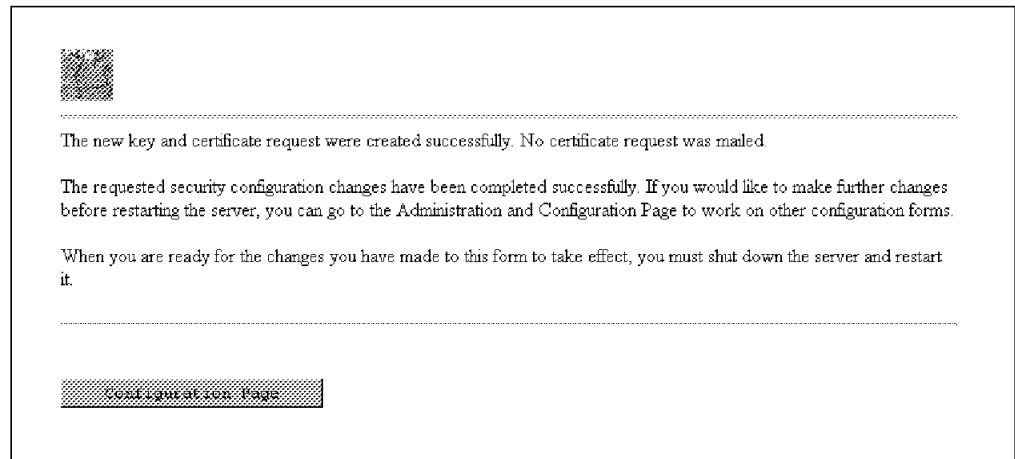


Figure 43. Confirmation Page

- n. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Security Configuration** and scroll down to **Add key ring**.

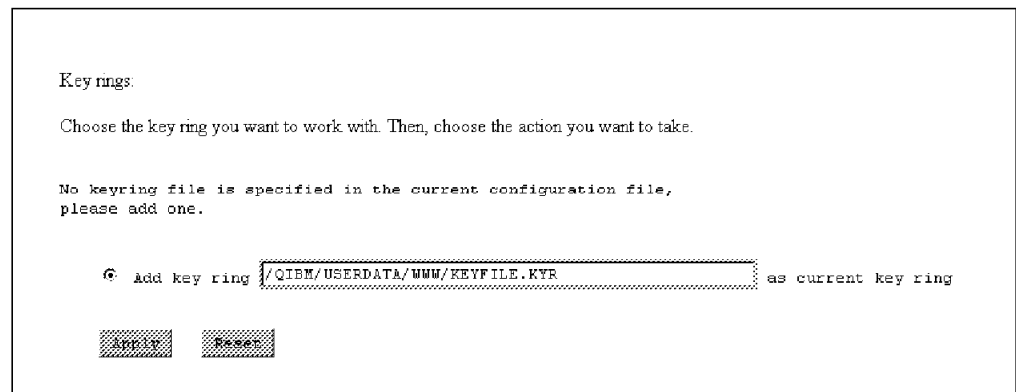



Figure 44. Add Key Ring

- o. Enter the key ring name (as entered in Figure 38 on page 67). Press the **Apply** button.



Directive: normalmode On

Directive: sslmode On

Directive: sslport 443

Directive: keyfile /QIBH/USERDATA/WWW/KEYFILE.KYR

The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms.

When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it.

Configuration Page

Figure 45. Confirmation Page

- p. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Receive Certificate**.

Receive Certificate

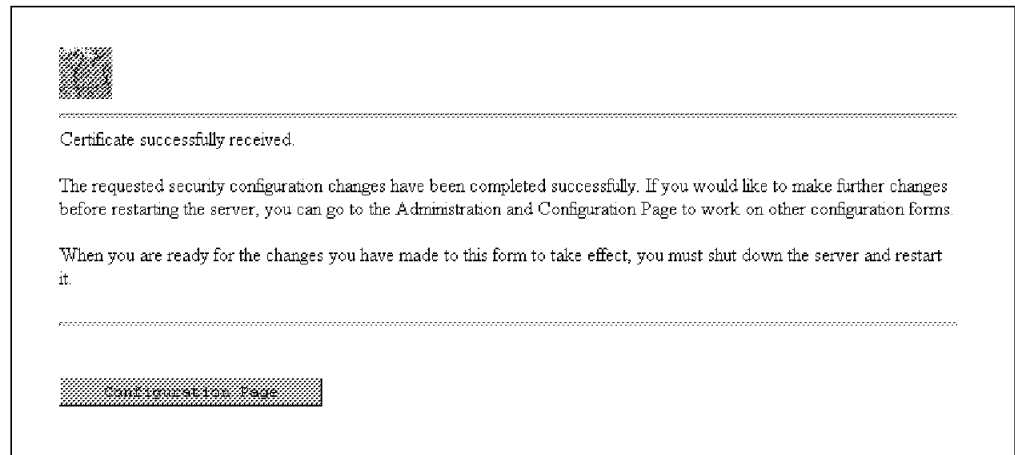
Use this form to receive a certificate into its key ring after it has been processed by a certification authority (CA). This form can also be used to create a signed certificate for you to use as a CA for a private Web network.

Specify the unique, fully qualified path and file name for the file that contains the certificate you are receiving. Specify the fully qualified path and file name for the key ring where the certificate will be kept. Specify the key ring password.

Name of file containing certificate	<input type="text" value="/QIBH/USERDATA/WWW/CAREQ.TXT"/>
Key ring	<input type="text" value="/QIBH/USERDATA/WWW/KEYFILE.KYR"/>
Key ring password	<input type="password" value="****"/>

Figure 46. Receive Certificate

- q. This step is required only if the Certificate Authority being used is not already a Trusted Root. This is the case in this example as our certificate was signed by an AS/400 that is not a third-party Certificate Authority. Enter the file name of the CA certificate request file received from the Certificate Authority, in our intranet example an AS/400. Enter the key ring file name (as used in Figure 38 on page 67) and the key ring password (as used in Figure 39 on page 67). Press the **Apply** button.



Certificate successfully received.

The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms.

When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it.

[Configuration Page](#)

Figure 47. Confirmation Page

- r. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Key Management**.



Key Management

Use the key management forms to manage your keys and certificates. This form shows the current key ring that you'll be working with.

Current key ring: /QIBM/USERDATA/WWW/KEYFILE.KYR

Specify the key ring password.

Key Ring Password

Choose the key management task you want to perform for the current key ring.

- ☐ Change Password - Change key ring password
- ☐ Manage Keys - Make a key the default in this key ring, delete keys, show key information
- ☐ Export Keys - Transfer key pair or certificate to another key ring or computer
- ☐ Import Keys - Transfer key pair or certificate to this key ring
- ☐ Request Certificate - Request certificate for an existing key
- ☒ Designate Trusted Root Keys - Designate keys as trusted root keys
- ☐ Remove Trusted Root Keys - Remove trusted root key designation

[Apply](#) [Reset](#)

Figure 48. Key Management

- s. This step is required only if the Certificate Authority being used is not already a Trusted Root. This is the case in this example as our certificate was signed by an AS/400 that is not a third-party Certificate Authority. Verify that the current key ring is as used in Figure 38 on page 67. Enter the key ring password (as entered in Figure 39 on page 67), select **Designate Trusted Root Keys** and press the **Apply** button.

Designate Trusted Root Keys

Use this form to designate a key in the current key ring as a trusted root key.

Current key ring: /QIBM/USERDATA/WWW/KEYFILE.KYR

Choose the key you want to designate as a trusted root. Only the public key of a certification authority should be designated as a trusted root.

Keys

C=US, ST=Minnesota, L=Rochester, O=IBM, OU=Itso CA, PC=MN55901, CN=www.itso.ica.com
SERVERKEY

Apply

Reset

Figure 49. Designate Trusted Root Keys

- t. Select the CA certificate and press the **Apply** button.



Designate root key operation successful

The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms.

When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it.

Configuration Page

Figure 50. Confirmation Page

- u. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Receive Certificate**.

Receive Certificate

Use this form to receive a certificate into its key ring after it has been processed by a certification authority (CA). This form can also be used to create a signed certificate for you to use as a CA for a private Web network.

Specify the unique, fully qualified path and file name for the file that contains the certificate you are receiving. Specify the fully qualified path and file name for the key ring where the certificate will be kept. Specify the key ring password.

Name of file containing certificate /QIBM/USERDATA/WWW/ITSOCERT.TXT

Key ring /QIBM/USERDATA/WWW/KEYFILE.KYR

Key ring password ****

Apply

Reset

Figure 51. Receive Certificate

- v. Enter the file name of the server certificate file received from the Certificate Authority, in our intranet example an AS/400. Enter the key ring file name (as used in Figure 38 on page 67) and the key ring password (as used in Figure 39 on page 67). Press the **Apply** button.

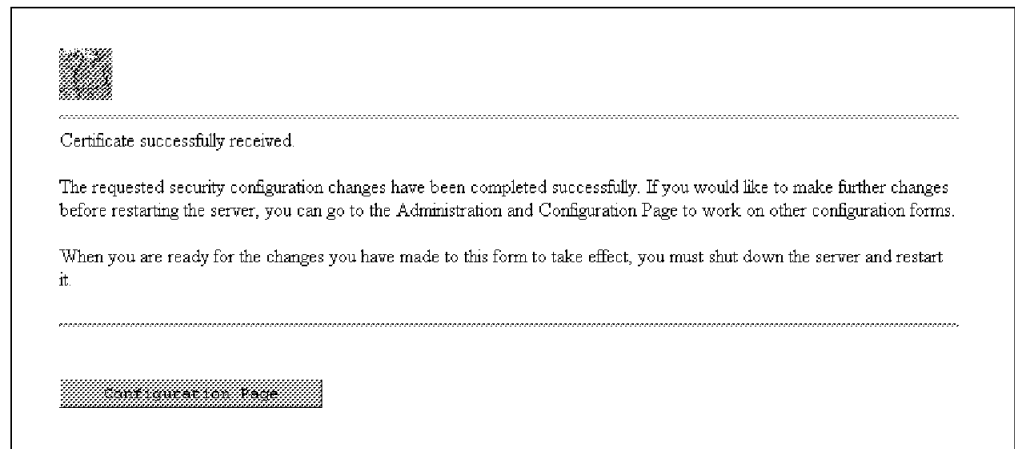
A screenshot of a web page titled "Confirmation Page". At the top left is a small square icon with a grid pattern. Below it, the text "Certificate successfully received." is displayed. A horizontal dotted line separates this from the next paragraph: "The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms." Another paragraph follows: "When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it." A final horizontal dotted line is above a button labeled "Configuration Page" which has a grid pattern.

Figure 52. Confirmation Page

- w. Check the *Confirmation Page* and press **Configuration Page** to return to the *Configuration and Administration Form*. Select **Key Management**.

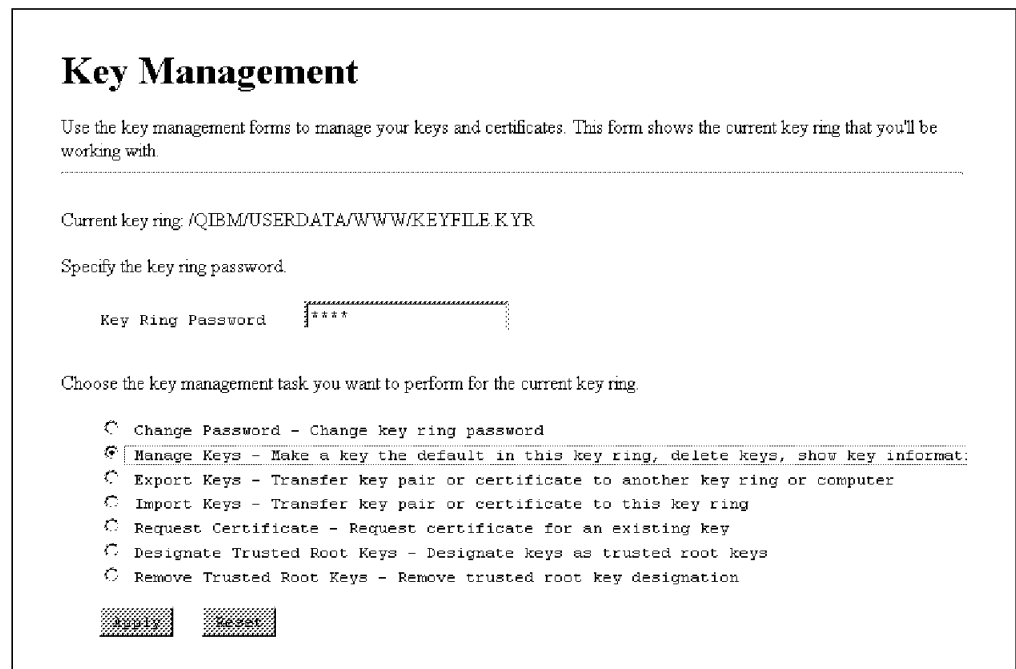
A screenshot of a web page titled "Key Management". Below the title is a paragraph: "Use the key management forms to manage your keys and certificates. This form shows the current key ring that you'll be working with." A horizontal dotted line follows. The text "Current key ring: /QIBM/USERDATA/WWW/KEYFILE.KYR" is shown. Below that is the label "Specify the key ring password." followed by a text input field labeled "Key Ring Password" containing four asterisks. Another horizontal dotted line is below. The text "Choose the key management task you want to perform for the current key ring." is followed by a list of radio button options: "Change Password - Change key ring password", "Manage Keys - Make a key the default in this key ring, delete keys, show key informat.", "Export Keys - Transfer key pair or certificate to another key ring or computer", "Import Keys - Transfer key pair or certificate to this key ring", "Request Certificate - Request certificate for an existing key", "Designate Trusted Root Keys - Designate keys as trusted root keys", and "Remove Trusted Root Keys - Remove trusted root key designation". At the bottom are two buttons with grid patterns.

Figure 53. Key Management

- x. Enter the **Key ring password** (as entered in Figure 39 on page 67), select **Manage Keys** and press the **Apply** button.

Manage Keys

Use this form to delete a key, to make a key the default key for the current key ring, to show information about the key and certificate, or to use this key to sign a certificate request.

Current key ring: /QIBM/USERDATA/WWW/KEYFILE.KYR

Current default key: C=US, ST=Minnesota, L=Rochester, O=IBM, OU=Itso CA, PC=MN55901, CN=www.itso.ics.com

Choose the key you want to work with. You cannot make a trusted root key (designated with an "*") the default key for the key ring. The default key should be the key the server uses for its secure communications.

Keys

* C=US, ST=Minnesota, L=Rochester, O=IBM, OU=Itso CA, PC=MN55901, CN=www.itso.ics.com	✖
SERVERKEY	
* Verisign Class 4 Public Primary Certification Authority	
* Verisign Class 3 Public Primary Certification Authority	
* Verisign Class 2 Public Primary Certification Authority	

Choose the action you want to take.

- ☒ Set as default
- ☐ Delete
- ☐ Show information
- ☐ Sign certificate

Apply

Reset

Figure 54. Manage Keys

- y. Select the server key (as created in Figure 38 on page 67) and **Set as default** then press the **Apply** button.



Successfully set default key.

The requested security configuration changes have been completed successfully. If you would like to make further changes before restarting the server, you can go to the Administration and Configuration Page to work on other configuration forms.

When you are ready for the changes you have made to this form to take effect, you must shut down the server and restart it.

Configuration Page

Figure 55. Confirmation Page

- z. We have now built a basic Net.Commerce configuration. In the next step we will verify the configuration details.

7.2 Configuration Details

The Net.Commerce configuration process completes the installation for specific customer instances of malls or stores. It creates the database schema and completes the mass import of the sample DEMOMALL if you choose to install the sample.

The following actions take place during a Net.Commerce instance configuration. For purposes of this example, the instance name "ntcinst1" will be used.

- The user profile *ntcinst1* is created; if it is already present, the password will be updated.
 - This user profile will be used to start the Net.Commerce jobs.
 - The password is obtained from the configuration screen.
- The database collection *ntcinst1* is created.
 - The database collection holds all information regarding the mall, the merchants within it and the registered users/shoppers.
 - This is a library that has the necessary system catalog tables and journalling objects.
- The validation list *QNETCOMM* is created in library *ntcinst1*.
 - This validation list contains the Net.Commerce administration ID and password needed to access the instance's sensitive data. The initial values of both the user ID and password are *ncadmin*. You should change the password at your earliest convenience.
 - Entries are added to this validation list each time a new administrator user ID is added.
 - Entries are added to this validation list every time a new shopper registers with the *ntcinst1* instance.
- The source physical file *INI* is deleted from the *ntcinst1* instance library .
- A new source physical file *INI* is created in the *ntcinst1* instance library .
- Member *DB2WWW* is created in *NTCINST1/INI*.
 - This is the initialization file used by Net.Data to find the macros and the files they include into dynamically generated HTML pages.
- For each Net.Commerce configuration performed (not including the initial configuration), the following will also be done:
 - The Web server **configuration** member *QNETCOMM* is backed up to *QNETCOMM00*.
 - The Web server **instance member** *QNETCOMM* is backed up to *QNETCOMM00*.
- The new Web server configuration member *QNETCOMM* is created in *QUSRSYS/QATMHHTPC*.
 - This member contains the directives needed to reference the Net.Commerce instance (or instances, in the case of a multihome use).
 - The file can be viewed using the command `WRKHTTPCFG QNETCOMM`.
 - This file is used when the Web server instance *QNETCOMM* is started.
- The Web server instance member *QNETCOMM* is created in *QUSRSYS/QATMHINSTC*.

- This is the Web server instance definition used to run Net.Commerce.
- This member references configuration member QNETCOMM.
- If you have chosen to install the Demomall database collection, the mass import utility imports the contents of the input data file demodata.in into the *ntcinst1* collection.
 - This populates the database collection.

- When started, the Net.Commerce server is started under the user profile *ntcinst1*. It is the user profile that provides the access to the correct database collection.

Because Net.Commerce uses the SQL naming mode, the user profile *ntcinst1* can facilitate the entire database access process, including that of accessing databases on remote systems.

When the Net.Commerce server is started, the document root directory is specified. This directory holds the key to the Net.Commerce instance because it contains file *mserver.ini*, which contains all the information required by the daemon.

- When the Web server is started, it uses the directory specified by the directive

Pass /* /QIBM/UserData/NetCommerce/Instance/ntcinst1 <numeric_IP_address>
that initiates communication with the correct Net.Commerce server through the *mserver.ini* file found there.

- The following stream files in Table 4 are created and stored in the “root” file system:

Table 4 (Page 1 of 2). Stream Files Created by the Net.Commerce Configuration Process	
File or Directory Name	Description
/QIBM/UserData/NetCommerce/instance/<instance_name>/logs	Directory containing log files. The <instance_name> value is from Figure 29 on page 59.
/QIBM/UserData/NetCommerce/instance/nc_cache/protect	Cache files
/QIBM/UserData/NetCommerce/instance/<instance_name>/nc_cache/protect	Cache files The <instance_name> value is from Figure 29 on page 59.
/QIBM/UserData/NetCommerce/instance/nc_cache/unprotect	Cache files
/QIBM/UserData/NetCommerce/instance/<instance_name>/nc_cache/unprotect	Cache files The <instance_name> value is from Figure 29 on page 59.
/QIBM/UserData/NetCommerce/instance/<instance_name>/teditor	Directory containing template editor work files. The <instance_name> value is from Figure 29 on page 59.
/QIBM/UserData/NetCommerce/instance/mserver.ini or /QIBM/UserData/NetCommerce/instance/<instance_name>/mserver.ini	Initialization file for the Net.Commerce server instance. When creating multiple Net.Commerce instances, each instance will have an <i>mserver.ini</i> file which is located in a sub-directory of the same name as the instance.

Table 4 (Page 2 of 2). Stream Files Created by the Net.Commerce Configuration Process

File or Directory Name	Description
/QIBM/UserData/NetCommerce/instance/db2www.ini or /QIBM/UserData/NetCommerce/instance/<instance_name>/db2www.ini	A work copy of the Net.Data initialization file (the actual file is object DB2WWW in file INI). Maintaining a work copy allows for easier viewing of the file. When creating multiple Net.Commerce instances, each instance will have an db2www.ini file which is located in a sub-directory of the same name as the instance.

7.3 Verifying a Successful Net.Commerce Installation and Configuration

Once you have installed and configured the Net.Commerce system, you can test it by using the procedures described below.

1. Start the Net.Commerce QNETCOMM Web server instance, as described in 9.1.3, "Starting the Net.Commerce Web Server Instance" on page 116.

WRKTCPTS

The WRKTCPTS *CNN command can be used to verify that no other Web servers are listening on ports 80 or 443 prior to starting the QNETCOMM Web server instance.

2. To confirm that the QNETCOMM Web server is listening on port 80, first check the WRKACTJOB command to see if the QNETCOMM server instance is active. For OS/400 V4R2, the QNETCOMM jobs will be under the QSYSWRK subsystem.

V4R3

For OS/400 V4R3, the QNETCOMM jobs will be under the QHTTPSVR subsystem.

If there is no job called QNETCOMM then the server instance has not started up. There may be multiple QNETCOMM service jobs servicing requests, but there should be at least one. If there are none, look for messages in QSYSOPR (DSPMSG QSYSOPR).

```

Work with Active Jobs
AS1
11/18/97 14:16:05
CPU %: 2.0 Elapsed time: 00:00:00 Active jobs: 150

Type options, press Enter.
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message
8=Work with spooled files 13=Disconnect ...

Opt Subsystem/Job User Type CPU % Function Status
--- QNETCOMM QTMHHTTP BCH .0 PGM-QTMHHTTP TIMW
--- QNETCOMM QTMHHTTP BCI .0 SIGW
--- QNETCOMM QTMHHTTP BCI .0 SIGW
--- QNETCOMM QTMHHTTP BCI .0 TIMW

```

Figure 56. Work with Active Jobs. Checking to see that QNETCOMM is active.

3. Then use the command WRKTCPTS *CNN to check for activity on ports 80 and 443. Press PF14 to display the port numbers.

```

Work with TCP/IP Connection Status
System: AS1

Local internet address . . . . . : *ALL

Type options, press Enter.
4=End 5=Display details

Opt Remote Remote Local Idle Time State
Address Port Port
- * * 21 121:26:55 Listen
- * * 23 000:13:47 Listen
- * * 23 000:20:38 Listen
- * * 25 167:36:33 Listen
- * * 67 000:00:10 *UDP
- * * 69 167:36:40 *UDP
- * * 80 000:08:38 Listen
- * * 110 167:35:08 Listen
- * * 137 198:20:17 Listen
- * * 443 198:20:17 Listen

```

Figure 57. TCP/IP Connection Status. Checking to see that ports 80 and 443 are active.

Note

The Net.Commerce Web server QNETCOMM uses the default port 80 to listen for HTTP requests and the default port 443 for HTTPS requests. By default QNETCOMM listens on all TCP/IP addresses configured on the AS/400. With the default setup, if there is any other AS/400 server instance already using port 80 or port 443, even if bound to a specific IP address, the QNETCOMM instance may not start. See 8.5, "Coexistence of Net.Commerce with a Non-Net.Commerce Web Server" on page 110.

4. Start the Net.Commerce server, as described in 9.1.5, "Starting the Net.Commerce Server" on page 118.
5. To verify that the Net.Commerce server has started successfully, type the following from the AS/400 command line:
WRKACTJOB SBS(QSYSWRK)

V4R3

For V4R3, submit the same command to the subsystem QHTTSPVR:
WRKACTJOB SBS(QHTTSPVR)

The Work with Active Jobs panel will be displayed (Figure 58).

Work with Active Jobs						AS1
						12/04/97 19:25:57
CPU %:	.0	Elapsed time:	00:00:00	Active jobs:	129	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
—	QSYSWRK	QSYS	SBS	.0		DEQW
—	MSERVERD	NTCINST1	BCI	.0		MTXW
—	MSERVERD	NTCINST1	BCI	.0		TIMW
—	QNETCOMM	NTCINST1	BCH	.0	PGM-QNETSTRNCS	EVTW
Parameters or command						Bottom
==>						
F3=Exit F4=Prompt F5=Refresh F10=Restart statistics						
F11=Display elapsed data F12=Cancel F14=Include F24=More keys						

Figure 58. Active Jobs in Subsystem QSYSWRK

Look for entries for Job/User **MSERVERD/<INSTANCE_NAME>** and **QNETCOMM/<INSTANCE_NAME>**. In this example (Figure 31 on page 62), the instance name is NTCINST1.

6. To start the default store front page:

a. From your Web browser, type the following URL:

`http://<your_host_name>/ncsample/base1.htm`

A sample mall/store page is displayed (Figure 59).

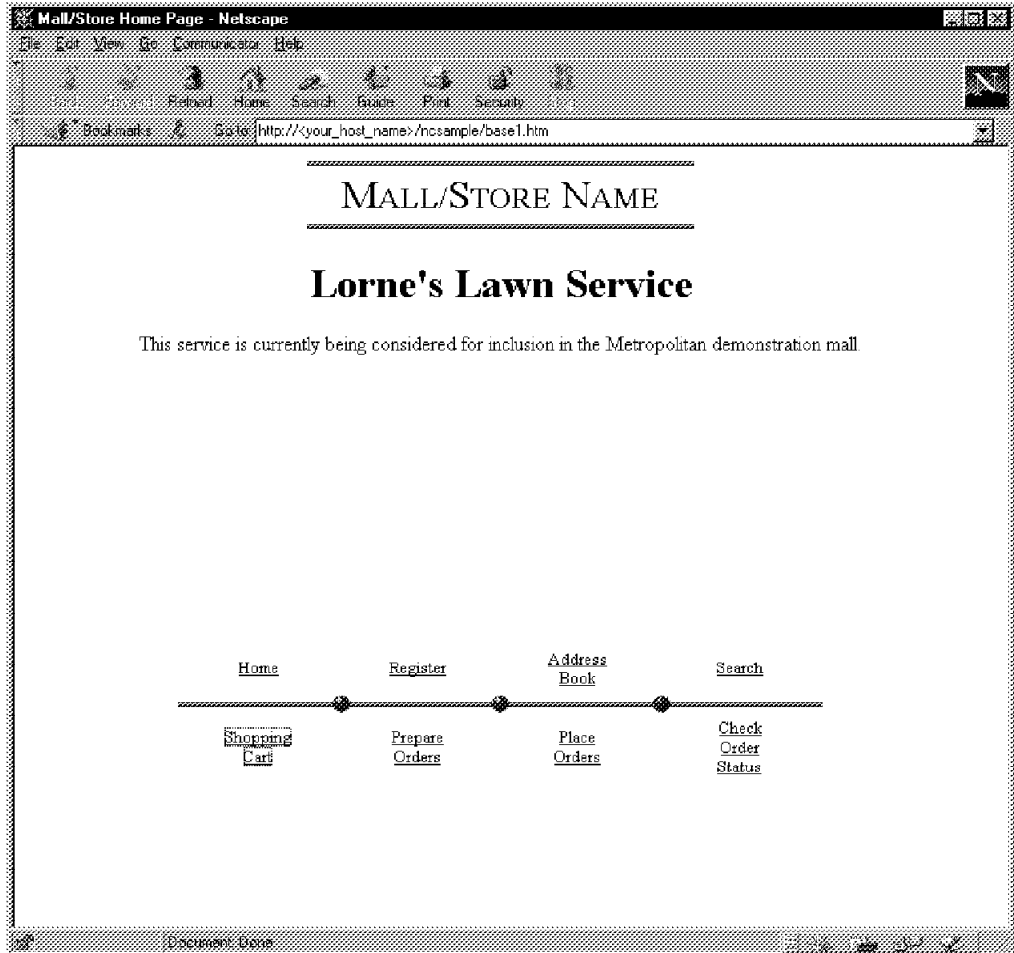


Figure 59. Default Store Front Page

7. To test registration:

a. From your Web browser, type the following URL:

`http://<your_host_name>/cgi-bin/ncommerce/;register/form`

The server will start an SSL session and the new user registration page appears (Figure 60 on page 81). In the examples shown the secure session is indicated by the closed padlock in the lower left-hand corner of the browser screen (compare Figure 60 on page 81 to Figure 59). If the SSL certificate is issued by a Certificate Authority that is not one of the browser's trusted roots (as in this example where the certificate is created by an AS/400), a series of pop-ups will make you aware of this and ask you to verify that you want to establish a secure session with this server.

Registration Information - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Reload Print Security

Bookmarks Status http://your_host_name/cgi-bin/incommerce/register/form

MALL STORE NAME

New Registration

To register as a new shopper, fill in the form below. Items listed in **bold** must not be left blank. All information will be kept strictly confidential by the mall and store owners. We will not communicate this information to others as part of a mailing list.

1 - Personal Information

Shopper's Login ID:

Password: Verify Password:

Title: Last Name:

First Name: Middle Name:

Company Name:

2 - Contact Information

Document Done

Figure 60. New Registration Page

- b. Fill in the requested information (the highlighted words indicate the required fields) and click on the **Submit** button.

Use *nctest* as both the user ID and password.

If the registration was successful, a message window appears (Figure 61 on page 82).

A pop-up will request that you enter a user ID and password. Enter *nctest/nctest*.

Note

Note that, following registration, the secure directory (msprotect) is accessed whereas prior to registration the unsecure directory (cgi-bin) was being accessed. Compare Figure 61 on page 82 to Figure 60.

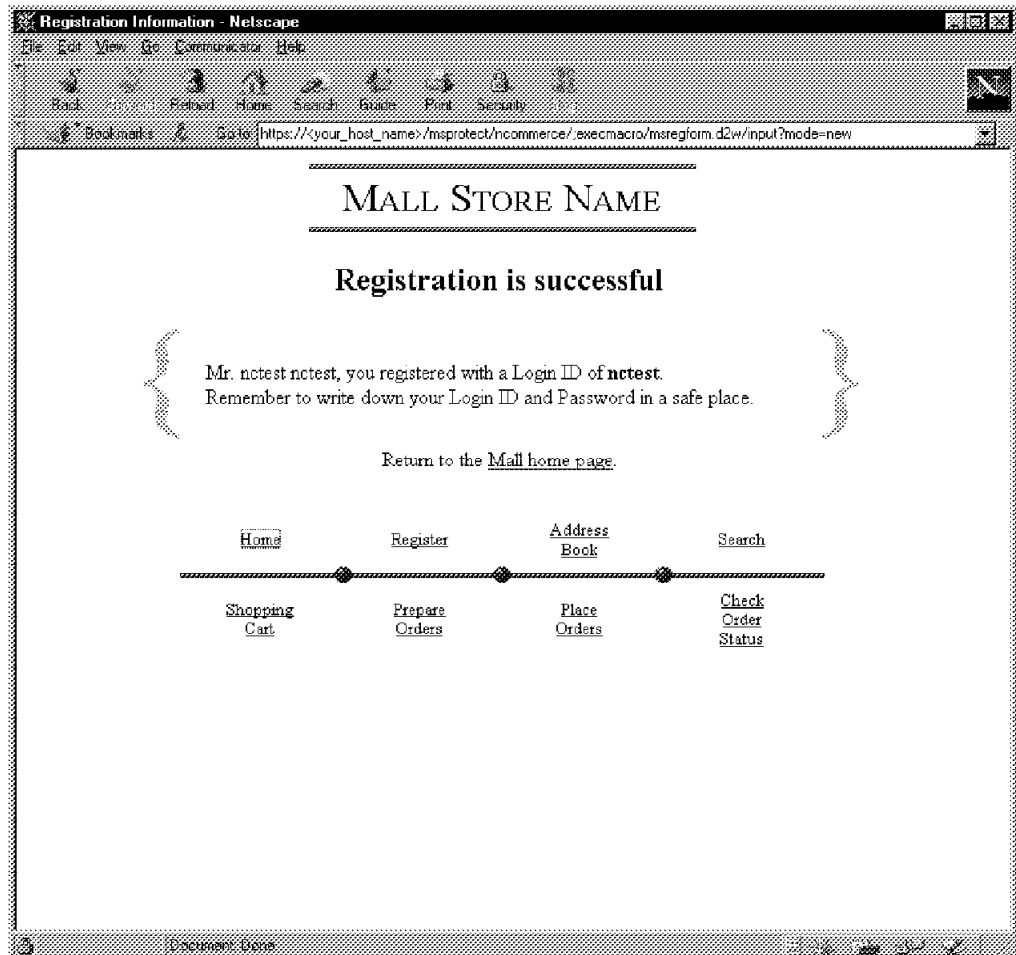


Figure 61. Registration Completion Page

8. To test the shopping cart, from your Web browser, type the following URL:
http://<your_host_name>/msprotect/ncommerce/;shopcart/display
 An empty shopping cart is presented (Figure 62 on page 83).



Figure 62. Shopping Cart Page

Net.Commerce Commands

See 4.1.2, "Net.Commerce Director" on page 26 for the makeup of Net.Commerce commands, ";shopcart/display" for example.

9. To start the Net.Commerce Administrator, perform these tasks:
 - a. Stop and re-start your Web browser to clear the cached *ncctest* user ID.
 - b. From your Web browser, type the following URL:
http://<your_host_name>/ncadmin/index.htm
 - c. Use *ncadmin* as both the user ID and password.

The administrator page is displayed (Figure 63 on page 84).

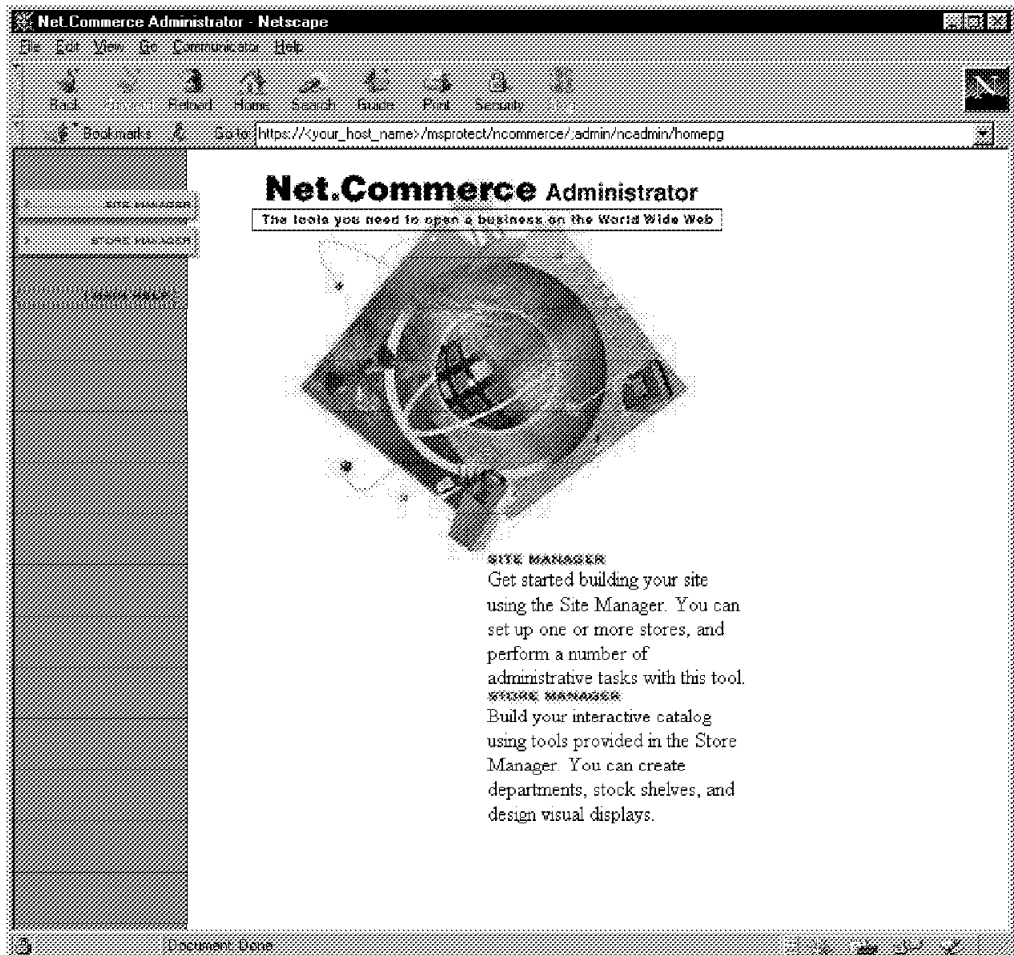


Figure 63. Net.Commerce Administrator Page

10. If you have not changed the default password for the ncadmin user ID, it is recommended that you do so now, using the Site Manager Access Control form. For information on how to do this, refer to the following URL:
http://<your_host_name>/nchelp/index.htm
11. To load the Net.Commerce Template Designer:
 - a. Click on **Site Manager** in the Net.Commerce Administrator.
 - b. Click on **Template Designer**.
 - c. Click on **Load**. The Template Designer will load (Figure 64 on page 85).

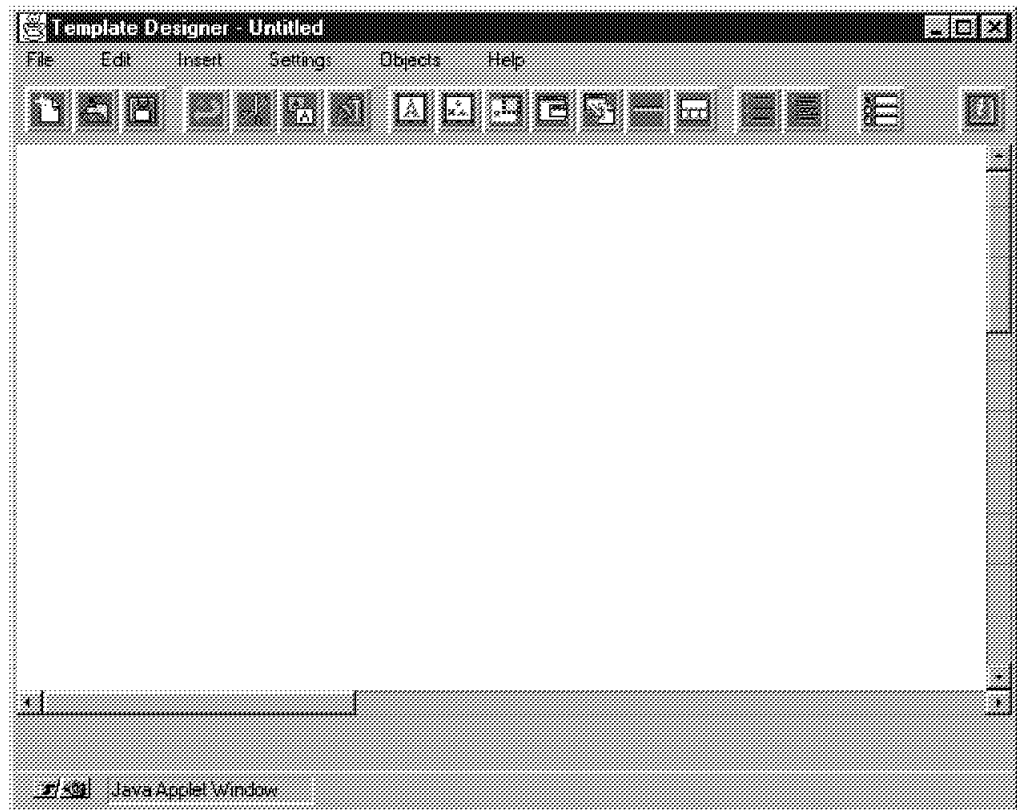


Figure 64. Net.Commerce Template Designer

- d. Click on **File/New**.
 - e. Select product template.
 - f. Click on the **Add a Text Box** icon.
 - g. Click on and drag the box into the working area.
 - h. Double-click on the Text Box object.
 - i. Click on the **Database** menu item and ensure that there are items in this menu.
12. If you installed the Net.Commerce demonstration mall on your system, you can test your access to it by typing the following URL:
- `http://<your_host_name>/demomall/basemall.htm`
- The demonstration mall page will be displayed (Figure 65 on page 86).

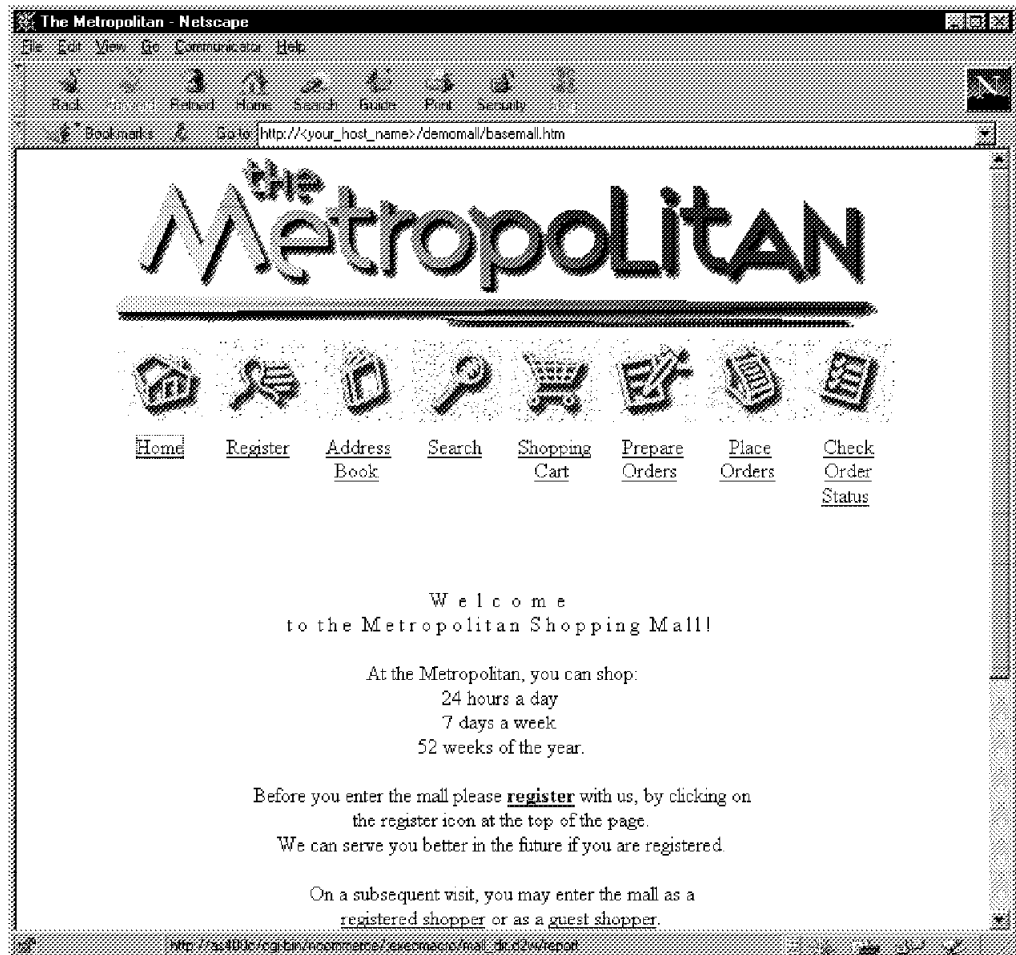


Figure 65. Net.Commerce Demonstration Mall Page

13. To verify that the online help can be accessed, enter the following URL:
http://<your_host_name>/nchelp/index.htm

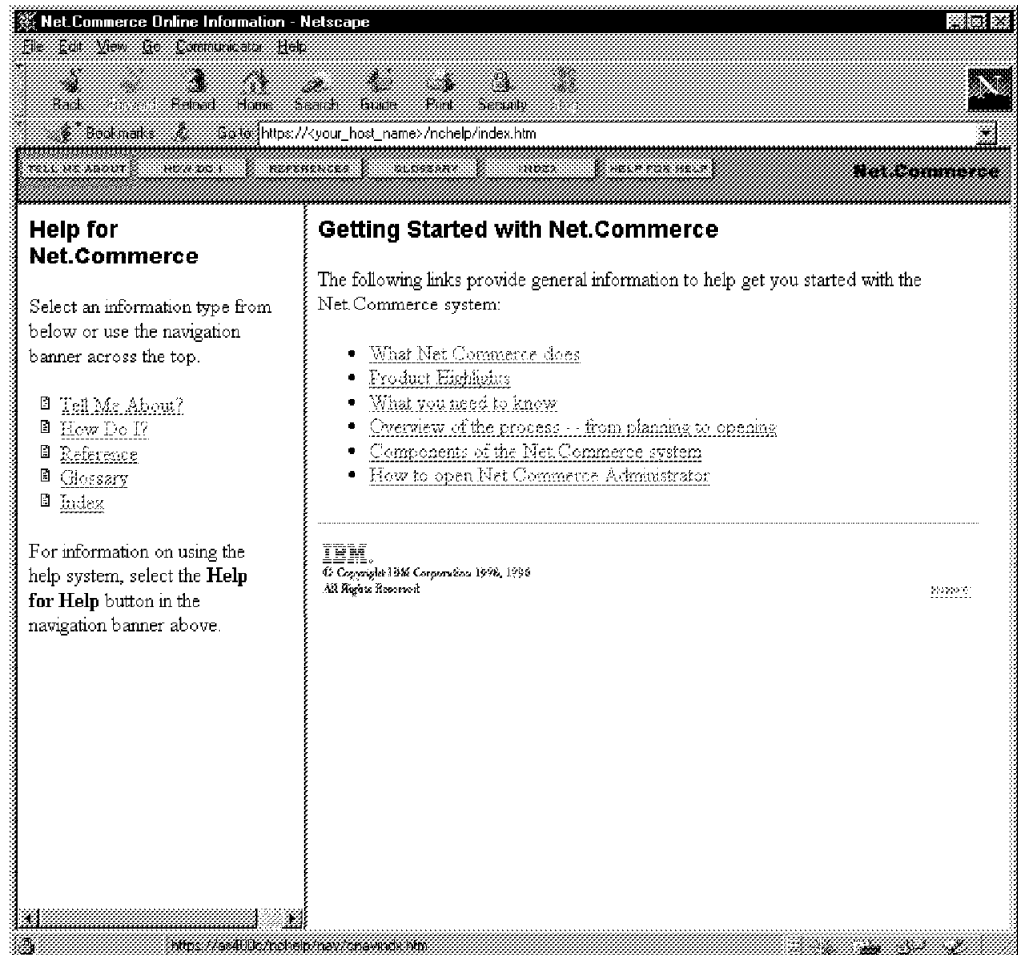


Figure 66. Net.Commerce Online Help

7.4 Printable Net.Commerce Book Files

The following Net.Commerce books are shipped with the product. These files contain information that is required to perform some of the more common tasks in Net.Commerce.

Two formats are available: postscript and PDF. To print a postscript file, you must have a printer that is capable of printing postscript documents. To print a PDF file, you can use the Adobe Acrobat Reader. If you do not have the Adobe Acrobat Reader, you can download it for free from the Adobe Website at: <http://www.adobe.com>

- *Net.Commerce Installation and Operations Guide*, GC09-2509 (ncinst.pdf and ncinst.ps)
- Net.Commerce Administrator (ncadmin.pdf and ncadmin.ps)
- Net.Commerce Template Designer (nctd.pdf and nctd.ps)
- Net.Commerce Utilities (nc_util.pdf and nc_util.ps)
- Net.Commerce Commands, Tasks, APIs, and Database Tables (dbtofcmd.pdf and dbtofcmd.ps)

These files are available in the directory:
\\QIBM\\ProdData\\HTTP\\Public\\NetCommerce\\HTML\\MRI2924\\ncbooks

7.5 Net.Commerce User-Customizable Server Configuration

This section discusses user-specific changes that can be made to the Net.Commerce server instance. The user can make changes to the following files:

- Net.Commerce server configuration file
- Net.Data configuration file
- QNETCOMM Web server instance configuration

7.5.1 Net.Commerce Server Configuration File

The mserver configuration file contains settings that affect the way the Net.Commerce server operates. You can change any of the settings to meet the requirements of your store or mall.

All variables must be specified unless noted otherwise. Trailing spaces entered after a variable are allowed. There must be exactly one space between the names of the fields and their value definitions.

The file is located in /QIBM/UserData/NetCommerce/instance/mserver.ini or /QIBM/UserData/NetCommerce/instance/<your_instance_name>/mserver.ini if you created multiple Net.Commerce server instances.

The file will look similar to Figure 67.

```
MS_HOSTNAME <your_host_name>.<your_domain_name>
MS_PORT 14530
MS_HTADMIN QNETCOMM/htadm_ns
MS_HTPASS <instance_name>/QNETCOMM
MACRO_PATH /QIBM/ProdData/NetCommerce/Macro/MRI2924
MS_LOGPATH /QIBM/UserData/NetCommerce/instance/<instance_name>/logs
WWW_HTML_PATH /QIBM/UserData/NetCommerce/instance/<instance_name>
MS_CGIBIN_PATH /QSYS.LIB/QNETCOMM.LIB
MS_DBNAME <database_name>
MS_DBINST <instance_name>
MS_DBPASS alafhcofnkapdfmc
MS_NUM_CHILD 2
NC_INST_PATH /QIBM/UserData/NetCommerce
NC_TEDITOR_PATH /QIBM/UserData/NetCommerce/instance/<instance_name>/teditor
NC_DMN_CACHE 1
#NC_DMN_SYNCH 1
NC_DMN_SLP_SEC 15
MS_TRANS_COUNT 1000
DB_RETRY_LIMIT 15
DB_RETRY_INTERVAL 60
MERCHANT_KEY ddbhgbmcc1pomeddddbhgbmcc1pomedd
NC_LANG 2924
MS_HTML_MAX 1000000
```

Figure 67. Net.Commerce Server Configuration File

Table 5 on page 89 discusses each of the directives and gives their default values. Be cautious when making changes as the instance may not start or may act unexpectedly if invalid values are specified.

Table 5 (Page 1 of 3). Net.Commerce Server Configuration File Directives	
Directive	Description and Default Value
MS_HOSTNAME	<p>The fully qualified TCP/IP domain name of your Net.Commerce server. If you are running only one server instance, set this value to its fully qualified host name. If you are running in a multi-home environment, set each value to a unique, fully-qualified host name that is defined on your system. This value is from Figure 29 on page 59.</p> <p>Default: The domain name of the local host.</p>
MS_PORT	<p>The port number that the Net.Commerce director(s) uses to communicate with the Net.Commerce daemon. This number must be from 0 to 65535, and must not conflict with the port number assigned to other servers. It must be greater than 1024, and must not be 1080 or 8080. Change this value only to adhere to the above conventions. This value is from Figure 29 on page 59.</p> <p>Default: A system-generated, random number that meets the above restrictions.</p>
MS_HTADMIN	<p>The name of the program that updates the list of registered users in the validation file. Change this value if you are using a custom program.</p> <p>Default: QNETCOMM/htadm_ns (where QNETCOMM is the product library).</p>
MS_HTPASS	<p>The fully qualified name of the validation list that contains the list of registered users. When shoppers register with your store, their user IDs and passwords are stored in this object. Change it if you wish to save user IDs and passwords in a different location. Note: This value must match the value of PasswdFile in the secure server configuration file.</p> <p>Default: /instance-name/QNETCOMM, where <i>instance_name</i> is the name of the Net.Commerce collection library.</p>
MACRO_PATH	<p>The fully qualified names of the directories that contain the Net.Commerce macro files, separated by semi-colons (;). Change this value only if you specified different directories when you configured the Net.Commerce product. This value is from Figure 29 on page 59.</p> <p>Default: /QIBM/ProdData/NetCommerce/Macro/MRI2924</p>
MS_LOGPATH	<p>The fully qualified name of the directory in which the Net.Commerce product writes its transaction logs. Change this value to write the logs to a different directory. If no value is specified, spool files are created for user <instance_name>.</p> <p>The log files begin with the characters NC, followed by the date, with an extension that matches the number of the process that created the file.</p> <p>Default: /QIBM/UserData/NetCommerce/instance/instance_name/logs, where <i>instance_name</i> is the name of the Net.Commerce instance.</p>
WWW_HTML_PATH	<p>The fully qualified name of the Net.Commerce instance document root. The document root contains the Net.Commerce server initialization file mserver.ini. This value is from Figure 29 on page 59.</p> <p>Default: /QIBM/UserData/NetCommerce/instance/instance_name where <i>instance_name</i> is the name of the Net.Commerce instance.</p>
MS_CGIBIN_PATH	<p>The fully qualified QSYS name of the library in which the Net.Commerce director is located.</p> <p>Default: /QSYS.LIB/QNETCOMM.LIB</p>
MS_DBNAME	<p>The name of the relational database you wish to access. This value is from Figure 29 on page 59.</p> <p>Default: *LOCAL</p>

Table 5 (Page 2 of 3). Net.Commerce Server Configuration File Directives

Directive	Description and Default Value
MS_DBINST	<p>The name of the database collection used by this Net.Commerce instance. This database collection is owned by a user profile of the same name.</p> <p>Default: The name of the Net.Commerce instance. This name cannot be changed.</p>
MS_DBPASS	<p>The encrypted password of the instance ID that is used to connect to the database. To encrypt the password, add library QNETCOMM to the library list and type the following:</p> <pre>CALL PGM(NC_CRYPT) PARM('-e' password)</pre> <p>where <i>password</i> is your unencrypted password. The system responds with a character string. Copy the string to the configuration file as the value for MS_DBPASS.</p> <p>Change this value if you change the password of your instance ID.</p> <p>This value is from Figure 29 on page 59.</p> <p>Default: No default is defined.</p>
MS_NUM_CHILD	<p>The number of processes that the Net.Commerce server starts to handle requests from the Net.Commerce director. This number must be from 2 to 99. Increase this value if you anticipate heavy traffic on your site. Each process is an AS/400 child job under the Net.Commerce parent job. This value is from Figure 29 on page 59.</p> <p>Default: 2</p>
NC_INST_PATH	<p>The fully qualified name of the directory in which the Net.Commerce instance files are kept.</p> <p>Default: /QIBM/UserData/NetCommerce</p>
NC_TEDITOR_PATH	<p>The name of the working directory for the Template Designer. Change this value if you wish to use a different working directory.</p> <p>Default: /QIBM/UserData/NetCommerce/instance/<i>instance_name</i>/teditor, where <i>instance_name</i> is the name of the Net.Commerce instance.</p>
NC_DMN_CACHE	<p>A flag that indicates whether caching is enabled for the Net.Commerce server. Set this value to 0 to disable caching, and to 1 to enable caching. Refer to the Net.Commerce online information system for more information on caching.</p> <p>Default: The NC_DMN_CACHE is set to 1 by default.</p>
NC_DMN_SYNCH	<p>A flag that indicates whether the Synchronization Daemon is to synchronize the validation list across Net.Commerce servers in a multiple-system environment. Set this value to 0 if you are running a single-system environment, and to 1 if you are running a multiple-system environment. Refer to the Net.Commerce online Information system for more information on the Synchronization Daemon.</p> <p>Default: The NC_DMN_SYNCH is set to 1 by default, but the entry in the mserver.ini file is commented out with a hash mark (#). To uncomment the entry, thereby enabling the Synchronization Daemon to function, simply edit the file and delete the hash mark.</p>

Table 5 (Page 3 of 3). Net.Commerce Server Configuration File Directives	
Directive	Description and Default Value
NC_DMN_SLP_SEC	<p>The number of seconds that the Synchronization Daemon sleeps between cycles. When the Synchronization Daemon wakes up, it synchronizes the validation list across all Net.Commerce servers in a multiple-system environment if NC_DMN_SYNCH is not commented out and not set to 0. Refer to the Net.Commerce online Information system for more information on the Synchronization Daemon.</p> <p>Default: 15</p>
MS_TRANS_COUNT	<p>The number of transactions that must occur in each Net.Commerce server child process before it is ended. A value of zero will disable this check.</p> <p>Default: 1000</p>
DB_RETRY_LIMIT	<p>The number of times to retry attempts to connect to the database. Setting this value to 0 would mean that the system does not retry connection attempts.</p> <p>Default: 15</p>
DB_RETRY_INTERVAL	<p>The number of seconds between attempts to retry connecting to the database.</p> <p>Default: 60</p>
MERCHANT_KEY	<p>The string that the system uses to encrypt the password file and the passwords in the database. To determine which string to enter, add QNETCOMM to the library list and type the following:</p> <pre>CALL PGM(NC_CRYPT) PARM('-e' number)</pre> <p>where <i>number</i> is a 16-digit hexadecimal number. Make sure the number you type does not follow a predictable pattern.</p> <p>After you type this command, the system responds with a character string. Copy this string to the configuration file as the value for MERCHANT_KEY. If you are running in a multiple system environment, copy the same string into the configuration files for all servers.</p> <p>The system sets this value initially, based on information you provide during configuration.</p> <p>Note: Do not change this value unless you have determined it is necessary. Information that is encrypted with one key cannot be decrypted with another.</p> <p>This value is generated from the value entered in Figure 29 on page 59.</p> <p>Default: No default is defined.</p>
NC_LANG	<p>The language indicator for the Net.Commerce instance. For further reference, see <i>IBM National Language Design Guide, Volume 2</i>.</p> <p>Default: MRI2924</p>
MS_HTML_MAX	<p>The largest size of HTML pages that will be generated by Net.Commerce macros, specified in bytes. Change this directive only if your HTML pages may be larger than the default value.</p> <p>Default: 1000000</p>

7.5.2 Net.Data Configuration File

The Net.Data initialization file, member DB2WWW in file INI, contains the directives that are used by the Net.Data component of the Net.Commerce system. The configuration file will reflect the information provided on the configuration page (Figure 29 on page 59) for macro paths. If the macros have been added or moved, follow this step to modify the file.

A working copy of this file is located in
/QIBM/UserData/NetCommerce/instance/db2www.ini or
/QIBM/UserData/NetCommerce/instance/<your_instance_name>/db2www.ini if you created multiple instances.

The file will look similar to Figure 68.

```
INCLUDE_PATH /QIBM/ProdData/NetCommerce/Macro/MRI2924/ncsample;/QIBM/ProdData/
NetCommerce/Macro/MRI2924/demomall;/QIBM/ProdData/NetCommerce/Macro/MRI2924;/
QIBM/UserData/NetCommerce/instance/<instance_name>/teditor;/QIBM/ProdData/HTTP/
Public/NetCommerce/html/MRI2924

ENVIRONMENT (DTW_SQL) /QSYS.LIB/QNETCOMM.LIB/QNETCSQL.SRVPGM (IN SHOWSQL,
DB_CASE,DTW_SET_TOTAL_ROWS,OUT DTWTABLE,SQL_CODE,SQL_STATE,TOTAL_ROWS)

DTW_SQL_DEFAULT_EDITMASK COUNTRY_SPECIFIC

ENVIRONMENT (DTW_SYSTEM) /QSYS.LIB/QTCP.LIB/QTMHYSYS.SRVPGM ()

MACRO_PATH /QIBM/ProdData/NetCommerce/Macro/MRI2924;/QIBM/ProdData/NetCommerce/
Macro/MRI2924/ncsample;/QIBM/ProdData/NetCommerce/Macro/MRI2924/demomall;/
QIBM/ProdData/NetCommerce/Macro/MRI2924/ncadmin;/QIBM/UserData/NetCommerce/
instance/<instance_name>/teditor
```

Figure 68. Net.Data Configuration File

Table 6 lists the Net.Data configuration file directives that you might wish to change.

Table 6 (Page 1 of 2). Net.Data Configuration File Directives	
Directive	Description and Default Value
INCLUDE_PATH	The fully qualified names of the directories that contain the files referred to on Net.Data %INCLUDE statements, entered on a single line and separated by semicolons (;). Set this value to the names of the directories in which you store your %INCLUDE files. Default: /QIBM/ProdData/NetCommerce/Macro/MRI2924/ncsample; /QIBM/ProdData/NetCommerce/Macro/MRI2924/instance_name; /QIBM/ProdData/NetCommerce/Macro/MRI2924; /QIBM/UserData/NetCommerce/instance/instance_name/teditor; /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924
ENVIRONMENT (DTW_SQL)	The SQL language environment variable is the fully qualified name of the service program that Net.Data uses to execute SQL statements through DB2/400.
ENVIRONMENT (DTW_SYSTEM)	The SYSTEM language environment variable is the fully qualified name of the service program that Net.Data uses to call external programs on the AS/400.

<i>Table 6 (Page 2 of 2). Net.Data Configuration File Directives</i>	
Directive	Description and Default Value
DTW_SQL_DEFAULT_EDITMASK COUNTRY_SPECIFIC	This line affects how numeric values from the database are presented when extracted through Net.Data macros. The value of COUNTRY_SPECIFIC indicates that the decimal point delimiter is determined by the decimal point delimiter that is specified in the Net.Commerce server job (MSERVERD). The MSERVERD job attributes are obtained from the instance user profile which MSERVERD runs under.
MACRO_PATH	The fully qualified names of the directories that contain the Net.Commerce macro files, entered on a single line and separated by semi-colons (;). Change this value only if you specified different directories when you installed the Net.Commerce product. Default: /QIBM/ProdData/NetCommerce/Macro/MRI2924; /QIBM/ProdData/NetCommerce/Macro/MRI2924/ncsample; /QIBM/ProdData/NetCommerce/Macro/MRI2924/ <i>instance_name</i> ; /QIBM/ProdData/NetCommerce/Macro/MRI2924/ncadmin; /QIBM/UserData/NetCommerce/instance/ <i>instance_name</i> /teditor

The Net.Data configuration file record length is longer than 240 bytes and therefore cannot be edited or browsed using SEU, use CPYTOSTMF and CPYFROMSTMF and edit the file using a PC editor.

7.5.3 QNETCOMM Web Server Configuration

QNETCOMM is the Web server configuration built by the Net.Commerce configuration program. The configuration file is located in QUSRSYS/QATMHTTPC.

The file will look similar to Figure 69 on page 94.

```

*****
*** Net.Commerce/400 ICSS Server Configuration ***
*****
Enable          GET
Enable          HEAD
Enable          POST
*****
##### IBM Net.Commerce ##### (Do not edit this section)
### Protect /msprotect/* <your_host_name>.<your_domain_name> {
Protect /msprotect/* <your_ip_address> {
ServerId        Private_Authorization
Authtype        Basic
Userid          <your_instance_name>
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      <your_instance_name>/QNETCOMM
}
Protect mserver.ini <your_ip_address> {
ServerId        Private_Authorization
Authtype        Basic
Userid          <your_instance_name>
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      <your_instance_name>/QNETCOMM
}
Pass    /te_html/*    /QIBM/UserData/NetCommerce/instance/<your_instance_name>/teditor/te_html/* <your_ip_address>
Service /cgi-bin/ncommerce/;display/* /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_cache
Service /msprotect/ncommerce/;display/* /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_cache
ServerInit /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_init_cache
Map    /msprotect/ncommerce/* /msprotect/ncommerce.pgm/*
Map    /cgi-bin/ncommerce/* /cgi-bin/ncommerce.pgm/*
Exec   /msprotect/* /QSYS.LIB/QNETCOMM.LIB/*
Exec   /cgi-bin/* /QSYS.LIB/QNETCOMM.LIB/*
Search /QSYS.LIB/QNETCOMM.LIB/SERVEFILE.PGM

DefaultFSCSID 37
DefaultNetCCSID 819

Pass    /storemgr/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/storemgr/*
Pass    /sitemgr/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/sitemgr/*
Pass    /ncacom/*      /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/common/*
Pass    /ncagif/*      /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/gif/*
Pass    /butnbars/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/butnbars/*
Pass    /ncadmin/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/*
Pass    /nchelp/*      /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/nchelp/*
Pass    /ncerror/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncerror/*
Pass    /ncbooks/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncbooks/*
Pass    /ncsample/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncsample/*
Pass    /demomall/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/demomall/*
Pass    /teditor/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/teditor/*
AddType .js          application/x-javascript      binary 1.0 #Net.Commerce java
sslmode      On
##### End of IBM Net.Commerce #####
##### DO NOT REMOVE ## OR MOVE #####
#
Pass    /              /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/Welcome.html
Pass    /sample/*      /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/*
#
##### IBM Net.Commerce (Pass) ##### (Do not edit this section)
Pass    /* /QIBM/UserData/NetCommerce/instance/<your_instance_name>/* <your_ip_address>
##### End of IBM Net.Commerce (Pass) #####
##### DO NOT REMOVE ## OR MOVE #####
normalmode   On
sslport      443
keyfile      /QIBM/USERDATA/WWW/KEYFILE.KYR

```

Figure 69. Net.Commerce Web Server Configuration File

Table 7 on page 95 lists the QNETCOMM Web server configuration file directives that you may wish to change.

Table 7 (Page 1 of 2). QNETCOMM Web Server Configuration File Directives

Directive	Description
Protect /msprotect/*	<p>This protection setup is applying basic authentication (Authtype Basic) to requests with a request URI of /msprotect/*. The basic authentication userids/passwords are verified using the validation list (PasswdFile) located at <instance_name>/QNETCOMM. While within this protection setup the Web server will run under the user profile <instance_name>. The protection setup has an IP address template such that the protection setup is associated with a Net.Commerce instance.</p> <p>The configuration routine substitutes IP addresses for hostnames. So, the server name <your_host_name>.<your_domain_name> is substituted by <your_ip_address> in all the directives.</p>
Protect mserver.ini	<p>This protection setup is applying basic authentication (Authtype Basic) to requests with a request URI of mserver.ini. The basic authentication userids/passwords are verified using the validation list (PasswdFile) located at <instance_name>/QNETCOMM. While within this protection setup the Web server will run under the user profile <instance_name>. The protection setup has an IP address template such that the protection setup is associated with a Net.Commerce instance.</p> <p>The configuration routine substitutes IP addresses for hostnames. So, the server name <your_host_name>.<your_domain_name> is substituted by <your_ip_address> in all the directives.</p>
Pass /te_html/*	This server directive applies to template designer requests (requests with a URI of /te_html/*). Request routing is used within this directive to route template designer requests to data specific to each Net.Commerce server instance.
Service Service ServerInit	These directives are used by server caching. See 8.1, "Caching" on page 97.
Map /msprotect/ncommerce/*	Maps secure ncommerce command requests to ncommerce.pgm.
Map /cgi-bin/ncommerce/*	Maps unsecure ncommerce command requests to ncommerce.pgm.
Exec /msprotect/*	This directive accepts secure CGI program requests that execute Net.Commerce programs responsible for executing Net.Commerce commands. The protection setup for requests to /msprotect/* discussed above authenticates these requests.
Exec /cgi-bin/*	This directive accepts non-secure CGI program requests that execute Net.Commerce programs responsible for executing Net.Commerce commands.
Search	The search directive sets up the default search application for the Web server.
DefaultFsCCSID and DefaultNetCCSID	During configuration, the Net.Commerce Web server instance, QNETCOMM, is configured with the DefaultFsCCSID and DefaultNetCCSID values that match the Net.Commerce feature code. These values control the conversion from EBCDIC to ASCII that the Web server instance will perform. These values are set correctly for the files shipped with the feature code and should not need to be altered.

Table 7 (Page 2 of 2). QNETCOMM Web Server Configuration File Directives

Directive	Description
Pass /storemgr/* Pass /sitemgr/* Pass /ncacom/* Pass /ncagif/* Pass /butnbars/* Pass /ncadmin/* Pass /nchelp/* Pass /ncerror/* Pass /ncbooks/* Pass /ncsample/* Pass /demomall/*	These directives set up the various paths needed by Net.Commerce for administration routines and help files.
AddType .js	This line adds a MIME type for handling javascript.
sslmode	This directive allows the server to accept requests on port 443 (SSL requests).
Pass / Pass /sample/*	These directives handles requests that are not specific to Net.Commerce. This can be used to allow non-Net.Commerce Web server requests to be handled by this Web server. We discuss this in 8.5, "Coexistence of Net.Commerce with a Non-Net.Commerce Web Server" on page 110.
Pass /*	This directive uses request routing to pass requests to the appropriate Net.Commerce instance depending on the IP address the request came in on.
sslport	This directive allows the server to accept requests on port 443 (SSL requests).
normalmode on	This directive allows the server to accept requests on port 80 (non-SSL requests).
keyfile	For SSL requests, this directive determines the location of the SSL key file.

Chapter 8. Net.Commerce Advanced Configuration

In this chapter we look at the advanced configuration of Net.Commerce for AS/400. The chapter covers the following topics:

- Caching
- Setting up remote database access
- Setting up multiple Net.Commerce server instances on the same system
- Setting up multiple Net.Commerce server instances on multiple systems
- Coexistence of Net.Commerce with a non-Net.Commerce Web server

8.1 Caching

The Net.Commerce caching utility improves the performance of displaying HTML product and category pages to shoppers by storing these pages in a directory or "cache". The cache feature allows Net.Commerce to reproduce product and category pages without having to access the database redundantly.

Net.Commerce database caching can be enabled in three phases:

- Net.Commerce HTML pages cached
- Enabling database triggers
- Synchronization daemon

Phase 1 provides ICAPI enablement and is enabled by default, phase 2 enables cache triggers that capture database changes and phase 3 enables the synchronization daemon that presents these database changes to the shopper. Phase 2 and 3 ensure that when the product and category pages change, the old pages are automatically purged from the cache directory. This prevents "stale" information from appearing on the Web site.

For store applications that have static data (merchandise rarely changes), phase 1 is all that is required.

8.1.1 Enabling Phase 2 Caching

Phase 2 caching (enabling the cache triggers), should be done *after* the initial database population. To enable phase 2 caching, perform the following tasks:

1. Sign on to the AS/400 system with a user ID with SECOFR authority.
2. Add the Net.Commerce server instance library to your library list by entering the following command:
`ADDLIB LIB(<instance_name>)`
3. Enable the cache triggers by entering the following:
`CALL PGM(QNETCOMM/QNEADDTR) PARM(<instance_name>)`

This program will add the necessary triggers to the files for caching. Once completed, messages on the command entry screen notify you of successes or failures (Figure 70 on page 98).

Figure 70. Confirmation Messages for Caching Triggers

```

MS_HOSTNAME <your_host_name>.<your_domain_name>
MS_PORT 14530
MS_HTADMIN QNETCOMM/htadm_ns
MS_HTPASS NTCINST1/QNETCOMM
MACRO_PATH /QIBM/ProdData/NetCommerce/Macro/MRI2924
MS_LOGPATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>/logs
WWW_HTML_PATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>
MS_CGIBIN_PATH /QSYS.LIB/QNETCOMM.LIB
MS_DBNAME <your_database_name>
MS_DBINST <your_instance_name>
MS_DBPASS alafhcofnkapdfmc
MS_NUM_CHILD 2
NC_INST_PATH /QIBM/UserData/NetCommerce
NC_TEDITOR_PATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>/teditor
#NC_DMN_CACHE 1
#NC_DMN_SYNCH 1
NC_DMN_SLP_SEC 15
MS_TRANS_COUNT 1000
DB_RETRY_LIMIT 15
DB_RETRY_INTERVAL 60
MERCHANT_KEY ddbhgbmcc1pomeddddbhgbmcc1pomedd
NC_LANG 2924
MS_HTML_MAX 1000000

```

Figure 71. Net.Commerce Server Configuration File

2. Modify the QNETCOMM Web server configuration. From the command line, type:

```
WRKHTTPCFG CFG(QNETCOMM)
```

The screen in Figure 72 is displayed. Page down until you find the lines highlighted in Figure 72. Use option 2 (change) to comment out these lines with a comment mark (#) as shown.

```

                                Work with HTTP Configuration
                                System:      AS1

Configuration name . . . . . :   QNETCOMM
Type options, press Enter.
  1=Add  2=Change  3=Copy  4=Remove  5=Display  13=Insert
Sequence
Opt  Number  Entry
---  ---
01110  PasswdFile  <instance_name>/QNETCOMM
01120  }
01130
01140  Pass  /te_html/*  /QIBM/UserData/NetCommerce/instanc  >
01150
01160  #Service /cgi-bin/ncommerce/;display/* /QSYS.LIB/QNETCO  >
01170  #Service /msprotect/ncommerce/;display/* /QSYS.LIB/QNET  >
01180  #ServerInit /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM  >
01190
01200  Map  /msprotect/ncommerce/* /msprotect/ncommerce.pgm  >
F3=Exit  F5=Refresh  F6=Print List  F12=Cancel  F17=Top  F18=Bottom
F19=Edit Sequence

```

Figure 72. HTTP Configuration file for QNETCOMM

8.1.4 Disabling Phase 2 Caching

To disable phase 2 caching, follow these steps:

1. Signon to the AS/400 system with a user ID with SECOFR authority.
2. Add the Net.Commerce server instance library to your library list by entering the following command:
`ADDLIB LIB(<instance_name>)`
3. Disable the cache triggers by entering the following:
`CALL PGM(QNETCOMM/QNRMVTR) PARM(<instance_name>)`

8.1.5 To Activate the Changes

To activate any changes made, perform the following steps:

1. Stop and restart the QNETCOMM Web server instance, as described in 9.1.4, "Stopping the Net.Commerce Web Server Instance" on page 118 and 9.1.3, "Starting the Net.Commerce Web Server Instance" on page 116.
2. Stop and restart the Net.Commerce server, as described in 9.1.6, "Stopping the Net.Commerce Server" on page 119 and 9.1.5, "Starting the Net.Commerce Server" on page 118.

8.2 Setting Up Remote Database Access

If you are using a relational database other than *LOCAL (Figure 73), or if you are using more than one server system, you will need to set up the database for remote access.

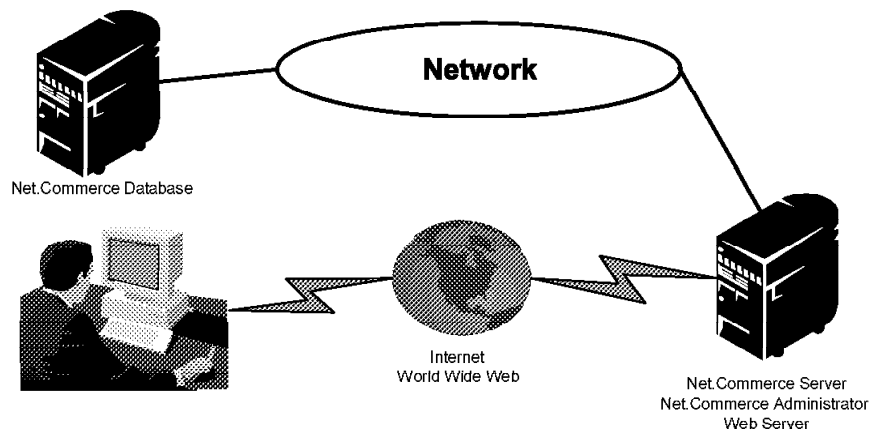


Figure 73. Net.Commerce Using Remote Database

Follow Chapter 6, "Net.Commerce Installation" on page 47 and Chapter 7, "Net.Commerce Basic Configuration" on page 55 to install and configure Net.Commerce for a local database. To change the database from local to remote, do the following:

1. Create a user profile of the instance name on the remote system. The password must be the same as on the *LOCAL system, as entered on the instance property screen (Figure 29 on page 59).
2. Restore and copy the database collection from the *LOCAL system. To do this, do the following:

- a. Type the following command on the *LOCAL system:
`SAVLIB <instance_DB_collection>`
and follow the prompts.
- b. Copy the save library to the remote system using a tape, SNADS, or FTP.
- c. On the remote system, type:
`RSTLIB <instance_DB_collection>`
and follow the prompts.
3. On the *LOCAL system, add your remote database to the relational database directory by executing the following command:
`ADDRDBDIRE RDB(<system_name>) RMTLOCNAME(<location_name><type>)`
`TEXT(' RDB <location_name>')`
Type = *IP or *SNA
4. Enter the following from the command line of the *LOCAL system:
`CRTSQLPKG PGM(QNETCOMM/MSERVERD) RDB(<remote_database_name>)`
`USER(<instance_DB_collection>) PASSWORD(<value>)`
`DFTRDBCOL(<instance_DB_collection>) MODULE(DB2LINK)`
`TEXT(' SQL package for Net.Comm DB collection`
`<instance_DB_collection>')`
You will see confirmation messages that the package has been created successfully (Figure 74).

```

                                Command Entry                                <HOSTNAME>
                                                                Request level:  9
All previous commands and messages:
9 > CRTSQLPKG PGM(QNETCOMM/MSERVERD) RDB(RCH12345) USER(ITSCNC2) PASSWORD() D
   FTRDBCOL(ITSCNC2) MODULE(DB2LINK) TEXT(' SQL package for Net.Comm DB colle
   ction ITSCNC2')
   Remote database job started.
   SQL package DB2LINK in QGPL at RCH12345 has been created.

                                                                Bottom
Type command, press Enter.
===> _____
_____
_____

F3=Exit   F4=Prompt   F9=Retrieve   F10=Exclude detailed messages
F11=Display full   F12=Cancel   F13=Information Assistant   F24=More keys

```

Figure 74. CRTSQLPKG Confirmation Messages

Notice that the SQL package is created on the remote system, not on the local system.

5. If you did not specify the remote database when you created the Net.Commerce instance, you must change the MS_DBNAME field in the mserver.ini file, to the correct remote database name. See the Net.Commerce server configuration file (Figure 67 on page 88).

6. You can now start the Net.Commerce Server instance as described in 9.1.5, “Starting the Net.Commerce Server” on page 118.

Once you have completed the remote database setup, you can drop the instance collection on the *LOCAL system. However, the instance library must be kept and INI.FILE and QNETCOMM.VLDL must remain within it. The instance user profile must exist on both the remote and *LOCAL system.

Interactive SQL can be used to verify the remote database connection:

```
STRSQL
CONNECT TO <remote_database_name>
SELECT * FROM <collection_name>/MALL
```

8.3 Setting Up Multiple Net.Commerce Server Instances on the Same System

This section discusses how to set up your Net.Commerce system to run multiple Net.Commerce server instances on a single system and is referred to as a *multihome* configuration. When you plan this configuration, it is important to remember:

- That the AS/400 needs to be powerful enough to handle the load.
- That a Net.Commerce server instance can connect to only one Net.Commerce database collection.
- That the Net.Commerce database can support only one mall. This mall could be comprised of multiple stores or a single store (a single store Net.Commerce implementation is a mall of one store).

When there is more than one Net.Commerce server instance on a single AS/400, each instance is connected to a separate database collection (Figure 75 on page 103). A shopper accesses a particular instance by specifying the domain host name in the URL, and the Web server determines which instance the shopper wants to access.

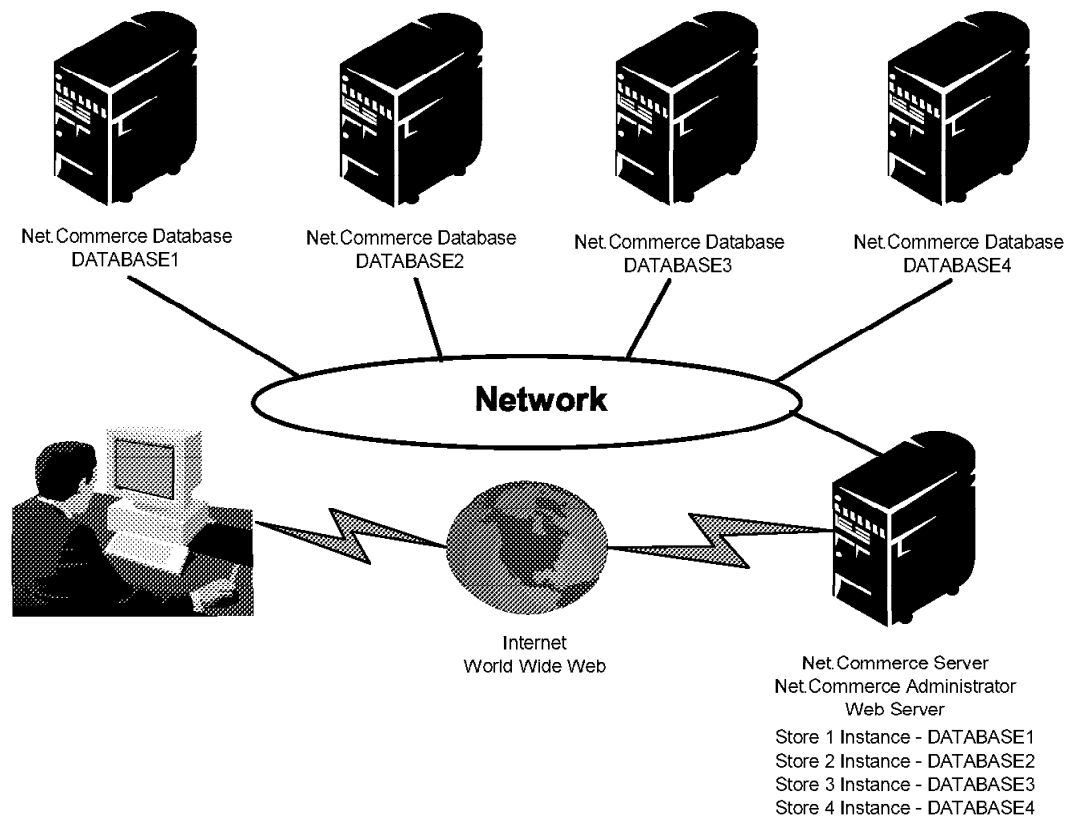


Figure 75. Multiple Instance Configuration

Each server instance has its own `mserver.ini` file, which contains the host name, the database name, and the port number. Also, each instance has its own copy of the member `DB2WWW` in file `INI`, the `Net.Data` initialization file, which contains the macro path and the HTML path that are unique to that instance. These initialization files must reside in the appropriate places. The `mserver.ini` must be in the HTML document root, and the `INI(DB2WWW)` in the collection library.

The `QNETCOMM` Web server configuration file defines the `Net.Commerce` servers so that it is able to map the multiple IP addresses to multiple document roots. Each `Net.Commerce` instance has its own document root where the `mserver.ini` `Net.Commerce` server initialization file resides.

Figure 76 on page 104 gives an example of how you can set up your `Net.Commerce` system to support two IP addresses and two database collections on a single system. In this example, the IP addresses are 10.1.1.1 and 10.1.1.2, and the corresponding host names are `mall1.com` and `mall2.com`.

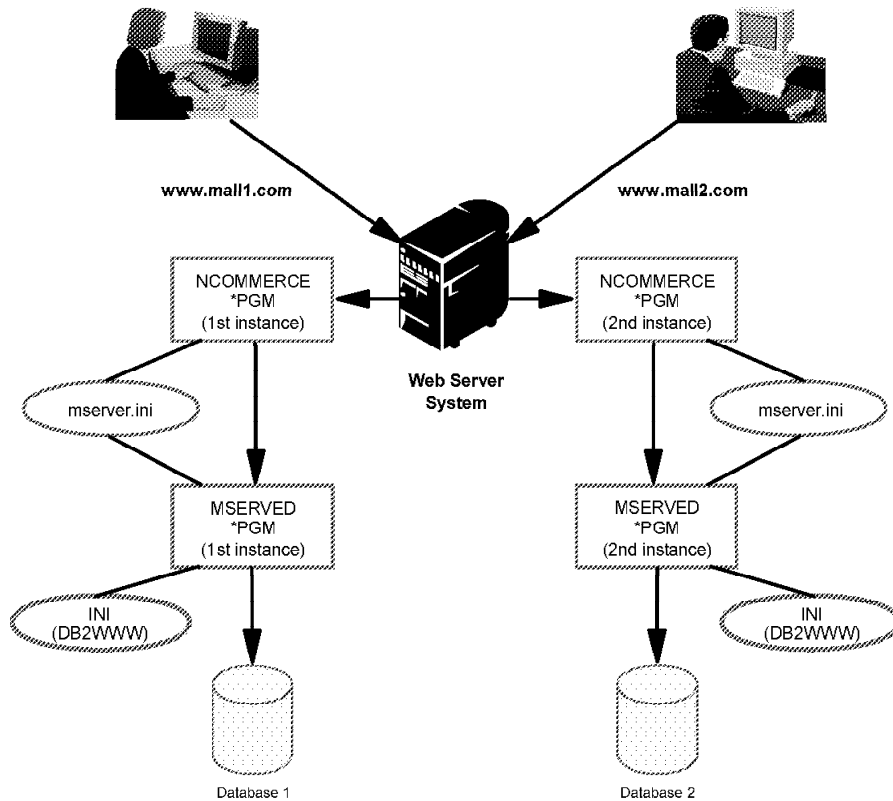


Figure 76. Multiple Instances on Single System

To configure the system based on this example, follow these steps:

1. Perform the pre-installation steps and installation steps found in Chapter 6, "Net.Commerce Installation" on page 47.
2. Each Net.Commerce server instance must be assigned a unique hostname/IP address. Follow these steps to add an IP address to a LAN interface.
 - a. To add a new IP address, you use the command ADDTCPIFC.

```

Add TCP/IP Interface (ADDTCPIFC)

Type choices, press Enter.

Internet address . . . . . > 10.1.1.2
Line description . . . . . TRNLINE      Name, *LOOPBACK
Subnet mask . . . . . 255.255.255.0
  
```

Figure 77. Adding a TCP/IP Interface

- b. To see what IP addresses are active, and to start and end IP sessions, use the command WRKTCPSTS *IFC.

Work with TCP/IP Interface Status					System: AS1
Type options, press Enter.					
5=Display details 8=Display associated routes 9=Start 10=End					
12=Work with configuration status 14=Display multicast groups					
Opt	Internet Address	Network Address	Line Description	Interface Status	
—	10.1.1.1	10.1.1.0	TRNLINE	Active	
—	10.1.1.2	10.1.1.0	TRNLINE	Active	
—	127.0.0.1	127.0.0.0	*LOOPBACK	Active	

Figure 78. Working with TCP/IP Interfaces: Verifying TCP/IP Interface Status

3. Perform the instance configuration for mall1.com using the detailed instructions found in Chapter 7, “Net.Commerce Basic Configuration” on page 55. Pay special attention to the **Host Name** and **HTML Path** fields as they apply to this multihome configuration.
4. Perform the instance configuration for mall2.com using the detailed instructions found in Chapter 7, “Net.Commerce Basic Configuration” on page 55. Pay special attention to the **Host Name** and **HTML Path** fields as they apply to this multihome configuration.
5. The configuration routine for Net.Commerce creates a new configuration file for QNETCOMM every time a Net.Commerce server instance is added or deleted.

The Net.Commerce Configuration routine puts a backup of the existing QNETCOMM config in the member QNETCOMM00. Use the WRKHTTPCFG QNETCOMM00 command to view the backup configuration.

8.3.1 Configuration Details

Net.Commerce uses request routing to handle multiple Net.Commerce server instances from within a single Web server instance (QNETCOMM). Each Net.Commerce instance has an unique address assigned to it, and the QNETCOMM Web server instance listens on these addresses for Net.Commerce requests. Depending on the address of the server on the request, the Net.Commerce server serves up the necessary file.

When the second Net.Commerce instance was added - called MALL2 on server MALL2.COM (10.1.1.2) - the lines highlighted in Figure 79 on page 106 and Figure 80 on page 107 were added to the QNETCOMM configuration file.

```

*****
*** Net.Commerce/400 ICSS Server Configuration ***
*****
#
*****
Enable          GET
Enable          HEAD
Enable          POST
*****
##### IBM Net.Commerce ##### (Do not edit this section)
### Protect /msprotect/* mall1.com {
Protect /msprotect/* 10.1.1.1 {
ServerId        Private_Authorization
Authtype        Basic
UserId          MALL1
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      MALL1/QNETCOMM
}

Protect mserver.ini 10.1.1.1 {
ServerId        Private_Authorization
Authtype        Basic
UserId          MALL1
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      MALL1/QNETCOMM
}

Pass    /te_html/*    /QIBM/UserData/NetCommerce/instance/mall1/teditor/te_html/* 10.1.1.1

### Protect /msprotect/* mall2.com {
Protect /msprotect/* 10.1.1.2 {
ServerId        Private_Authorization
Authtype        Basic
UserId          MALL2
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      MALL2/QNETCOMM
}

Protect mserver.ini 10.1.1.2 {
ServerId        Private_Authorization
Authtype        Basic
UserId          MALL2
GetMask         All@(*)
PostMask        All@(*)
Mask            All@(*)
PasswdFile      MALL2/QNETCOMM
}

Pass    /te_html/*    /QIBM/UserData/NetCommerce/instance/mall2/teditor/te_html/* 10.1.1.2

Service /cgi-bin/ncommerce/;display/* /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_cache
Service /msprotect/ncommerce/;display/* /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_cache
ServerInit /QSYS.LIB/QNETCOMM.LIB/NCCACHE_IC.SRVPGM:nc_init_cache

Map    /msprotect/ncommerce/* /msprotect/ncommerce.pgm/*
Map    /cgi-bin/ncommerce/* /cgi-bin/ncommerce.pgm/*

```

Figure 79. Net.Commerce Web Server Configuration File (Part 1 of 2)

```

Exec    /msprotect/* /QSYS.LIB/QNETCOMM.LIB/*
Exec    /cgi-bin/*   /QSYS.LIB/QNETCOMM.LIB/*

Search  /QSYS.LIB/QNETCOMM.LIB/SERVEFILE.PGM

Pass    /storemgr/*  /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/storemgr/*
Pass    /sitemgr/*   /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/sitemgr/*
Pass    /ncacom/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/common/*
Pass    /ncagif/*     /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/gif/*
Pass    /butnbars/*  /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/butnbars/*
Pass    /ncadmin/*   /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncadmin/*
Pass    /nchelp/*    /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/nchelp/*
Pass    /ncerror/*   /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncerror/*
Pass    /ncbooks/*   /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncbooks/*
Pass    /ncsample/*  /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/ncsample/*
Pass    /demomall/*  /QIBM/ProdData/HTTP/Public/NetCommerce/html/MRI2924/demomall/*
Pass    /teditor/*   /QIBM/ProdData/HTTP/Public/NetCommerce/html/teditor/*

AddType .js          application/x-javascript      binary 1.0 #Net.Commerce java

sslmode On
##### End of IBM Net.Commerce #####
##### DO NOT REMOVE ## OR MOVE #####
#
Pass /                /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/Welcome.html
Pass /sample/*        /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/*
#
##### IBM Net.Commerce (Pass) ##### (Do not edit this section)
Pass /* /QIBM/UserData/NetCommerce/instance/mall1/* 10.1.1.1
Pass /* /QIBM/UserData/NetCommerce/instance/mall2/* 10.1.1.2
##### End of IBM Net.Commerce (Pass) #####
##### DO NOT REMOVE ## OR MOVE #####
normalmode    On
sslport       443
keyfile /QIBM/USERDATA/WWW/KEYFILE.KYR

```

Figure 80. Net.Commerce Web Server Configuration File (Part 2 of 2)

The new Web server directives add a validation list for the new Net.Commerce server instance and associate requests that come in on the IP address allocated to the new server instance (10.1.1.2) with data applicable to the new server instance.

Ensure that the configuration has been successful for each instance by performing the instructions in 7.3, “Verifying a Successful Net.Commerce Installation and Configuration” on page 77.

8.4 Setting Up Multiple Net.Commerce Server Instances on Multiple Systems

This section discusses how to set up your Net.Commerce system to run multiple Net.Commerce server systems that all access the same database (Figure 81). When you plan this configuration, it is important to remember that a Net.Commerce instance can connect to only one database collection, and the database can support only one mall or store. This configuration therefore represents a single mall or store (single database) being served by multiple Net.Commerce servers. The router is distributing the load across the multiple servers.

Note

You must purchase a Net.Commerce license for each processor.

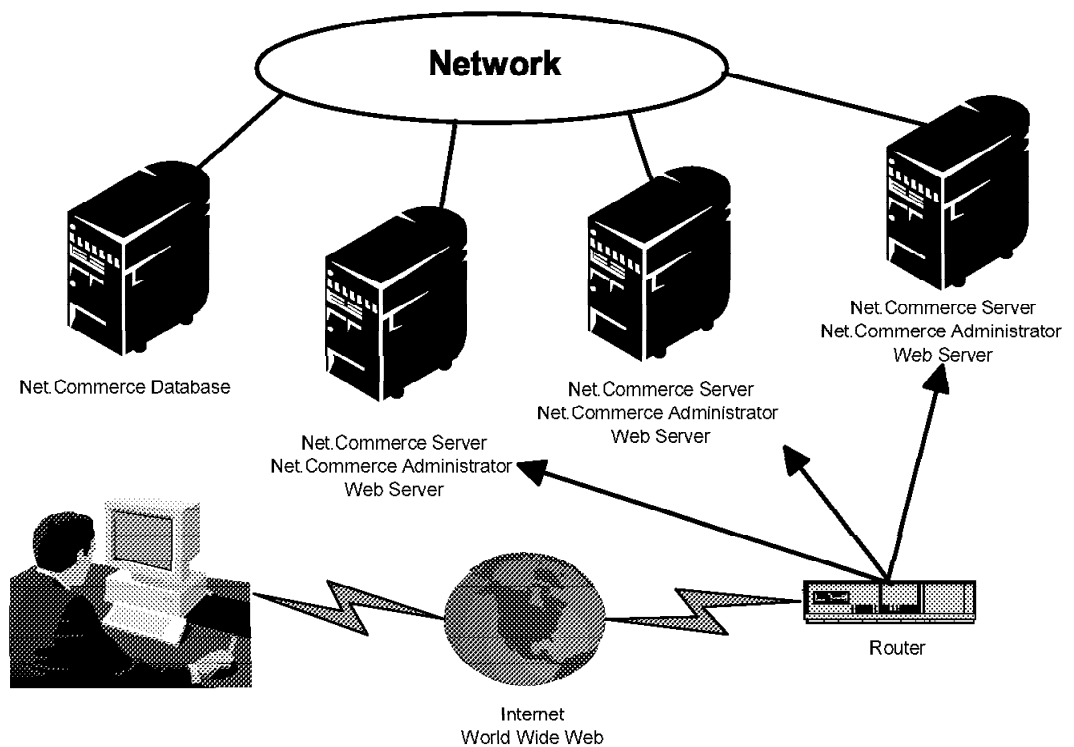


Figure 81. Multiple Instance Servers with a Single Database Collection

In this scenario, each Net.Commerce Server must be configured with the same Net.Commerce instance using the same remote database. The router controls to which system the requests are sent. A shopper specifies one URL and the router determines which server will process the request.

To configure the system based on this example, follow these steps:

1. Perform the pre-installation steps and installation steps found in Chapter 6, "Net.Commerce Installation" on page 47 for each Net.Commerce server.
2. Configure the router to route requests to the servers.
3. Perform the instance configuration for each Net.Commerce server using the detailed instructions found in Chapter 7, "Net.Commerce Basic Configuration" on page 55. Make sure you specify the same instance name,

merchant key and database name (and password) for each instance. Each Net.Commerce server would have a unique host name. The router network despatcher function maps the host name accessed by the shopper to the Net.Commerce server host names.

4. Configure the remote database using the instructions in 8.2, "Setting Up Remote Database Access" on page 100. Perform steps 2 (copying the database collection to the remote system) and 4 (create SQL package) from one system only.
5. Ensure that the configuration has been successful for each instance by performing the instructions in 7.3, "Verifying a Successful Net.Commerce Installation and Configuration" on page 77.
6. Synchronize the validation lists. In 8.1, "Caching" on page 97 we showed how the synchronization daemon is used to remove obsolete pages from the Net.Commerce cache. The synchronization daemon can also be used to synchronize validation lists across multiple Net.Commerce servers. To enable the synchronization daemon for this task, follow these steps:
 - a. Modify the mserver.ini file in the instance directory:

/QIBM/UserData/NetCommerce/instance/mserver.ini

or /QIBM/UserData/NetCommerce/instance/<instance_name>/mserver.ini if you have created multiple instances.

Since the AS/400 cannot natively edit this file it is necessary to use Client Access, FTP, or another method to edit the file.

Remove the comment mark (#) from the beginning of the NC_DMN_SYNCH 1 line as highlighted in Figure 82.

```
MS_HOSTNAME <your_host_name>.<your_domain_name>
MS_PORT 14530
MS_HTADMIN QNETCOMM/htadm_ns
MS_HTPASS NTCINST1/QNETCOMM
MACRO_PATH /QIBM/ProdData/NetCommerce/Macro/MRI2924
MS_LOGPATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>/logs
WWW_HTML_PATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>
MS_CGIBIN_PATH /QSYS.LIB/QNETCOMM.LIB
MS_DBNAME <your_database_name>
MS_DBINST <your_instance_name>
MS_DBPASS alafhcofnkapdfmc
MS_NUM_CHILD 2
NC_INST_PATH /QIBM/UserData/NetCommerce
NC_TEDITOR_PATH /QIBM/UserData/NetCommerce/instance/<your_instance_name>/teditor
NC_DMN_CACHE 1
NC_DMN_SYNCH 1
NC_DMN_SLP_SEC 15
MS_TRANS_COUNT 1000
DB_RETRY_LIMIT 15
DB_RETRY_INTERVAL 60
MERCHANT_KEY ddbhgbmcc1pomeddddbhgbmcc1pomedd
NC_LANG 2924
MS_HTML_MAX 1000000
```

Figure 82. Net.Commerce Server Configuration File

- b. Start the synchronization daemon by entering:
CALL PGM(QNETCOMM/MS_SYNCHD) PARM(' -I' <html_path>)
Where <html_path> is as entered in Figure 29 on page 59.

The synchronization daemon will now keep the local validation list <INSTANCE_NAME>/QNETCOMM synchronized with the copy on the database system.

The mserver.ini NC_DMN_SLP_SEC 15 parameter controls how frequently the synchronization daemon wakes up to do the checking. The default is every 15 seconds.

7. Ensure that the complete configuration has been successful by routing requests through the router.

8.5 Coexistence of Net.Commerce with a Non-Net.Commerce Web Server

By default, the Net.Commerce Web server instance (QNETCOMM) listens for HTTP requests on port 80 and HTTPS requests on port 443 for all IP addresses. With this default setup, no other Web server instance can run on either port 80 or 443 while Net.Commerce is running. Port 80 (non-SSL) and 443 (SSL) are the default HTTP ports used when a port is not specified in the URL request. To run a non-Net.Commerce Web server when Net.Commerce is running, the server would have to be associated with a non-default port and requests for this server would have to specify the port in the request in the form `http://<server_name>:<port_number>`. This may be workable in an intranet environment but inconvenient in an Internet environment. In this section we look at some options that allow a non-Net.Commerce Web server to run concurrently with the Net.Commerce Web server QNETCOMM. We look at the following options:

- HostName and BindSpecific Web server directives
- Pass / and Pass /sample/* Web server directives
- Client pull

8.5.1 HostName and BindSpecific Web Server Directives

When the bindspecific server directive is set on (BindSpecific On), the server binds to the IP address specified in the hostname directive only (HostName <host_name>), instead of binding to all local IP addresses.

Use the WRKHTPCFG QNETCOMM command to modify the Net.Commerce Web server such that it binds only to the host name being used for Net.Commerce.

```

#*****
#*** Net.Commerce/400 ICSS Server Configuration ***
#*****
#
#
#
BindSpecific On
HostName mall1
#*****
Enable          GET
Enable          HEAD
Enable          POST
#*****
##### IBM Net.Commerce ##### (Do not edit this section)
### Protect /msprotect/* mall1.com {
Protect /msprotect/* 10.1.1.1 {
ServerId      Private_Authorization
"
"
"
"

```

Figure 83. Hostname and Bindspecific Server Directives

With Net.Commerce bound to the host name being used by Net.Commerce, other servers can then concurrently use ports 80 and 443 bound to other host names.

Note: This option can only be used when there is a single Net.Commerce server instance - there can be only one Hostname directive.

8.5.2 Pass / and Pass /sample/* Web Server Directives

It is possible for the Net.Commerce Web server (QNETCOMM) to accept non-Net.Commerce requests provided these requests are not received on an IP address associated with a Net.Commerce server instance. QNETCOMM provides two sever directives that allow for this. If we use the WRKHTTPCFG QNETCOMM command to look at the Net.Commerce Web server directives, the following directives direct Net.Commerce requests to Net.Commerce files:

```

##### IBM Net.Commerce (Pass) ##### (Do not edit this section)
Pass /* /QIBM/UserData/NetCommerce/instance/mall1/* 10.1.1.1
Pass /* /QIBM/UserData/NetCommerce/instance/mall2/* 10.1.1.2
##### End of IBM Net.Commerce (Pass) #####

```

10.1.1.1 and 10.1.1.2 are the IP addresses associated with the Net.Commerce server instances.

The following directives handle requests that are not associated with a Net.Commerce server instance:

```

Pass / /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/Welcome.html
Pass /sample/* /QIBM/ProdData/HTTP/Public/TC1/ICSS/HTML/*

```

These two directives allow the sample IBM-supplied home page to be served on any address not bound to one of the Net.Commerce instances. In our example, the address 10.2.2.1 is not bound to any Net.Commerce instance, so the URL <http://10.2.2.1/> will serve the sample home page shown in Figure 84 on page 112.

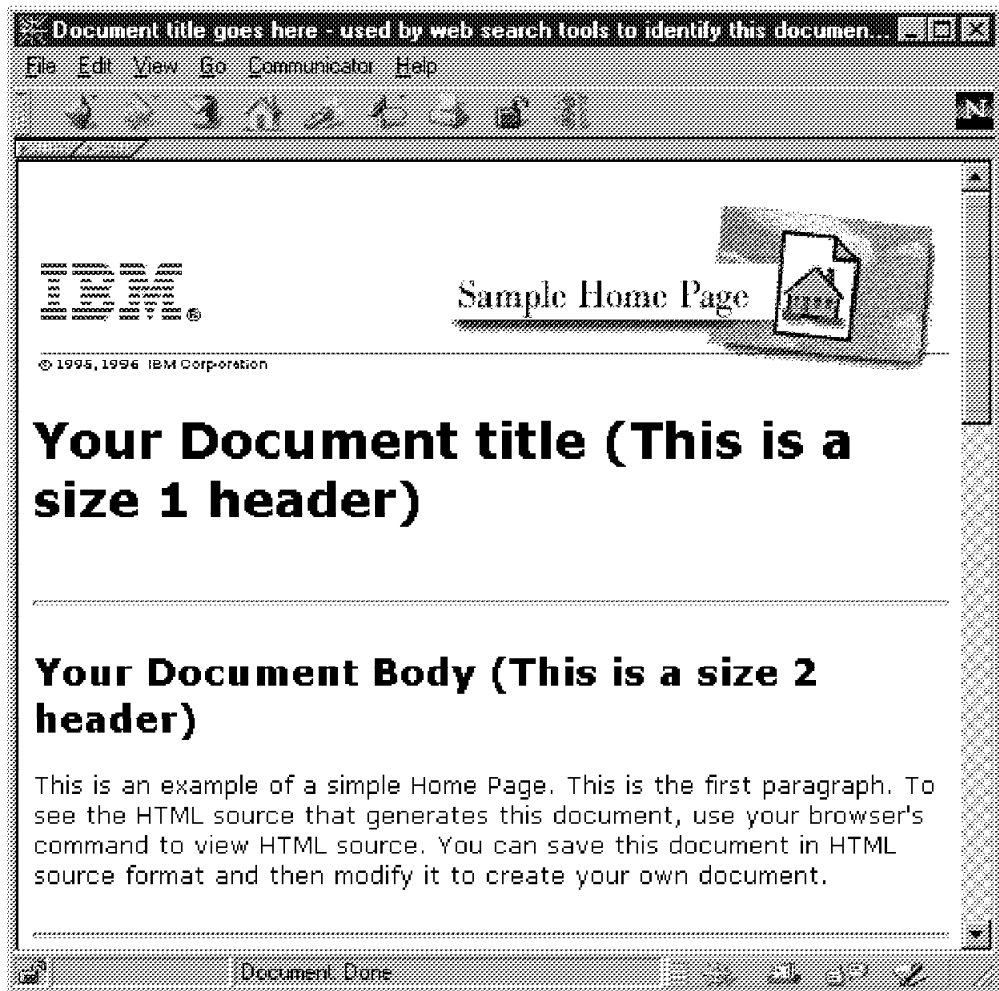


Figure 84. The Default Home Page Supplied by IBM

You can replace this sample home page with any HTML page you create.

Any changes made to the QNETCOMM Web server configuration file should be made outside of the blocks marked #### (Do not edit this section) ####.

Important

If you choose to edit the QNETCOMM Web server configuration file manually, please ensure that any directives you insert do not interfere with the operation of the existing Net.Commerce related directives.

8.5.3 Client Pull

In the above example we mentioned the use of a redirect to redirect a browser request to a non-Net.Commerce Web server. An alternative to this is to use a function called *Client Pull*. Using client pull it is possible to transfer users directly from Welcome.html (or any other page) to a different URL. This is implemented using browser-specific meta-directives in the home page, and causes the browser to automatically load a different specified URL after a certain number of seconds.

Client pull uses a meta-directive of the following form:

```
<META HTTP-EQUIV=REFRESH CONTENT="<time>; URL=<new url>">
```

Where:

- <time> is the number of seconds to wait before loading the URL
- <new URL> is the new URL to load.

This technique works for Netscape Navigator 2.0 and above, and Internet Explorer 3.0 and above, but may not work with all browsers. Therefore, in case the page is being accessed by a browser that does not support this feature, it is usually the convention that the URL is also presented as a link on the page.

Here is a sample home page that transfers a browser to a page on a different port (8001) and a different page on the same server.

```
<HTML>
<HEAD>
  <META HTTP-EQUIV=REFRESH CONTENT="3; URL=http://www.mall1.com:8001/homepage/Welcome.html">
  <TITLE>Transferring to Intranet</TITLE>
</HEAD>
<BODY>
  <H2>Transferring you to the IBM Intranet!</H2><BR>
  The page should load within a short time. If not,
  click <A HREF="http://www.mall1.com:8001/homepage/Welcome.html"> HERE </A>
  to go to the Intranet homepage.<BR>
</BODY>
</HTML>
```

Figure 85. Home Page Example

This HTML page looks like this when it is loaded into Netscape Communicator:



Figure 86. Client Pull Sample

After three seconds, the home page at the location <http://www.mall1.com:8001/homepage/Welcome.html> will start loading.

Using client pull, however, you must transfer the user to another port, for all accesses to this port will be refused by QNETCOMM except to the page above.

Chapter 9. Net.Commerce System Operations

The following operational activities are required to support the Net.Commerce system.

- Starting and stopping the ADMIN Web Server instance
- Starting and stopping the Net.Commerce Web Server
- Starting and stopping the Net.Commerce Server
- Database cleanup
- Database backup

9.1.1 Starting the ADMIN Web Server Instance

Net.Commerce is configured, and its operational status changed, through the administration server (*ADMIN). To start the ADMIN Web server instance, do the following:

1. From the command line, type the following:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

National Language Support

For NLS support when starting the *ADMIN server, add the -fscsid and -netccsid parameters as shown below.

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN '-fscsid xxxx -netccsid yyy')
```

Where xxxx is the DefaultFsCCSID and yyy is the DefaultNetCCSID listed for the system language feature. For a list of the available languages, see the latest Net.Commerce readme.

2. To verify that this has worked, type the following from the AS/400 command line:

```
WRKACTJOB SBS(QSYSWRK)
```

V4R3

For V4R3, submit the same command to the subsystem QHTTPSVR:

```
WRKACTJOB SBS(QHTTPSVR)
```

The Work with Active Jobs display is shown (Figure 87 on page 116).

Work with Active Jobs						HOSTNAME
						12/04/97 19:37:39
CPU %:	.0	Elapsed time:	00:00:00	Active jobs:	129	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
—	QSYSWRK	QSYS	SBS	.0		DEQW
—	ADMIN	QTMHHTTP	BCH	.0	PGM-QTMHHTTP	TIMW
—	ADMIN	QTMHHTTP	BCI	.0	PGM-QYUNLANG	DEQW
—	ADMIN	QTMHHTTP	BCI	.0		SIGW
—	ADMIN	QTMHHTTP	BCI	.0		SIGW
—	ADMIN	QTMHHTTP	BCI	.0		DEQW
—	QMSF	QMSF	BCH	.0		DEQW
—	QNETCOMM	QTMHHTTP	BCH	.0	PGM-QTMHHTTP	TIMW
—	QNETCOMM	QTMHHTTP	BCI	.0		DEQW
						More...
Parameters or command						
====>						
F3=Exit F4=Prompt F5=Refresh F10=Restart statistics						
F11=Display elapsed data F12=Cancel F14=Include F24=More keys						

Figure 87. Active Jobs in Subsystem QSYSWRK

Look for entries for Job/User **ADMIN/QTMHHTTP**.

The Web configuration server port number is 2001.

Note: Port 2010 is also available for a secure connection for the *ADMIN Web server instance if appropriately configured.

9.1.2 Stopping the ADMIN Web Server Instance

To stop the *ADMIN Web server instance, do the following:

1. From the command line, type the following:

```
ENDTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

2. To verify that this has worked, type the following from the AS/400 command line:

```
WRKACTJOB SBS(QSYSWRK)
```

V4R3

For V4R3, submit the same command to the subsystem QHTTPSVR:

```
WRKACTJOB SBS(QHTTPSVR)
```

If the server has been stopped successfully, you will not see the lines mentioned in 9.1.1, "Starting the ADMIN Web Server Instance" on page 115.

9.1.3 Starting the Net.Commerce Web Server Instance

You can start the Net.Commerce Web server instance from either the command line or the Web *ADMIN server.

To start it from the command line, do the following:

1. From the command line, type:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(QNETCOMM)
```


Note: QNETCOMM is the name of the Net.Commerce instance created during the configuration of the Net.Commerce system.

To start it from the Web browser, do the following:

1. From your browser, type the following URL:
http://<your_server_name>:2001
2. Click on **Internet Connection Server for AS/400**.
3. Click on the **Configuration and Administration link**.
4. Select QNETCOMM by clicking on its radio button, and press the **Start** button (see Figure 32 on page 63).
5. To verify that this has worked, type the following from the AS/400 command line:

```
WRKACTJOB SBS(QSYSWRK)
```

V4R3

For V4R3, submit the same command to the subsystem QHTTPSVR:
WRKACTJOB SBS(QHTTPSVR)

The Work with Active Jobs display is shown (Figure 88).

```

                                Work with Active Jobs                                HOSTNAME
                                                12/04/97 19:37:39
CPU %:      .0      Elapsed time:  00:00:00      Active jobs:  129

Type options, press Enter.
  2=Change  3=Hold  4=End  5=Work with  6=Release  7=Display message
  8=Work with spooled files 13=Disconnect ...

Opt  Subsystem/Job  User      Type  CPU %  Function      Status
---  -
   QNETCOMM      QTMHHTTP  BCI      .0      SIGW
   QNETCOMM      QTMHHTTP  BCI      .0      SIGW
   QNETCOMM      QTMHHTTP  BCI      .0      TIMW
   QNETCOMM      QTMHHTTP  BCI      .0      DEQW
   QNETCOMM      QTMHHTTP  BCI      .0      DEQW
   QNETWARE      QSYS      BCH      .0      PGM-QFPANTWJ  DEQW
   QNPSEVRD      QUSER     BCH      .0      SELW
   QPASVRP       QSYS      BCH      .0      PGM-QPASVRP   DEQW
   QPASVRS       QSYS      BCH      .0      PGM-QPASVRS   TIMW

More...

Parameters or command
====
F3=Exit  F4=Prompt  F5=Refresh  F10=Restart statistics
F11=Display elapsed data  F12=Cancel  F14=Include  F24=More keys

```

Figure 88. Active Jobs in Subsystem QSYSWRK

Look for entries for Job/User **QNETCOMM/QTMHHTTP**.

9.1.4 Stopping the Net.Commerce Web Server Instance

You can stop the Net.Commerce Web server instance from either the command line or the Web *ADMIN server.

To stop it from the command line, do the following:

1. From the command line, type:

```
ENDTCPSVR SERVER(*HTTP) HTTPSVR(QNETCOMM)
```

Note: QNETCOMM is the name of the server configuration file created during the configuration of the Net.Commerce system.

To stop it from the Web browser, do the following:

1. From your browser, type the following URL:

```
http://<your_server_name>:2001
```

2. Click on **Internet Connection Server for AS/400**.
3. Click on the **Configuration and Administration** link.
4. Select the instance QNETCOMM by clicking on its radio button, and press the **Stop** button (see Figure 32 on page 63).
5. To verify that this has worked, type the following from the AS/400 command line:

```
WRKACTJOB SBS(QSYSWRK)
```

V4R3

For V4R3, submit the same command to the subsystem QHTTPSVR:

```
WRKACTJOB SBS(QHTTPSVR)
```

If the server has been stopped successfully, you will not see the lines mentioned in 9.1.3, "Starting the Net.Commerce Web Server Instance" on page 116.

9.1.5 Starting the Net.Commerce Server

You can start the Net.Commerce server from either the command line or the Web *ADMIN server.

To start it from the command line, type:

```
STRNETCSVR INSTANCE(<INSTANCE_NAME>) HTML(<root_path>)
```

Where *root_path* is the HTML path entered in Figure 29 on page 59.

You can also select either or both debug and trace modes when starting the Net.Commerce server instance by using the following parameters:

- DEBUG(*YES)
- TRACE(*YES)

By default, both of these parameters are set to (*NO).

To start the Net.Commerce server from the Web *ADMIN server, do the following:

1. Type the following URL:
`http://<your_host_name>:2001`
2. Enter your AS/400 user ID and password at the prompt.
3. Click on the **IBM Net.Commerce for AS/400** link.
4. Select the Net.Commerce instance you wish to start by clicking on its radio button, and press the **Start Server** button (see Figure 28 on page 58).
5. To verify that the Net.Commerce server has started successfully, type the following from the AS/400 command line:
`WRKACTJOB SBS(QSYSWRK)`

V4R3

For V4R3, submit the same command to the subsystem QHTTSPVR:
`WRKACTJOB SBS(QHTTSPVR)`

The Work with Active Jobs display is shown (Figure 89).

Work with Active Jobs						HOSTNAME
						12/04/97 19:25:57
CPU %:	.0	Elapsed time:	00:00:00	Active jobs:	129	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
—	QSYSWRK	QSYS	SBS	.0		DEQW
—	MSERVERD	ITSCNC2	BCI	.0		MTXW
—	MSERVERD	ITSCNC2	BCI	.0		TIMW
—	QNETCOMM	ITSCNC2	BCH	.0	PGM-QNETSTRNCS	EVTW
Parameters or command						Bottom
===>						
F3=Exit F4=Prompt F5=Refresh F10=Restart statistics						
F11=Display elapsed data F12=Cancel F14=Include F24=More keys						

Figure 89. Active Jobs in Subsystem QSYSWRK

Look for entries for Job/User **MSERVERD/<INSTANCE_NAME>** and **QNETCOMM/<INSTANCE_NAME>**. In this example (Figure 89), the instance name is ITSCNC2.

9.1.6 Stopping the Net.Commerce Server

You can stop the Net.Commerce server from either the AS/400 command line or the Web *ADMIN server.

To stop it from the command line, type:

`ENDNETCSVR INSTANCE(<INSTANCE NAME>)`

To stop it from the Web *ADMIN server, do the following:

Open your browser to the following URL:

`http://<your_host_name>:2001`

1. Enter your AS/400 user ID and password at the prompt.
2. Click on the **IBM Net.Commerce for AS/400** link.
3. Select the Net.Commerce instance you wish to stop by clicking on its radio button, and press the **Stop Server** button (see Figure 28 on page 58).
4. To verify that the Net.Commerce server has been stopped successfully, type the following from the AS/400 command line:

```
WRKACTJOB SBS(QSYSWRK)
```

V4R3

For V4R3, submit the same command to the subsystem QHTTPSVR:

```
WRKACTJOB SBS(QHTTPSVR)
```

If the server has been stopped successfully, you will not see the lines mentioned in 9.1.5, “Starting the Net.Commerce Server” on page 118.

9.1.7 Database Cleanup

The Net.Commerce Database Cleanup utility allows you to delete unneeded records from the Net.Commerce database. You can delete the following record types:

- Guest shoppers
- Temporary shopper addresses
- Old orders
- Products that have been marked for deletion
- Records in the CACHLOG table that identify invalid cache pages that have been purged.

9.1.7.1 Guest Shopper Records

You can use the Database Cleanup utility to remove guest shopper records from the database, except those that are associated with orders. Guest shopper records are records for which SHSHTYP="G" in the SHOPPER table. For example, you can choose to delete a guest shopper record that was created at least 30 days ago. To make this determination, the database queries column SHRSTMP in the SHOPPER table.

Note: You cannot use this utility to remove registered shoppers from the database. The library containing the database collection that is owned by the Net.Commerce instance must be added to the library list before you can delete guest shopper records.

Before the utility deletes a record from the SHOPPER table, it deletes the corresponding records in the following child tables, to preserve the referential integrity of the database:

- SHADDR
- SHOPDEM
- SHOPPINGS

9.1.7.2 Temporary Shopper Addresses

When the shopper provides new address information, for example when the shopper moves, a new record is created in the SHADDR table. The old address record is flagged as a temporary record. Temporary address records are also created if a shopper provides new address information for an order without updating the address book. (This type of temporary address record cannot be deleted if the order which it is associated with is still pending.)

You can use the Database Cleanup utility to delete temporary address records from the SHADDR table. The SHADDR table stores address information that is specified by shoppers during registration, which is flagged as a permanent record.

To delete address records, the following conditions must be satisfied:

- The records are temporary (column SAADRFLG is set to T).
- There are no records in the SHIPTO table that reference the address records.

Note: The library containing the database collection that is owned by the Net.Commerce instance must be added to the library list before you can delete temporary shopper address records.

9.1.7.3 Old Orders

The criteria for defining an order as "old" will vary from merchant to merchant, because merchants can add customized order status flags to the ORDSTAT column. For example, a merchant may add an F flag to indicate that an order has been filled.

You can use the Database Cleanup utility to remove an old order record from the ORDERS table. For example, you can delete an order record that has been processed or canceled.

Note: The library containing the database collection that is owned by the Net.Commerce instance must be added to the library list before you can delete old order records.

Before the utility deletes an order record, it deletes the corresponding records in the following child tables, to preserve the referential integrity of the database:

- ORDERPAY
- ORDPAYMTHD
- SHIPTO

9.1.7.4 Marked Products and Items

When you want to remove products from your inventory, you have two options: you can permanently delete the product records, or you can mark them for deletion. Permanently deleting product records deletes the products and any items associated with them from the PRODUCT table in the database. Marking products for deletion assigns the value 2 in the column PRPUB in the PRODUCT table to the product to indicate that it has been marked for later deletion. Products marked for deletion cannot be viewed by shoppers. When appropriate, you can use the Database Cleanup utility to delete any product records that have been marked for deletion and that are not referenced by any records in the SHIPTO or SHOPPINGS table.

Permanently deleting products is ideal when you are very sure that you no longer need the product in your store. But there may be situations when products that you wish to delete are still associated with orders that are pending or that have not yet been processed. In these cases, you would mark them for deletion until they can be permanently deleted.

Note: The library containing the database collection that is owned by the Net.Commerce instance must be added to the library list before you can delete marked product records.

Before the utility deletes a product record from the PRODUCT table, it deletes the corresponding records in the following child tables, to preserve the referential integrity of the database:

- PRODATR
- CGPRREL
- PRODDSTATR
- PRODPRCS

9.1.7.5 Delete Records from the CACHLOG Table

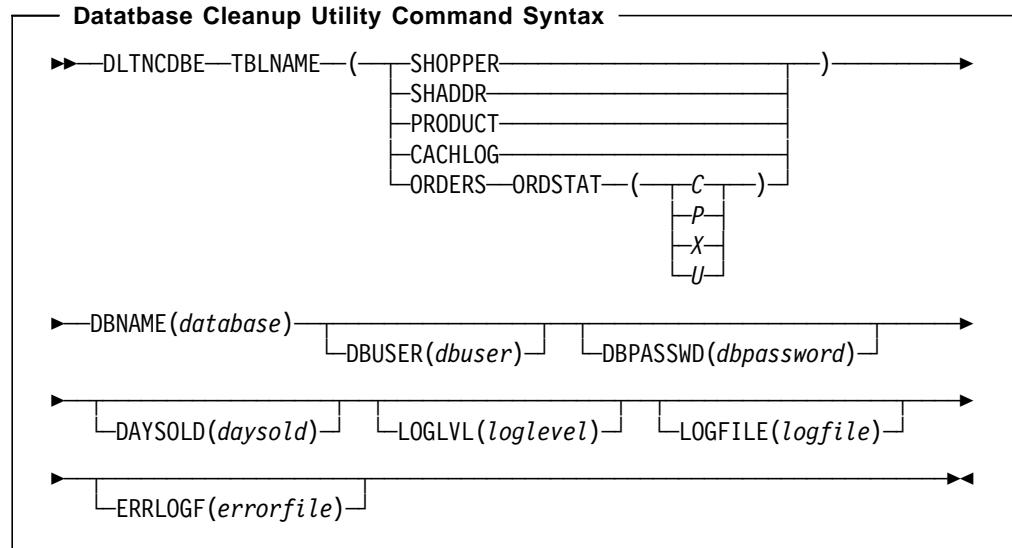
You can use the Database Cleanup utility to delete records from the CACHLOG table that correspond to cached HTML pages that have been purged by the Caching utility.

When the Database Cleanup utility deletes a record in a table, it also deletes the corresponding records in other tables that are linked to that table, to preserve the referential integrity of the database.

The administrator running this utility must sign on as the instance name that is being deleted. The server must be terminated prior to invoking the Database Cleanup utility.

9.1.7.6 Database Cleanup Utility

The syntax of the database cleanup utility is as follows:



Where:

database The name of the relational database.

dbuser The logon ID of the instance that created the database collection.

dbpassword The password of the logon ID that is specified by the DbUser parameter.

daysold The age (in days) that the records must be in order to be deleted. The default value is 2 days; if this parameter is not specified, the Cleanup utility will delete all records that are more than two days old. If you want to delete all records, you must specify a value of 0 for this parameter. The utility compares the current date and time with the date and time for each record defined in the column CACSTMP. (This column records when each record was created.) If the difference is greater than or equal to the value specified for this parameter, the record is deleted.

loglevel The level of logging that you want. Specify one of the following:

0 - No log activities will be recorded.

1 - Only the record to be deleted will be recorded.

2 - All affected records in the database will be recorded.

If this parameter is not specified, the default logging level is 0.

logfile The name of the file in which the utility will record its activities. If this parameter is not specified, a log file called dbclog.txt will be created in the root directory of IFS. You can specify another file for logging activities. Its path name must conform to the IFS directory structure. To specify the path name (which must exist prior to issuing the command) from the command line, use the following syntax:
LOGFILE('/qibm/userdata/netcommerce/instance/instname/<logfile>')

errorfile The name of the file in which the utility will record errors. If this parameter is not specified, a log file called dbcerr.txt will be created in the root directory of IFS. You can specify another file for logging

errors. Its path name must conform to the IFS directory structure. To specify the path name (which must exist prior to issuing the command) from the command line, use the following syntax: ERRLOGF ('/qibm/userdata/netcommerce/instance/instname/<error logfile>')

9.1.7.7 Example

To delete from database collection sysdb all caching records that were created 90 days ago or more, type the following:

```
DLTNCDBE TBLNAME(CACHLOG) DBNAME(SYSDB) DAYSOLD(90)
```

9.1.8 Database Backup

We recommend that the Net.Commerce database be backed up on a regular basis. This should always be done prior to making significant changes to the database. This protects the data in case of a hardware failure or other problems that can result in loss of data. Use the SAVE option from the General System Tasks menu.

Chapter 10. Setting Up a Net.Commerce Shopping Mall

In this chapter, we look at the Net.Commerce Administrator Site Manager and Store Manager tools. Figure 90 shows how these tools are used to create an online store.

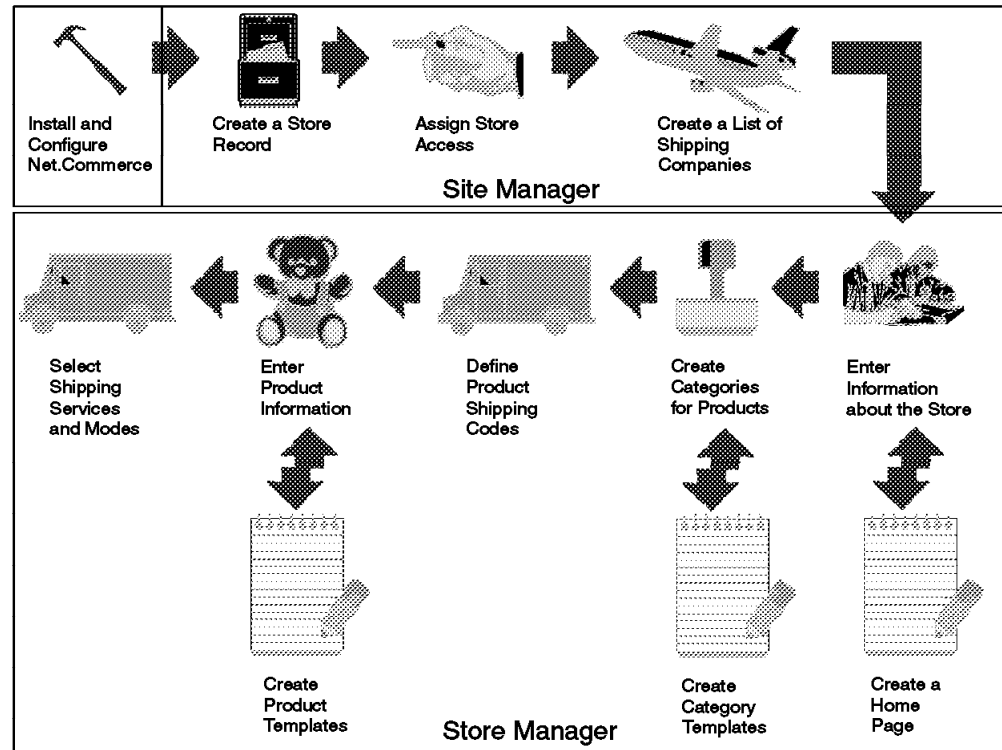


Figure 90. Steps to Creating a Net.Commerce Store

The Net.Commerce Administrator is comprised of the Site Manager which is used to create and maintain the overall site and the Store Manager which is used to create and maintain stores within the site. The typical steps to build a Net.Commerce online store are:

1. Site Manager
 - a. Install and Configure Net.Commerce
 - b. Create a store record
 - c. Assign store access
 - d. Create a list of shipping carriers
2. Store Manager
 - a. Select shipping services and modes
 - b. Create product templates and information
 - c. Define product shipping codes
 - d. Create categories templates
 - e. Create categories
 - f. Enter products information and relate products to categories
 - g. Create store home page

10.1 Setting Up a Mall

In this section we look at how the Net.Commerce Administrator creates and maintains a site. To start the Administrator module, type:

`http://<your_host_name>/ncadmin/index.htm/`

The default administrator ID and password is `ncadmin`.

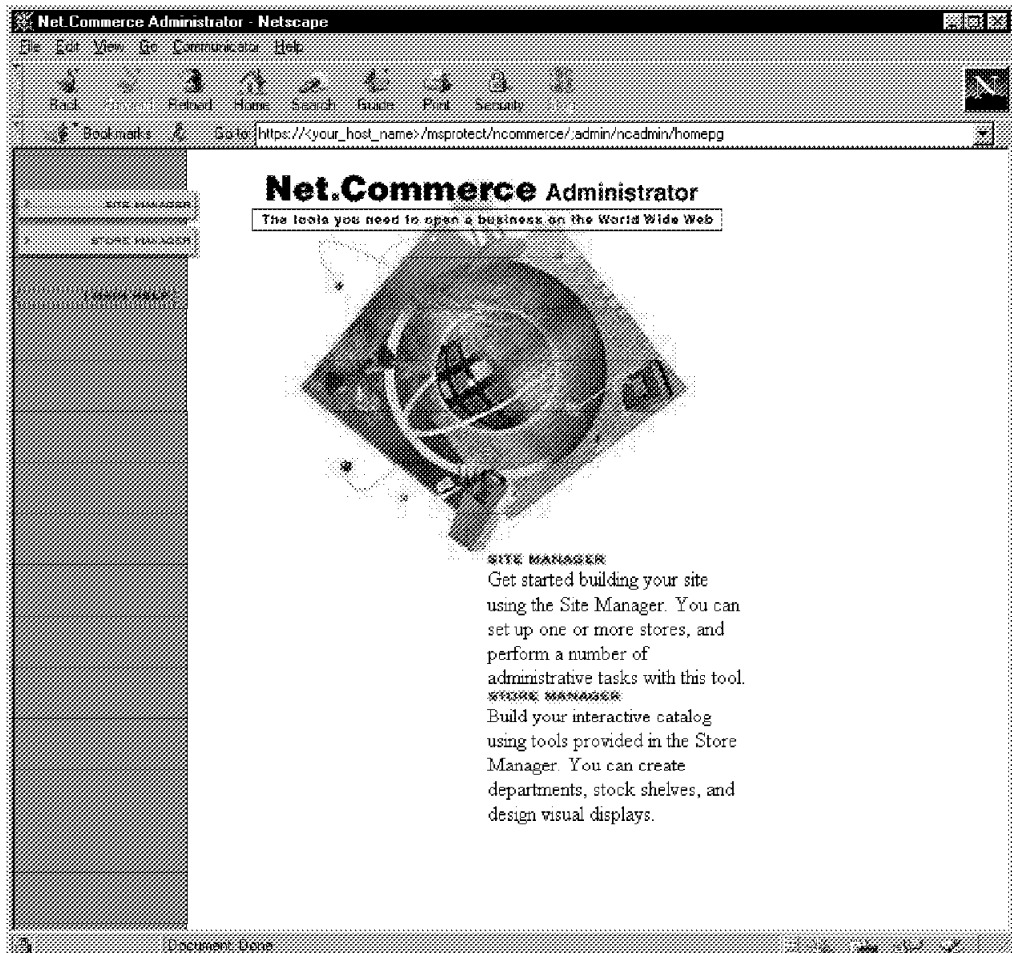


Figure 91. The Net.Commerce Administrator Main Screen

Screen Details

The available menus are shown on the left hand side of the screen:

- Site Manager
- Store Manager

The small triangle on a button indicates that the list item can be expanded.

10.1.1 Site Manager

By clicking on the **Site Manager** button, you can define your stores, shipping carriers, shoppers, and other functions (refer to 10.2, “Net.Commerce Site Manager” on page 129).

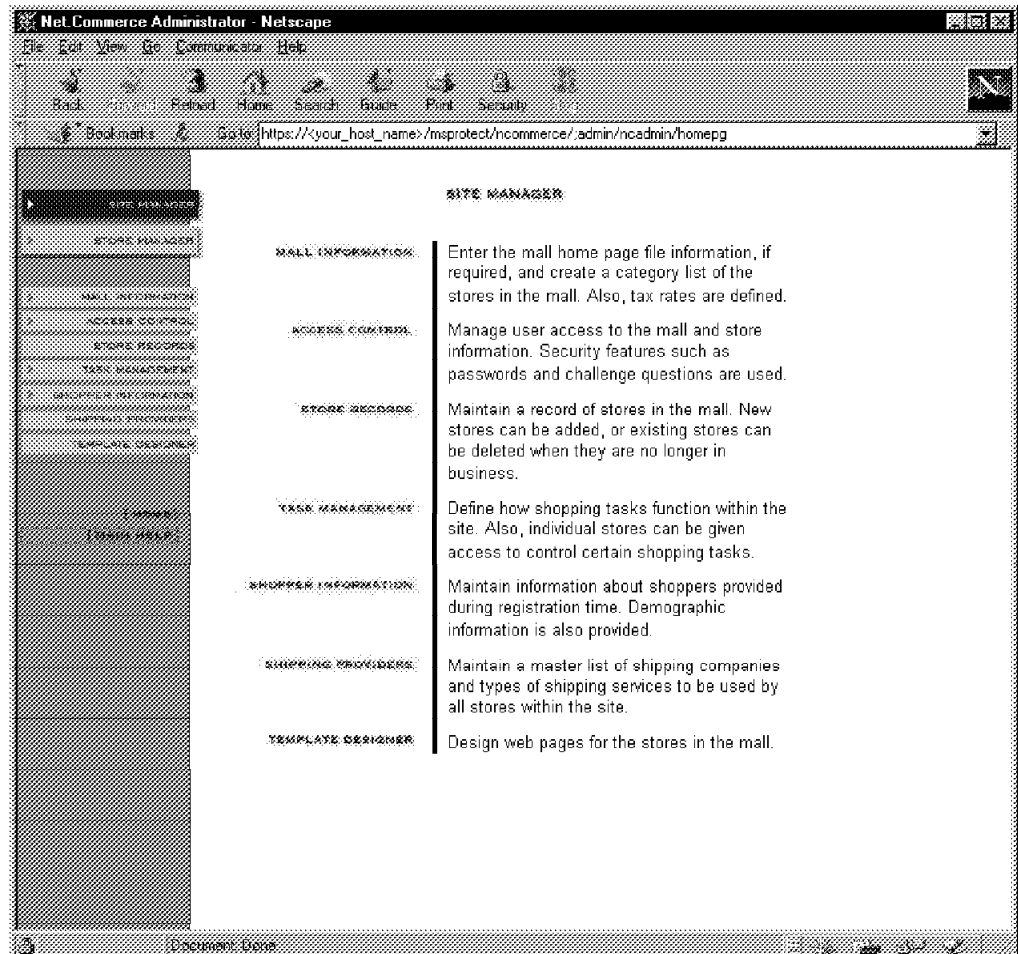


Figure 92. The Net.Commerce Site Manager Main Screen

Screen Details

The available menus are shown on the left-hand side of the screen:

- Mall Information
- Access Control
- Store Records
- Task Management
- Shopper Information
- Shipping Providers
- Template Designer

The small triangle on a button indicates that the list item can be expanded.

10.1.2 Store Manager

By clicking on the **Store Manager** button, you can define categories, sub-categories, products, and so on for each store in the mall (refer to 10.3, “Net.Commerce Store Manager” on page 152).

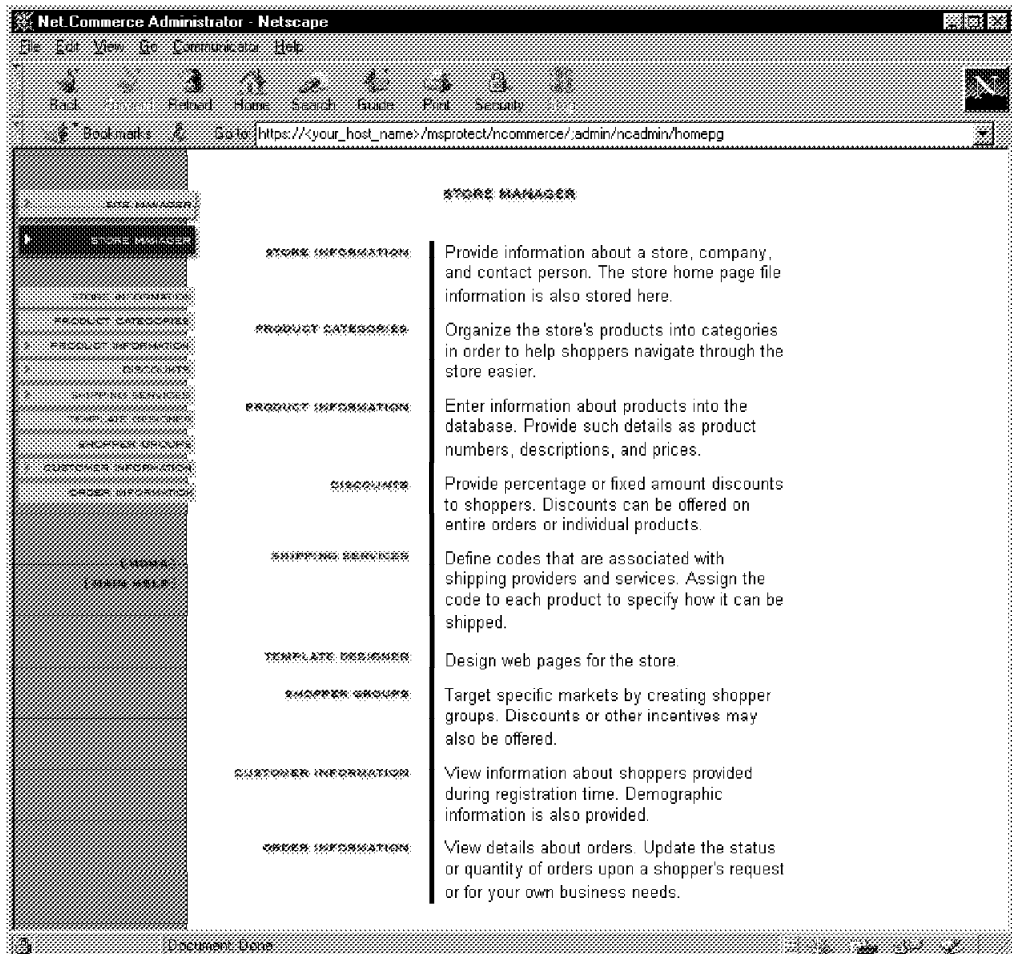


Figure 93. The Net.Commerce Store Manager Main Screen

Screen Details

The available menus are shown at the left-hand side of the screen:

- Store Information
- Product Categories
- Product Information
- Discounts
- Shipping Services
- Template Designer
- Shopper Groups
- Customer Information
- Order Information

The small triangle on a button indicates that the list item can be expanded.

10.2 Net.Commerce Site Manager

From the Net.Commerce Administrator main panel (Figure 91 on page 126), click on **Site Manager** to run the Site Manager module.

Using the Site Manager you can:

- Create and manage the mall's home page.
- Assign site and store access, to ensure that only authorized individuals are given access to the database.
- Add and delete stores from the site.
- Maintain a list of shipping carriers.
- Assign scope to tasks, which dictates whether some aspects of the shopping process, such as ordering, can be customized by stores.
- Manage site-based data, including any customized store APIs or macros.
- Change shopper information in the database.
- Use all the functions in the Store Manager.

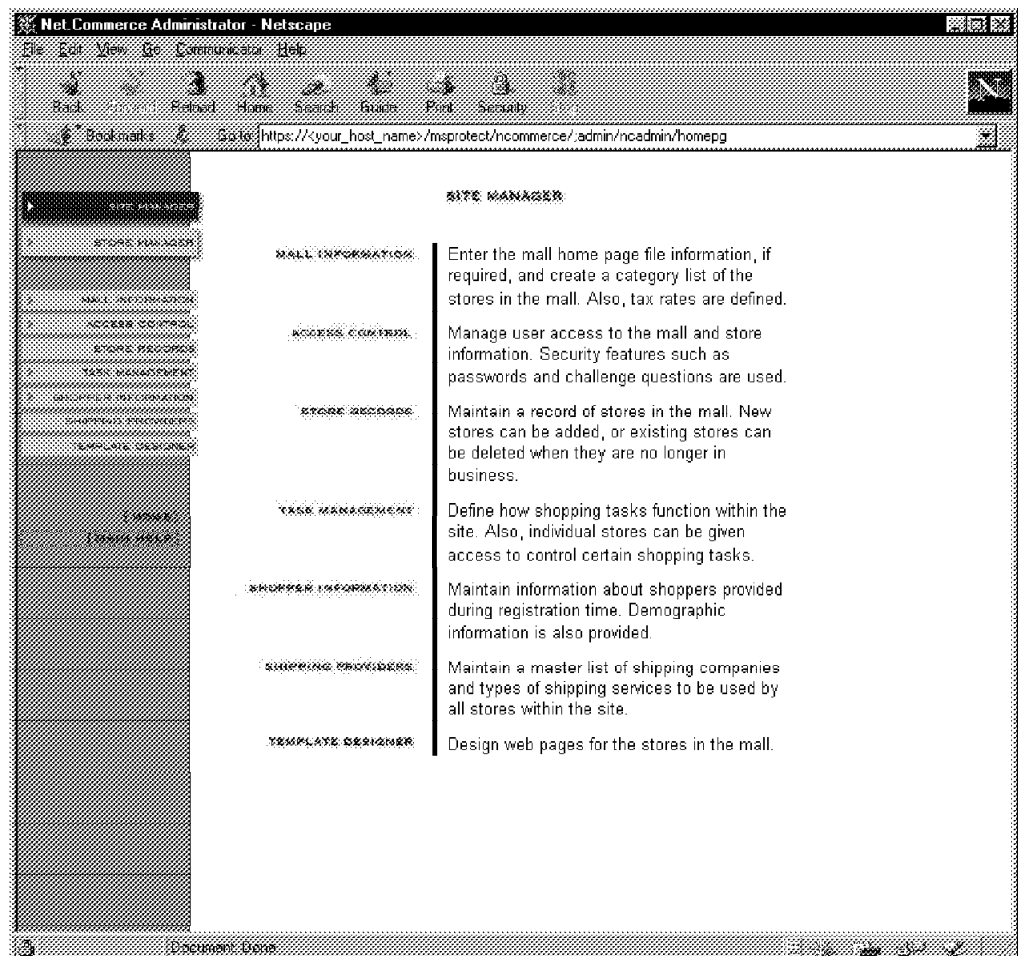


Figure 94. Net.Commerce Site Manager

The following is a list of the Site Manager functions which allow you to perform the tasks listed above:

- Mall Information
- Access Control
- Store Records
- Task Management
- Shopper Information
- Shipping Providers
- Template Designer

In the following screens, you may find additional buttons at the bottom such as SAVE, SEARCH, CLEAR, DELETE, and HELP.

- SAVE** After filling in all the fields in the screen, press this button to add the newly entered record or update an existing one.
- SEARCH** To search all the available records for this module, ensure that all fields on the screen are clear (press CLEAR to do this), then press the SEARCH button.
- To search an existing record, fill in the first field on the screen and press this button; your screen is then divided into two frames to display the result in the lower frame. You can use the mouse to control the size of the lower frame. To display the attributes of one item on the list, just click on it and the attributes are shown in the upper frame of the screen.
- CLEAR** Press this button to clear all the fields on the screen.
- DELETE** Press this button to delete this item from your database.
- HELP** Detailed online help is shown.

10.2.1 Mall Information

From the Site Manager main screen (Figure 92 on page 127), click on **Mall Information** to define the general information related to the whole mall such as front page and tax rates.

The screenshot displays the Net.Commerce Site Manager interface within a Netscape browser window. The browser's address bar shows the URL: `https://your_host_name:/msprotect/ncommerce/admin/hcadmin/homepg`. The interface features a left-hand navigation menu with the following items: SITE MANAGER, STORE MANAGER, MALL INFORMATION (highlighted), MALL DIRECTORY, ACCESS CONTROL, STORE RECORDS, USER MANAGEMENT, ORDER INFORMATION, ORDER PROCESSING, and TRACKING INFORMATION. The main content area is titled "Mall Information" and is divided into two primary sections. The "Mall Front" section contains three text input fields: "HomePage" (with the value `/demomall/basemall.htm`), "Header" (with the value `/demomall/headmall.htm`), and "Footer" (with the value `/demomall/footmall.htm`). Below this is the "Tax Rates" section, which consists of six input fields arranged in two rows of three. The first row contains "Tax Rate 1" (15.00), "Tax Rate 2" (0.00), and "Tax Rate 3" (0.00). The second row contains "Tax Rate 4" (0.00), "Tax Rate 5" (0.00), and "Tax Rate 6" (0.00). At the bottom of the form is a "Custom" section with a single input field. The "SAVE" and "HELP" buttons are located at the bottom center of the form area.

Figure 95. Net.Commerce Site Manager - Mall information Screen

Net.Commerce allows you to create your front page in three parts:

- **Home page** (shown at the center of the screen)
- **Header** (shown at the top of the screen)
- **Footer** (shown at the bottom of the screen)

You may define up to six different tax rates to be used later during tax calculation when placing orders.

If you want to change your mall front, update the relevant field and press the SAVE button.

Note: When you click on "Mall Information", a sub-list (Mall Directory) is added under Mall Information.

10.2.1.1 Mall Directory

Click on **Mall Directory** under Mall Information to create or remove a category from your mall. For example, if you want to add *Women's Fashion* as a mall category, type it in the "New Category" field and press the CREATE button.

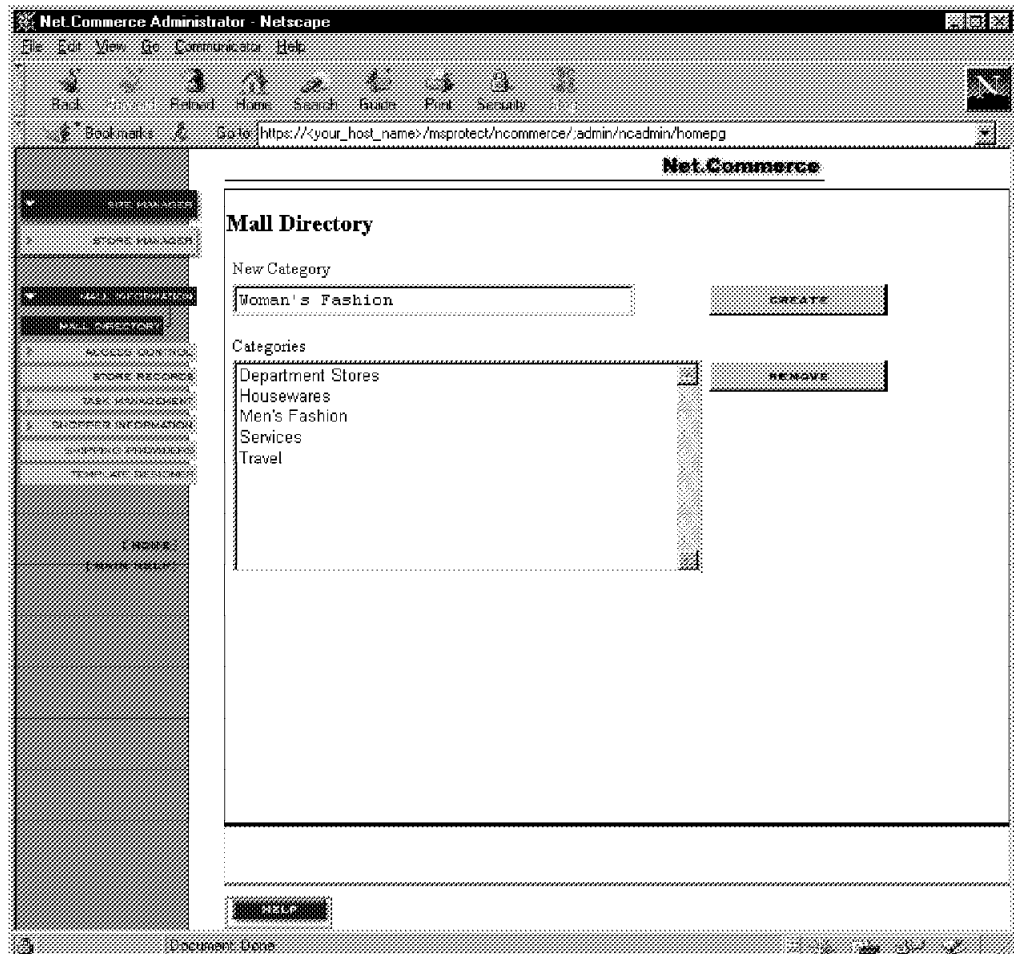


Figure 96. Net.Commerce Site Manager - Mall Directory Screen

To remove an existing category, select it from the list and press the REMOVE button.

10.2.2 Access Control

From the Site Manager main screen (Figure 92 on page 127), click on **Access Control** to maintain a list of personnel who have authority to perform administrator activities. To add an ID, fill in the fields shown in Figure 97. Then press the SAVE button.

Net.Commerce Administrator - Netscape

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Bookmarks Address: https://your_host_name:/nsprotect/ncommerce/admin/ncadmin/homepg

Net.Commerce

Access Control

Administrator's ID: Dalia Site Authority?: Yes

Password: **** Password Confirmation: ****

Title: Mrs

Last Name: Rady First Name: Dalia Middle Name/Initial: Raef

Challenge Question: Name a famous Paris landmark?

Answer: Eifel tower

Last Post: Last Updated:

SAVE SEARCH CLEAR DELETE HELP

Figure 97. Net.Commerce Site Manager - Access Control Screen

Note: When you click on Access Control, Figure 97 is shown and a Store Authorities sub-list underneath Access Control is added. Store Authorities is discussed in 10.2.2.1, "Store Authorities" on page 135.

To **list** all those who have administrator access, ensure that all fields are clear (press the CLEAR button) and press the SEARCH button. Net.Commerce searches the database, then lists all the IDs having administrator access in the bottom frame. You may adjust the frame size of Figure 98 on page 134 using your mouse. Let's choose "ncadmin" from the lower frame to view its attributes. You may scroll down to view more information.

Net.Commerce

Access Control

Administrator's ID: Site Authority?:

Password: Password Confirmation:

Title:

Last Name: First Name: Middle Name/Initial:

Challenge Question:

Answer:

Administrator Login ID	Last Name	First Name
<u>ncadmin</u>		

SAVE SEARCH CLEAR DELETE HELP

Figure 98. Net.Commerce Site Manager - Access Control Search Screen

If you want to update any of the attributes, enter the new information over the existing one and press the SAVE button to save your updates before leaving this screen.

10.2.2.1 Store Authorities

The default *ncadmin* administrator ID has access to all stores in the mall. The Store Authorities form can be used to prevent site administrators from updating specific store data. To access the Store Authorities form, click on **Store Authorities** under Access Control.

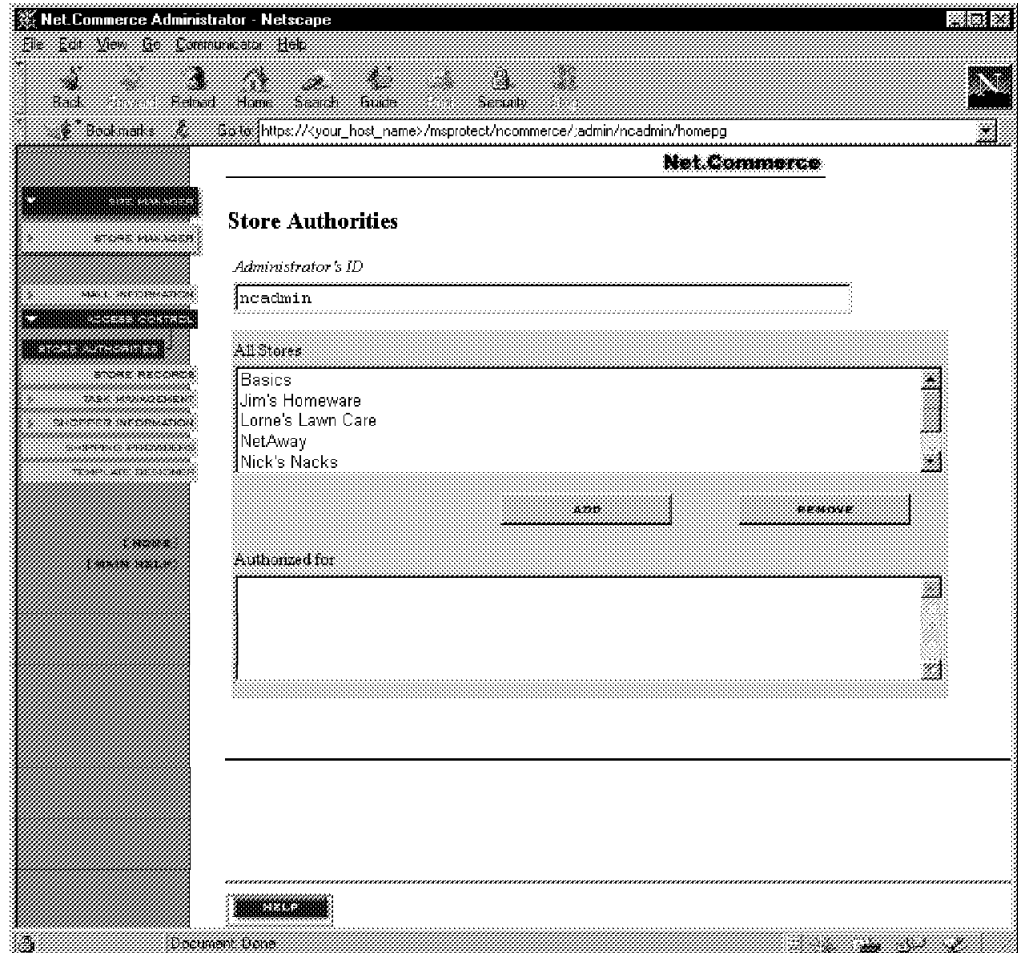


Figure 99. Net.Commerce Site Manager - Store Authorities Screen

To remove access to a store, select the store name then press the REMOVE button.

10.2.3 Store Records

From the Site Manager main screen (Figure 92 on page 127), click on **Store Records** to maintain stores within the mall. You may add, update, delete, or list all stores in the mall.

Net.Commerce Administrator - Netscape

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Bookmarks Address Bar

Address: https://your_host_name:/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Store Records

Store Name
Basics

Company Information

Company Name
K.J. Holdings Inc.

Company Phone Number
1-888-4KJ-HOLD

Contact Information

Last Name First Name Middle Name/Initial
Pong James L.T.

Contact's Job Title Contact's Phone Number

<u>Basics</u>	K.J. Holdings Inc.
<u>Jim's Homeware</u>	K.J. Holdings Inc.
<u>Lorne's Lawn Care</u>	Concept Store 1
<u>NetAway</u>	K.J. Holdings Inc.
<u>Nick's Nacks</u>	Concept Store 2

SAVE SEARCH CLEAR DELETE HELP

Figure 100. Net.Commerce Site Manager - Store Records Screen

You can perform a search of the store records using the SEARCH button (refer to page 133 for a detailed example on how to perform a search). To display information on the "Basics" store, click on the highlighted word **Basics** in the lower frame. Figure 100 is displaying the store record for the Basics store.

You may update the store information and save it. For a detailed example on how to update and save data, please refer to page 134.

10.2.4 Task Management

Depending on the type of customization you want to perform, you may need to modify macros, create one or more API programs, modify HTML files, or add new columns to the database. The following are examples of what you can customize:

- Change the look of store pages and exception pages.
- Change the look of system error message pages.
- Add fields to store and exception pages.
- Remove fields from store pages and exception pages.
- Change the flow of store pages.
- Create packages of products and items.
- Change when shoppers must login or register.
- Change the way the system processes information.
- Customize the database.

Net.Commerce provides three types of macros that can be customized:

Store page macros Display store pages such as product pages, category pages, and shopping pages such as the order forms, shopping cart, and registration form. Default macros are provided for the shopping tasks; you can use them as they are, modify them, or replace them with your own. You create your own macros to display product and category pages in a different way to the ones supplied with the "demomall". You can use the Template Designer to create these macros.

Exception macros Handle exceptional situations, such as if a shopper types incorrect information or fails to enter any information, into a field that is required by the system. Another example is when a shopper clicks a button to add a product to the shopping cart without selecting all the required product attributes.

API exception macros Handle exceptions that may occur during the processing of an API function. API exception macros are closely tied to API functions.

For detailed information on how to customize the APIs and macros, please refer to the online help at the following URLs:

- http://<your_host_name>/nchelp/index.htm
- http://<your_host_name>/nchelp/tasks/stpacst.htm

From the Site Manager main screen (Figure 92 on page 127), click on **Task Management** to customize your site in an advanced way.

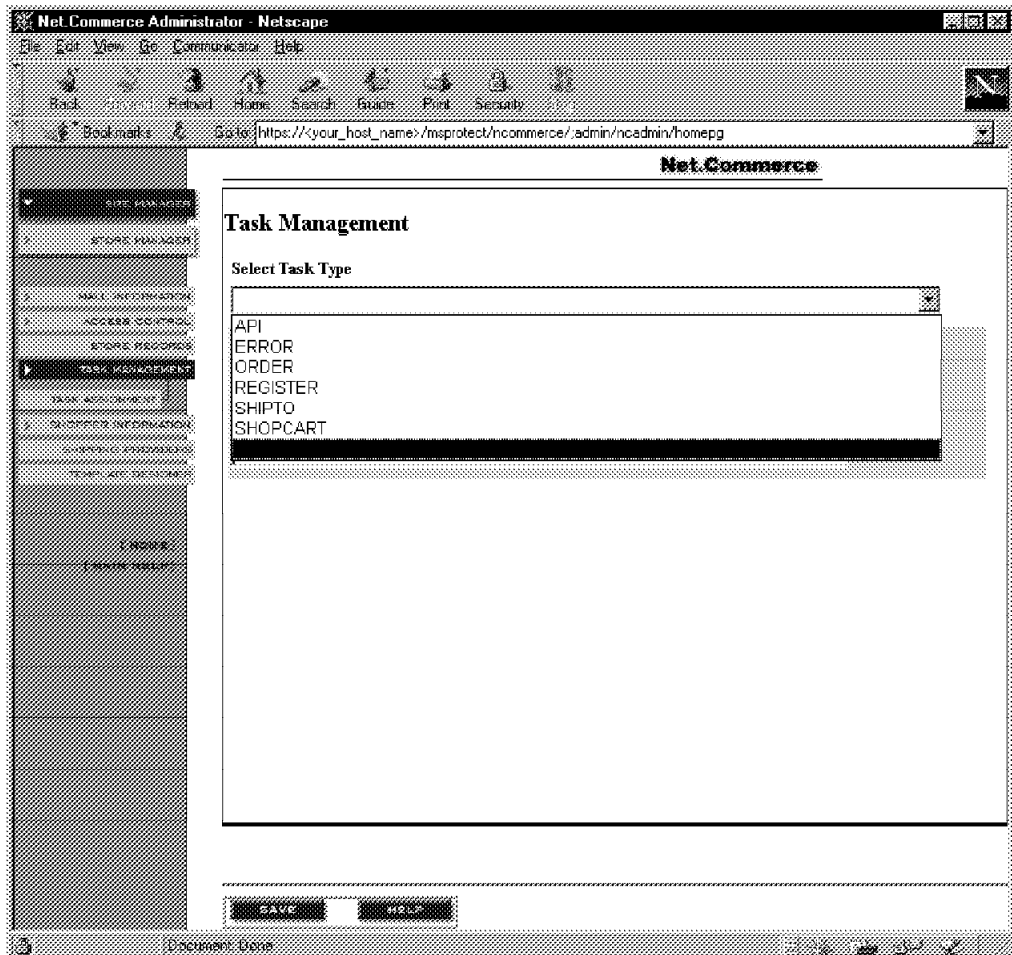


Figure 101. Net.Commerce Site Manager - Task Management Screen

Click on the small triangle on the right corner in the Select Task Type field to display all the available tasks:

- API
- ERROR
- ORDER
- REGISTER
- SHIPTO
- SHOPCART

10.2.4.1 APIs

The Net.Commerce system uses API functions to process information, perform certain calculations and process parameters that are passed into commands. API functions allow merchants to extend the built-in commands, for example, to send an e-mail notification to shoppers who submit orders. API functions can also write information to the database. API programs can be written to change the way in which calculations are performed and maintain custom information in the Net.Commerce database. APIs can also be written that connect the Net.Commerce system to a legacy system, such as an order processing system.

For more information on APIs, please refer to the online help at the following URL:

http://<your_host_name>/nchelp/nav/rnavindx.htm and select Application programming interface (API) functions.

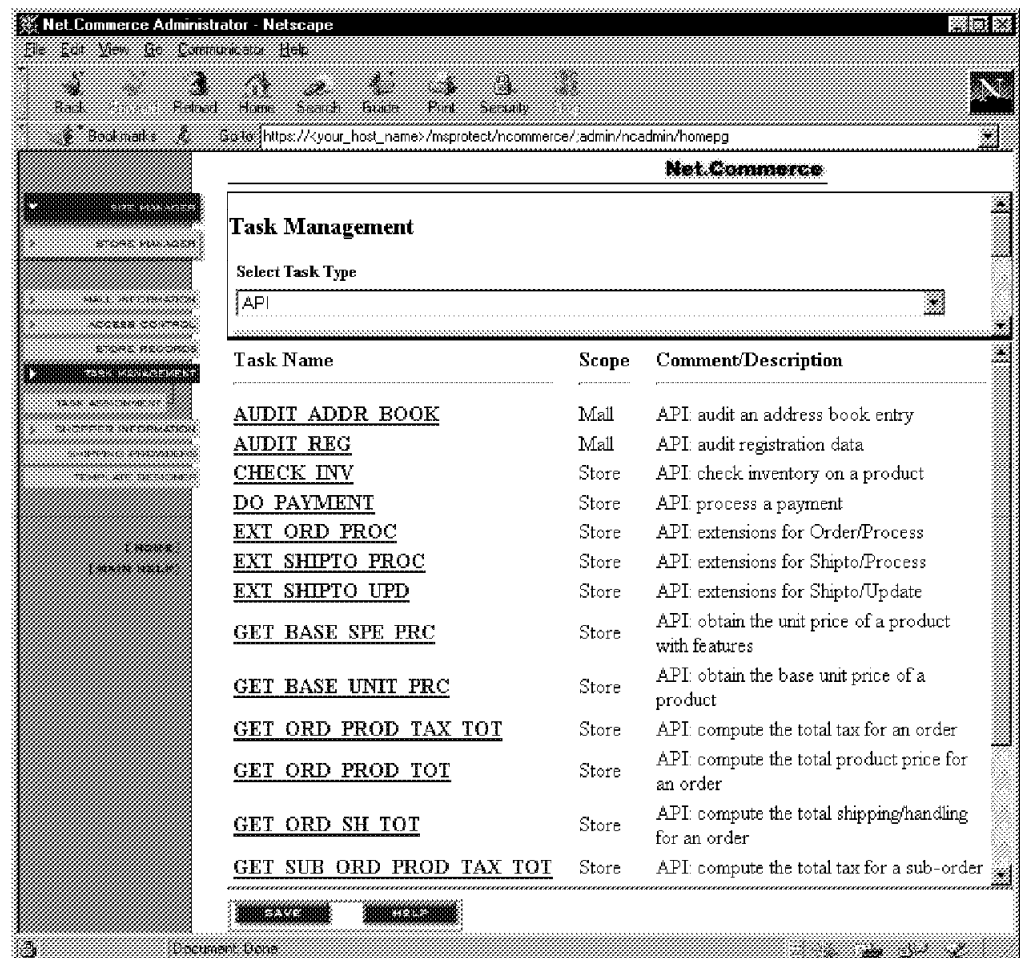


Figure 102. Net.Commerce Site Manager - API Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro or APIs for a specific store or mall.

10.2.4.2 Error Macros

An error macro is called when a shopper enters invalid or incomplete information into a required field. The macro called can be modified to change the way the system handles the exception.

For more information on error messages, please refer to the online help at the following URL: http://<your_host_name>/nchelp/refs/srexcmr.htm

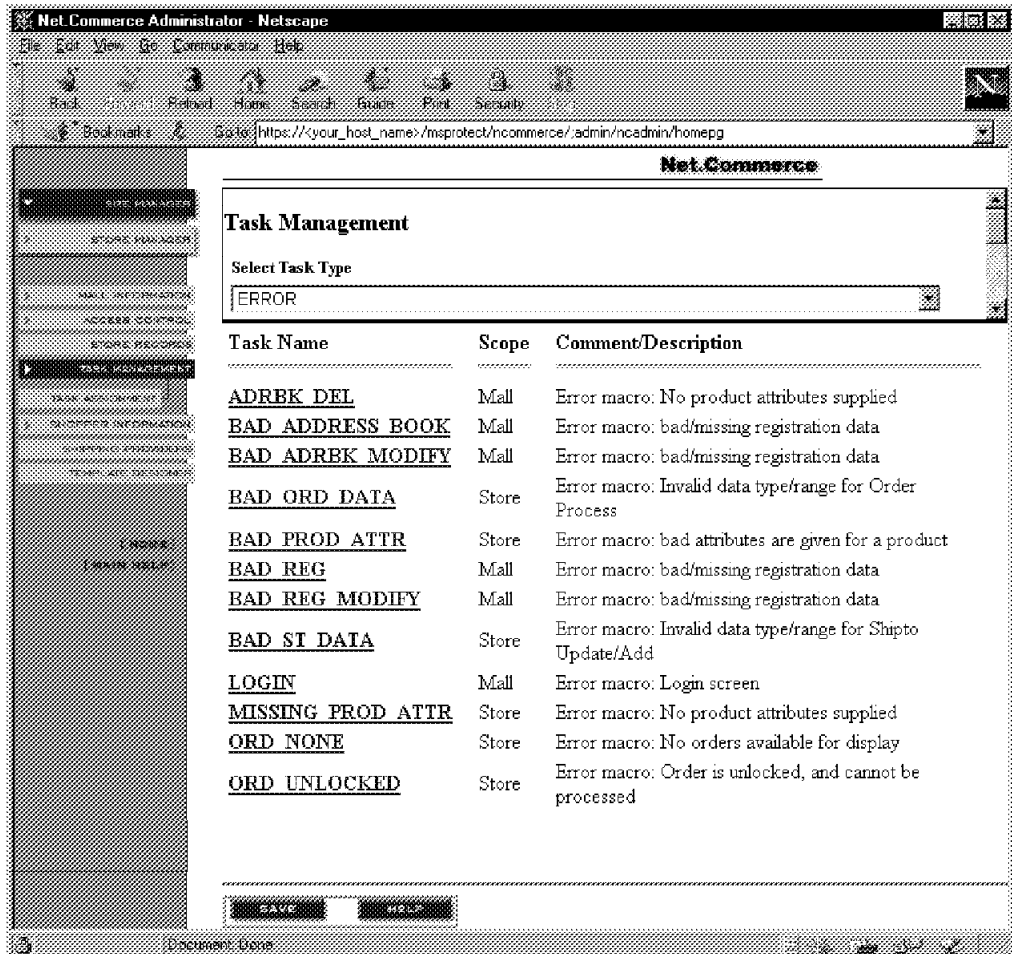


Figure 103. Net.Commerce Site Manager - ERROR Messages Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro. See Figure 108 on page 145.

10.2.4.3 Order Macros

These macros are used to define the ordering process, such as a macro to notify the shopper that an order has been placed correctly; another one lists the items in a pending order and so on.

For more information on Order macros, please refer to the online help at the following URL: http://<your_host_name>/nchelp/nav/rnavindx.htm

Select Store page macros.

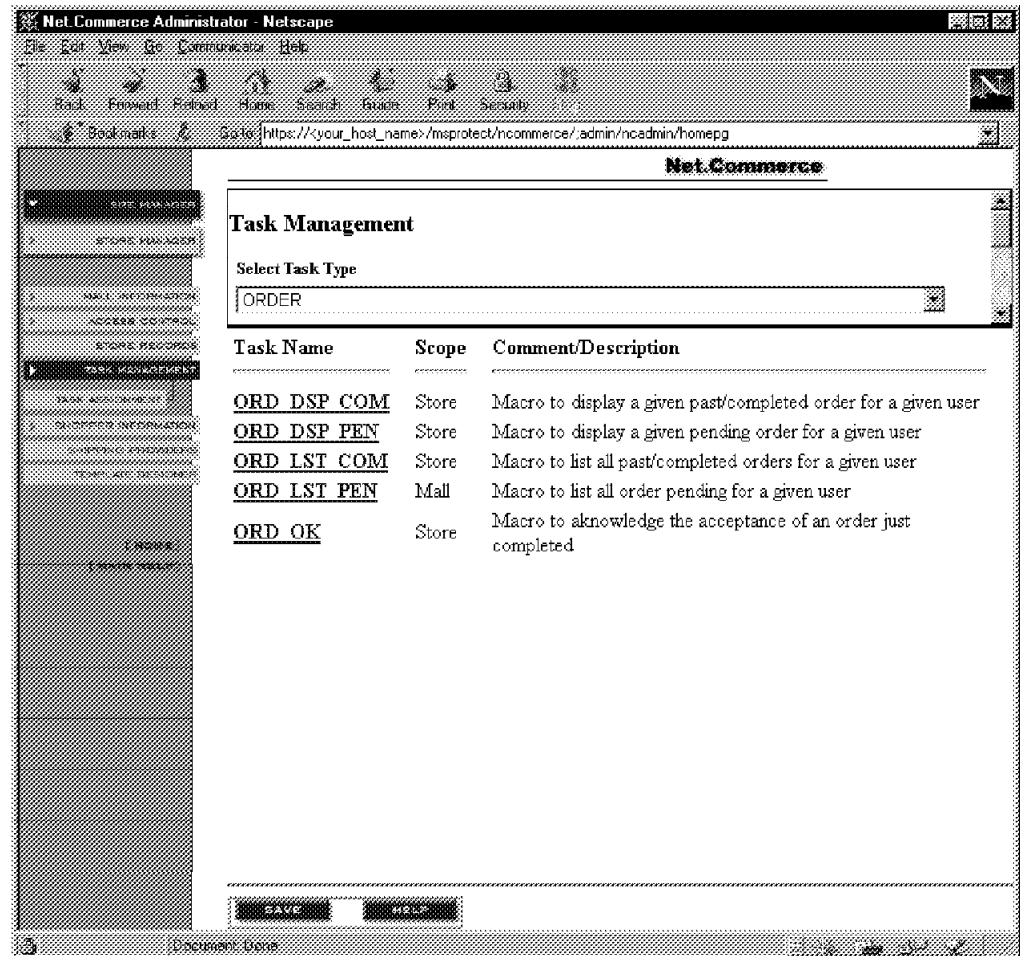


Figure 104. Net.Commerce Site Manager - ORDER Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro. See Figure 108 on page 145.

10.2.4.4 Register Macros

These macros are used to define the registration process.

For more information on Register macros, please refer to the online help at the following URL: http://<your_host_name>/nchelp/nav/rnavindx.htm

Select Store page macros.

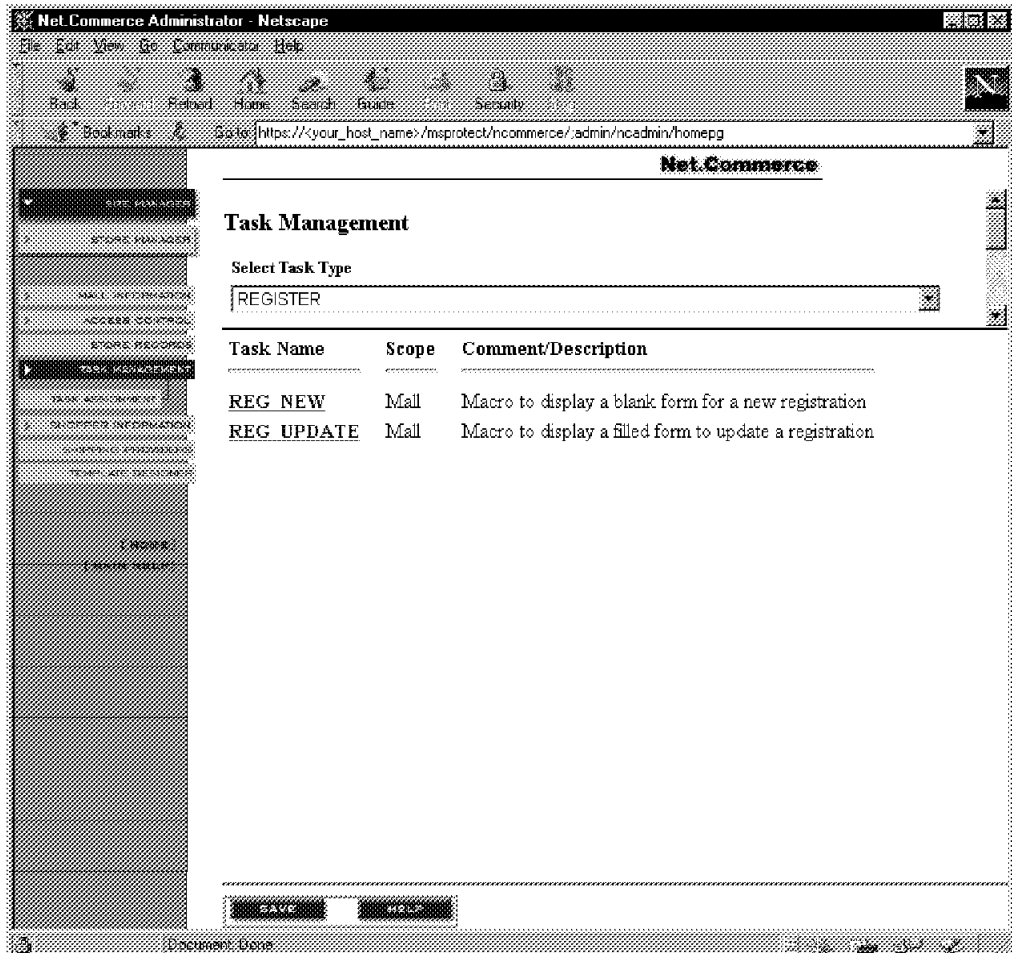


Figure 105. Net.Commerce Site Manager - REGISTER Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro. See Figure 108 on page 145.

10.2.4.5 Shipto Macros

These macros are used to define the shipping process.

For more information on Shipto macros, please refer to the online help at the following URL: http://<your_host_name>/nchelp/nav/rnavindx.htm

Store page macros

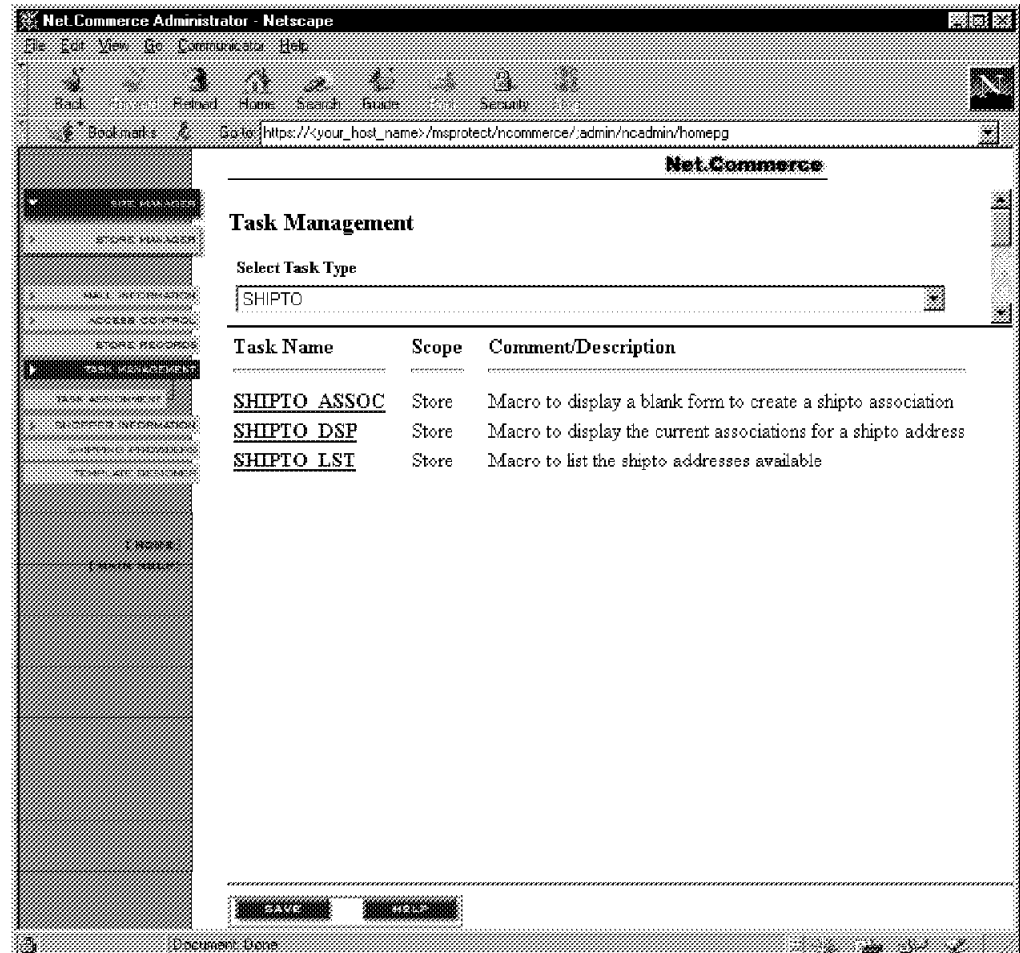


Figure 106. Net.Commerce Site Manager - SHIPTO Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro. See Figure 108 on page 145.

10.2.4.6 Shopcart Macros

These macros are used to define the shop cart process.

For more information on Shopcart macros, please refer to the online help at the following URL: http://<your_host_name>/nchelp/nav/rnavindx.htm

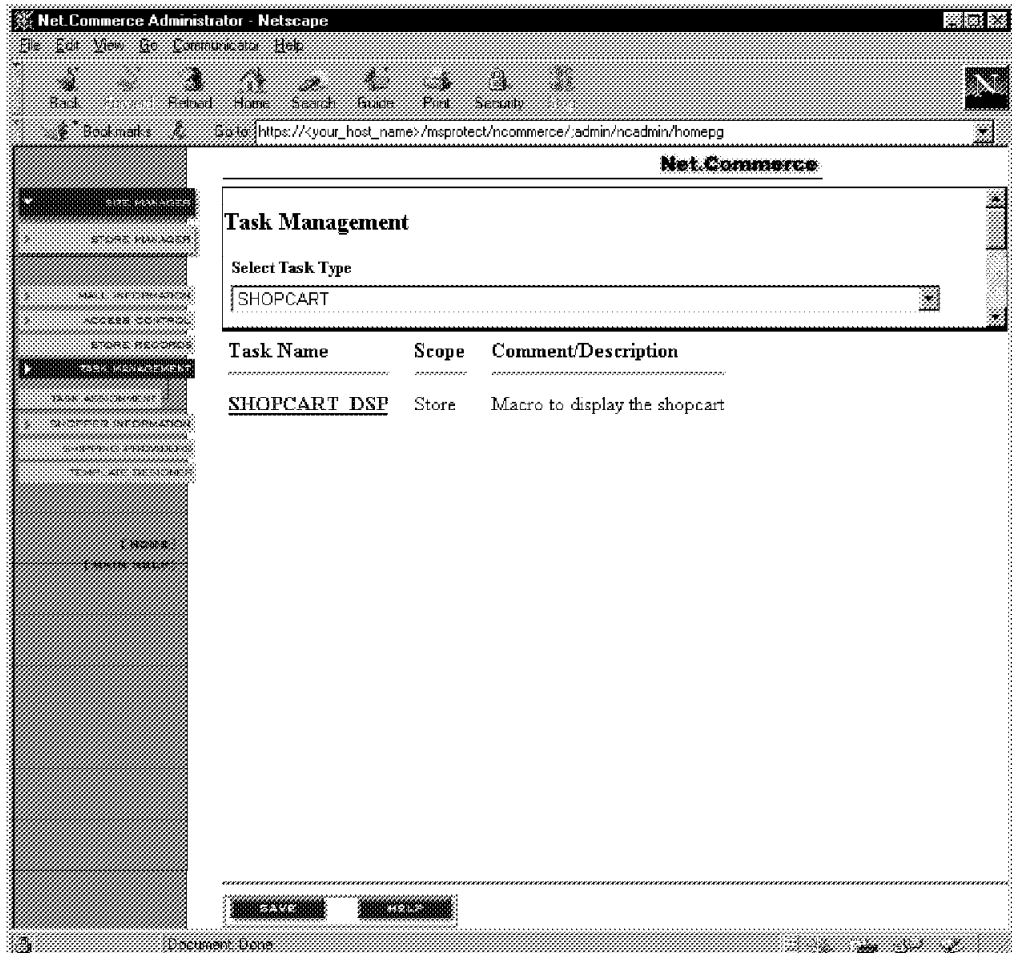


Figure 107. Net.Commerce Site Manager - SHOPCART Screen

Select a task from the lower frame and click on Task Assignment under Task Management to assign a customized macro. See Figure 108 on page 145.

10.2.4.7 Task Assignment

Choose the task you want to change, for example choose *ORDER*. A lower frame is added at the bottom of your panel listing all the available order macros (refer to Figure 104 on page 141). Choose *ORD_DSP_COM* for our example and click on **Task Assignment**. Figure 108 displays the macro name that is associated with that task; this task displays the completed orders for a given shopper.

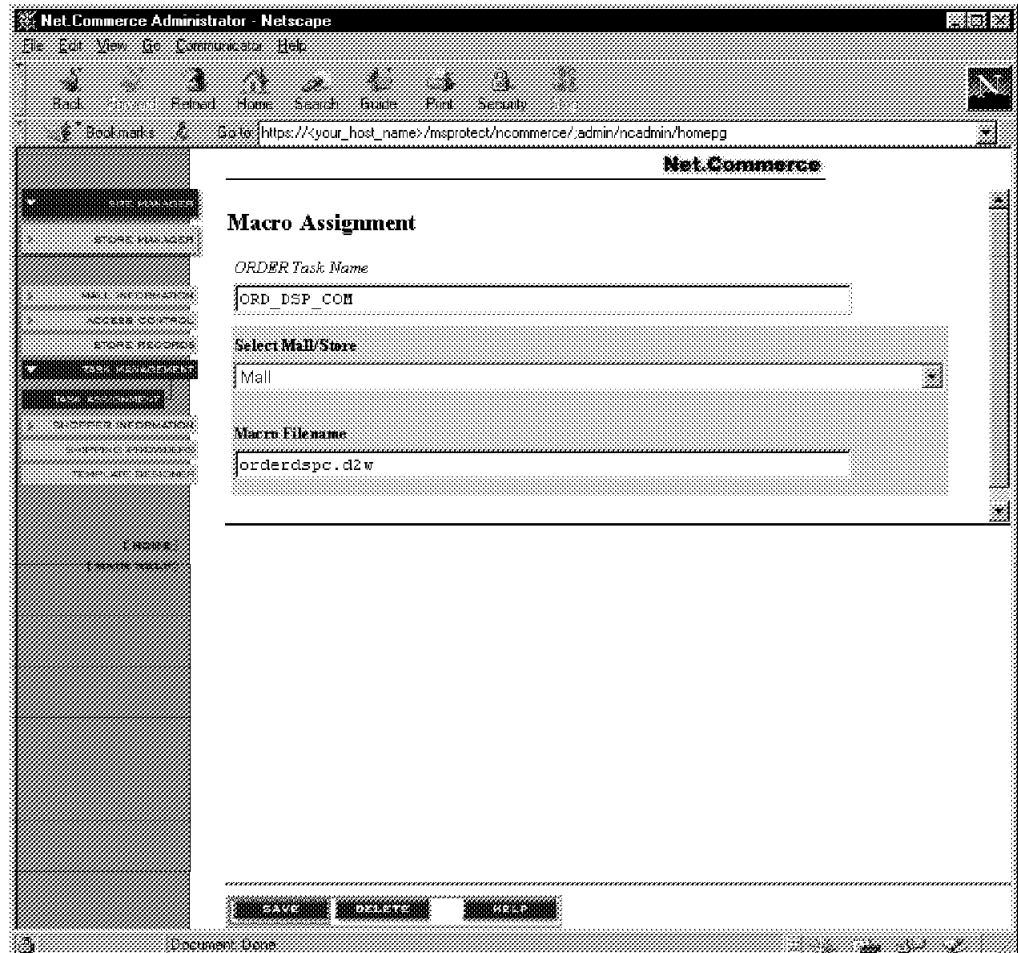


Figure 108. Net.Commerce Site Manager - Task Assignment Screen

10.2.5 Shopper Information

From the Site Manager main screen (Figure 92 on page 127), click on **Shopper Information**. Figure 109 and Figure 110 on page 147 show the information for shopper ID "Dalia" as entered in Figure 143 on page 199, Figure 144 on page 200 and Figure 145 on page 201.

Net.Commerce Administrator - Netscape

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Bookmarks Address Bar: https://your_host_name:/nsprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Shopper Information

Profile

Shopper's Login ID
Dalia

Shopper Type
Registered

Password
[]

Password Confirmation
[]

Title
Mrs

Last Name
Rady

First Name
Dalia

Middle Name/Initial
R

Company Name
IBM

Challenge Question
[]

Answer
[]

Navigation Bar: [ncadmin](#) | Dalia | Rady | Dalia | Rochester | MN | [SAVE](#) | [SEARCH](#) | [CLEAR](#) | [HELP](#)

Figure 109. Net.Commerce Site Manager - Shopper Information Screen 1

Note: When you click on Shopper Information, a sub-list (Address Book) is added under Shopper Information.

Net.Commerce Administrator - Netscape

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*Bookmarks: https://your_host_name:/nsiproduct/ncommerce/admin/hcadmin/homepg

Net.Commerce

SITE MANAGER

STORE MANAGER

MAIL INFORMATION

ACCESS CONTROL

STORE MANAGER

TAX INFORMATION

CUSTOMER INFORMATION

ADMIN TOOL

SHIPPING INFORMATION

PRODUCT INFORMATION

1 MORE
(VIEW HELP)

Answer

Custom Field 1

Custom Field 2

Last Visit

Last Order

Registration

Registration Last Updated

Cancellation

03/26/1998 18:59: 03/26/1998 18:59:

Contact Information

Address

3605 Highway 52 North

Dalia Rady Dalia Rochester MN

SAVE SEARCH CLEAR HELP

Document Done

Figure 110. Net.Commerce Site Manager - Shopper Information Screen 2

The SEARCH button can be used to search through the available shopper information (refer to page 133 for a detailed example on how to perform a search).

An administrator can modify shopper information, for example, reset a shopper's password.

Note: The custom fields can be used for merchant customization.

10.2.5.1 Address Book

Click on **Address Book** under Shopper Information to display/modify the shopper's address book.

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

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Bookmarks Status https://your_host_name/mprotect/ncommerce/admin/headmin/homepg

Net.Commerce

Shopper's Address Book

Address Type: Dalia's "Address Book" Addresses

Nick Name: Noel Update Time: 03/27/1998 12:59:

Title: Mr

Last Name: Claus First Name: Santa Middle Name/Initial: M

Address: North Pole High Street

City: White Place State/Province: North Pole

Noel North Pole High Street White Place North Pole

SAVE SEARCH CLEAR DELETE HELP

Figure 111. Net.Commerce Site Manager - Address Book Screen

10.2.6 Shipping Providers

A key part of an online shopping trip is arranging for the shipping of purchased products since shoppers cannot carry purchases home with them. This form can be used to create and maintain a list of shipping companies for the site. Store administrators can then select the shipping companies to be used by a store. From the Site Manager main screen (Figure 92 on page 127), click on **Shipping Providers**.

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Settings

Bookmarks Go to: https://your_host_name/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Shipping Service Providers

Select

Metropolitan Shipping - Ground

Carrier: Metropolitan Shipping Shipping Mode: Ground

Description: Courier

Custom

Custom Field 1

Custom Field 2

SAVE CLEAR DELETE HELP

Figure 112. Net.Commerce Site Manager - Shipping Services Screen

10.2.7 Template Designer

The Net.Commerce Template Designer is a graphical object-oriented editing tool that allows you to create Web pages for an online mall or store. It can be used to do the following:

- Create and update home pages, product pages and category pages.
- Design headers and footers for pages.
- Modify the supplied sample category and product templates.

From the Site Manager main screen (Figure 92 on page 127), click on **Template Designer**.

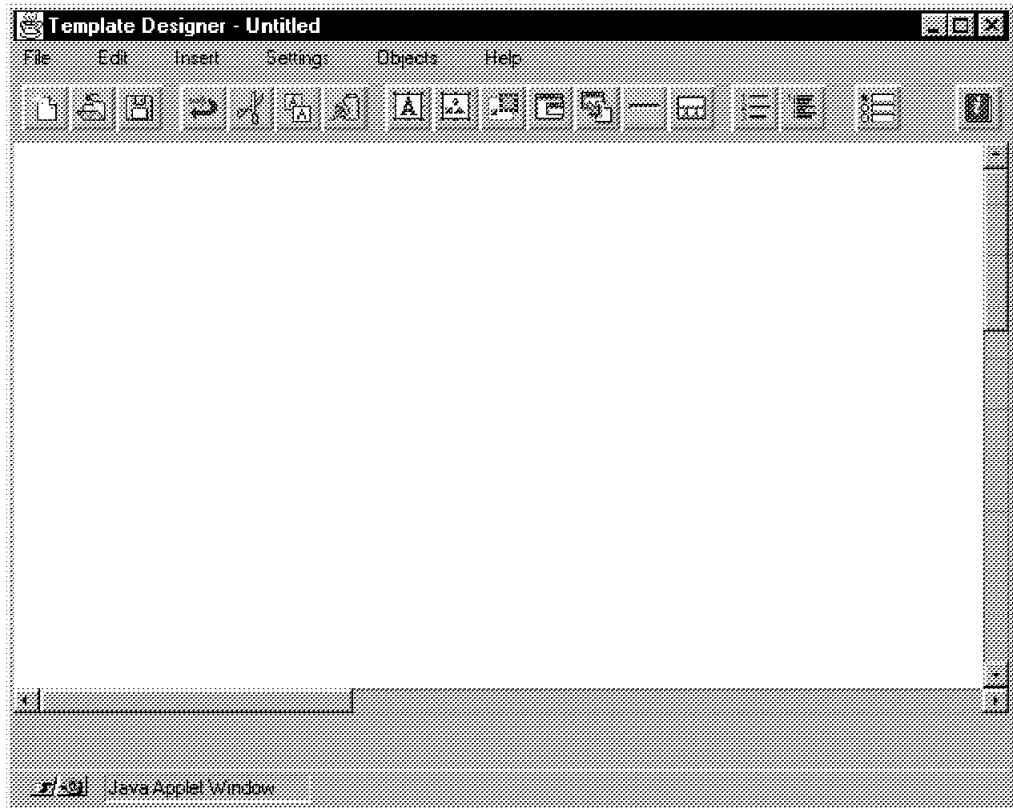


Figure 113. Net.Commerce Site Manager - Template Designer Screen

Select **File**→**Open** to open a supplied sample template. See Figure 114 on page 151.

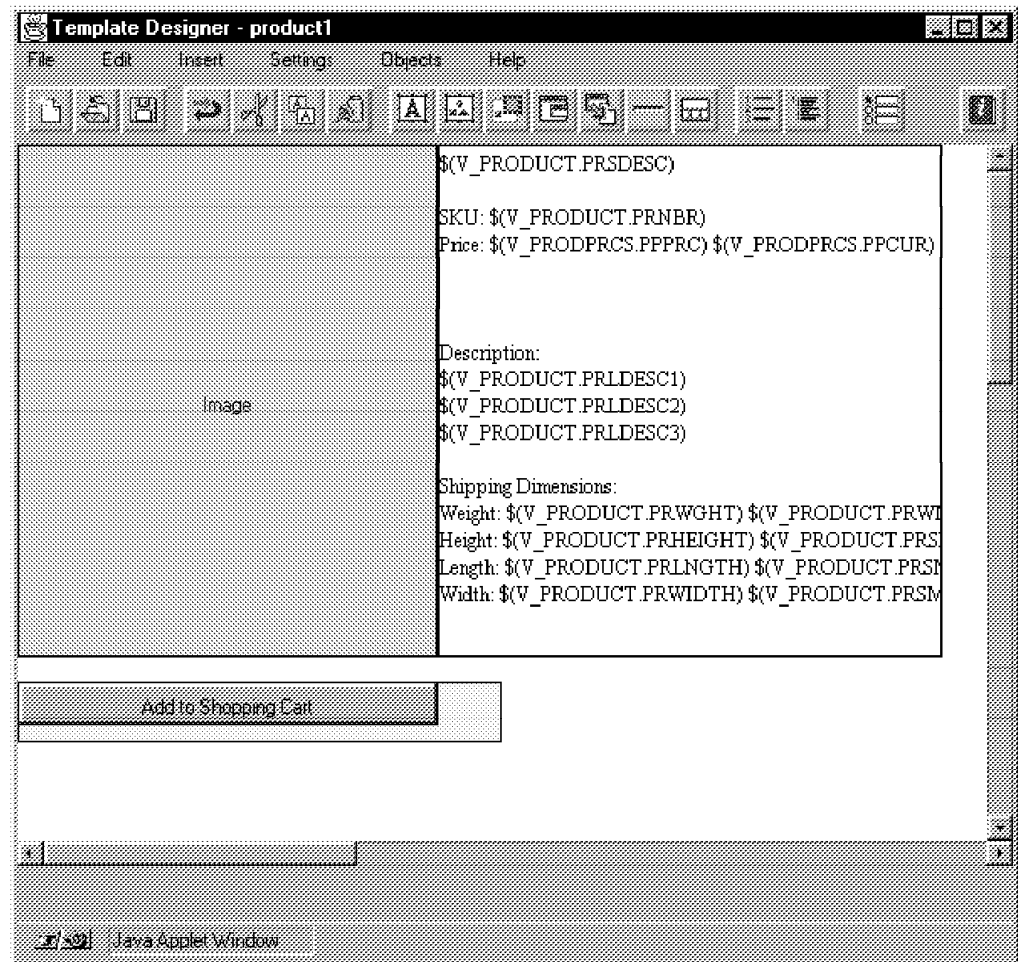


Figure 114. Net.Commerce Site Manager - Template Designer Sample

The purpose of the Template Designer is to help you create basic pages. For production requirements, you may need to perform additional customization using Net.Data macros.

10.3 Net.Commerce Store Manager

From the Net.Commerce Administrator main panel (Figure 91 on page 126), click on **Store Manager** to run the Store Manager module.

Using the Store Manager module you can:

- Create and maintain store pages, product categories, and shopper groups.
- Enter and update information about the store and its products or services.
- View information about shoppers, add shoppers to shopper groups, and assign numbers to shoppers if desired for record-keeping purposes.
- Delete stock from the store.

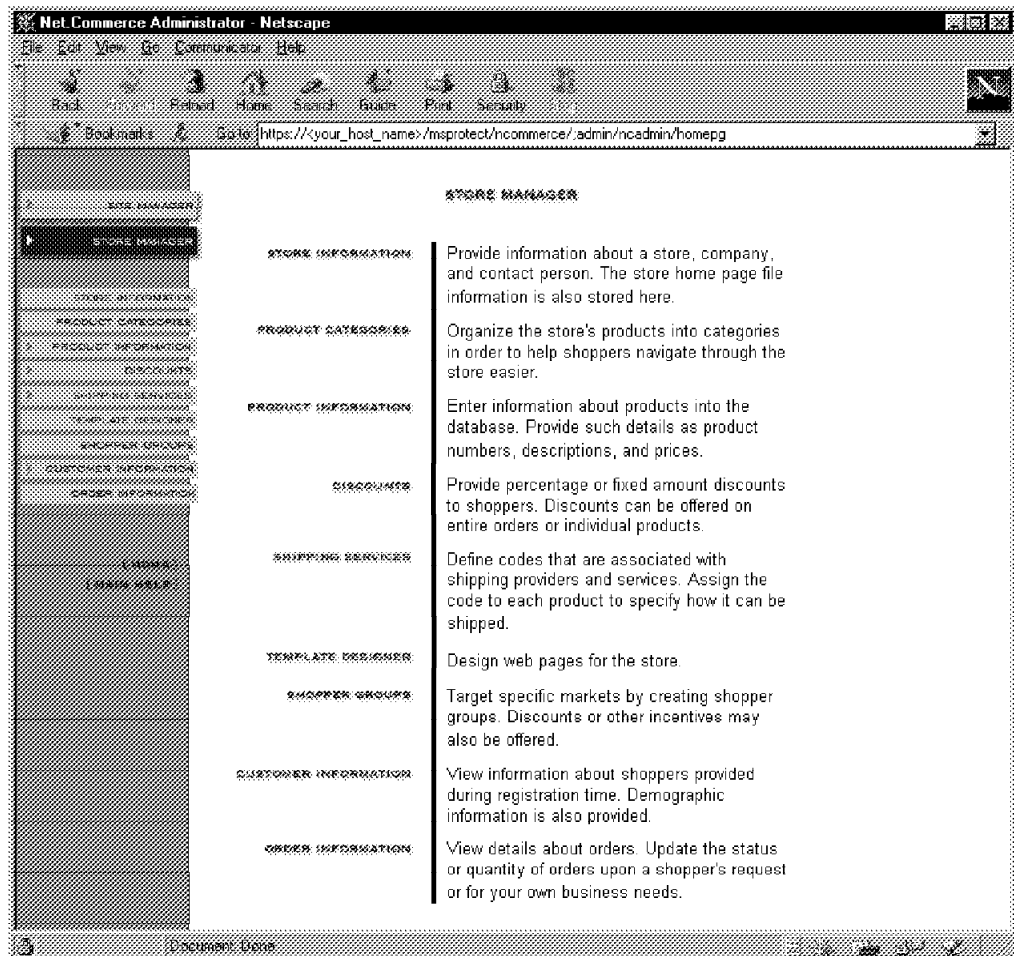


Figure 115. The Net.Commerce Store Manager - Store Information Screen 1

The following is a list of the Store Manager functions which allow you to perform the previously listed tasks:

- Store Information
- Product categories
- Product Information
- Discounts
- Shipping Services
- Template designer
- Shopper Groups

- Customer Information
- Order Information

In the following screens, you may find additional buttons at the bottom such as SAVE, SEARCH, CLEAR, DELETE, and HELP.

- SAVE** After filling in all the fields on the screen, press this button to add the newly entered record or update an existing one.
- SEARCH** To search all the available records for this module, ensure that all fields on the screen are clear (press CLEAR to do this) then press the SEARCH button.
To search an existing record, fill in the first field on the screen and press this button. Your screen is then divided into two frames to display the result in the lower frame; you can use the mouse to control the size of the lower frame. To display the attributes of one item of the list just click on it, and the attributes are shown in the upper frame of the screen.
- CLEAR** Press this button to clear all the fields on the screen.
- DELETE** Press this button to delete this item from your database.
- HELP** A detailed online help is shown.

10.3.1 Store Information

From the Store Manager main screen (Figure 115 on page 152), click on **Store Information**. Use this form to record details about stores or merchants who own stores.

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Address: https://your_host_name:/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Store and Merchant Information

Select Store

Basics

Store Information

Store Name

Basics

Store Description

Clothing for life!

Logo Thumbnail Image

/demomall/basicsm1.gif

Store Category

Men's Fashion

Currency

CAD

SAVE CLEAR HELP

Figure 116. The Net.Commerce Store Manager - Store Information Screen 1

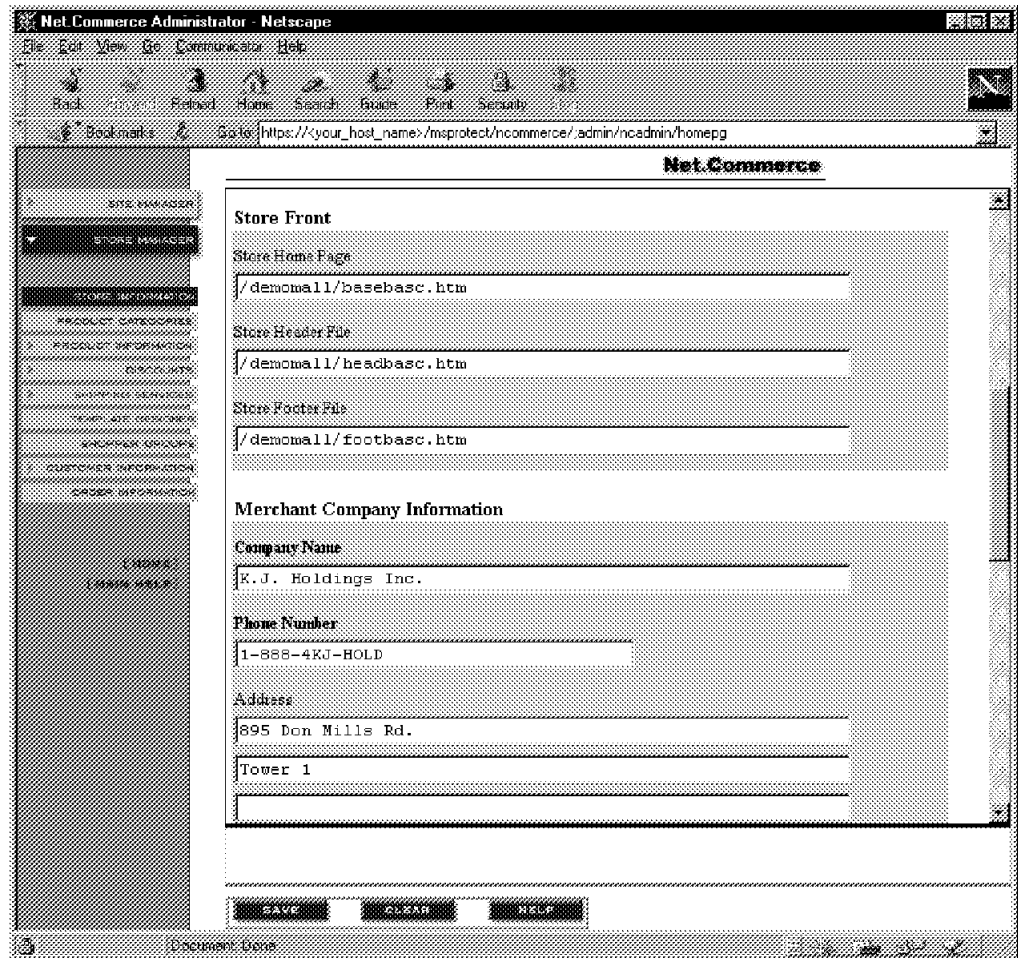


Figure 117. The Net.Commerce Store Manager - Store Information Screen 2

Net Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Guide Print Security

Bookmarks Site: https://your_host_name/misprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

1. SYS MANAGER

2. **STORE MANAGER**

3. STORE INFORMATION

4. PRODUCT CATEGORIES

5. PRODUCT INFORMATION

6. DISCOUNTS

7. SHIPPING SERVICES

8. MAILING SERVICES

9. MEMBER SERVICES

10. CUSTOMER INFORMATION

11. ORDER INFORMATION

(HOME)

10000 HELP

City
North York

State/Province
ON

Country
Canada

ZIP/Postal code
M3C 1G3

Merchant Contact Information

Last Name Fong	First Name James	Middle Name/Initial L.T.
-------------------	---------------------	-----------------------------

Contact Job Title
Owner

Phone Number (1) (555) 123-2067	Phone Number (2) 	Fax Number (555) 123-2067
------------------------------------	----------------------	------------------------------

E-mail or URL (1)
j1tfong@vnet.ibm.com

E-mail or URL (2)

Custom

SAVE CLEAR HELP

Document: Done

Figure 118. The Net.Commerce Store Manager - Store Information Screen 3

10.3.2 Product Categories

From the Store Manager main screen (Figure 115 on page 152), click on **Product Categories**. This form allows you to create a category tree in order to lay out a structure for your product line and customize navigation within your store. You can create, view, delete, copy and move categories within the tree, and list products within the categories.

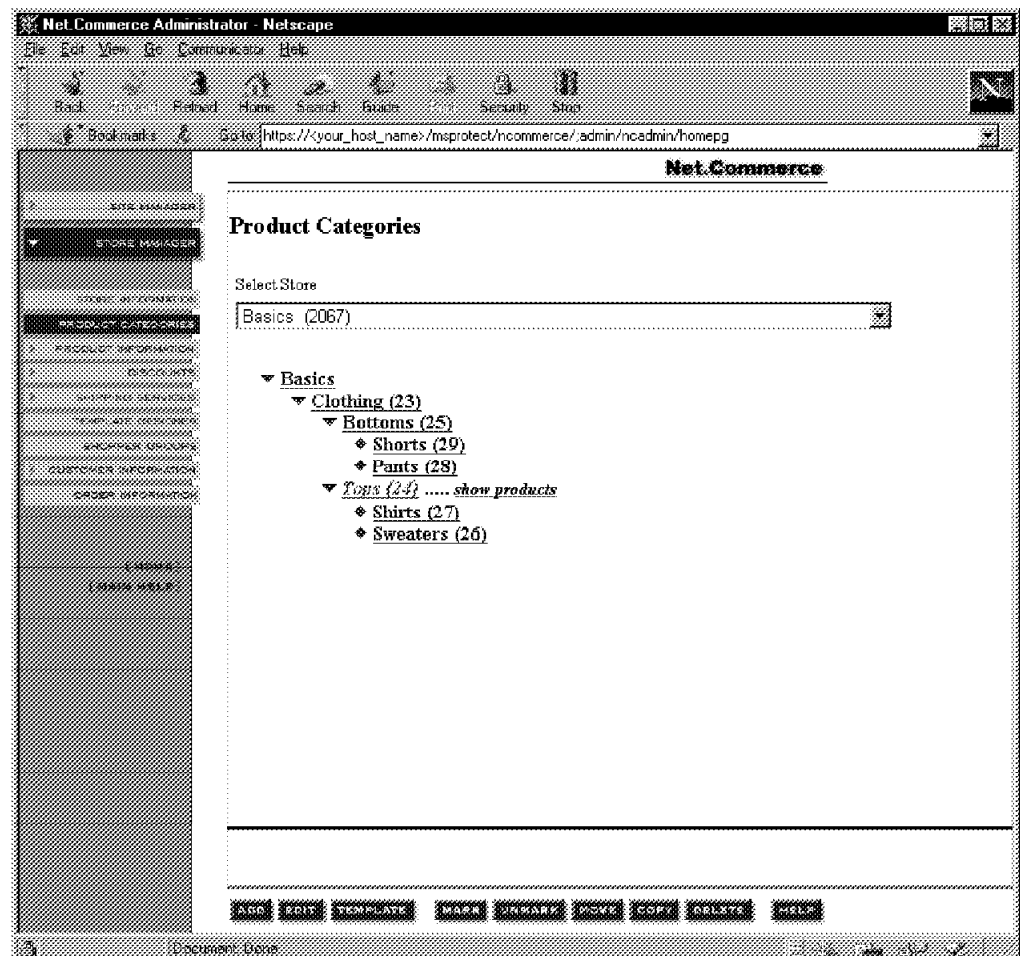


Figure 119. The Net.Commerce Store Manager - Categories Screen

To edit a category, select the item and press the **Edit** button. See Figure 120 on page 158.

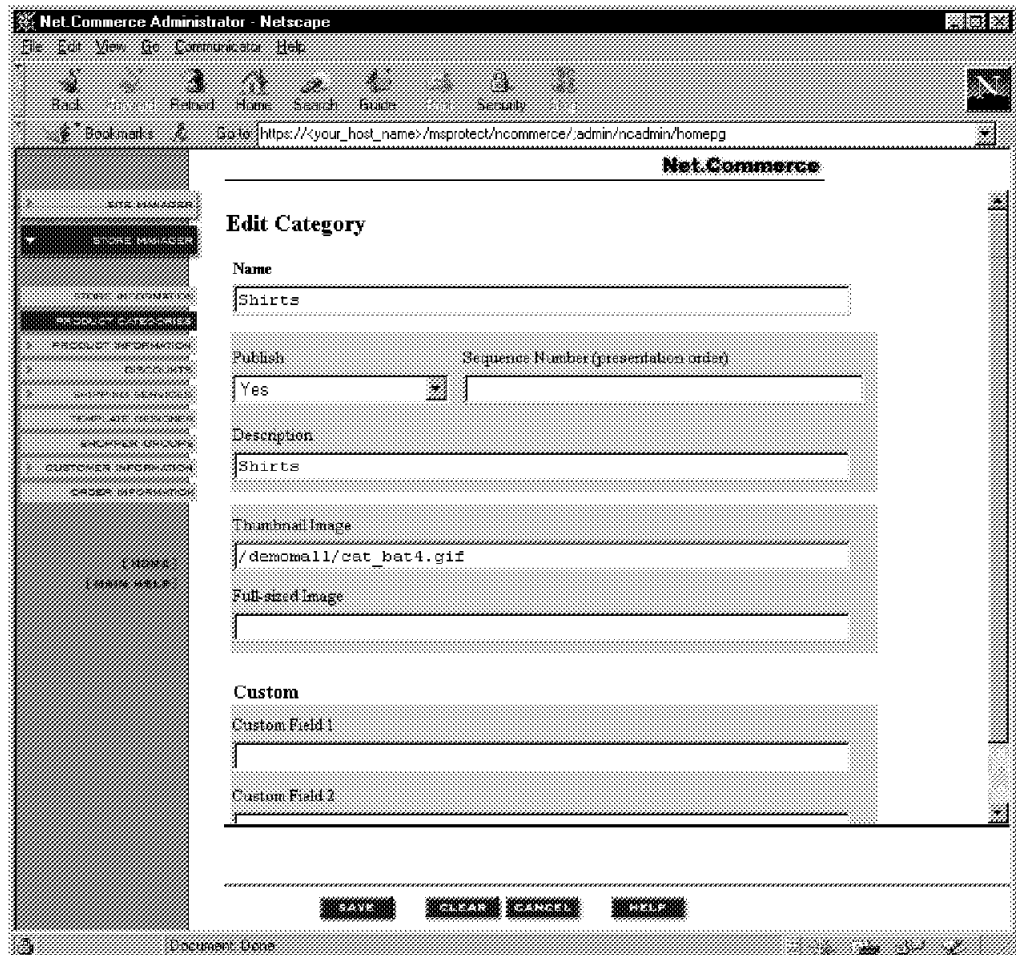


Figure 120. The Net.Commerce Store Manager - Edit Category Screen

10.3.3 Product Information

From the Store Manager main screen (Figure 115 on page 152), click on **Product Information**. Use this form to indicate specific details about products or items. Such information includes the store(s) that sell the product or item, unique reference numbers for identification, dimensions, descriptions and more.

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Find Security Exit

Bookmarks Address: https://your_host_name/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Product/Item Information

Select Store
Basics

Input For Product Number or Item SKU
Product 1-G4494A

Product/Item Reference Number
40

Parent Reference Number

UPDATE FORM

SELECT PARENT...

Product Number or Item SKU	Short Description
1-G4494A	Dress Pants
1-G4494B	Casual Pants
1-G4495A	Jogging Shorts
1-G4495B	Walking Shorts
1-G4496A	V-Neck Sweater
1-G4496B	Crew Neck Sweater
1-G4497A	T-Shirt
1-G4497B	Casual Shirt

SAVE SEARCH CLEAR DELETE HELP

Figure 121. The Net.Commerce Store Manager - Product Information Screen 1

Note: When you click on Product Information, a sub-list is added under Product Information:

- Attributes
- Prices
- Templates
- Parent categories

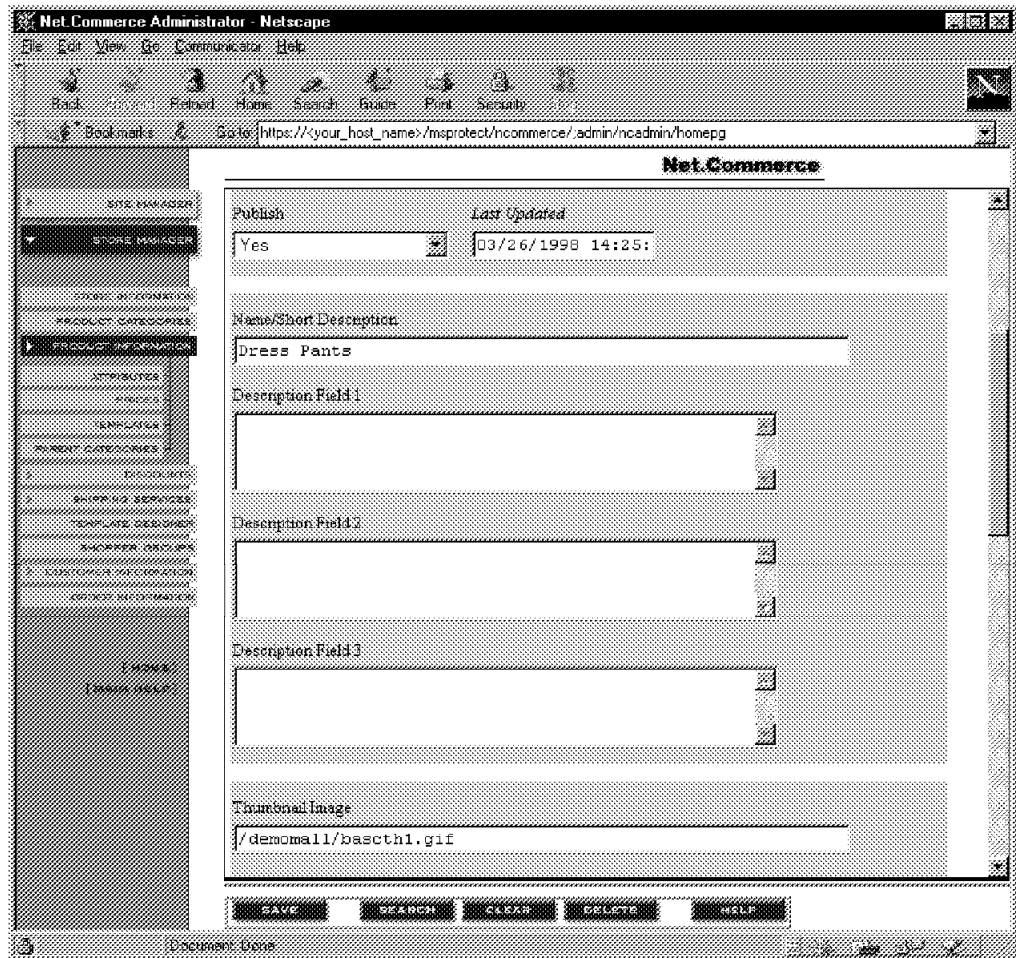


Figure 122. The Net.Commerce Store Manager - Product Information Screen 2

Net Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Guide Print Settings

Bookmarks Site: https://your_host_name/insprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

SYN MANAGER

STORE MANAGER

ORDER MANAGER

PRODUCT CATEGORIES

PRODUCT INFORMATION

ATTRIBUTES

PRICES

EMPLINGS

PARENT CATEGORIES

DISCOUNTS

SHIPPING SERVICES

TAXPLANS DESIGNER

SHOPPER GROUPS

CUSTOMER INFORMATION

ADDRESS INFORMATION

TOOLS

ADMIN HELP

Full-sized image

/demomall/bascful.gif

Soft Goods URL

Product Shipping Code

E

Special Information

Tax Code

Inventory

313

Change Inventory (+/-)

Availability Date

03/26/1998

Shipping Dimensions

Unit of Measure

in

Length

0.7500

Width

0.3500

Height

0.0100

SAVE SEARCH CLEAR DELETE HELP

Document Done

Figure 123. The Net.Commerce Store Manager - Product Information Screen 3

Net Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Guide Print Settings

Bookmarks Site: https://your_host_name:/nsprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

313 03/26/1998

Shipping Dimensions

Unit of Measure

in Length: 0.7600

Width: 0.3600

Height: 0.0100

Unit of Weight

kg Weight: 0.8300

Custom

Custom Field 1 Custom Field 2 Custom Field 3

Custom Field 4

Custom Field 5

SAVE SEARCH CLEAR DELETE HELP

Document: Done

Figure 124. The Net.Commerce Store Manager - Product Information Screen 4

10.3.4 Discounts

From the Store Manager main screen (Figure 115 on page 152), click on **Discounts**. Use this form to identify which products or items you wish to discount and to assign a code that specifies details of the discount.

Net.Commerce Administrator - Netscape

File Edit View Go Communicate Help

Back Forward Reload Home Search Guide Print Security

Bookmarks Address: https://your_host_name:/nsprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

STORE MANAGER

DISCOUNTS

Discount Code Assignment

Select Store: Basics

Search Fields:

Product # or Item SKU: 1-G4494A Product Name / Short Description: Dress Pants

Selected Products/Items: 1-G4494A Discount Code: - None -

REMOVE EMPTY

1-G4494A	Dress Pants
1-G4494B	Casual Pants

SAVE SEARCH CLEAR HELP

Figure 125. The Net.Commerce Store Manager - Discount Screen

When you click on Discounts, a sub-list is added under Discounts:

- Define codes
- Scales/ranges

Select **Define Codes** under Discounts to define discount codes.

10.3.5 Shipping Services

Net.Commerce provides shipping functions that enable you to define how each product in your store can be shipped. Shoppers can then choose from shipping modes made available to them for the products they purchase. Use the Shipping Services form to create a list of shipping carriers and modes for your store. From the Store Manager main screen (Figure 115 on page 152), click on **Shipping Services**.

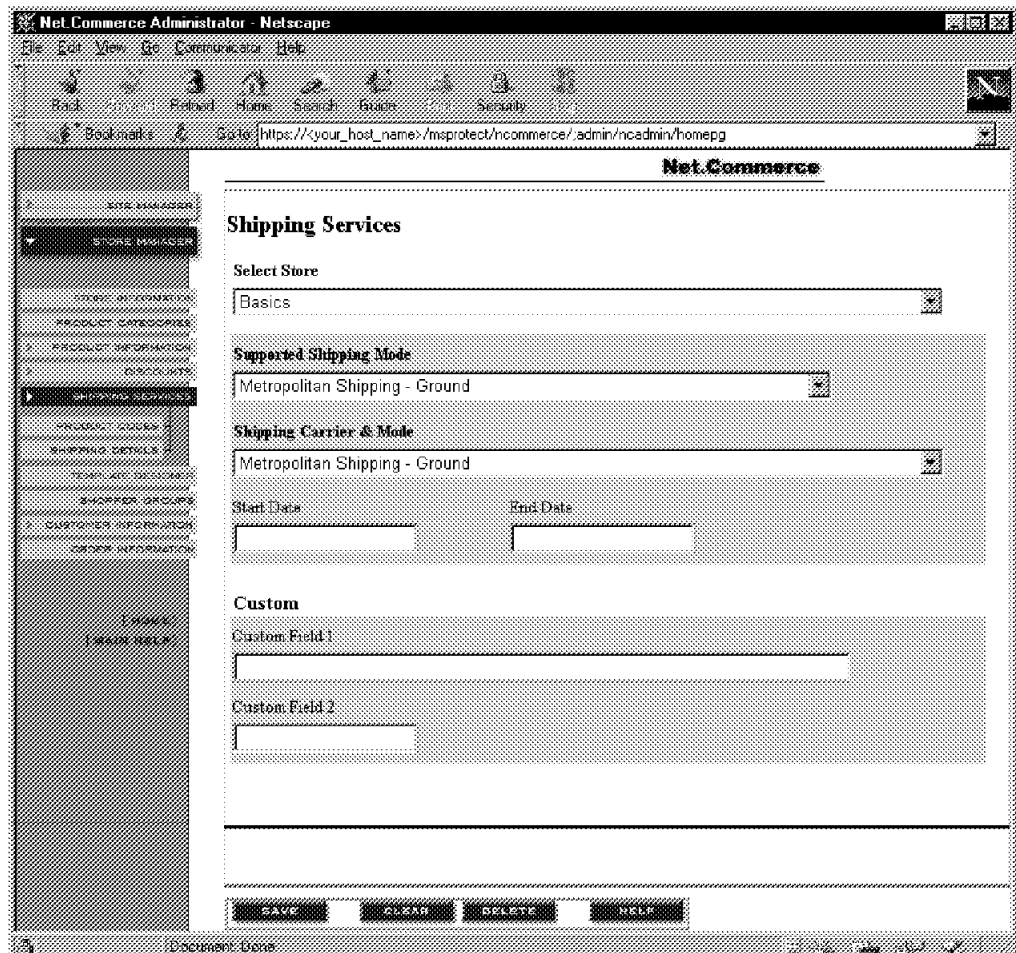


Figure 126. The Net.Commerce Store Manager - Shipping Services Screen

When you click on Shipping Services, a sub-list is added under Shipping Services:

- Product codes
- Shipping details

The shipping functions provided in Net.Commerce are designed to suit many online purchasing applications. They can, however, be customized. Also, you may be able to integrate an existing automated shipping application instead of using the one that is supplied in Net.Commerce.

10.3.5.1 Product Shipping Codes

Use the Product Shipping Codes form to create shipping codes for specific carriers and modes, select calculation methods and assign a shipping code to each product in the database. Select **Product Codes** under Shipping Services to define shipping codes and methods for calculating shipping charges.

Net.Commerce Administrator - Netscape

File Edit View Go Communications Help

Back Forward Refresh Home Search Find Print Security

Bookmarks Date: https://your_host_name/misprotect/vcommerce/admin/headmin/homepg

Net.Commerce

Product Shipping Codes

Supported Product Shipping Code

Product Shipping Code

Shipping Code Description

Custom

Custom Field1

Calculation Method

(Q1) Quantity - Range - Total
(Q2) Quantity - Range - Unit
(Q3) Quantity - Cumulative - Total
(Q4) Quantity - Cumulative - Unit
(W1) Weight - Range - Total
(W2) Weight - Range - Unit
(W3) Weight - Cumulative - Total
(W4) Weight - Cumulative - Unit

SAVE CLEAR DELETE HELP

Document Done

Figure 127. The Net.Commerce Store Manager - Product Shipping Codes Screen

10.3.5.2 Shipping Details

Select **Shipping Details** under Shipping Services to associate shipping codes with shipping modes and to specify shipping charge calculation methods.

Net.Commerce Administrator - Netscape

File Edit View Go Communicate Help

Back Forward Home Search Guide Print Security

Bookmarks

State: https://your_host_name/ncprotect/nccommerce/admin/hcadmin/homepg

Net.Commerce

Shipping Details

Product Shipping Code
E (Q1)

Shipping Mode
Metropolitan Shipping - Ground (Effective from 04/02/1998 to 04/02/1998)

Range: minimum
10.00

Range: maximum
20.00

Charge (Total Cost)
5.00

Rate (Unit Cost)

Start Date

End Date

Country
CAD

Jurisdiction

Custom
Custom Field 1

Metropolitan Shipping - Ground - E	10.00	20.00
------------------------------------	-------	-------

CREATE UPDATE SEARCH CLEAR DELETE HELP

Figure 128. The Net.Commerce Store Manager - Shipping Details Screen

10.3.6 Template Designer

Please see 10.2.7, "Template Designer" on page 150 for information on the Net.Commerce Template Designer.

10.3.7 Shopper Groups

From the Store Manager main screen (Figure 115 on page 152), click on **Shopper Groups** to create shopper groups for specific shoppers.

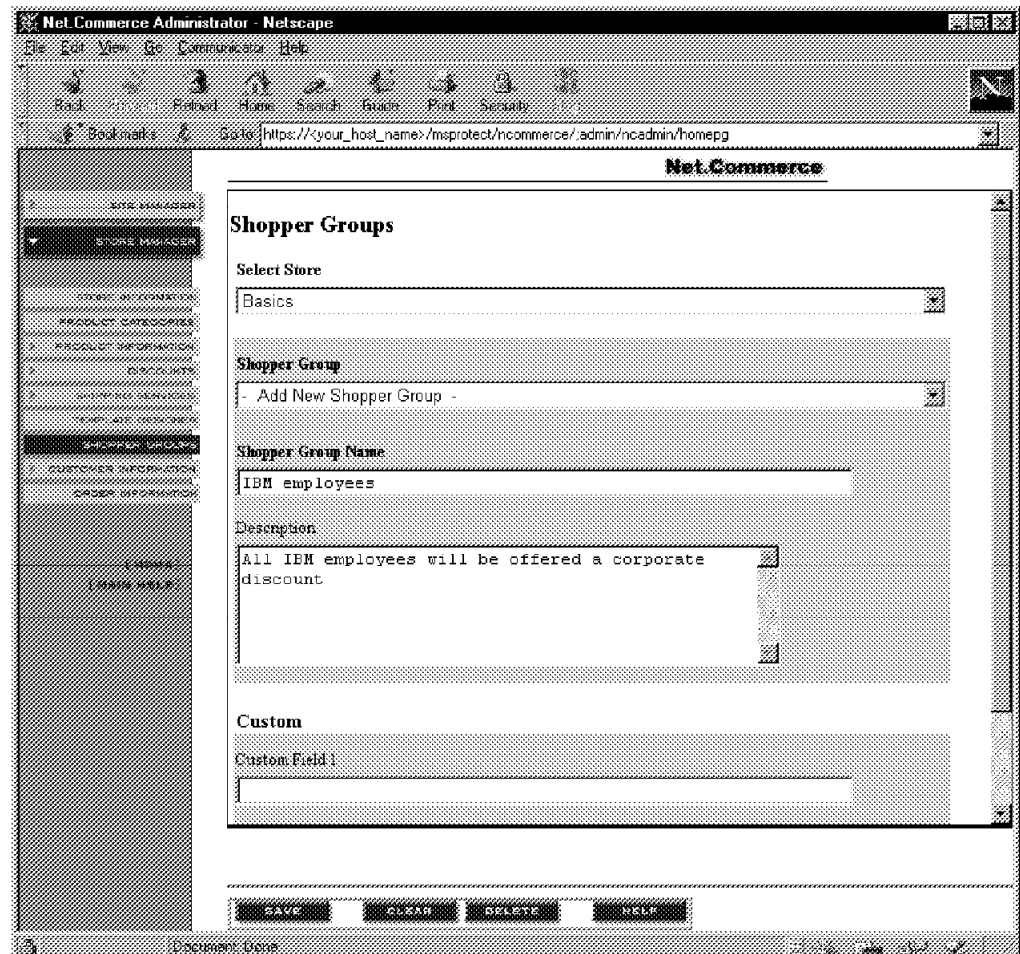


Figure 129. The Net.Commerce Store Manager - Shopper Groups Screen

In the above example, we define a group for IBM employees.

10.3.8 Customer Information

From the Store Manager main screen (Figure 115 on page 152), click on **Customer Information** to view the information entered by shoppers when they register. Store administrators can view the information and use the fields for searches but they cannot update the form. Only site administrators can update the form (see 10.2.5, "Shopper Information" on page 146).

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Settings

Bookmarks Address Book Site Map

Status: https://your_host_name/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Customer Information

Profile

Shopper's Login ID: Dalia

Shopper Type: Registered

Password:

Password Confirmation:

Title: Mrs

Last Name: Rady

First Name: Dalia

Middle Name/Initial: R

Company Name: IBM

Challenge Question:

Answer:

Dalia Rady Dalia Rochester MN

SEARCH CLEAR HELP

Figure 130. The Net.Commerce Store Manager - Customer Information Screen

When you click on Customer Information, a sub-list is added under Customer Information:

- Address book
- Customer details

10.3.8.1 Address Book

Select **Address Book** under Customer Information to view information in the customer's address book. Store administrators can view the information and use the fields for searches but they cannot update the form. Only site administrators can update the form (see 10.2.5.1, "Address Book" on page 148).

Net.Commerce Administrator - Netscape

File Edit View Go Communicate Help

Back Forward Reload Home Search Find Print Security

Bookmarks Date: https://your_host_name/mprotect/ncommerce/admin/ncadmin/homepg

Net.Commerce

Customer's Address Book

Address Type
Dalia's "Address Book" Addresses

Nick Name
Dalia

Update Time
03/26/1998 18:59:

Title
Mrs

Last Name
Rady

First Name
Dalia

Middle Name/Initial
R

Address
3605 Highway 52 North

City
Rochester

State/Province
MN

Dalia 3605 Highway 52 North Rochester MN

SEARCH CLEAR HELP

Document Done

Figure 131. The Net.Commerce Store Manager - Address Book Screen

10.3.8.2 Customer Details

Select **Customer Details** under Customer Information to assign shoppers to shopper groups.

Net.Commerce Administrator - Netscape

File Edit View Go Communicate Help

Back Forward Home Search Guide Print Security

Bookmarks

State: https://your_host_name:/nsprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

STORE MANAGER

CUSTOMER INFORMATION

Product Categories

Product Information

Discounts

Shipping Services

Payment Options

Shopper Groups

CUSTOMER INFORMATION

Customer Details

Select Store

Basics

Shopper's Login ID

Dalia

Customer Number

Shopper Group

IBM Employees

Custom

Custom Field 1

SAVE SEARCH CLEAR DELETE HELP

Figure 132. The Net.Commerce Store Manager - Customer Detail Screen

In the example above added "Dalia" to the Shopper Group we defined in Figure 129 on page 167.

10.3.9 Order Information

From the Store Manager main screen (Figure 115 on page 152), click on **Order Information** to view information on orders placed. The Order Name, Order Status, and Payment Method fields can be modified. The other fields can be used for search purposes only.

Net.Commerce Administrator - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security

Bookmarks Address: https://your_host_name:/msprotect/ncommerce/admin/hcadmin/homepg

Net.Commerce

Orders

Select Store

Basics

Order Information

Order Name: 1 Date: 03/31/1998 Match Date?: Exactly

Order Status: C Order Last Updated: 03/31/1998 Match Date?: Exactly

Payment Method: ANEX

Subtotal: 29.99

Tax: 4.49

Shipping Charges: 5.00

Shipping Tax:

Grand Total: 39.48

Shopper Information

1	1	Dalia Rady	29.99	C
---	---	------------	-------	---

SEARCH CLEAR UPDATE HELP

Figure 133. The Net.Commerce Store Manager - Order Information Screen

To obtain information on all orders for a store, ensure that all the fields on the Orders form are blank (press the CLEAR button), select the store from the Select Store drop-down list, enter information into one or more search fields on the form, then press the SEARCH button. All orders that match the specifications you entered are listed in the lower frame of the screen. Click on the one you wish to view to display its attributes in the lower frame of the screen.

10.4 Populating the Net.Commerce Database

In this section, we look at the options available for populating the Net.Commerce database when first setting up an online store.

When a Net.Commerce instance is created, the database created has sufficient information in it to allow the mall to be administered but it has no product/category/price information unless the option was taken to install the demo mall.

The Net.Commerce database tables contain all the information Net.Commerce needs to store about the mall and its operation, such as products, categories and prices. Initially, however, these product/category/price tables are empty, so this information must be fed into the database. This information can be added to the database from the Net.Commerce administrator screens. However, if there is a large amount of data to be added to the database, doing this manually through the administrator screens may not be practical. To allow for this, Net.Commerce provides a mass import utility. Alternately, another utility could be used to populate the database.

10.4.1 Mass Import

Mass import is a utility supplied with Net.Commerce that allows the Net.Commerce database to be populated from preformatted data in a text file. This utility is used if the option is chosen to install the demo mall when configuring a Net.Commerce instance.

The mass import utility allows you to populate the Net.Commerce database with information about categories and products. The utility imports data from a delimited flat file on the IFS into the product-related tables in the DB2 database. The product-related tables contain information about categories, products, items, and their interrelationships. These tables are:

- CATEGORY (Category)
- CATESGP (Shopper Group Category Template)
- CGRYREL (Category Relationship)
- PRODUCT (Product)
- CGPRREL (Category Product Relationship)
- PRODDSTATR (Product Distinct Attribute)
- PRODATR (Product Attribute)
- PRODPRCS (Product Price)
- PRODSGP (Shopper Group Product Template)

The mass import utility simplifies the process of importing data in the following ways:

- It automatically generates reference numbers to prevent referential integrity errors.
- It automatically checks whether or not records exist in the database. If a record exists, it updates the record; otherwise it inserts a new record.

The mass import utility is ideal for importing large quantities of product data into the database tables. To insert or update individual records in the database, you should use the forms provided by the Net.Commerce administrator function.

Note

Before you can use the mass import utility, you must have already created a store using the Store Records form. See Figure 100 on page 136.

To import product and category data, there are two steps involved:

1. Create an import file.
2. Import data using the mass import utility.

10.4.1.1 Create an Import File

Before you can use the mass import utility, you must create an ASCII import file that contains the commands and the data with which to populate the product-related tables. The file is treated as a continuous string of transactions, with the columns and rows of data separated by delimiters. The file must be created as a text file residing on the IFS. It is probably easiest to use Client Access Enhanced and edit the file directly on the IFS using a Windows text editor. Alternately, you can use FTP to transfer the file into the IFS.

The following commands can be included in the import file:

- #COLUMNDELIMITER - Defines the character that is used as a column delimiter.
- #ROWDELIMITER - Defines the character that is used as a row delimiter.
- #STORE - Specifies the name of the store for which the product and category records are being created.
- #CATEGORY - Populates the Category table and the Category Relationship table.
- #CATESGP - Populates the Shopper Group Category Template table.
- #PRODUCT - Populates the Product table.
- #CGPRREL - Populates the Category Product Relationship table.
- #PRODDSTATR - Populates the Product Distinct Attribute table.
- #PRODATR - Populates the Product Attribute table.
- #PRODPRCS - Populates the Product Price table.
- #PRODSGP - Populates the Shopper Group Product Template table.

All of the above commands can be specified more than once. For example, if you define the row delimiter as “,” and then later in the file you need to add product transactions that contain this delimiter in the product descriptions, you can define a new row delimiter for all of the affected product transactions.

Note: Following each #STORE command, you must add the product and category commands to the import file in the sequence shown above. If you do not follow this sequence, referential integrity problems may result.

You can type the commands in uppercase, lowercase, or mixed case. For example:

- #PRODATR
- #prodatr
- #ProdAtr

If you want to leave a column in a transaction empty, you must still insert delimiters to create a placeholder for that column. If you insert a new record into the database and you leave a column empty, if a default value exists as specified in the database schema the mass import utility will automatically insert the default value into the column. If you update a record and you leave a

column empty, the existing column value will remain. Columns are updated only when you specify new values.

There may be an existing database that you want to import into Net.Commerce. In this case, you have to export the data from the tables in that database into a file that conforms to the format required by mass import. No utility is provided with Net.Commerce that will aid this step.

Mass import can be run multiple times against the same tables. If importing data from a complex set of tables into multiple tables in Net.Commerce, it may be easier to create multiple input files for the same store and run mass import for each one.

Note: Do not import double quotes (") into the database.

Import File Example: When you import the demo data into a Net.Commerce instance, the full name of the import file used is /QIBM/ProdData/NetCommerce/MRI2924/demodata.in. The following few lines are extracted from the demodata.in file:

```
#STORE;61xth Avenue
#CATEGORY;6th Avenue Department Store;6th Avenue;6th Avenue Department Store;;;1;;;
#CATEGORY;Hardware;Hardware;Hardware;;/demomall/cat_hat1.gif;;1;/demomall/headhard.gif;;6th Avenue Department Store;
#CATEGORY;Computers;Computers;Computers;;/demomall/cat_cot1.gif;;1;/demomall/headcomp.gif;;6th Avenue Department Store;
#CATEGORY;Bottoms;Bottoms;Bottoms;;/demomall/cat_clt5.gif;/demomall/cat_clf5.gif;1;/demomall/headclot.gif;;Clothing;
#CATEGORY;Tops;Tops;Tops;;/demomall/cat_clt2.gif;/demomall/cat_clf2.gif;1;/demomall/headclot.gif;;Clothing;
#CATEGORY;Sweaters;Sweaters;Sweaters;;/demomall/cat_clt3.gif;/demomall/cat_clf3.gif;1;/demomall/headclot.gif;;Tops;
#CATEGORY;Shirts;Shirts;Shirts;;/demomall/cat_clt4.gif;/demomall/cat_clf4.gif;1;/demomall/headclot.gif;;Tops;
#CATEGORY;Shorts;Shorts;Shorts;;/demomall/cat_clt7.gif;/demomall/cat_clf7.gif;1;/demomall/headclot.gif;;Bottoms;
#CATEGORY;Pants;Pants;Pants;;/demomall/cat_clt6.gif;/demomall/cat_clf6.gif;1;/demomall/headclot.gif;;Bottoms;
#STORE;Basics
#CATEGORY;Clothing;Clothing;Clothing;;/demomall/cat_bat1.gif;;1;;;
#CATEGORY;Tops;Tops;Tops;;/demomall/cat_bat2.gif;;1;;;Clothing;
#CATEGORY;Bottoms;Bottoms;Bottoms;;/demomall/cat_bat5.gif;;1;;;Clothing;
#CATEGORY;Sweaters;Sweaters;Sweaters;;/demomall/cat_bat3.gif;;1;;;Tops;
#CATEGORY;Shirts;Shirts;Shirts;;/demomall/cat_bat4.gif;;1;;;Tops;
#CATEGORY;Pants;Pants;Pants;;/demomall/cat_bat6.gif;;1;;;Bottoms;
#CATEGORY;Shorts;Shorts;Shorts;;/demomall/cat_bat7.gif;;1;;;Bottoms;
#STORE;NetAway
#CATEGORY;NetAway Travel Shop;NetAway;NetAway Travel Shop;;;1;;;
#CATEGORY;Barbados - Activities;Barbados - Activities;Barbados - Activities;;;1;;;NetAway Travel Shop;
#STORE;61xth Avenue
#PRODUCT;046-546R;;Regular Wrench;Made of high quality steel with custom grip. SAE sized 11 pc combination set. 5/16 to 7/8 inc...
#PRODUCT;91-123H;;Claw Hammer;Styled with slanted front and heat-treated head. Steel handle with cushion grip;;/demomall/hard...
#PRODUCT;91-648B;;Ballpein Hammer;2-1b steel fabricated with polished head. Hickory wood handle;;;/demomall/hardth3.gif;/demom...
#PRODUCT;88-617-3V;;Watering Can;10L fine quality molded plastic, solid grip. Green only;;;/demomall/hardth6.gif;/demomall/har...
#PRODUCT;288-455-2V;;Garden Hose;1/2 inch nylon fortified, economy rubber hose;;;/demomall/hardth5.gif;/demomall/hardfu5.gif;1...
#PRODUCT;288-455-2V10;288-455-2V;Garden Hose 10 ft.;Garden Hose 10', 1/2 inch nylon fortified, economy rubber hose;;;/demomall...
#PRODUCT;288-455-2V15;288-455-2V;Garden Hose 15 ft.;Garden Hose 15', 1/2 inch nylon fortified, economy rubber hose;;;/demomall...
```

Notice that in the listing above there are many store directives, each populating a store in the demonstration mall -"Metropolitan Mall". A #STORE directive tells the mass import utility that the lines following it, until the next #STORE directive, are all for the store indicated. Mass import ensures that the correct referential integrity constraint information is generated so that more than one store can have the same category and product. A #STORE directive for a store can appear more than once in the file. In the extract for the example, the directive "#STORE;61xth Avenue" appears more than once, first for category information and then again for product information.

Each store directive and the lines following it until the next #STORE directive can be separated into a separate input file for mass import. Thus, if you are creating these files from an existing database, you can generate one import file for all the categories in each store from one set of tables and then generate another input file for all the products in each store. However, you must make sure that no referential integrity constraints are violated by keeping the order of importing correct as discussed earlier; you should not, for example, attempt to insert a new product before inserting the category it goes under.

10.4.1.2 Using the Mass Import Utility

Once you have completed the import file, you can run the mass import utility.

Before calling the mass import utility, you need to know the name of the local or remote database, as defined in the relational database directory of the AS/400.

To work with database directory entries, you use the command:

```
WRKRDBDIRE
```

This brings up the following screen:

```
Work with Relational Database Directory Entries

Position to . . . . .

Type options, press Enter.
  1=Add  2=Change  4=Remove  5=Display details  6=Print details

Option  Relational      Remote
       Database        Location   Text
-----
  _     MALL_DB         *LOCAL    RDB entry for Mall DB
  _     ROCH_DB         ROCHESTER RDB entry for IBM Rochester

Bottom
F3=Exit  F5=Refresh  F6=Print list  F12=Cancel
(C) COPYRIGHT IBM CORP. 1980, 1998.
```

Figure 134. WRKRDBDIRE. Checking the location of a relational database.

If you are using the local database, then the relational database name corresponding to the location *LOCAL is the name of the database you use. Otherwise, you use the RDB name corresponding to the remote location you want.

On the AS/400, the command to invoke the mass import utility is:

```
IMPNCDATA INSTANCE(instance_name) PASSWD(password) INFILE(infile)
          DATABASE(database) LOG(log_file) ERROR(error_file)
```

Where:

Instance_name The name of the Net.Commerce instance into which the data will be imported.

Password The Net.Commerce instance database password (as entered in Figure 29 on page 59).

infile The name of the file that contains the product and category data to be imported. It can be either a database file member or a stream file. Its path name must conform to the IFS directory naming conventions. For example, QSYS.LIB/LIBA.LIB/FILEA.FILE/MBRA.MBR is the form required by the QSYS.LIB file system.

- database** The name of the database into which the data is being imported. (The mass import utility uses DRDA to connect to the database. This parameter refers to the database name found in the Relational Database Directory of the AS/400.)
- log_file** The name of the file in which you want the mass import utility to record its activities. If this parameter is not specified, the following default log file is created: /QIBM/Userdata/NetCommerce/instance/<instance_name>/logs/massimpt.log
- error_file** The name of the file in which the mass import utility records errors. If this parameter is not specified, the following log file is created: /QIBM/Userdata/NetCommerce/instance/<instance_name>/logs/massimpt.err

An example of a mass import activity log:

```
Thu Nov 6 15:10:15 1997
CMN1304I Started reading input file. Processing began.
CMN1303I Connected successfully to the database.
CMN1301I The following transaction completed successfully...
-00002*STORE;61xth Avenue
CMN1301I The following transaction completed successfully...
-00004*#CATEGORY;6th Avenue Department Store;6th Avenue;6th Avenue Department Store;;;1;;;
CMN1301I The following transaction completed successfully...
-00005*#CATEGORY;Hardware;Hardware;Hardware;;/demomall/cat_hat1.gif;1;/demomall/headhard.gif;6th Avenue Department Store;
CMN1301I The following transaction completed successfully...
-00006*#CATEGORY;Computers;Computers;Computers;;/demomall/cat_cot1.gif;1;/demomall/headcomp.gif;6th Avenue Department Store;
CMN1301I The following transaction completed successfully...
-00007*#CATEGORY;Clothing;Clothing;Clothing;;/demomall/cat_clt1.gif;/demomall/cat_cfl1.gif;1;/demomall/headclot.gif;6th Avenue Department Store;
CMN1301I The following transaction completed successfully...
-00008*#CATEGORY;Hand Tools;Hand Tools;Hand Tools;; /demomall/cat_hat2.gif;/demomall/cat_haf2.gif;1;/demomall/headhard.gif;Hardware;
+1.00000000E+000
```

An example of a mass import error log:

```
Thu Nov 6 15:10:15 1997
CMN1025E Trying to get reference number for category Hand Tools failed.
CMN1025E Trying to get reference number for category Hand Tools failed.
CMN1025E Trying to get reference number for category Gardening Tools failed.
CMN1025E Trying to get reference number for category Gardening Tools failed.
CMN1025E Trying to get reference number for category Computers failed.
CMN1025E Trying to get reference number for category Computers failed.
CMN1025E Trying to get reference number for category Software failed.
CMN1025E Trying to get reference number for category Software failed.
CMN1025E Trying to get reference number for category Computers@Hardware failed.
CMN1025E Trying to get reference number for category Computers@Hardware failed.
CMN1033E Product table update failed, (SQL class) return code = -1019.
UPDATE Product set prprfnbr=12,prsdsc='IBM Aptiva A40',prldesc1='For brilliant performance, here's one PC that is upto speed!',
prldesc2=NULL,prldesc3='<B>Processor/Memory:</B> 133MHz Pentium, 16MB RAM<BR><B>Modem Type:</B>
28.8K bps Data/Fax.<BR><B>Multimedia Features:</B> 6X CD-ROM, 30W speakers.<BR><B>Software:</B>
Windows 95, Lotus SmartSuite, over 40 great multimedia software titles!<BR><B>Warranty:</B>Three Year Express Maintenance Warranty
<BR>All IBM Aptiva models offer 180 days or 180 hours on the Internet at no extra cost!<BR>',prthmb='/demomall/compth2.gif',
prfull='/demomall/compfu2.gif',prpub=1,prwght=25.30,prwmeas='kg',prlngh=0.7500,prwidth=0.75,prheight=1.20,prsmear='m',prpsnbr=4,
prpcode=' ',prurl=NULL,prvent=212,pravdate='1997-11-06-15.11.15.6728',prspecial=' ',prstmp=CURRENT_TIMESTAMP,prfield1=0,
prfield2=0,prfield3=0000000000000000,prfield4=NULL,prfield5=NULL,prdconbr=0 where prrfnbr=12 AND prmenbr=2066
```

The log files are stored in the IFS but, unlike other IFS files, are in EBCDIC format and have to be converted before they can be viewed on a PC. If Client Access is being used to access the logs, use the *File extensions for automatic EBCDIC/ASCII conversion* option under Network Drives of Client Access Properties to select conversion for the appropriate file extensions. The logs are appended to if they already exist. They list the commands being executed and the status of each command.

To call the mass import utility to populate the MALL1 database with Demo Mall, for example, you would use the following command (assuming that the database is called MALL1DB and activity and error logs are being stored in a folder on the IFS called /logs):

```
IMPNCDATA INSTANCE(MALL1) PASSWD(password)
INFILE('/QIBM/ProdData/NetCommerce/MRI2924/demodata.in')
DATABASE(MALL1DB) LOG('/logs/massimpt.log') ERROR('/logs/massimpt.err')
```

10.4.1.3 Alternatives to the Mass Import Function

If you do not want to use the mass import, then you can use one of the tools provided with the AS/400 to populate the database. The tables related to each instance are stored in a library of the same name as the instance. The ways of accessing a collection of tables on the AS/400 are:

- Native database manipulation commands such as Open Physical File from an AS/400 supported language such as RPG.
- Embedded SQL from a language supported on the AS/400.
- An ODBC compliant application tool such as Powerbuilder or Delphi in combination with the Client Access ODBC driver.
- An ODBC compliant database manager such as Lotus Approach in combination with the Client Access ODBC driver.
- Interactive SQL using the STRSQL command.
- A data replication product such as Data Propagator.

However, if you are not using mass import, then you must take care of ensuring that referential integrity is satisfied. This can be quite complex if you are trying to update all the tables in the collection, and is not recommended generally. These alternative approaches are more useful when updating particular columns or tables periodically, because unlike the general purpose mass import utility which requires the additional step of generating a special format input file, the alternative approaches can be written to update the tables in one step. Alternative approaches to importing data should be used in cases of simple batch updates. Examples of updates that could benefit from this approach are:

- Updating price information for all the products. You could write a utility program or SQL query that copies the price values from a table in your legacy system into the PPPRC column of the table PRODPRC.
- Updating merchant customizable fields.
- Updating product descriptions.

Chapter 11. Integrating Legacy Applications and Data with Net.Commerce

Integrating legacy or existing applications with Net.Commerce generally means integrating two basic aspects of the legacy application:

- Integrating legacy application function
- Integrating legacy application data

Net.Commerce provides for a high degree of customization, and has a rich set of APIs (application programming interfaces). These APIs provide the mechanism by which legacy application functions can be incorporated into the Net.Commerce environment. The APIs can also be used to add new function that may not be present in the legacy applications. The APIs and supporting documentation are described in detail in the Net.Commerce manuals. The following section provides a high level overview of how Net.Commerce can be integrated with legacy applications and data.

While using the APIs to customize the Net.Commerce environment is optional, most will find that integrating legacy data is mandatory. Most customers who have products, goods, or services that they wish to make available in a Net.Commerce environment already have an "inventory" file, and require that information to be used by Net.Commerce. As described in earlier chapters, Net.Commerce uses its own files, and cannot simply point to existing files. The challenge then becomes how to integrate the existing information or data into the Net.Commerce files.

11.1 Integrating Applications

Net.Commerce is a frontend application that provides the tools to quickly set up and populate a mall that shoppers can browse and order from. However, shoppers cannot purchase anything unless Net.Commerce is linked to a backend system that actually fulfills the order and collects the payment.

Net.Commerce requires the following backend systems to complete the shopping process:

- Payment system that verifies and collects credit card payment for goods purchased.
- Accounting system that handles inventory, invoicing and accounts receivable.
- Order fulfillment that handles shipping of purchased goods.

Net.Commerce provides macros and API functions that can be used to link to these systems. With these links in place, Net.Commerce provides a complete Internet shopping experience from browsing for products to actually purchasing online followed by delivery.

When customizing Net.Commerce, you can do one of the following:

- Modify the database. Net.Commerce has many tables that contain user-customizeable fields. These can be used to store information not otherwise present in Net.Commerce. You can also add other tables.

- Net.Commerce uses triggers to implement various functions such as implementing cascade delete. You can modify these triggers to accommodate extra functionality like cascade delete for tables you add.
- Modify the behavior of tasks. Tasks can be modified through the use of either APIs or macros. You can, for example, modify the Net.Commerce task Check Inventory to get the inventory from your backend ERP (Enterprise Resource Planning) system.

11.2 Modify the Database

Net.Commerce stores the tables for each instance in a library of the same name as the instance on the RDBMS specified. You can add or modify tables using a variety of tools, such as Lotus Approach or the AS/400's native host-based tools.

In addition to adding tables, you can customize particular fields in some tables. For example, the product category table CATEGORY has four fields for merchant customization, called CGDISPLAY, CGLDESC, CGFIELD1 and CGFIELD2 respectively. These fields are character fields and can be used to store category data not captured elsewhere in the category table.

When adding tables, you may have to modify the triggers for some tables to add cascade delete functions for the tables you added. For example, to delete a row in a table you add: if a row in the CATEGORY table is deleted, you have to modify the Before Delete trigger in the category table, called QNETCOMM/CASDCAT. The way to modify a trigger is to drop the trigger command and then add the trigger again.

Note

You have to be careful when modifying triggers, so you don't change them in a way Net.Commerce does not expect. The changes you make to the triggers are not validated by Net.Commerce.

11.3 Modify the Behavior of Tasks

Net.Commerce uses API functions to process information, perform certain calculations and process parameters that are passed into commands. API functions allow merchants to extend the built-in commands, for example, to send an e-mail notification to shoppers who submit orders. API functions can also write information to the database. You can write your own API programs to change the way in which calculations are performed and maintain custom information in the Net.Commerce database. You can also write your own API programs to connect Net.Commerce to a legacy system, such as an order processing system.

An API task is the task that the API function is assigned to handle. It is handled by a service program on the AS/400. You can write your own API programs for tasks like inventory and shipping so that they integrate with existing systems such as an Enterprise Resource Planning (ERP) system or an order processing system already existing in the company.

If you want to override an API, you make an entry in the APIS table corresponding to that task for the Service program that executes the task.

Each API task has an exception task associated with it. If Net.Commerce detects that an API function has returned a non-zero return code, it calls the corresponding exception task, which has the same name as the API task. A Net.Data macro then generates an error page for the user. You may need to modify the macro that implements the exception task for your API task. You assign your new exception macro to the API by putting the macro name in the MACROS table. Depending on the change that you are making, you may need to do the following when you implement your new API function:

- Extend the Net.Commerce database
- Modify one or more macros

Depending on the definition of the task, the macro or API you write replaces or adds to the behavior predefined in Net.Commerce. Macros and APIs can be merchant specific or sometimes apply to all merchants.

You can modify a macro by inserting the relevant row into the MACROS table. The MACROS table contains information about the macros that are defined in Net.Commerce. The macros are Net.Data files that provide a database-Web interface by querying the database and creating the HTML page that the visitor sees. APIs can similarly be replaced in the API's table. The API's table contains information about the APIs in Net.Commerce.

The following is a list of all the Net.Commerce API tasks and what they can be used to change or customize:

AUDIT_ADDR_BOOK customize the parameter checking for the adrbk/add and adrbk/process commands.

AUDIT_REG customize the parameter checking for the register/modify and register/new commands.

CHECK_INV Customize the way that the order/display, shipto/process, and shipto/update commands check inventory.

DO_PAYMENT Change the way the order/process command processes payments for orders.

EXT_ORD_PROC Perform additional processing just prior to the completion of the order/process command.

EXT_SHIPTO_PROC Perform additional processing for each product and item after the shipto/process command associates it with a shipping address.

EXT_SHIPTO_UPDATE Perform additional processing just before completion of the shipto/update command.

GET_BASE_SPE_PRC Change the way the order/display, shipto/display, shipto/process, and shipto/update commands determine item prices. This price can be different from the price that is returned by GET_BASE_UNIT_PRC because an item that is associated with a shipping address can have extra features that increase the price.

GET_BASE_UNIT_PRC Change the way the shopcart/add and shopcart/display commands determine product and item prices.

GET_ORD_PROD_TAX_TOT Change the way the order/display command calculates the total taxes payable on an order.

GET_ORD_PROD_TOT Change the way that the order/display command calculates the total cost of the items in an order.

GET_ORD_SH_TOT Change the way the order/display command calculates the total shipping charges for an order.

GET_SUB_ORD_PROD_TAX_TOT Change the way the order/display command calculates the total tax payable for all the items in a suborder. A suborder is a part of an order that is to be shipped to a single address.

GET_SUB_ORD_PROD_TOT Change the way the order/display command calculates the total price of all the items in a suborder. A suborder is a part of an order that is to be shipped to a single address.

GET_SUB_ORD_SH_TOT Change the way that the order/display command calculates the total shipping charges for all the items in a suborder. A suborder is a part of an order that is to be shipped to a single address.

UPDATE_INV Customize the way that the order/process command updates the inventory in the database.

Detailed information on each of these tasks can be found in *Net.Commerce References*. This manual is available online from either <http://w3.torolab.ibm.com> or <http://www.shop.isc.uk.ibm.com>.

You do not have to modify the Net.Commerce tables directly for prices, shipping, inventory or taxes. With prices, for example, you can modify the corresponding APIs to take prices or markups from a table other than the PRODUCT table.

11.4 API Signatures

Every API has an API signature. The API signature lists the parameters the system passes to the function that implements the task, and the parameters that the system expects to be returned. Three of the parameters are passed to all API functions. Other parameters are passed that are unique to the function.

When changing an API, you need to:

- Use any parameters that the system passes in if they are needed by your function.
- Pass the variables that the system expects to receive, back to the system.
- In case of an exception condition, return the parameters that are needed by your API exception macro in the format that is required according to the API signature.

11.5 Integrating Data

In addition to the integration of legacy application functions into the Net.Commerce environment, it is important to be able to integrate legacy application data. And while some view the task of integrating function, which requires "programming" to be more difficult than integrating data, true integration of data may require more skill. This is due to the dual aspects of integrating data. First is the task of populating the Net.Commerce database with legacy data. There are several techniques that can be used to accomplish this, and most are reasonably straightforward, if not a bit tedious. Secondly, and

perhaps more importantly, is the task of keeping the Net.Commerce data and the legacy data fully synchronized, so that changes to either set of files is replicated in the other. This task may require a combination of data management skills and programming skills, depending on the particular implementation.

The next section will cover the techniques available for populating the Net.Commerce database. Those techniques include using Net.Commerce's mass import utility, using the store manager interface to key data in manually, and other techniques such as using DataPropagatorRelational to populate the database.

11.5.1 Populating the Net.Commerce Database

When setting up an individual store in a Net.Commerce site, the store manager has the ability to enter a wide variety of data, including product specific data. This can be done through the Net.Commerce administrator but entering data for a single product requires filling in several "screens" worth of fields. This certainly does work, but for a store that is to have thousands or even tens of thousands (or more) of items, this process is less than desirable. Fortunately, Version 2 of Net.Commerce, which is the level implemented for OS/400 V4R2, includes a utility to incorporate existing data without having to manually key the information via the Net.Commerce store administrator panels. This utility, called mass import, is discussed in 10.4, "Populating the Net.Commerce Database" on page 172.

In addition to using Net.Commerce's mass import utility, other techniques for populating the Net.Commerce files are also available. These techniques include using platform specific utilities such as DFU (data file utility) on the AS/400, generic DB/2 tools like DataPropagatorRelational, tools such as NotesPump, or writing a custom program to accomplish the task.

Finally, simply populating the Net.Commerce files one time may not be all that is required to integrate Net.Commerce and legacy applications. A customer will likely continue to use the legacy applications in a non-Web environment, and will require the Net.Commerce data to be kept synchronized with the non-Net.Commerce data.

11.5.2 Synchronizing the Net.Commerce Database with Backend Data

API functions are the recommended way to deal with situations where Net.Commerce changes data arising out of shopping activities, such as inventory or shipping. There are certain cases, however, where you have to use some other approach to synchronize the Net.Commerce database with some backend or legacy system database. Some examples are:

- To read from the Net.Commerce database into a backend system. For example, you may want to synchronize shopper demographics with your data warehouse.
- When there is no API available. For example, a shop selling gambling tickets may have rapidly changing ticket (product) descriptions, depending on the state of the game. There is no API that deals with product descriptions, so this can be written directly into the database with some process that synchronizes the descriptions with some other table.
- For mass scale updates. You may want to update all product names in a particular category because your branding has changed.
- For connectivity or security reasons. You may not want to link Net.Commerce to your legacy system directly, because of your company's

security policies, because your legacy system is on a platform or data format that cannot be linked easily, or because you do not have enough information about your backend system to code the links. In these and other cases, it may be easier to write a batch update program that periodically updates prices, taxes, inventory, and so on directly into the Net.Commerce database and does not change the behavior of the API set.

- For performance - an API task may be quite slow because it incurs repeated overheads and it may improve performance if data like prices were directly available in the Net.Commerce database.

The following methods can be used for database synchronization:

1. **Mass import**, as discussed in 10.4, "Populating the Net.Commerce Database" on page 172, can be used to update the Net.Commerce database. Some code needs to be written to generate an Input file of the required format from the backend data. Mass import can then be run against this file periodically using the job scheduler. This is the recommended method.
2. **Synchronization Tools** such as Data Propagator or Data Mirror. In this case, one has to consider if the replication is one-way or both-ways - can the tool handle updates being done at both ends? Also, replicating tools such as data propagator generally update identical tables or columns, so it may be necessary to create a large number of definitions if your backend data does not match Net.Commerce data closely in structure. If the definitions are in place, however, these tools can provide reliable and usually very efficient replication.
3. **Custom Daemons** that copy data periodically from one set of tables to another. This requires you to invest more heavily in programming and maintenance of code and is not easily upgraded. This approach is not recommended unless there are special requirements like a stockbroker reading prices from an online information service.

Important

It is strongly recommended that you use APIs to update information wherever possible; otherwise maintaining and upgrading the Net.Commerce product may become difficult.

Chapter 12. Building an e-commerce Site

Net.Commerce provides a full front-end for an interactive electronic shopping experience. However, it requires the following additional components to be a fully functional site for electronic commerce that provides a secure environment for shoppers to order, pay for, and receive products from the site:

- A connection to the Internet, so that shoppers can access the site.
- Firewall protection, to prevent unauthorized access to the site and its resources.
- Backend systems, to provide payment, accounting and order fulfillment functions.

12.1 Connecting to the Internet

A Net.Commerce server must be connected to the Internet so that shoppers can access it. The AS/400 must have a physical connection to the Internet (usually via an Internet Service Provider) and a valid unique TCP/IP address that is visible to persons in the Internet. Also, you must have a host name for the AS/400, usually of the form *www.<hostname>.com* so that shoppers can easily locate your site.

12.2 Firewall Protection

A firewall is a blockade between a secure private network and another non-secure network, such as the Internet (see Figure 135 on page 186). Although most companies use a firewall to connect a private network safely to the Internet, you can also use a firewall to secure one private network from another private network on an intranet.

A firewall provides a controlled single point of contact (called a chokepoint) between your secure internal network and the non-secure network. The firewall:

- Lets users in the internal network use authorized resources that are located on the outside network.
- Prevents unauthorized users on the outside network from using resources in the internal network.

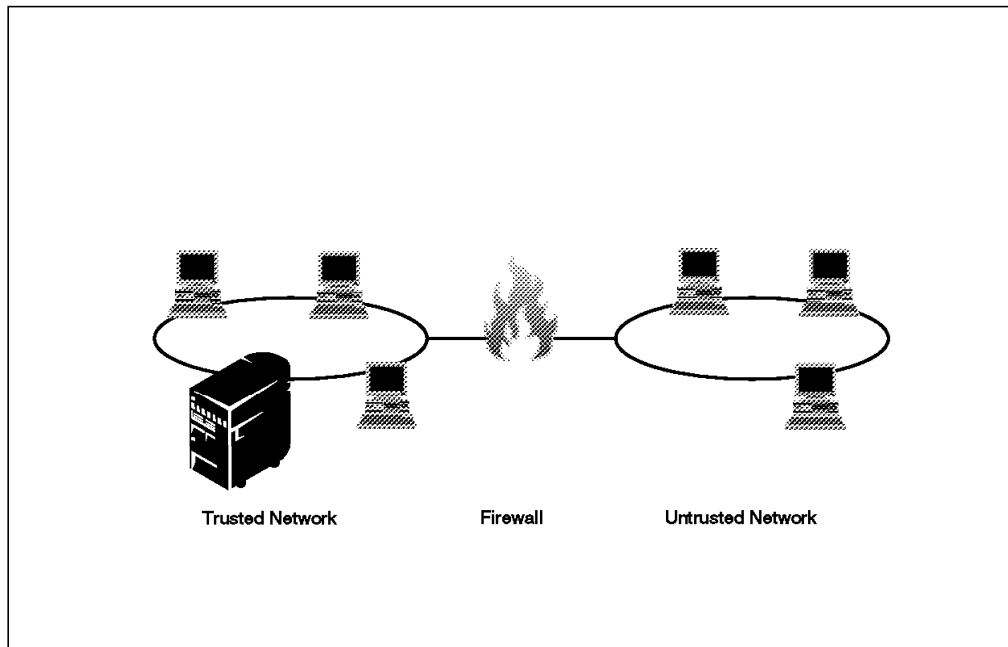


Figure 135. Firewall: Protecting Your Internal Network from Outside Users

When you use a firewall as your gateway to the Internet (or other network), you considerably reduce the risk to your private, internal network. Using a firewall also makes administering network security easier, since most of your security policy is put into effect by functions provided by the firewall.

Implementing a firewall has a performance penalty as the firewall forces all access to the trusted network to pass through a series of validations. The more comprehensive the rules, the greater the impact on performance. Also, the fewer the facilities offered to the untrusted network, the more the security. Hence, a firewall represents a trade-off between functionality, performance and security.

A firewall can be set up to perform:

Address concealment The addresses of the internal trusted network cannot be seen outside the firewall by members of the external network.

Packet filtering Allowing or restricting packets based on the services requested and originating address.

Proxy serving Carrying out functions like FTP or HTTP to the untrusted side on behalf of users inside the trusted network.

Socks serving A protocol independent way similar to Proxy of protecting the connection between a trusted client and an unsecure server.

Mail relay Relaying mail from unsecure external network to internal network.

Split DNS Providing a DNS that is split into two parts, one for internal addresses only accessible by the trusted side, and one for external addresses linked to external Domain Name Servers on the untrusted side.

In the following scenarios, any firewall product will work. Firewall for AS/400 has an advantage over other products in that it can be administered from the same set of menus as the Net.Commerce Configuration. Some functions of a firewall, such as packet filtering, can be provided by a router as well. However, routers

do not generally produce activity logs, which can be crucial in tracing unauthorized activity.

Note

Firewalls protect only TCP/IP traffic. If you are using SNA or TCP/IP over AnyNet or any other protocol, the firewall will not protect or monitor that. It is strongly recommended that you use only TCP/IP to communicate across the firewall. In particular, database access should use DRDA over TCP/IP, which is available with OS/400 V4R2.

It is possible to set up secure APPC networks also, but a good deal of work must be done to ensure the same level of security that is provided by the firewall on TCP/IP.

In the case of Net.Commerce, there are three components that can be put on separate machines, each of which can either be in front of or behind the firewall. The components are:

- The Net.Commerce servers including the Web server, the Director and the Daemon
- The Net.Commerce database
- The backend systems that service Net.Commerce

Depending on the trade-off between performance and security that you decide on, there can be various firewall scenarios. Note that the Web server and the Net.Commerce server should be on the same machine. Also, while only single machine scenarios are discussed here, it can be applied equally well to multiple machine scenarios. Any of the three components can be on one or more machines. It is also possible to have, for example, multiple database machines - some inside and some outside the firewall. These special case scenarios are not discussed here because they can be very complex, involve other issues like distributed database management and require expert configuration.

The scenarios we discuss here are:

- Everything behind the firewall
- Net.Commerce server in front of the firewall
- Backend applications behind the firewall
- Firewall issues

12.3 Everything behind the Firewall

In this approach, the Net.Commerce server, the database and the backend systems are all behind the firewall, and all accesses from the untrusted network must go through it (see Figure 136 on page 188). The immediate advantage is better security, but there is a possibility that the firewall will become a bottleneck for high capacity serving.

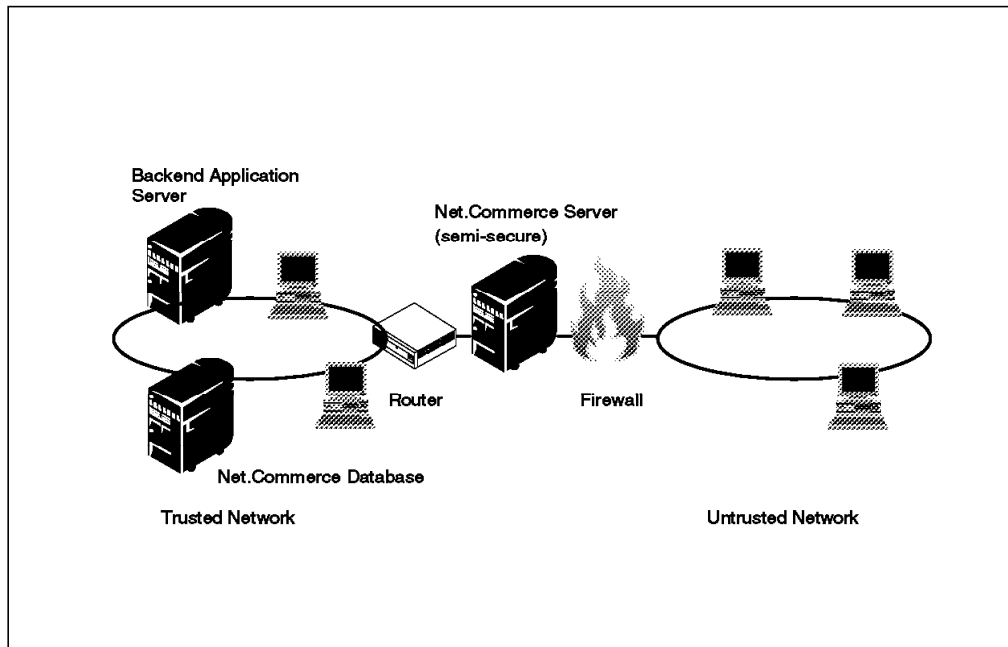


Figure 136. Everything behind a Firewall

To implement such a firewall, you must make the TCP/IP address of the Net.Commerce server public even though behind the firewall. This scenario makes the machine running Net.Commerce a little more open to potential attack, so we call it semi-secure. It is recommended that a router be placed between the semi-secure Net.Commerce machine and the rest of the internal network, so that the addresses of the rest of the network are kept private.

12.4 Net.Commerce Server in front of the Firewall

The Net.Commerce server essentially consists of static HTML pages and CGI-bin programs accessing the database. These can be protected by allowing only HTTP access to the server outside the firewall. The database that contains price data, etc. can be secured behind the firewall, and accesses can occur via DRDA over TCP/IP. The database can be any DRDA complaint database, such as DB2/6000, but the appropriate connectivity utilities (DDCS, Data Hub) have to be installed if the database is not DB2/400. This protects the data from untrusted users while allowing the Net.Commerce server to function without the overhead of a firewall (see Figure 137). Note, however, that many Net.Commerce pages require database access so the performance gains may not be very substantial depending on the activities a shopper performs. Database access will now incur the overheads of a remote DRDA call.

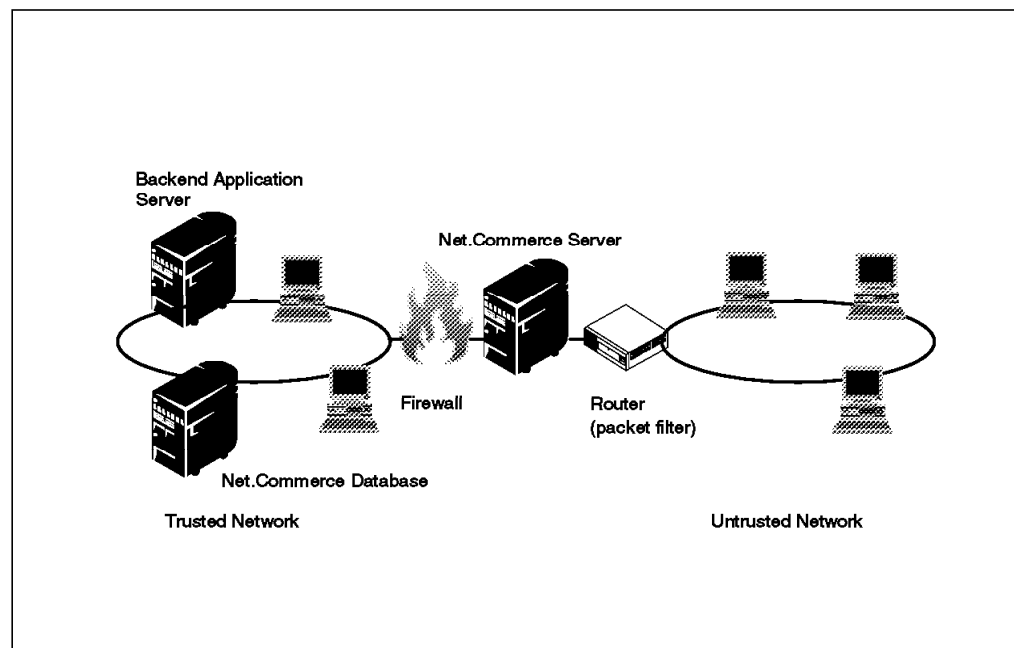


Figure 137. Net.Commerce in Front of the Firewall

If the Net.Commerce server is in front of the firewall, then in addition to database access, any APIs you write to connect the Net.Commerce server to backend legacy applications (that are behind the firewall) have to be firewall aware.

12.5 Backend Applications behind the Firewall

In this scenario (see Figure 138), only the backend applications that service payment, inventory and other functions are behind the firewall, and the Net.Commerce server as well as the database tables associated with the Net.Commerce instances are in front of the firewall, protected by a router and protocol restrictions. Generally, you would allow read-only HTTP access to the server in front of the firewall, and disable all other services like FTP, TFTP, Telnet, BootP, RPC or AS/400 login screens. This provides adequate security from unauthorized access, but without Telnet and login access you will not be able to use the AS/400 for anything else.

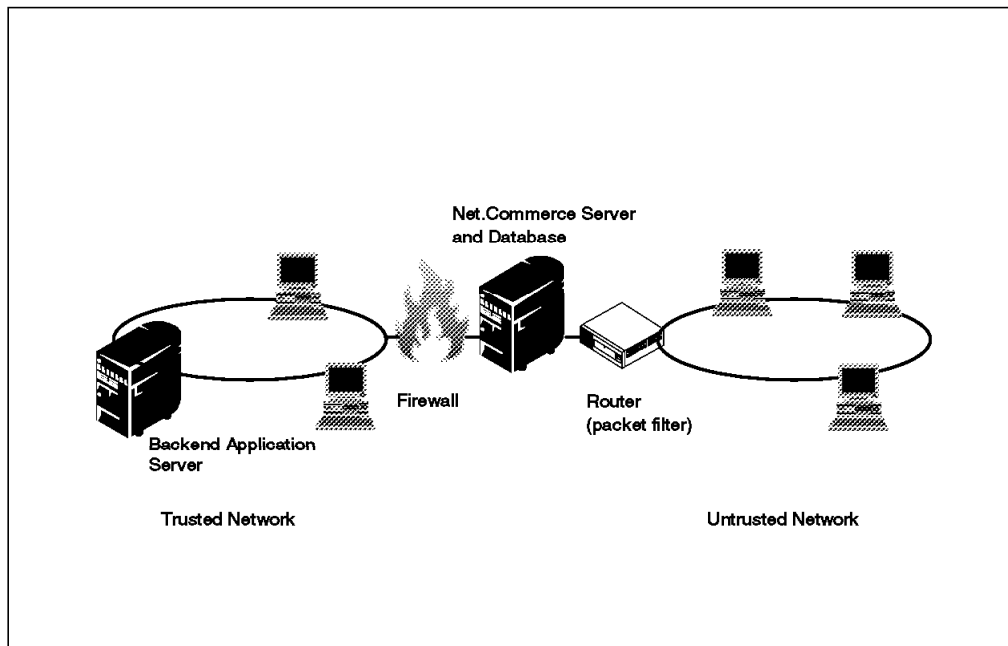


Figure 138. Backend Applications behind the Firewall

This scenario would mean that all routine Net.Commerce tasks are conducted in front of the firewall and do not incur any overhead. Only backend accesses, which are relatively infrequent, are required to go through the firewall.

12.6 Firewall Issues

When a firewall is implemented between the Net.Commerce server and the backend database, you must program with the firewall in mind. This involves programming only with TCP/IP. This means that you should use SQL with DRDA over TCP/IP. You cannot use SNA based native database calls like Open Physical File or DDM calls to access data on the other side of the firewall. While it is possible to circumvent the firewall using SNA based commands, it is strongly suggested that you do not.

For interprocess communication, you can use TCP/IP-based system functions like RPC or a product like MQ Series. MQ Series, in particular, takes care of the housework related to establishing the connection and makes it easy to write applications that address multiple machine architectures.

An exception to not using SNA is when Opticonnect is used. Opticonnect only supports DDM, which means there isn't any scope for illegal access by another

SNA application when using this to connect systems. Opticonnect provides a very fast connection between systems.

Chapter 13. Shopping Trip in the Demo Mall

Net.Commerce includes a demonstration shopping mall. It is useful to install this mall prior to implementing a live mall such that Net.Commerce can be experienced prior to implementing a live mall. Experience gained from this may provide useful input to the implementation of the live mall. The demonstration mall is installed by selecting to install the demo mall from Figure 29 on page 59 or by using the mass import utility (see 10.4.1, "Mass Import" on page 172).

In this chapter we go on a shopping trip in the Net.Commerce Demomall. Ensure that the following steps are performed before starting the shopping trip.

1. Net.Commerce is installed and configured.
2. The demomall is installed.
3. The QNETCOMM Web Server instance is running. See 9.1.3, "Starting the Net.Commerce Web Server Instance" on page 116.
4. The Net.Commerce Server instance is running. See 9.1.5, "Starting the Net.Commerce Server" on page 118.

The following figure illustrates the steps we are going to perform during our shopping trip.

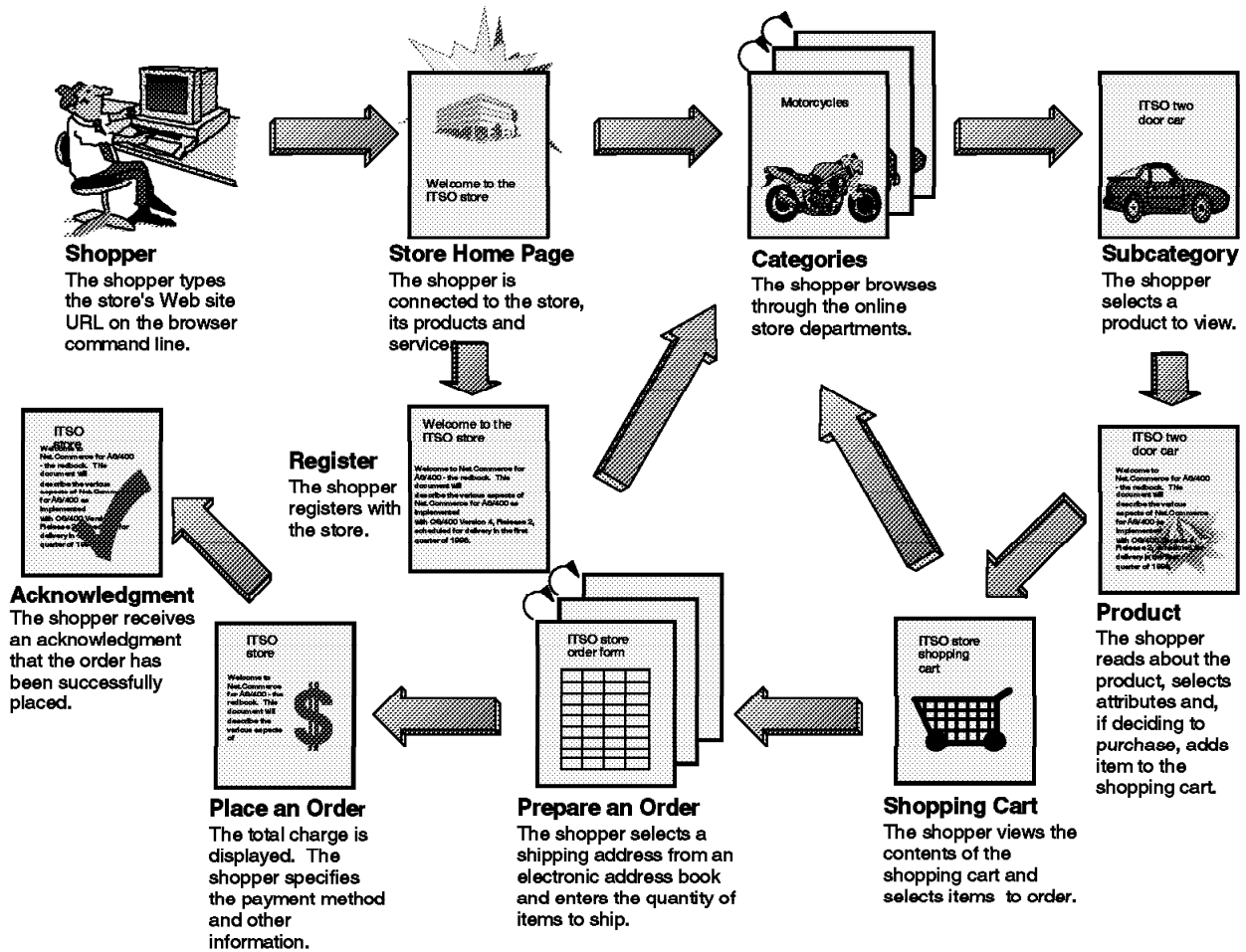


Figure 139. Net.Commerce Shopper Activities

13.1.1 Mall Front

To start the shopping trip, enter the following URL from your browser
http://<hostname>/demomall/basemall.htm. The following mall front page is shown.

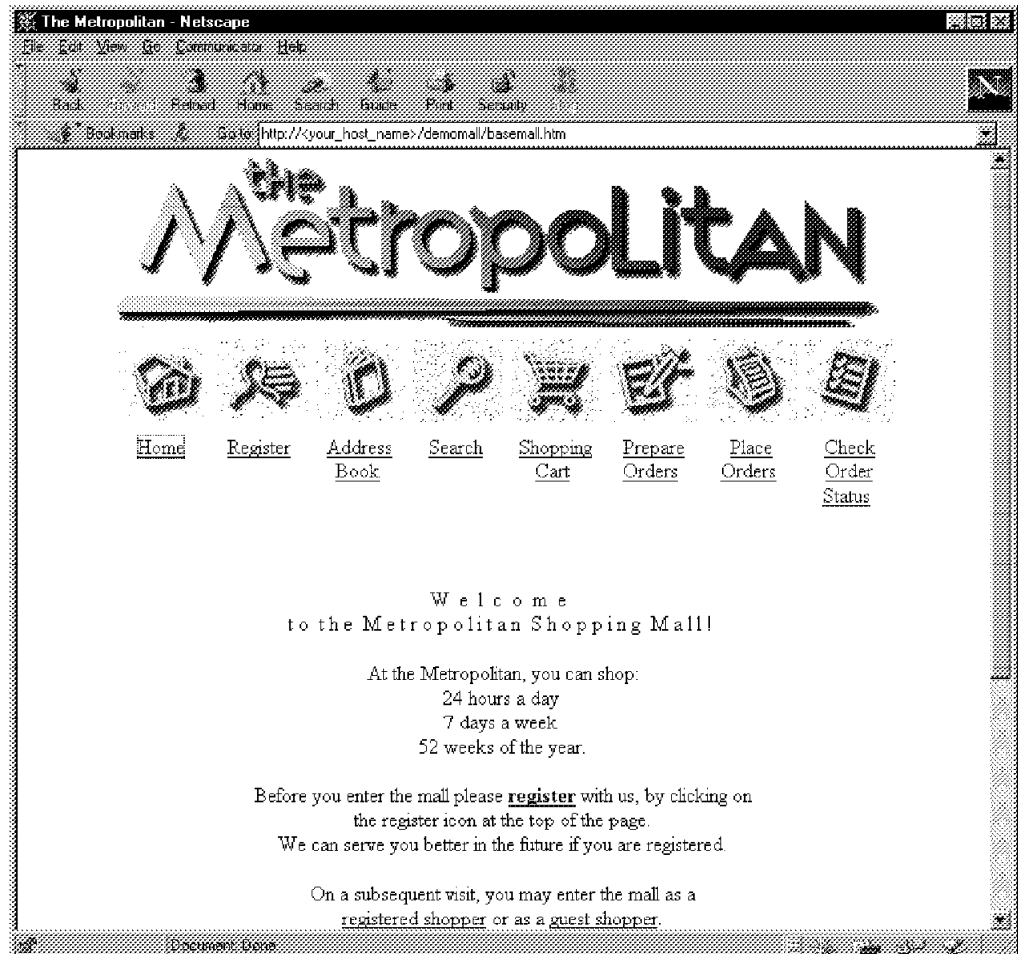


Figure 140. Net.Commerce Metropolitan Mall Front Page

From any mall page you can go directly to any of the following links:

Home	This is the mall directory, that is, a list of all stores in the mall.
Register	Register yourself to be a registered shopper allowed to do shopping from the mall.
Address Book	Define your contact information including your address and any other address to which you have products sent.
Search	You can search products by categories in all stores in the mall.
Shopping Cart	Every item you choose is added to this shopping cart; this does not mean that you have to buy all these items at once.
Prepare Orders	From your shopping cart, you choose the items you want to buy now, then you enter the quantities of each item.

Place Orders	At the end of your shopping trip, place the order by entering your credit card number. A reference number for your order is assigned to you only if it is a valid credit card and accepted by the store.
Check Order Status	At any time you can check your order status and if you have more than one order, all of them are shown with their reference numbers.

13.1.2 Entering the Mall

You may enter the mall as a registered shopper or just as a guest. As a guest, you are only allowed to surf the site and display the products but you cannot actually buy. As a registered shopper you can surf, choose, place orders, buy, and even track your order status.

To enter the mall as *Guest*, just click on the highlighted **guest shopper** link. You can surf and choose; if you decide to *register* yourself, just click on the highlighted **Register** link. After registration, you become a *registered shopper* and from now on you click on the highlighted **registered shopper** to shop.

13.1.3 Guest Shopper

When the **guest shopper** link is selected, a page is shown (Figure 141 on page 197) that lists all of the stores in the mall that you can surf as a *guest shopper*. You can then click on the store you want to visit, or click on the highlighted word **here** to see the specially featured products in the mall (Figure 142 on page 198).



Figure 141. Net.Commerce Metropolitan Mall Directory List



Figure 142. Net.Commerce Metropolitan Mall Special Products

13.1.4 Register

Before you can buy anything from the mall, you must be a registered shopper. You can register by clicking on the highlighted word **Register** and filling in the registration forms shown in Figure 143 on page 199, Figure 144 on page 200, and Figure 145 on page 201. You have to describe your contact information such as frequently used addresses, your telephone number, optional demographic information, and a password to keep your information confidential.

Note that currently the session is unsecure as indicated in Netscape 4 by the *open* padlock in the browser lower left-hand corner (see Figure 142). Having clicked on the register button the server will now establish a secure session. If the certificate being used by the server was created by a Certificate Authority that the browser does not trust (is not one of its trusted roots), a series of panels will ask you to confirm that you wish to establish a secure session with this server. This is the case if the certificate is issued by an AS/400 acting as a Certificate Authority in an intranet environment.

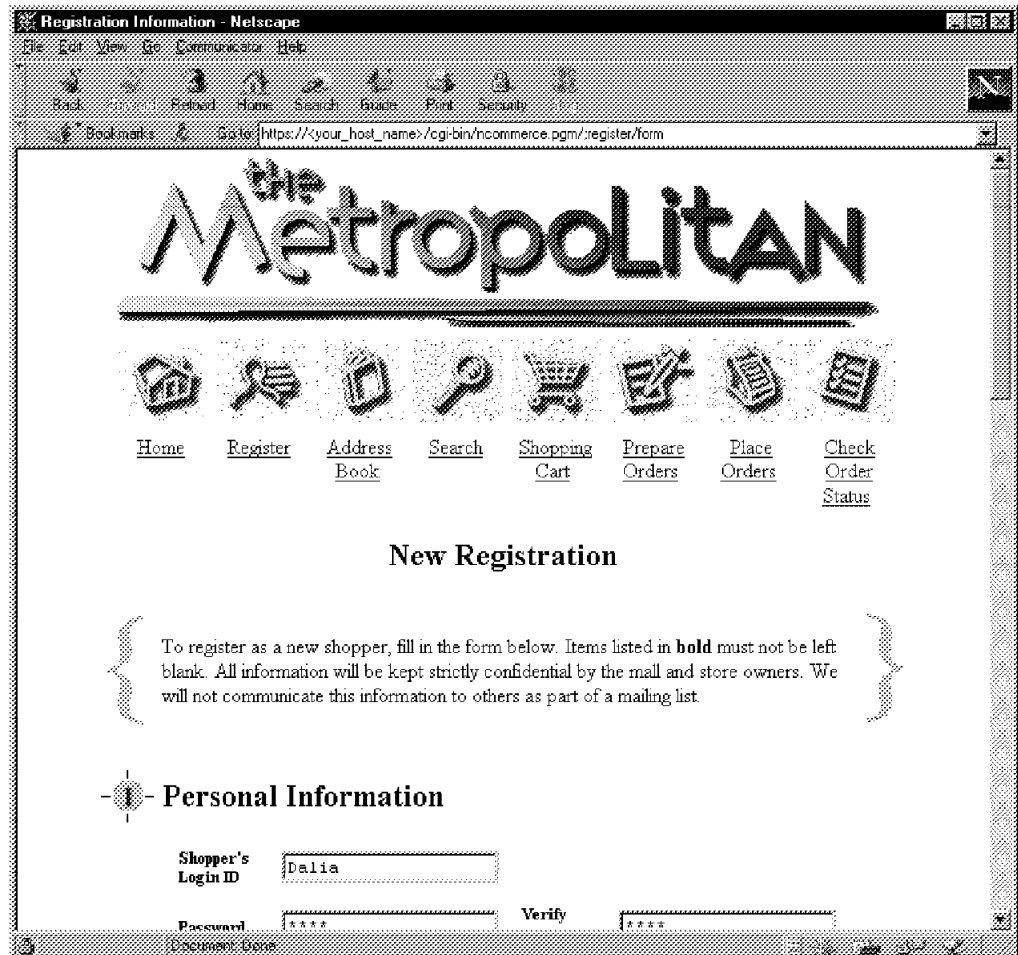


Figure 143. Net.Commerce Registration Screen - Personal Information

Fill in the registration form as in Figure 143, Figure 144 on page 200 and Figure 145 on page 201. Click on the **Submit Registration** button in Figure 145 on page 201 to send your registration for approval.

Note

Only the **bold** fields are mandatory. Both the ID and password are case sensitive.

The ID and password entered are stored in the validation list associated with the Net.Commerce server instance.

Note that the session is now secure as indicated in Netscape 4 by the *closed* padlock in the browser lower left-hand corner (see Figure 143).

Registration Information - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Reload Print Security

Bookmarks Status https://your_host_name/cgi-bin/ncommerce/pgm/register/form

2 Contact Information

Address (line 1)

Address (line 2)

Address (line 3)

City State/Province

Zip/Postal Code Country

Daytime Phone Number Evening Phone Number

Daytime Phone Type Evening Phone Type

Phone Unlisted? Fax Number

E-mail or URL (1)

E-mail or URL (2)

Preferred Method of Communication Best Time to Call

Document Done

Figure 144. Net.Commerce Registration Screen - Contact Information

Registration Information - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Reload Print Settings

Bookmarks Address: https://your_host_name/cgi-bin/ncommerce/pgm/register/form

Preferred method of Communication Phone Number 1 Best Time to Call Daytime

3 - Shopper Demographics

To help us better understand your needs, please fill out the following optional demographic information. If you do not want to volunteer any demographic information, move to the bottom of this form and click the Register button.

Age Gender

Marital Status Number of Household Members

Employer Annual Household Income

Interests/Hobbies

4 - Submit Your Registration

You are now ready to submit your registration for approval. To submit your registration, click the Submit Registration button. To cancel your registration, click the back arrow button below.

Document Done

Figure 145. Net.Commerce Registration Screen - Shopper Demographics

Enter your User Name and Password when prompted (as entered on the registration form in Figure 143 on page 199).

When the registration is correctly created, Figure 146 on page 202 is shown. Write down your ID and password in a safe place and click the highlighted **Proceed to the Mall Directory** link. Later you may change any of your registration fields by choosing the Register link from any of the mall pages. All of the fields are shown for you to update (your password is hidden; however you can change it).

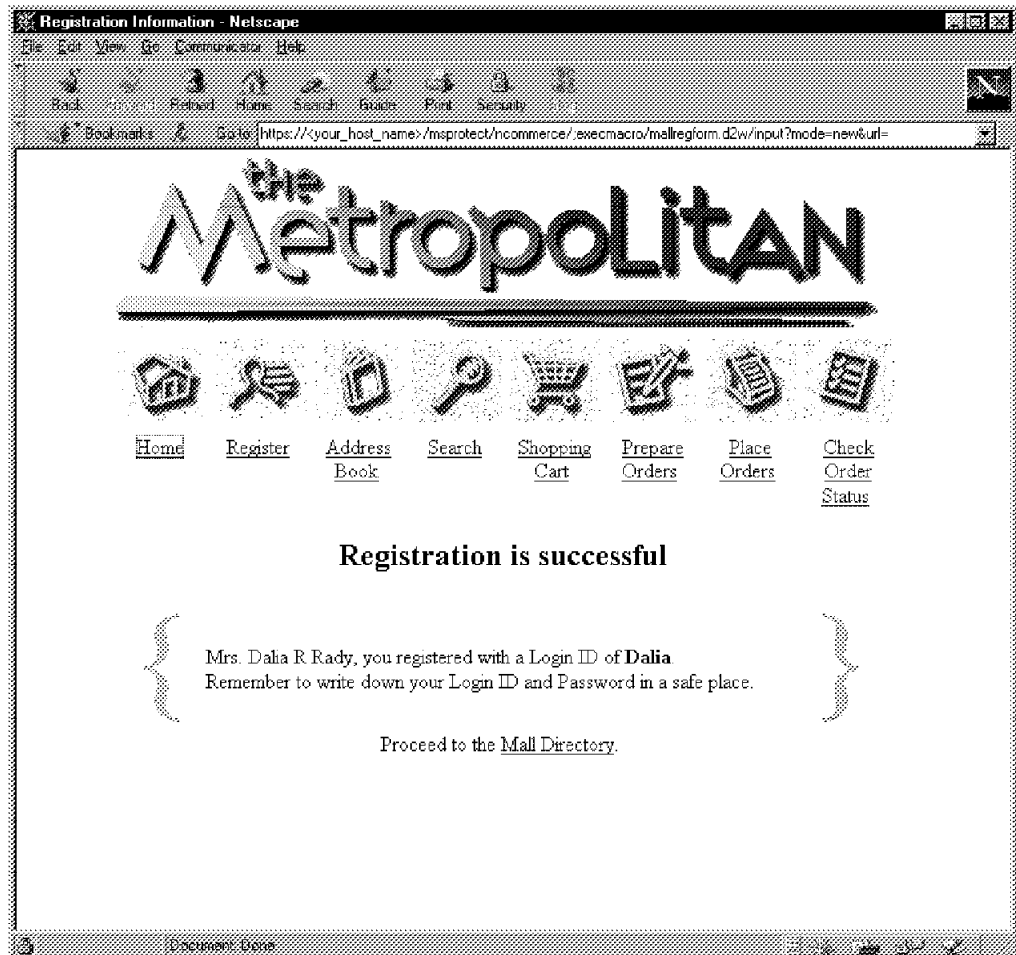


Figure 146. Net.Commerce Registration Success

13.1.5 Address Book

Whether you are a guest or a registered shopper, you can edit your address book simply by clicking on the Address Book icon from any of the Mall pages. If you are a registered shopper, the address book already contains the address that you entered at registration time. You can add as many addresses as you wish to use when placing orders; for example, you might be frequently sending presents to your parents so you add their address to the address book to save having to enter their address each time you place an order. Net.Commerce allows you to save nicknames and corresponding addresses to facilitate the order placing process.

The following figures are for a registered shopper; if you are a guest, you receive a similar screen. However, it shows *Unregistered Shopper* instead of your name.

Click on **Address Book** to display your address book; see Figure 147 on page 203.



Figure 147. Net.Commerce Address Book for Registered Shopper - 1

Let us assume that we want to add the address of Santa Claus at the North Pole, and give him a nickname of Noel. Enter Noel in the first field of Figure 147 and click on the **Add** button. Figure 148 on page 204 is shown. Fill in all fields as shown and scroll down to add more information such as address, telephones, e-mail, and so on. Then click on the **Add** button to confirm the addition.

You may clear all fields by pressing the CLEAR button to restart.

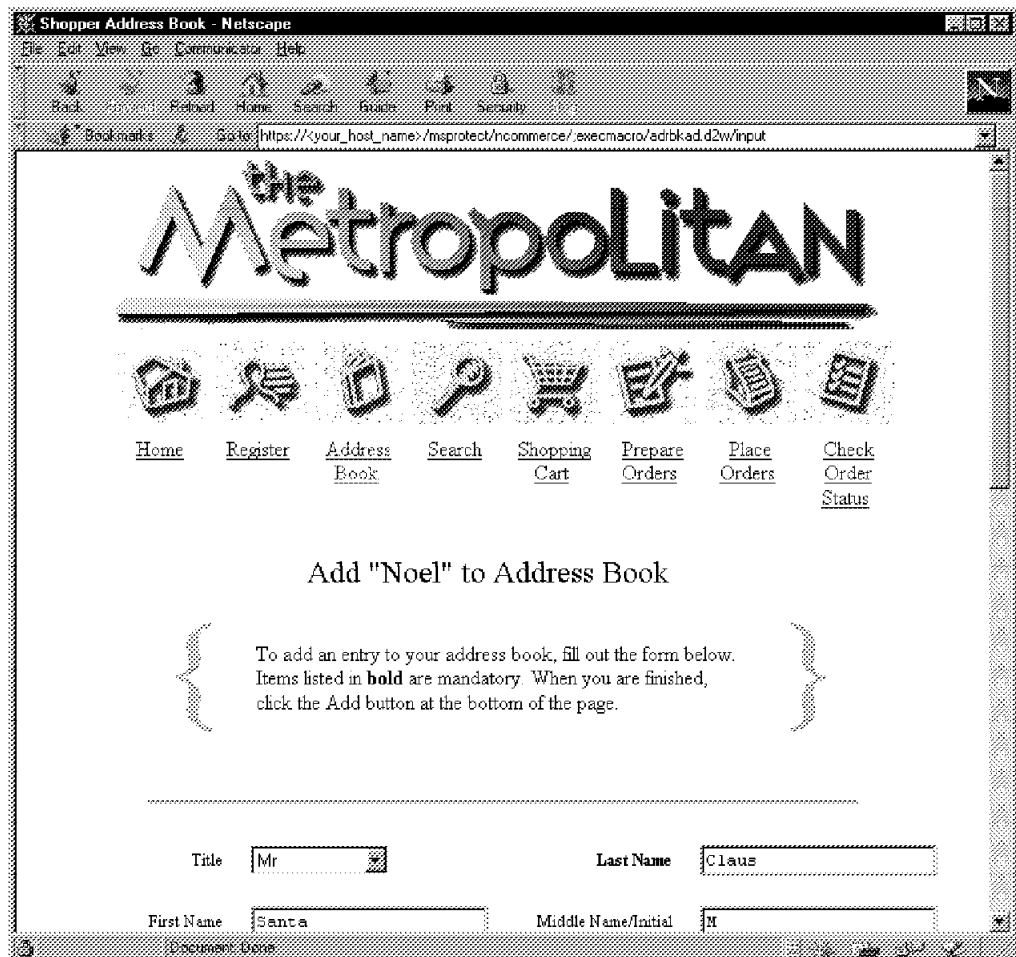


Figure 148. Net.Commerce Address Book - Add Nicknames

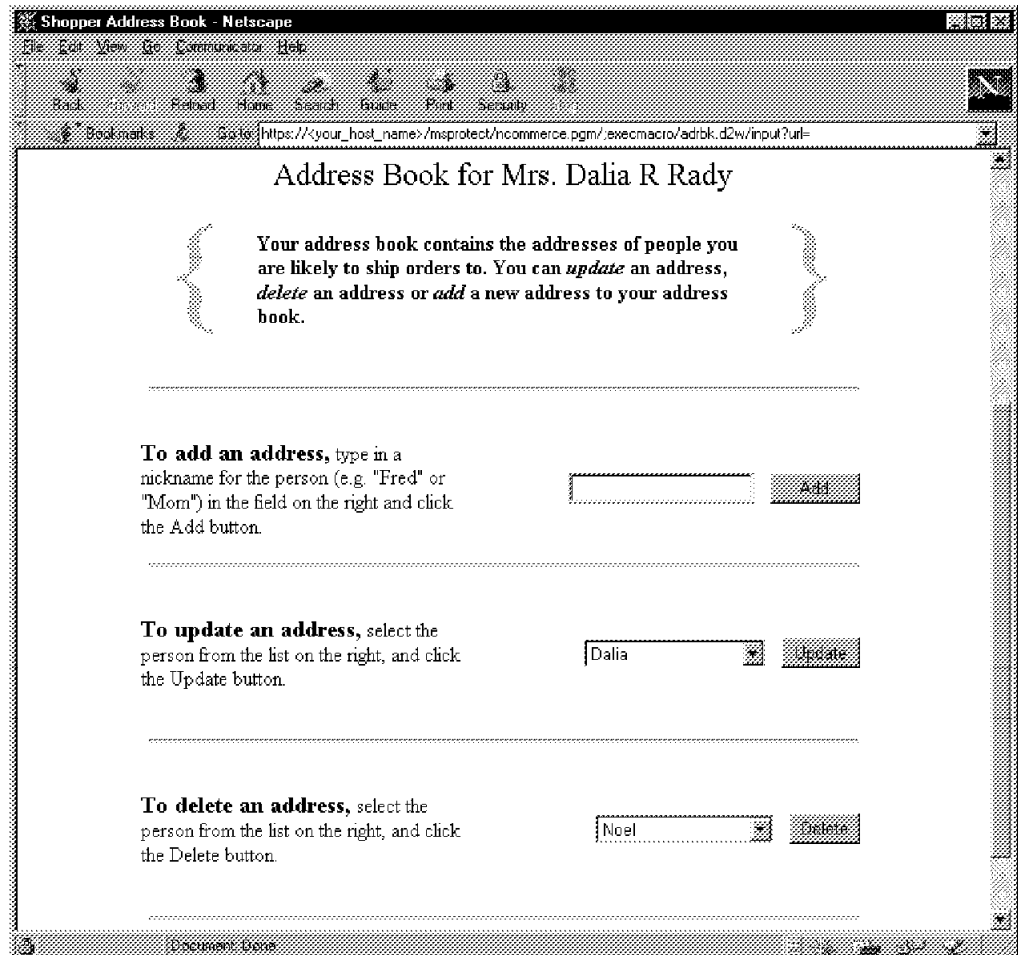


Figure 149. Net.Commerce Address Book - 2

You may update any nickname in your address book by choosing it from the drop down list of the second field in Figure 149 and then clicking on the **Update** button.

You may Delete any nickname from your address book by choosing it from the drop-down list of the third field on Figure 149. Then click on the **Delete** button.

13.1.6 Search a Specific Product or Category

From the Mall directory, click on any store you want to visit, or click on the **search** icon at the top of the screen. You can search by store name, category, product name, or description or even price range.

If you want to search through the products offered by the "Basics" store, select the radio button against the Merchant Name field in Figure 150, select Basics from the drop-down list, fill in the other fields as appropriate and click on the **Search** button. You may search by:

- Product name or description
- Price range
- Category name
- Merchant name

Specify Search Criteria - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Settings

Bookmarks Site: https://your_host_name/insprotect/ncommerce/execute/search.d2w/input

1 - Choose a search method by clicking on one of the buttons in the middle column.

2 - Enter the necessary search information in the field to the right of the search method you selected.

3 - Indicate if you want to display the product description in the search results.

4 - Click on the search button.

Product Name or Description ☐

Low Price ☐

High Price ☐

Category Name ☐

Merchant Name ☒

Include Description in results? ☐ Yes ☒ No

Document Done

Figure 150. Net.Commerce Metropolitan Mall Search Screen

A list of all products offered by Basics is shown in Figure 151 on page 207. You can scroll up and down in the list, so scroll down once.

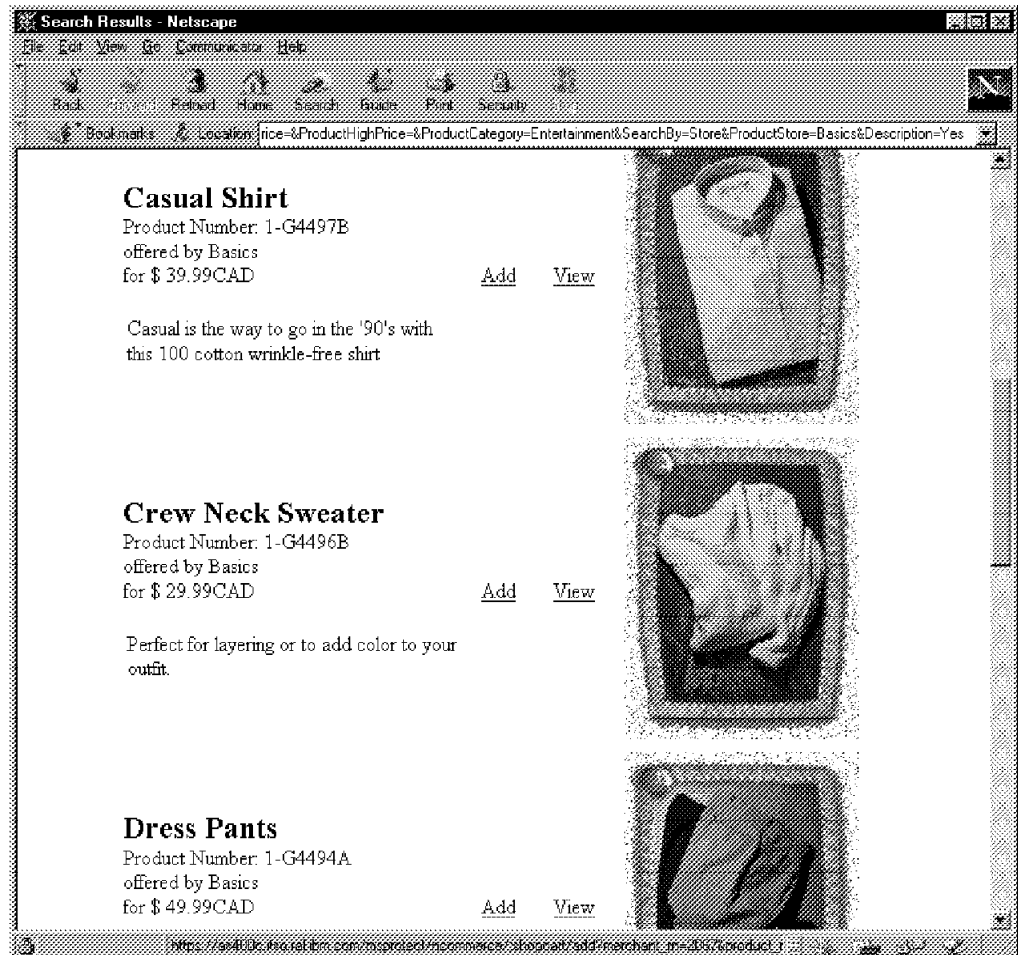


Figure 151. Net.Commerce Metropolitan Mall Search Result Screen

You can either view more description on any of the listed items by clicking on the highlighted word **View** or if you plan to buy it, just add it to your shopping cart by clicking on the highlighted word **Add**. For our shopping trip, click on **Add** to add "Crew Neck Sweater" to our shopping cart; see Figure 152 on page 208.

13.1.7 Shopping Cart

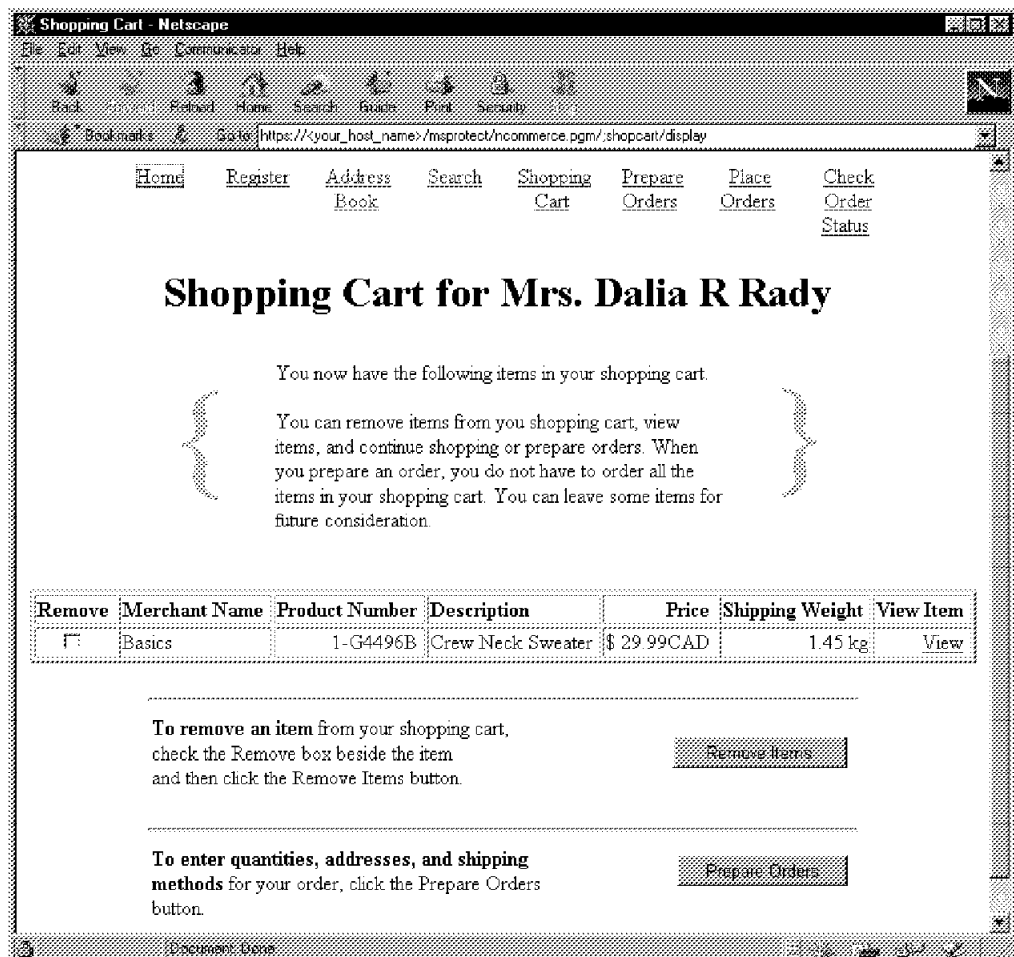


Figure 152. Shopping Cart Contents

Whatever you choose is added to your shopping cart. You can display your shopping cart contents at any time during your shopping trip just as in a normal shopping trip. You can also add or remove from it at any time; even if you log off and still have some items left in your shopping cart they are not automatically removed. They will be waiting for you next time you shop.

In a mall environment, the shopping cart contains all the items selected from all stores, however the store name is indicated near each item. Our shopping cart displays only the "Crew Neck Sweater" we chose from Figure 151 on page 207.

13.1.8 More Shopping

The following front pages are for different stores in the Metropolitan Mall. The first one is a men's fashion shop and the second store is a travel agent offering different vacation trips. The two front pages are designed differently; for example, the menu which contains the Home, Register, Address Book, and so on is shown at the bottom of the "Basics" store page and to the left of the "Netaway" store page and with different images also.

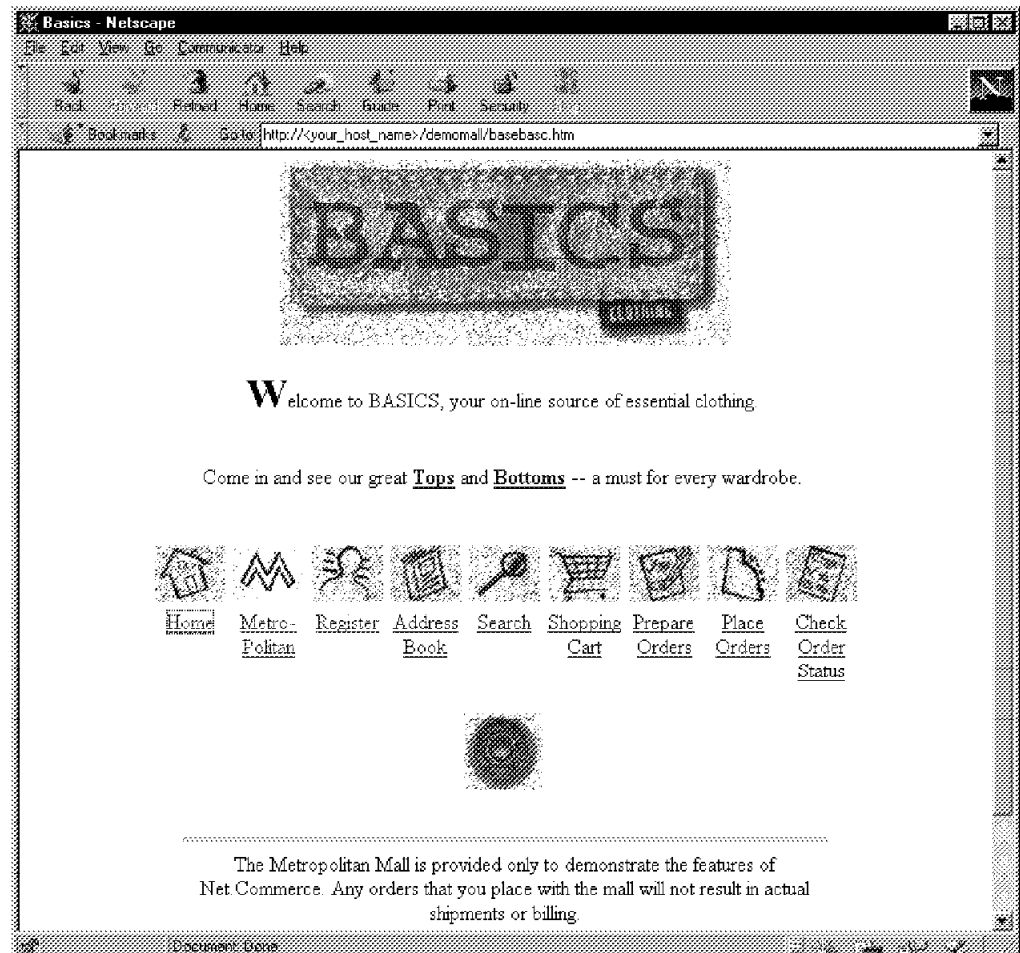


Figure 153. Sample Men's Fashion Shop Front Page

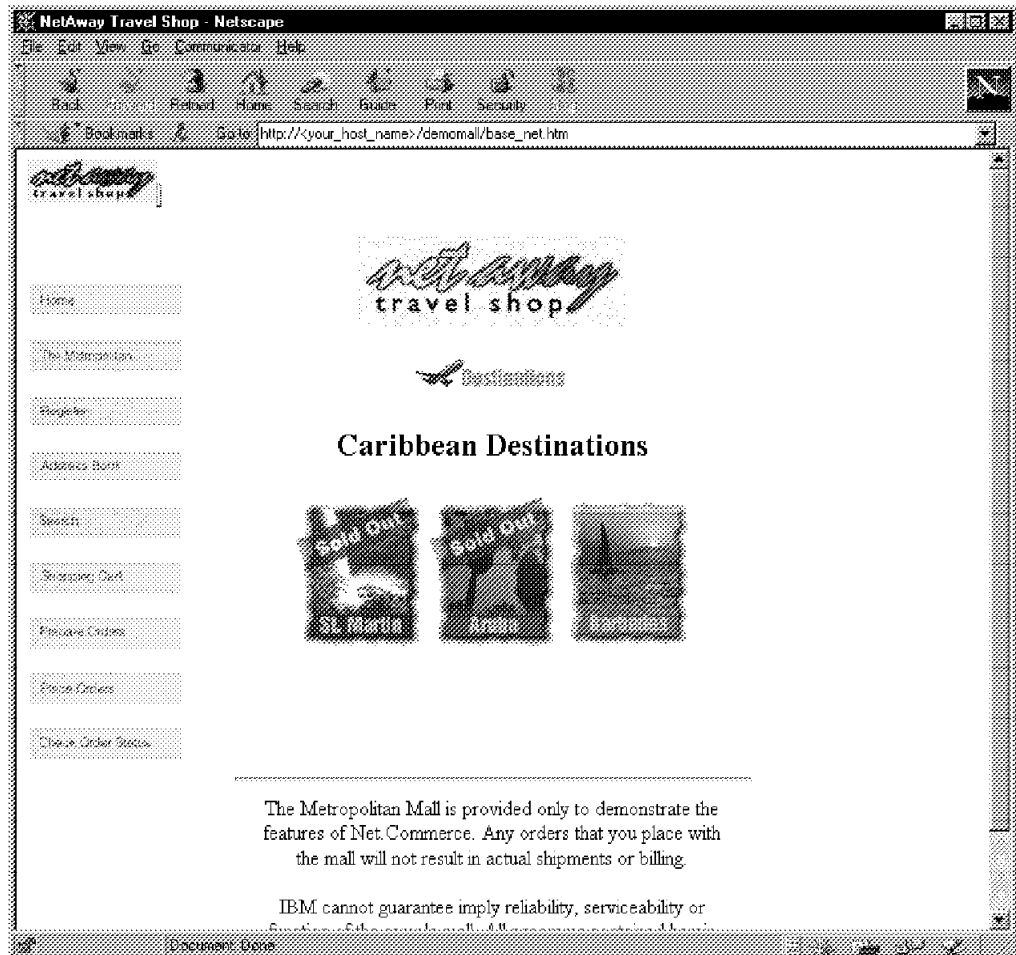


Figure 154. Travel Agent Sample Home Page

Let's assume that you chose the "Netaway" store to start surfing its offerings. The Netaway travel agent decided to **categorize** his offerings by the trip place such as St. Martin, Aruba, and Barbados. As shown on his front page, the only offered package is the *Barbados* offer and all the other packages are already sold out.

Let's discover more details about the Barbados offer by clicking on the *Barbados* image.

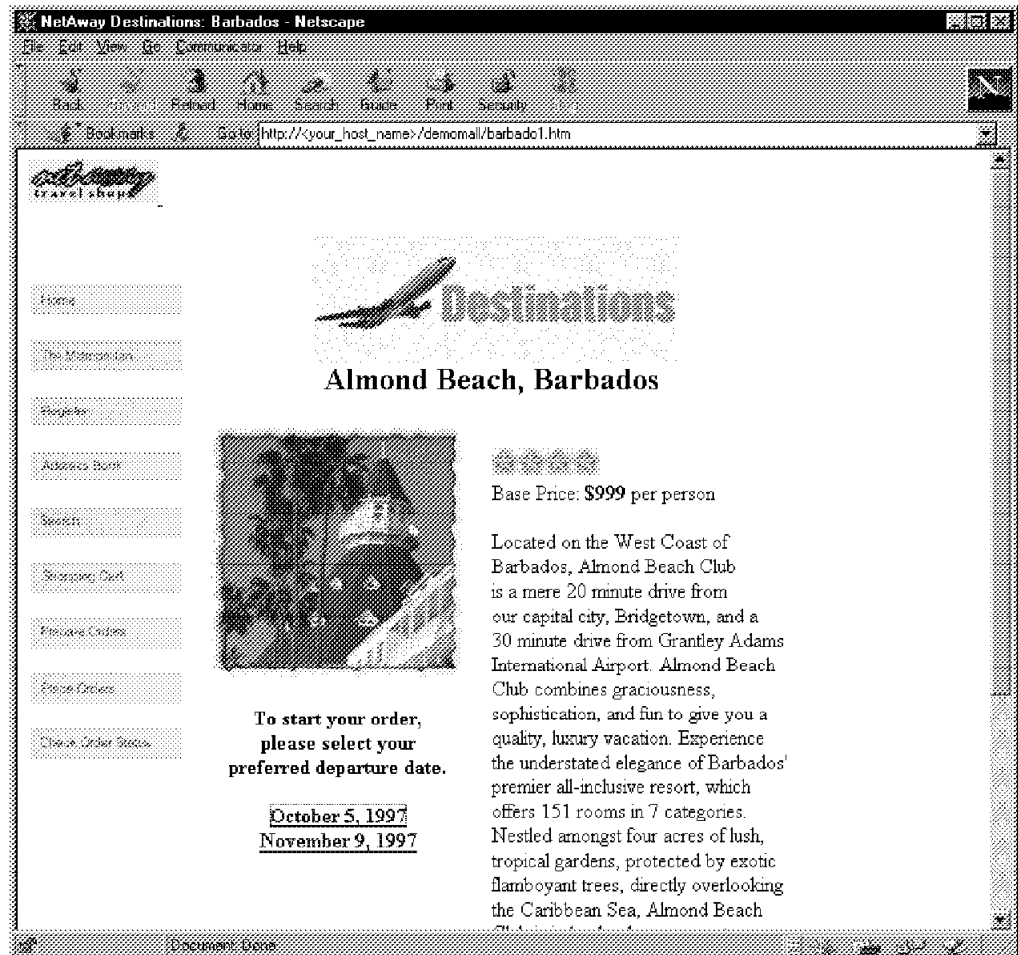


Figure 155. Travel Agent Sample Category Page

The store decided to **sub-categorize** its packages by trip date (October 5, 1997 and November 9, 1997). We click on **November 9, 1997** to explore this trip.

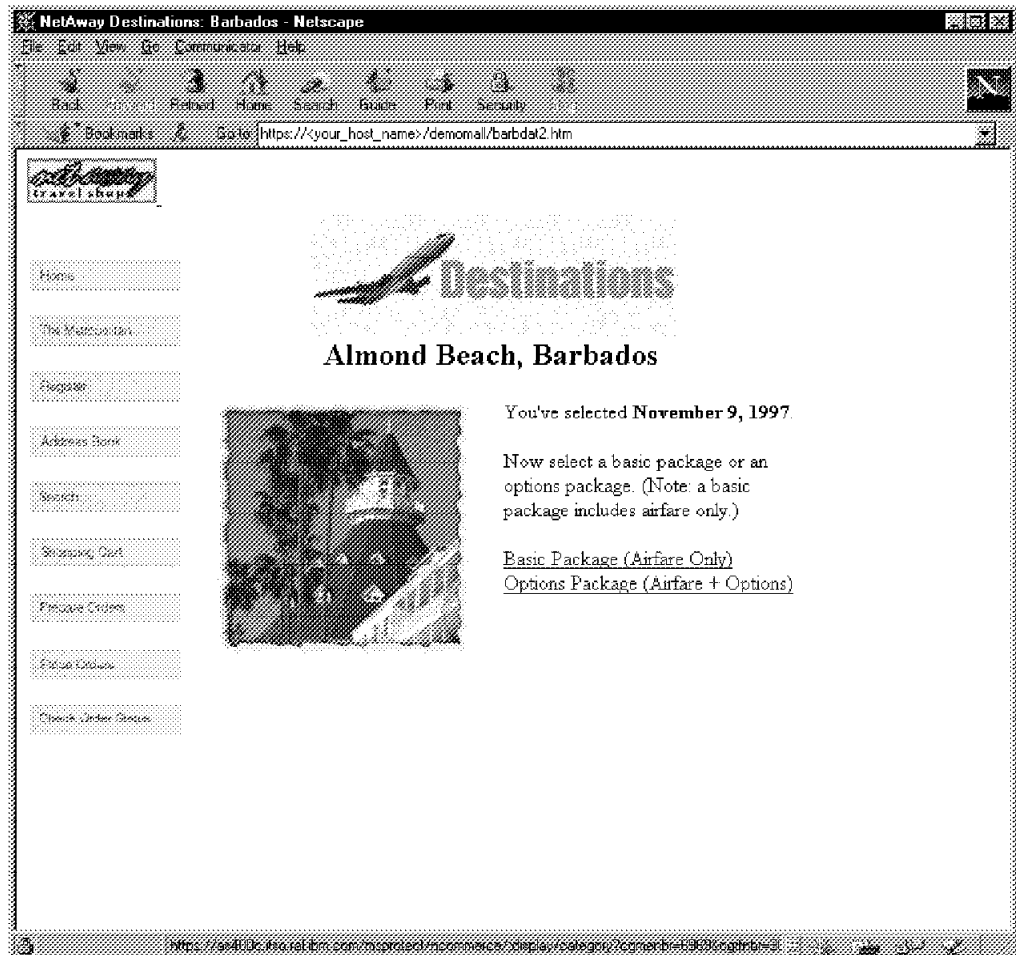


Figure 156. Travel Agent Sample Sub-Category Page

The November 9, 1997 option is further detailed by another level of sub-categorization, which is the travel option. For our shopping trip, we just click on **Basic Package (Airfare Only)** to add it to our shopping cart.

13.1.9 Preparing Order

From any point on the mall pages, you can click on **Prepare Order** to specify the quantities for all the items you want to buy and to indicate the shipping addresses.

Prepare Orders

- Specify shipping addresses

The following table lists the items in your shopping cart. To begin preparing your order, you must first select shipping addresses.

Follow these steps for each item you want to order. If you do not perform these steps for an item, it will simply remain in your shopping cart until you decide to order it, or until you remove it.

- In the Nickname column, select a nickname representing a shipping address.
- Click the Add button. The person you have selected will appear in the Ship To column.

Repeat the above steps if you want to select additional shipping addresses for the same item.

To change or remove a shipping address, click the Details button.

Merchant	Product Number	Item	Price	Nickname	
Basics	1-G4496B	Crew Neck Sweater	29.99	Dalia	Add
NetAway	Bar-Nov996	Trip to Barbados Nov9/97	1099.99	Dalia	Add

Items In Your Current Order

No items in your current order

Figure 157. Preparing Order Screen - 1

For each of the items in your shopping cart, choose the nickname to whom you want to send this item (nicknames are entered from the address book that you can access from any of the mall pages; refer to Figure 147 on page 203) and click on **Add** near each item you want to buy. After each addition, you will find the items added into your current order list as per Figure 158 on page 214.

Note: You have to click on the **Add** button near each item you want to buy.

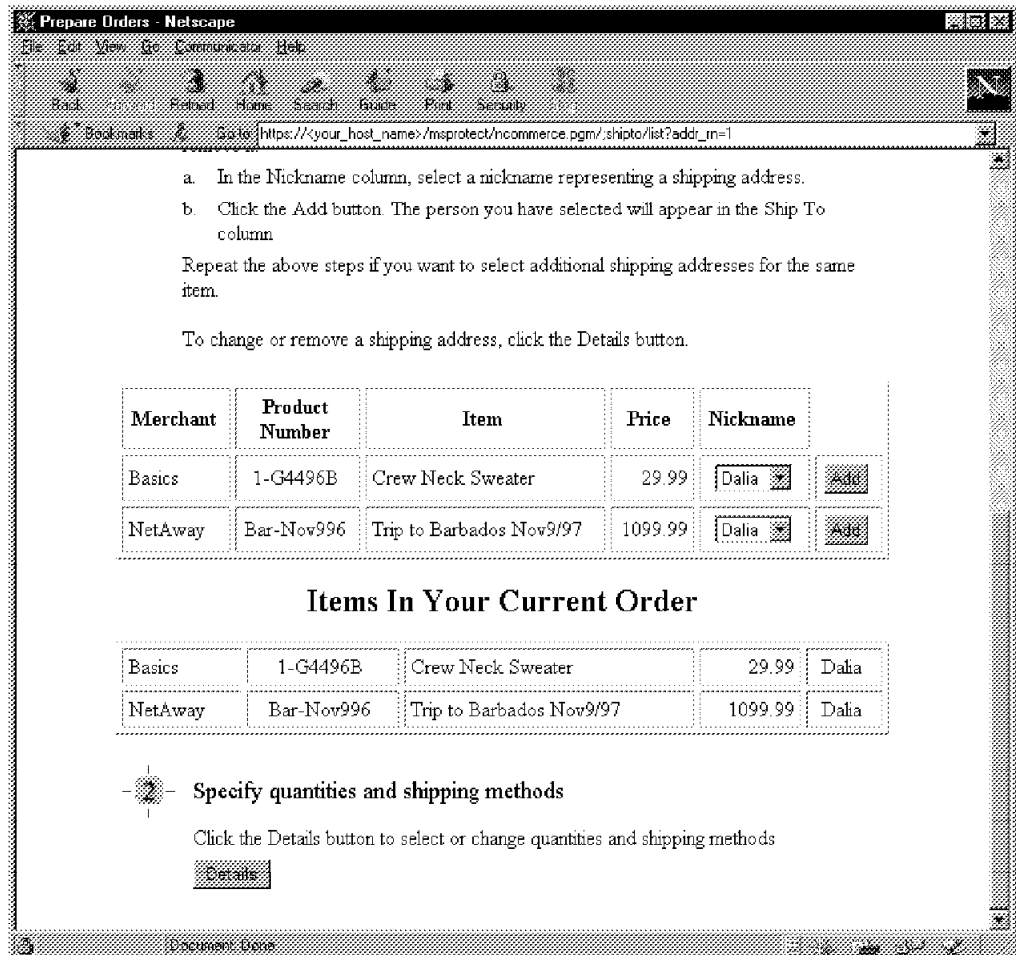


Figure 158. Preparing Order Screen - 2

In Figure 158, we entered Dalia as the nickname to send items to. Now we click on the **Details** button.

Note: Our order will be fulfilled from two different shops and hence we should expect to receive two order numbers.

Shipping Details - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Reload Print Security

Bookmarks Status: https://your_host_name/msprotect/incommerce/shipto/display?

Shipping Details

The following tables list the items that will be sent by each store to each destination. You can change the quantity, shipping address, and shipping method. For each item you have changed, click the Update button to save the changes. To remove an item, click the Remove button. All prices listed are in CAD.

Basics

Items to ship to Dalia

Product Number	Item	Qty	Cost per Item	Subtotal	
1-G4496B	Crew Neck Sweater	<input type="text" value="1"/>	29.99	29.99	<input type="button" value="Update"/>
Ship To: <input type="text" value="Dalia"/>		Shipping Carrier and Mode: <input type="text" value="Metropolitan Shipping Overnight"/>			<input type="button" value="Remove"/>

NetAway

Items to ship to Dalia

Product Number	Item	Qty	Cost per Item	Subtotal	
Bar Mon996	Trip to Barbados	<input type="text" value="1"/>	1099.99	1099.99	<input type="button" value="Update"/>

Document: Demo

Figure 159. Preparing Order Screen - 3

The items you decide to buy are sorted by store. Enter the quantity required of each item. You may also change the shipping address and you may choose from different shipping carriers the store or the mall is offering. You still have a chance to remove an item from your order by clicking on the **Remove** button. If you decide to place the order, click on the **Place orders** button at the end of your screen (scroll down, then click on the button).

13.1.10 Placing an Order

You may also click on **Place order** from any of the mall pages at any time. Here you enter your credit card information. Once the credit card is accepted, the system assigns a reference number to each of your orders. You have a separate reference number for each store.

Note: You must prepare an order before being able to place it.

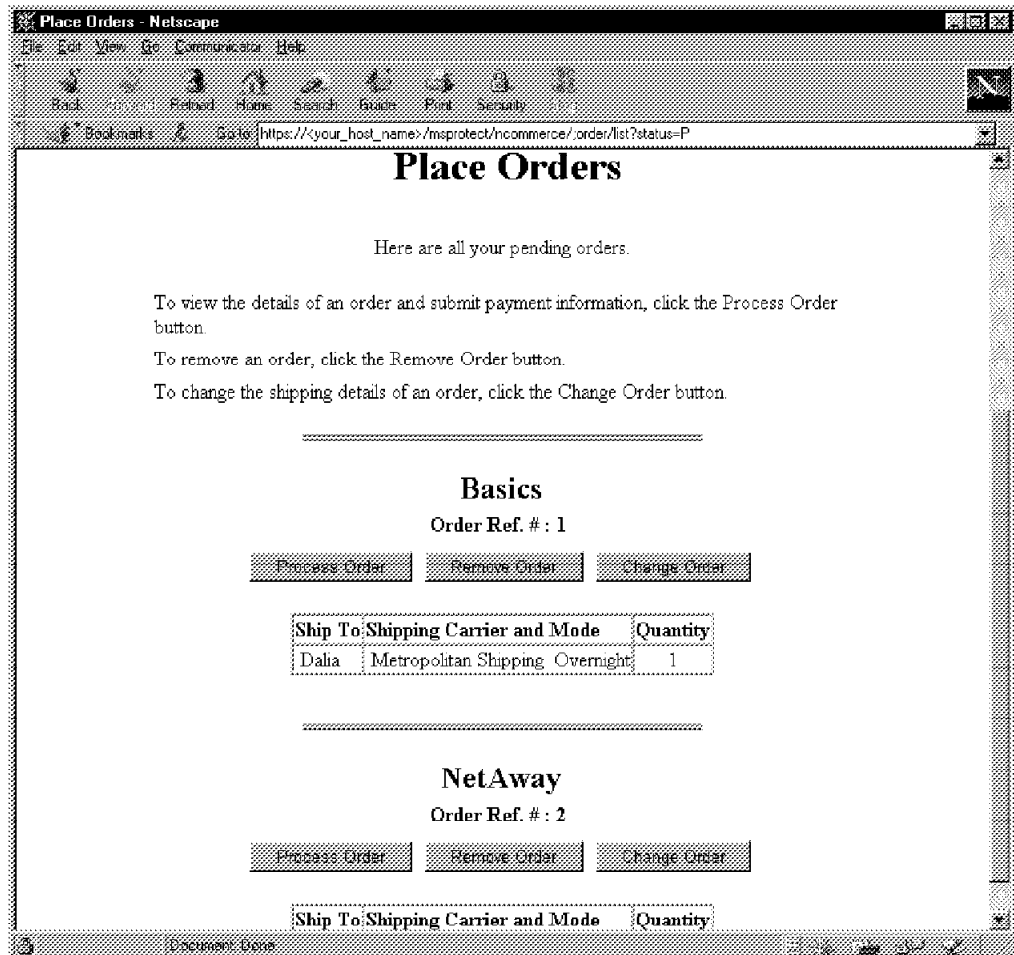


Figure 160. Placing Order Screen - 1

Up to this moment you can still change your order, remove items from an order, or process it. If you decide to process it, click on the **Process Order** button for each of your orders. For our shopping trip, we click on Process Order for order number 1 from the Basics store. See Figure 161 on page 217.

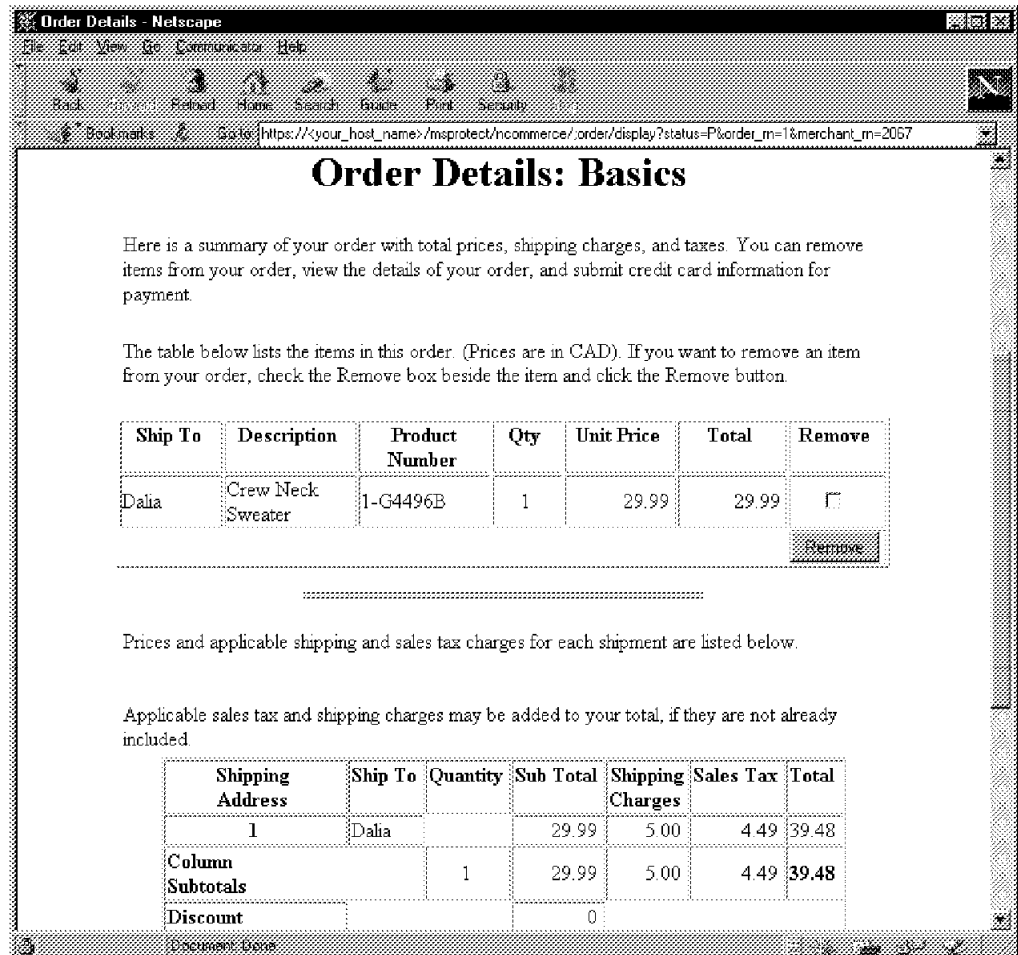


Figure 161. Placing Order Screen - 2

Details of the order are shown along with shipping and tax details. Scroll down to display Figure 162 on page 218 and enter your credit card type, number, and expiry date, then press the **Purchase** button.

Order Details - Netscape

File Edit View Go Communicator Help

Back Forward Home Search Reload Print Security

Bookmarks Status https://your_host_name/msprotect/ecommerce/order/display?status=P&order_m=1&merchant_m=2067

Prices and applicable shipping and sales tax charges for each shipment are listed below.

Applicable sales tax and shipping charges may be added to your total, if they are not already included.

Shipping Address	Ship To	Quantity	Sub Total	Shipping Charges	Sales Tax	Total
1	Dalia		29.99	5.00	4.49	39.48
Column Subtotals		1	29.99	5.00	4.49	39.48
Discount			0			
Total after Discount			29.99	5.00	4.49	39.48

Enter your credit card information below and click the Purchase button. If you do not want to submit payment at this time, click the Cancel button to return to your list of pending orders.

Credit Card	Number	Expiration Month	Expiration Year
VISA	1111111111111111	01	1999

Purchase Cancel

Your credit card will not be billed until the order is shipped. A receipt will be included with your shipment.

Document Done

Figure 162. Placing Order Screen - 3

Note: You have to click Process Order for each order you have on your list in Figure 160 on page 216.

In our shopping trip, we placed order number 1 only and order number 2 is still pending.

13.1.11 Checking Order Status

From any point on the mall pages, you can click on **Check Order Status** to check the status of any of your placed orders.



Figure 163. Checking Order Status Screen

Only the store administrator can change the Order Status (see Figure 133 on page 171), which can be:

- **P** Pending orders (non-processed orders)
- **C** Completed (placed orders)
- **X** Canceled (deleted orders)

13.1.12 Placing Pending Orders

Now if you click on **Place Orders**, you receive Figure 164, which lists all the orders that you have prepared but not yet placed. In our case, we prepared order numbers 1 and 2 but processed order 1 only (refer to the note on page 218).

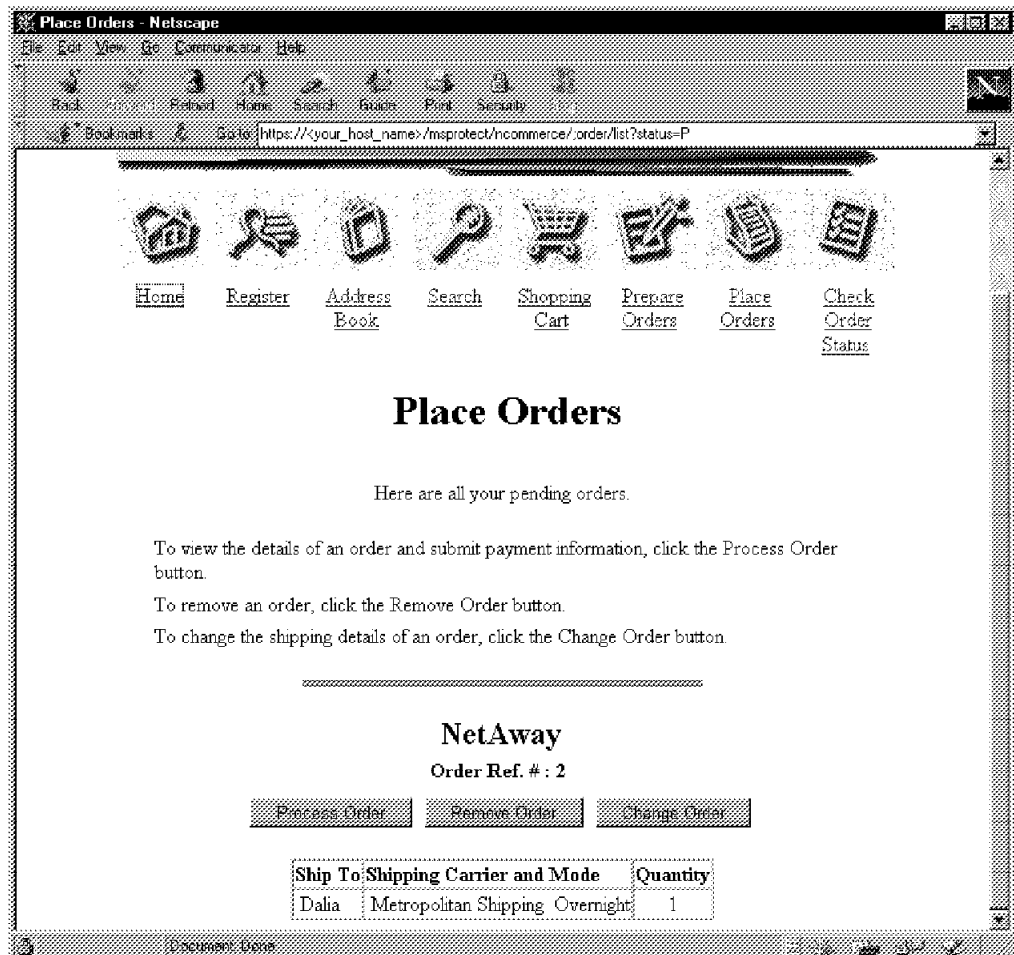


Figure 164. Placing Pending Orders

Please refer to 13.1.10, “Placing an Order” on page 216 for more information on how to place an order.

Appendix A. SSL Configuration for V4R3

The SSL configuration on the V4R3 AS/400 is done through the Digital Certificate Manager (DCM), which is one of the AS/400 Tasks on a browser.

This appendix shows you the overview of the V4R3 DCM, and the SSL configuration steps necessary to run Net.Commerce on the secured Web session. First, we describe the implementation of the DCM in V4R3. Second, we describe the detailed configuration steps of SSL through the DCM.

The steps described in this appendix should be applied in place of step 15 in 7.1, "Configuration Process" on page 55 for a V4R3 system.

A.1 AS/400 Implementation of Digital Certificate Management

Digital Certificate Manager (DCM) is a browser-based administration facility that allows you to create, manage, and use certificates within an enterprise and with partners of an enterprise. You can use DCM to request digital certificates from Internet Certificate Authorities like VeriSign and Thawte.

DCM allows you to create your own intranet Certificate Authority (CA). You can then use the CA to dynamically issue digital certificates to servers and users (client certificates) on your intranet. When you create a server certificate, DCM automatically generates the private key and public key for the certificate. You can also use DCM to register and use digital certificates from VeriSign or other commercial organizations on your intranet or the Internet.

Digital Certificate Manager is option 34 of OS/400 (5769-SS1 option 34). You must install this option to use DCM. DCM is a link in the AS/400 Tasks page which runs in the *ADMIN HTTP server instance. Therefore, you must have installed IBM HTTP Server for AS/400 (5769-DG1) and use it to access DCM. In addition, you must install IBM Cryptographic Access Provider licensed program (5769-AC1, or AC2, or AC3) to create certificate keys. These cryptographic products determine the maximum key length permitted for cryptographic algorithms on your AS/400 system. Government export/import regulations determine which version is available in your country.

To use all the options available in DCM, you must have *SECOFR and *SECADM authority.

To access the Digital Certificate Manager, click on the hyperlink for Digital Certificate Manager from the AS/400 Tasks page. When using Digital Certificate Manager, you can click the *Help* button on any page at any time to access online help.

A.1.1 Configuring a Digital Certificate Environment

You can use your AS/400 system to configure a digital certificate environment. You can also configure the HTTP server to use digital certificates and run over SSL.

Perform the following series of steps to configure an intranet digital certificate environment using AS/400 as CA:

1. Use DCM to create an intranet CA in one or more AS/400 systems.

2. Using DCM, the intranet CA issues server certificates that can be used in the local server (same AS/400 system where the CA is configured) or exported to a remote server.
3. For the clients to recognize and trust the server certificates issued by the intranet CA, the CA certificate must be installed in the clients' browsers and designated as a trusted root.
4. If the server will request client certificates for client authentication, the users must request and install client certificates in their browsers.
5. The HTTP server must be configured to enable SSL (**SSL On**) and specify the key ring file where the server certificate is stored (**keyfile**). Optionally, you can configure SSL client authentication (**SSL_ClientAuth**), add specify PROTECTION/PROTECT directives for further resource protection.

A.2 Requesting a Server Certificate from an Internet CA

To conduct commercial business on the Internet you should request your server certificate from an Internet Certificate Authority such as VeriSign or Thawte who are widely known by client browsers and servers.

For your private Web network within your own company, university or group, or for testing purposes you can, using Digital Certificate Manager (DCM), act as your own CA. A.3, "Creating a Self-signed Certificate" on page 230 explains this procedure.

This section describes how to obtain a server certificate from an Internet certificate authority.

To use a server certificate issued by an Internet CA you must:

1. Request the server certificate from an Internet CA.
2. Receive a server certificate for this server.
3. Configure the HTTP server to use SSL and Server Authentication.

A.2.1 Request a Server Certificate from an Internet CA

To use SSL for secure Web serving, your server must have a digital certificate. You can use an intranet certification authority (CA) to issue a server certificate (see A.3, "Creating a Self-signed Certificate" on page 230), or you can use an Internet CA.

When you choose to use an Internet CA to issue a server certificate, you must first request the certificate. Follow these steps:

1. Start the HTTP *ADMIN server on your AS/400 system. From the command line enter the command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```
2. Access the AS/400 Tasks page from your browser by entering the URL:

```
http:// System_name:2001
```
3. You will be prompted to enter a user name and password. Sign on with a user that has *SECOFR and *SECADM authority. The AS/400 Tasks page is displayed as shown in Figure 165 on page 223.

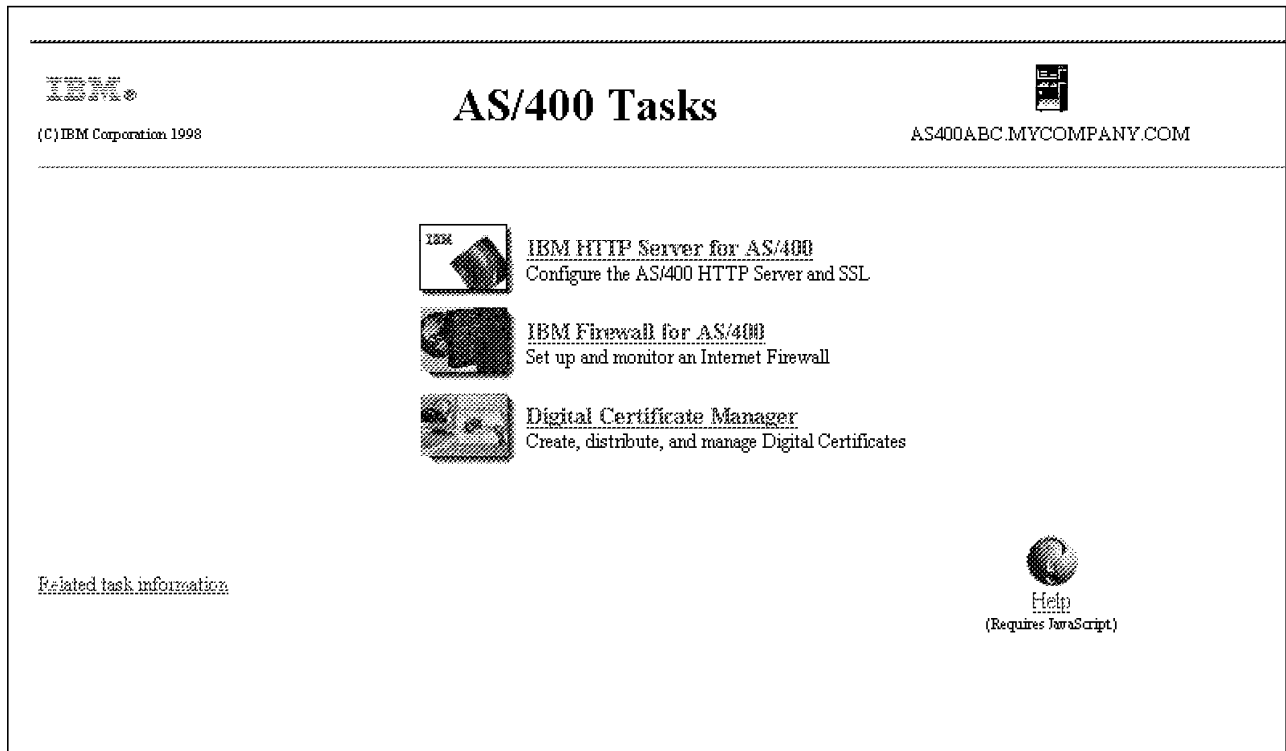


Figure 165. AS/400 Tasks Page

4. Click Digital Certificate Manager.
5. From the Digital Certificate Manager (DCM) page, click **Server Certificates** in the left-hand frame to display an extended list of server tasks.
6. Click **Create a server certificate** from the list to display the **Select a Certificate Authority** page.
7. Select **VeriSign** or other Internet Certificate Authority as shown in Figure 166.



Figure 166. Requesting a Certificate from VeriSign or other Internet Certificate Authority

Click **OK** to display the Create a Server Certificate form.

8. Complete the Create a Server Certificate form as shown in Figure 167 on page 224 replacing the field values with your organization information.

The options for the key size are determined by the IBM Cryptographic Access Provider (5769-ACx) licensed program installed in your system. This is the key size that will be used to generate your public and private keys.

The screenshot shows the 'Digital Certificate Manager' window. On the left is a navigation pane with a tree structure: 'Certificate Authority (CA)' (expanded), 'Registered Certificates', 'Server Certificates' (expanded), 'Create a server certificate' (selected), 'Update a server certificate', 'Delete a server key ring', 'Recover a server certificate', 'Recover a CA certificate', 'Key management', 'Client Certificates', and 'Recover to AS/400 Tools'. The main area contains a message: 'The system will create a public-private key pair and store the key pair in a key ring file.' Below this are several input fields: 'Key size' (512 bits), 'Key label' (VeriSign_Cert), 'Key ring path and file name' (/QIBM/USERDATA/ICSS/CERT/SERVER/VeriSign.), 'Key ring password' (masked with asterisks), and 'Confirm password' (masked with asterisks). A section titled 'Certificate Information' follows, with fields for 'Server name' (AS400ABC.NYCOMPANY.COM), 'Organization unit' (ITSOROCK), 'Organization name' (IBM), 'Locality or city' (Rochester), 'State or province' (MIN), 'Country' (US), and 'Zip or postal code' (55901). At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Digital Certificate Manager

The system will create a public-private key pair and store the key pair in a key ring file.

Key size: 512 (bits)

Key label: VeriSign_Cert (required)

Key ring path and file name: /QIBM/USERDATA/ICSS/CERT/SERVER/VeriSign. (required)

Key ring password: ***** (required)

Confirm password: ***** (required)

Certificate Information

Server name: AS400ABC.NYCOMPANY.COM (required)

Organization unit: ITSOROCK

Organization name: IBM (required)

Locality or city: Rochester

State or province: MIN (required minimum of 3 characters)

Country: US (required)

Zip or postal code: 55901

OK Cancel Help

Figure 167. Request a Server Certificate from an Internet CA

By default, the system inserts the fully qualified name of the AS/400 system into the Server name field. Do not change this name. This is the name used to describe your server. You can give the server any name, although the fully qualified TCP/IP host name is usually used for the server name.

Click **OK** to process the Create a Certificate Request form.

You will receive the Server Certificate Request Created page as shown in Figure 168 on page 225.

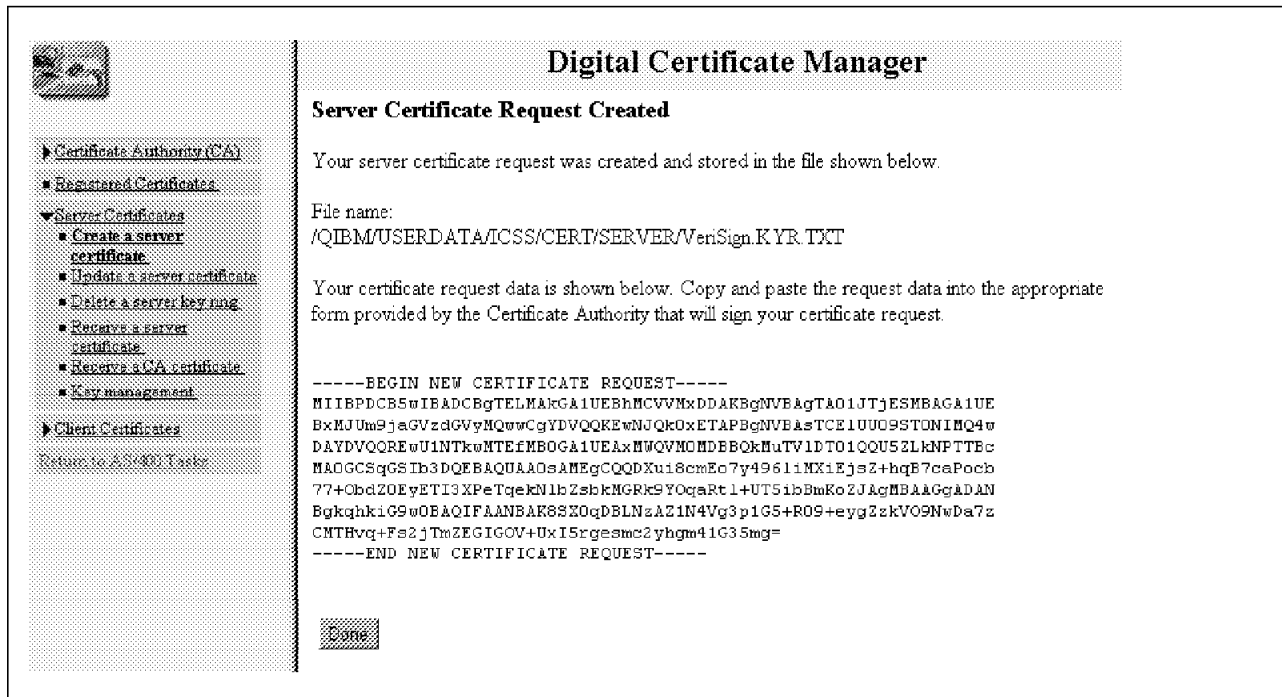


Figure 168. Server Certificate Request Generated by DCM

Note

Do not click done or close the browser yet. You will need to cut and paste the certificate request when you submit the Certificate Signing Request to the Internet CA.

9. Copy the Server Certificate Request to your clipboard. Start at -----BEGIN NEW CERTIFICATE REQUEST-----

and end at -----END NEW CERTIFICATE REQUEST-----

Click Done to close the page.

10. Follow your Internet CA procedures to paste the certificate request. For example, to request a certificate from VeriSign, follow the instructions that are described on the following URL:

<http://www.verisign.com>

When VeriSign is satisfied that you meet all of its requirements, it will e-mail the secure server certificate to you. You should receive it in 3 to 5 business days. Other certificate authorities will have their own procedures.

A.2.2 Receive a Server Certificate for this Server

After you receive the certificate from the Internet CA, you need to copy the signed server certificate to a text file that DCM can access when you perform the Receive server certificate task. Perform the following steps:

1. Copy the signed server certificate presented to you by the Internet CA to your clipboard.

Start at -----BEGIN CERTIFICATE REQUEST-----

and end at -----END CERTIFICATE REQUEST-----

2. Paste the signed server certificate in your clipboard into a .txt file. Use a text editor of your choice, for example Notepad, to create a txt file and paste the server certificate issued by the Internet CA.
3. Save the file in your AS/400 system IFS. Use a mapped network drive and save the txt file that contains the server certificate issued by the Internet CA in the following path (enter a file name of your choice):
/QIBM/USERDATA/ICSS/CERT/SERVER/rcvcert.txt
4. Back in DCM, click **Receive a server certificate** and complete the Receive a Server Certificate page (Figure 169).

Digital Certificate Manager

Receive a Server Certificate

Use this form to receive a server certificate into a server key ring file after the certificate has been signed by a Certificate Authority. Before using this form, you must copy the signed certificate into a file which you specify below.

Specify the fully qualified path and file name for the files requested below.

Signed certificate path and file name: /QIBM/USERDATA/ICSS/CERT/SERVER/rcvcert.txt (required)

Key ring path and file name: /QIBM/USERDATA/ICSS/CERT/SERVER/VeriSign.kyr (required)

Key ring password: ***** (required)

OK Cancel Help

Figure 169. Receiving a Server Certificate Issued by an Internet CA

5. The Certificate Received page is displayed. You have the option to use the received certificate with the ADMIN or LDAP server. Do not select these options. Click **OK**.
6. You should receive a Server Configuration Status message indicating the server certificate operations are complete. Click **Done**.
7. You must now set the key as the default key. Back in DCM, click **Key management**. Complete the Key Management page and select **Work with keys** (see Figure 170 on page 227).

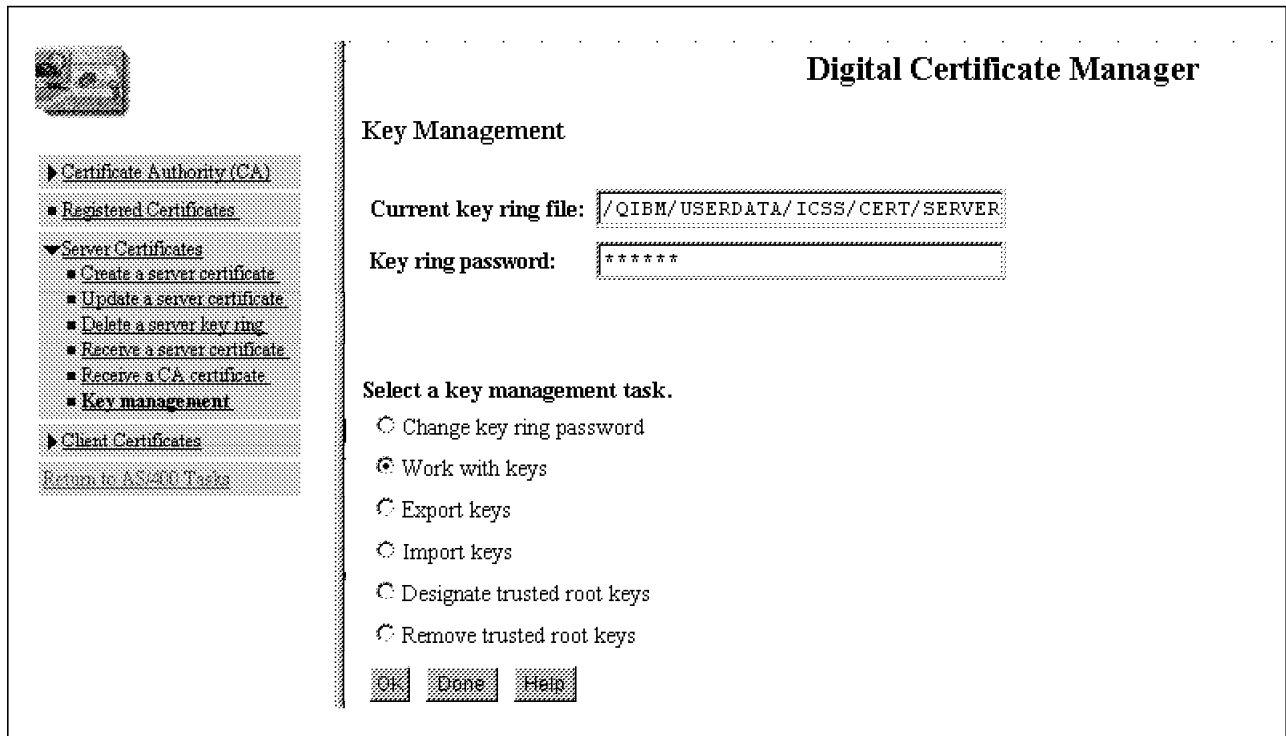


Figure 170. Key Management Page

8. Select the key with the label corresponding to the certificate you received from the Internet CA (VeriSign_Cert in our example), select **Set key to be the default** and click **OK**.

A.2.3 Configure the HTTP Server to Use SSL

The Web server must be configured to run over SSL and use the certificate you received in A.2.2, "Receive a Server Certificate for this Server" on page 225. To configure your HTTP server to run over SSL and use a certificate, you must perform the following tasks:

1. From Digital Certificate Manager click Return to AS/400 Tasks. The AS/400 Tasks page is displayed (see Figure 174 on page 231).
2. Click IBM HTTP Server for AS/400.
3. Click Configuration and Administration.
4. Click Configurations in the left frame.
5. Select your HTTP configuration file from the drop-down box immediately beneath the Configurations link as shown in Figure 171 on page 228.

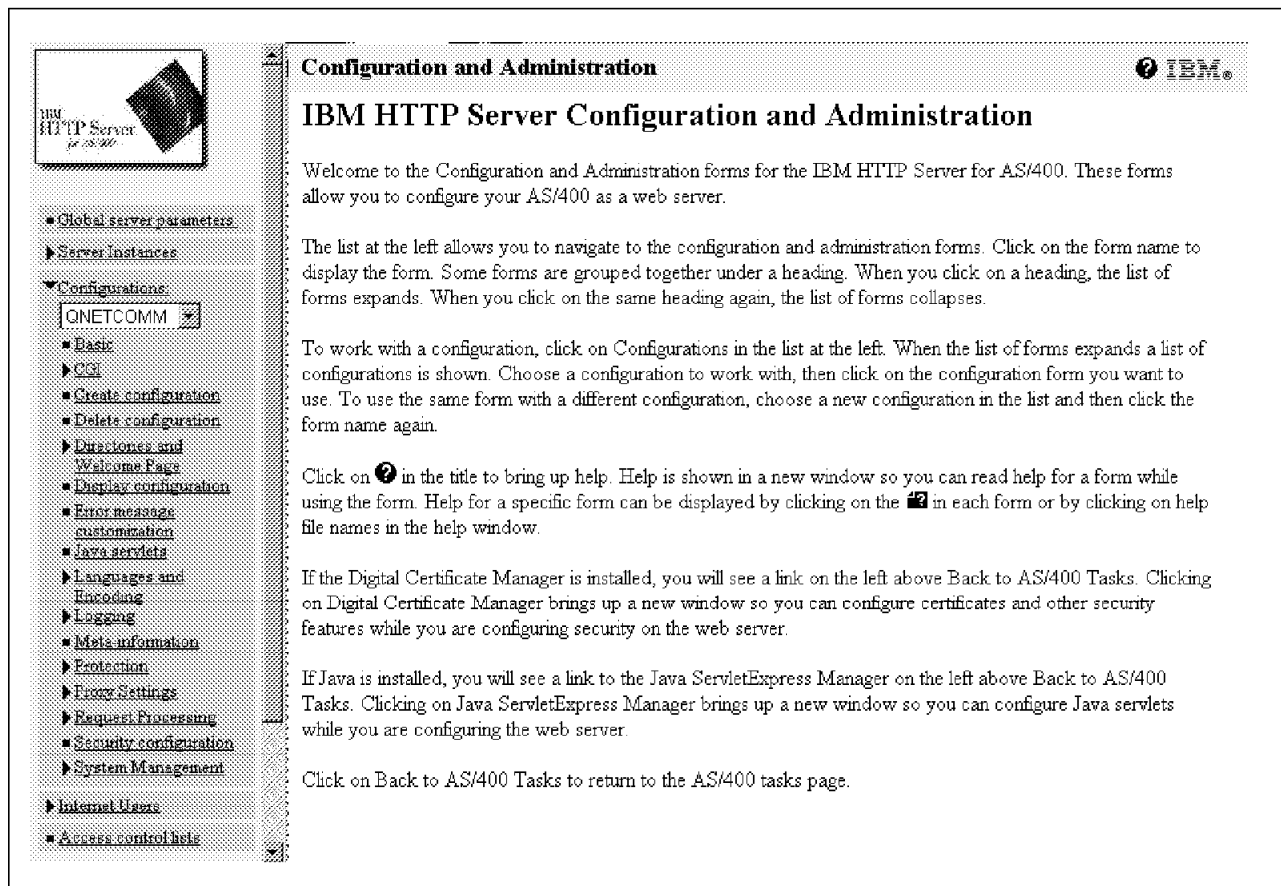


Figure 171. HTTP Server Configuration

6. Click **Security configuration**. Fill in the Security configuration page (see Figure 172 on page 229).

Check **Allow SSL connections**.

Accept the default SSL port (443) or specify the port you wish to use for SSL.

Deselect **Enable SSL client authentication**.

Add the key ring path and file name. If you copied it to the clipboard you can paste it now.

/QIBM/USERDATA/ICSS/CERT/SERVER/DEFAULT.KYR

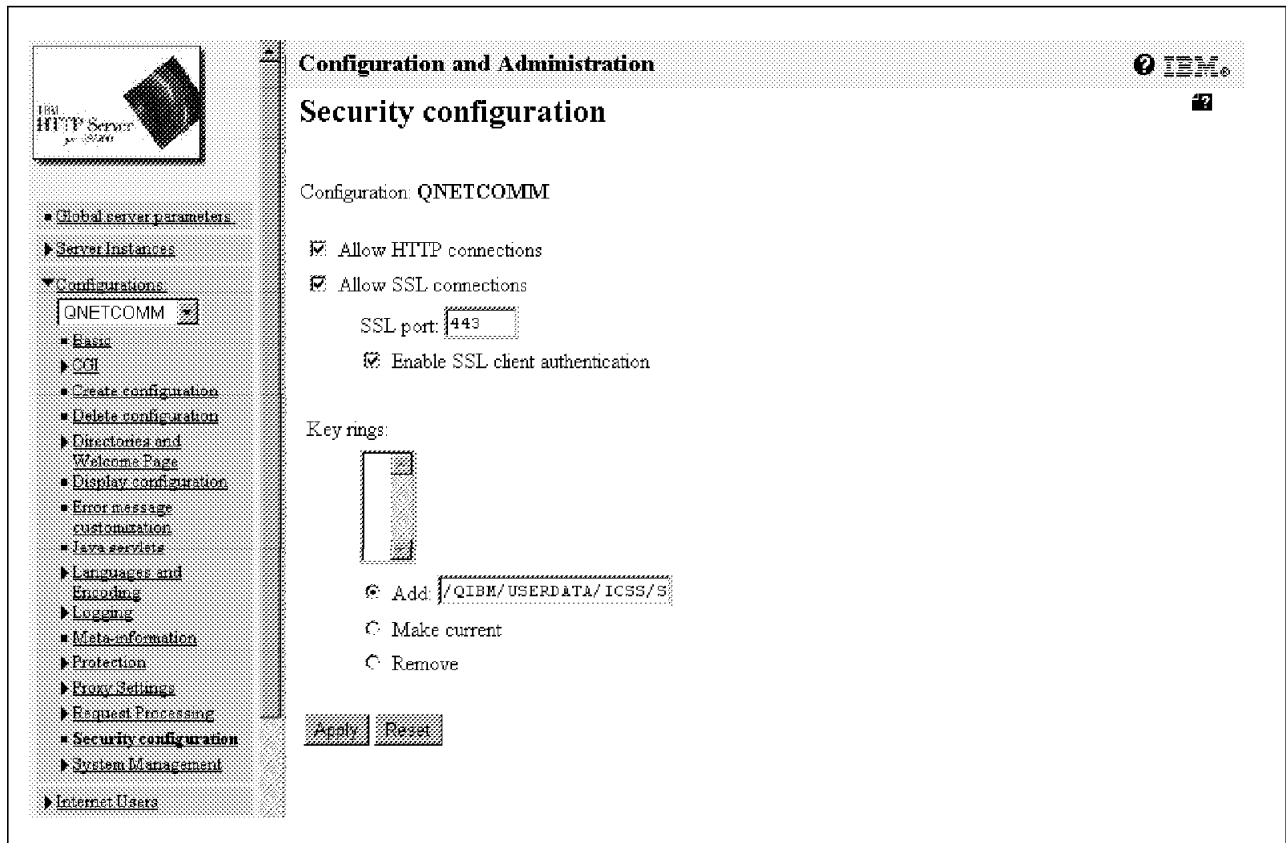


Figure 172. Security Configuration Page

Click **Apply**. You should see this message at the top of the screen: *The configuration file was successfully updated. Server instances that are using this configuration must be stopped and started for the changes to take affect.*

You should also see your key ring file added in the Key rings box.

7. You should now stop the server instance and start it again. In the left pane of the window click **Server Instances**.
8. Click **Work with server instances**.
9. From the drop-down box, select your server instance (see Figure 173 on page 230).

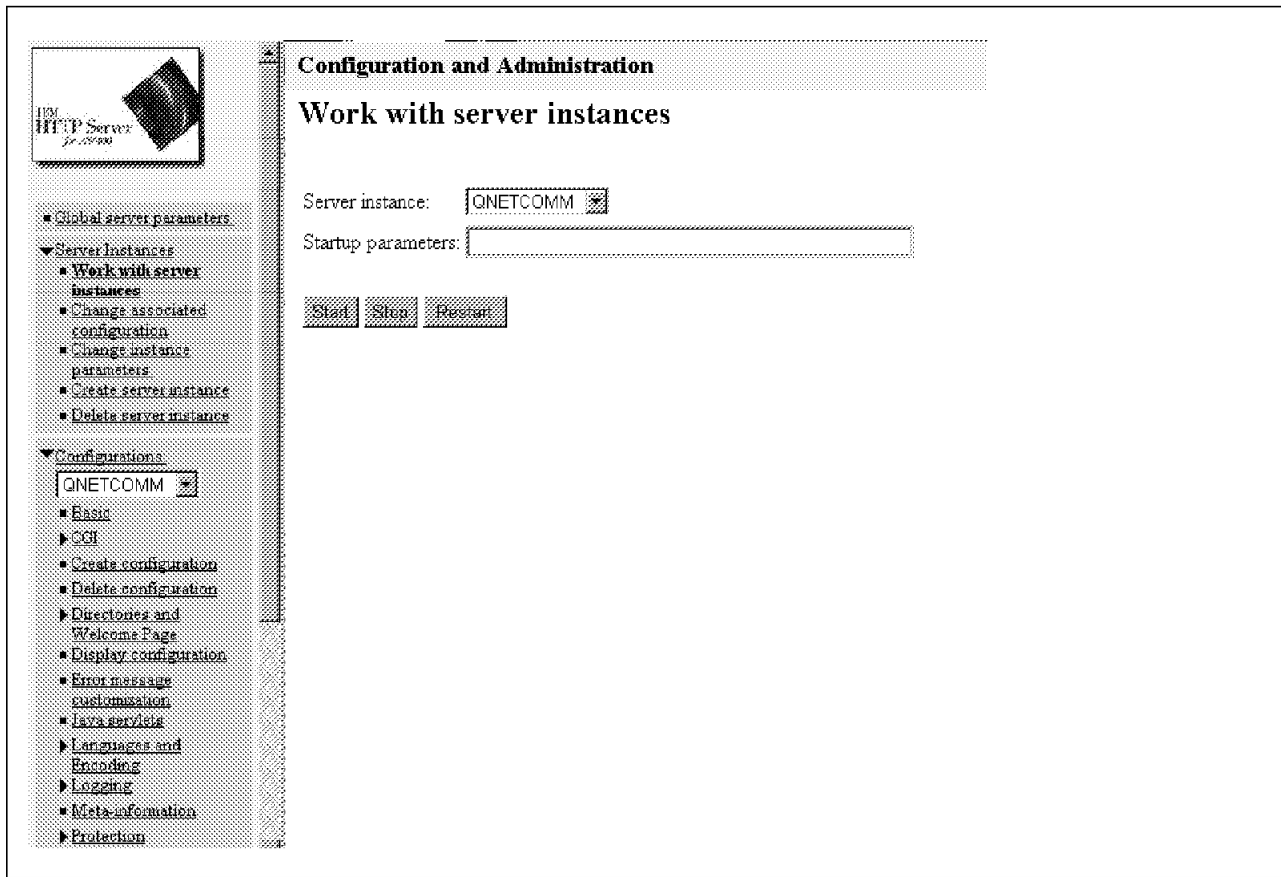


Figure 173. Work with Server Instances

Click **Stop**.

Wait until you see this message at the top of your window: *The server instance was successfully stopped.*

10. From the drop-down box select your server instance (see Figure 173).

Click **Start**.

You should see this message: *The server instance was successfully started.*

You have now successfully configured your Web server to use SSL with server authentication.

A.3 Creating a Self-signed Certificate

This section describes how to create a self-signed certificate using your AS/400 system as an intranet Certificate Authority.

Because self-signed certificates are not recognized by visitor's browsers as coming from a trusted third party, they should not be used in customer transaction situations over the Internet. Use them only on your test and development systems, and for demonstration purposes. You can also use a self-signed certificate for intranet applications.

To obtain a self-signed certificate, you will do the following:

1. Create an intranet Certificate Authority.
2. Create a server certificate with your intranet CA.
3. Configure your HTTP server to use the server certificate.

A.3.1 Create an Intranet Certificate Authority

Digital Certificate Manager (DCM) allows you to create your own intranet CA in your AS/400 system and use it to issue server and client certificates for testing purposes or applications within your organization.

This section outlines the steps you must perform to create a CA on your AS/400 system. You only need to perform this task, if the system administrator has not previously created an intranet Certificate Authority and if you wish to use your AS/400 system to issue intranet server certificates.

To create an intranet CA in your AS/400 system, follow these steps:

1. Start the HTTP *ADMIN server on your AS/400 system. From the command line enter the command:
`STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)`
2. Access the AS/400 Tasks page from your browser by entering the URL:
`http:// System_name:2001`
3. You will be prompted to enter user name and password. Sign on with a user that has *SECOFR and *SECADM authority. The AS/400 Tasks page is displayed as shown in Figure 174.

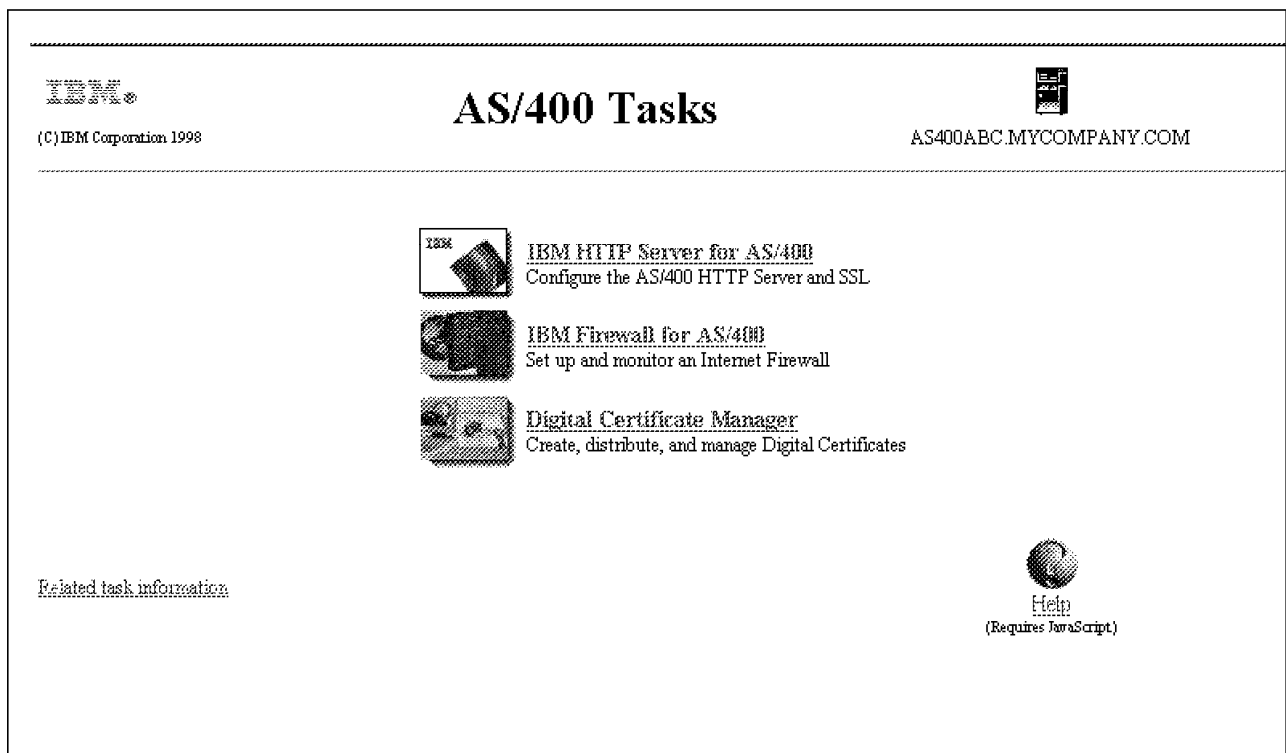


Figure 174. AS/400 Tasks Page

4. Click Digital Certificate Manager.

5. Click Certificate Authority (CA).
6. Click Create a Certificate Authority.

Note

If a Certificate Authority (CA) has previously been created on your system, the Create a Certificate Authority link is not displayed.

7. Complete the Create a Certificate Authority form as shown in Figure 175. Replace the field values as appropriate with your organization information.

Digital Certificate Manager

Create a Certificate Authority

The system will create a public-private key pair and store the key pair in a key ring file.

Key size: 512 (bits)

Key ring password: ***** (required)

Confirm password: ***** (required)

Certificate Information

Certificate Authority name: ITSOSIGN (required)

Organization unit: ITSO

Organization name: IBM (required)

Locality or city: Rochester

State or province: MIN (required minimum of 3 characters)

Country: US (required)

Zip or postal code: 55901

Validity period of Certificate Authority (1-2000): 1095 (days)

OK Cancel Help

Figure 175. Create an Intranet Certificate Authority

Click **OK**.

8. After DCM processes the form, it stores a copy of the CA certificate in the CA default key ring file:

/QIBM/USERDATA/ICSS/CERT/CERTAUTH/DEFAULT.KYR

At this point, you can install the CA certificate in your browser so that it recognizes the certificates issued by the intranet CA. DCM displays the page shown in Figure 176 on page 233.

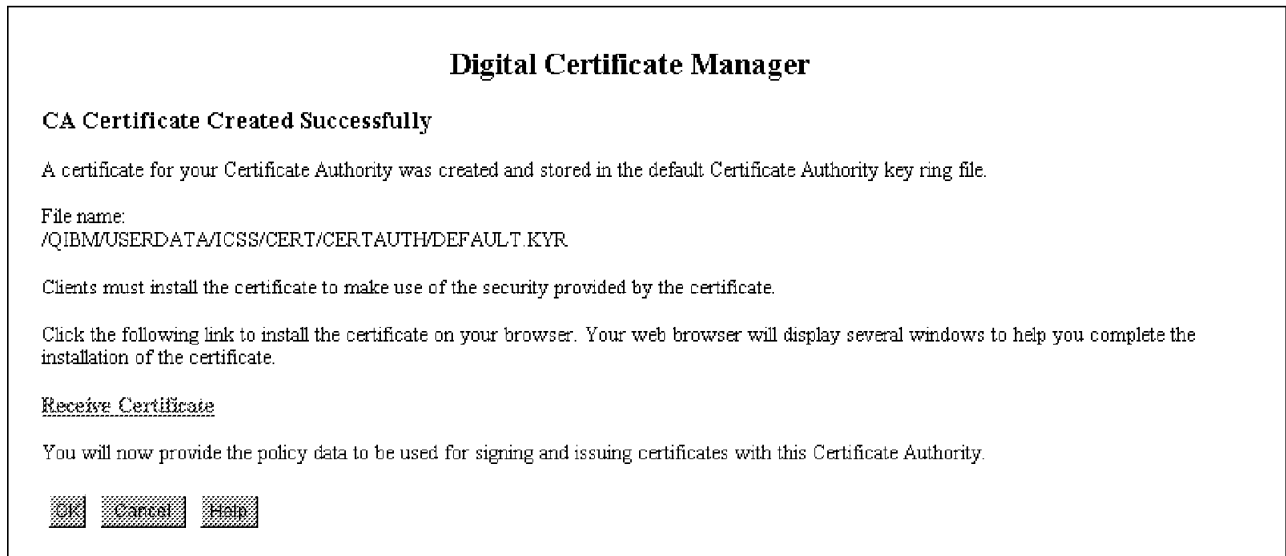


Figure 176. CA Certificate Created Successfully

Click **Receive Certificate** if you wish to install the CA certificate in your browser now. Otherwise, click **OK** to proceed to the next setup window, and install the CA certificate in your browser at a later time. Notice the default path and file name where the intranet CA key ring file is stored.

9. Complete the CA Policy Data form to set the client certificate policy for your CA. See Figure 177.

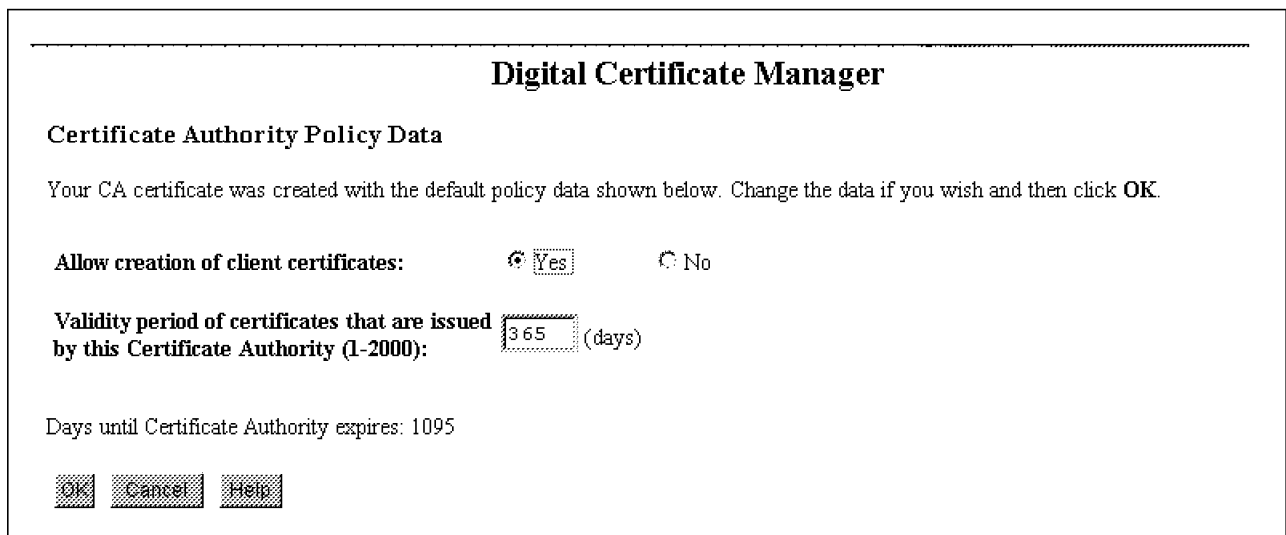


Figure 177. Certificate Authority Policy

This is where you define whether your CA can issue and sign client certificates. If the CA can issue client certificates, indicate the length of time for which the certificates will be valid.

10. The policy data for the Certificate Authority was successfully changed message will appear. At this point, you can continue to create a server certificate signed by your Certificate Authority. This will allow server authentication by clients that use this system as a server.

A.3.2 Create a Server Certificate with Your Intranet CA

Immediately after creating the intranet CA, DCM leads you to create a server certificate.

To use Secure Sockets Layer (SSL) for secure Web serving, your server must have a digital certificate. When you create a server certificate in DCM, the server certificate and keys are stored in the following default directory and file:
/QIBM/USERDATA/ICSS/CERT/SERVER/DEFAULT.KYR

Note

When you create a server certificate, Digital Certificate Manager (DCM) stores a copy of the CA certificate in the server's key ring and designates it as a trusted root.

Complete the Create a Server Certificate form as shown in Figure 178 replacing the field values with your organization information.

The options for the key size are determined by the IBM Cryptographic Access Provider (5769-ACx) licensed program installed in your system. This is the key size that will be used to generate your public and private keys.

Digital Certificate Manager

Create a Server Certificate

The system will create a public-private key pair and store the key pair in a key ring file.

Key size: 512 (bits)

Key ring password: ***** (required)

Confirm password: ***** (required)

Certificate Information

Server name: AS400ABC.MYCOMPANY.COM (required)

Organization unit: ITSOROCH

Organization name: IBM (required)

Locality or city: Rochester

State or province: MIN (required: minimum of 3 characters)

Country: US (required)

Zip or postal code: 55901

OK Cancel Help

Figure 178. Create a Server Certificate Page

By default, the system inserts the fully qualified name of the AS/400 system into the Server name field. Don't change this name. This is the name used to

describe your server. You can give the server any name, although the fully qualified TCP/IP host name is usually used for the server name.

Click **OK**.

The Server Certificate Created Successfully page displays (see Figure 179).



Figure 179. Server Certificate Created Successfully Page

From this page, you can select whether the HTTP ADMIN server or the Directory Services server (LDAP) will use this server certificate for SSL connections. Do NOT select any of these options.

Copy the file and path name where the server certificate is stored to the clipboard. It is:

/QIBM/USERDATA/ICSS/CERT/SERVER/DEFAULT.KYR

Click **OK**.

Click **Done**.

A.3.2.1 Create a Server Certificate with an Existing Intranet CA

The steps to create a server certificate described above assume you are creating the intranet CA for the first time. If your administrator has already created an intranet CA and server certificate, you can use the existing server certificate in your HTTP server configuration.

If you wish to create a new server certificate using an existing intranet CA, start by clicking **Create a server certificate** under Server Certificates in DCM (see Figure 180 on page 236).



Figure 180. Create a Server Certificate with an Existing Intranet CA

Select **Local Certificate Authority** and Click **OK**.

The Create Server Certificate page is displayed next (see Figure 178 on page 234).

A.3.2.2 Authorizing QTMHHTTP to the Key Ring File

You may need to give QTMHHTTP (or the user profile under which your HTTP server runs) authority to the key ring and stash files. The key ring and stash files are created with *PUBLIC authority *EXCLUDE. QTMHHTTP (or the user profile under which the HTTP server runs) must have at least read rights to those files.

To authorize QTMHHTTP to the key ring and stash file enter the command:

```
WRKLNK '/QIBM/UserData/ICSS/Cert/Server'
```

1. Enter 5, Next level, to display the files in the directory.
2. Enter 9, Work with authority, by the key ring file (DEFAULT.KYR).
3. Enter 1, Add user , User=QTMHHTTP, Data Authority=*R.
4. Repeat steps 1 through 3 to authorize QTMHHTTP to the stash file (DEFAULT.sth).

A.3.3 Configure the Web Server to Use SSL with Server Authentication

The Web server must be configured to run over SSL and use the server certificate you created in A.3.2, "Create a Server Certificate with Your Intranet CA" on page 234. The configuration task is described in A.2.3, "Configure the HTTP Server to Use SSL" on page 227.

A.4 Additional Resources

For additional information, check out the following resources:

- *HTTP Server for AS/400 Webmaster's Guide*, GC41-5434
- *Securing Your AS/400 from Harm on the Internet*, SG24-4929
- <http://publib.boulder.ibm.com/pubs/html/as400/ic2924/info/index.htm>
Click Internet -> Digital certificate management
- <http://www.software.ibm.com/web servers/>
- <http://www.ibm.com/security>
- <http://www.ics.raleigh.com>
- <http://www.internet.ibm.com/commercepoint/registry/>
- <http://www.verisign.com/products/doc.html>
- <http://home.netscape.com/assist/security/ssl/index.html>
- <http://www.rsa.com>

Appendix B. Special Notices

This publication is intended to help Technical Specialists who are working with Net.Commerce to understand the support provided by, install and configure Net.Commerce for AS/400 V4R2. The information in this publication is not intended as the specification of any programming interfaces that are provided by AS/400 for Net.Commerce, 5798-NC2. See the PUBLICATIONS section of the IBM Programming Announcement for AS/400 for Net.Commerce, 5798-NC2 for more information about what publications are considered to be product documentation.

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Appendix C. Related Publications

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

C.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see "How to Get ITSO Redbooks" on page 243.

- *AS/400 e-commerce: Internet Connection Servers*, SG24-2150
- *Integrating Net.Commerce with Legacy Applications*, SG24-4933
- *Secure Electronic Transactions: Credit Card Payment on the Web in Theory and Practice*, SG24-4978
- *Safe Surfing: How to Build a Secure World Wide Web Connection*, SG24-4564
- *Securing Your AS/400 from Harm on the Internet*, SG24-4929

C.2 Redbooks on CD-ROMs

Redbooks are also available on CD-ROMs. **Order a subscription** and receive updates 2-4 times a year.

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
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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

C.3 Other Publications

These publications are also relevant as further information sources:

- *IBM Net.Commerce for AS/400: Installation and Operations Guide*, GC09-2509 **1**
- *IBM Net.Commerce Basics: Open for Business*, SC09-2372
- *IBM Net.Commerce: Customization Guide and Reference*, SC09-2370
- *IBM Net.Commerce Administrator* **1**
- *IBM Net.Commerce Template Designer* **1**
- *IBM Net.Commerce Utilities* **1**
- *IBM Net.Commerce Commands, Tasks, APIs and Database Tables* **1**
- *Webmaster's Guide*, GC41-5434
- *AS/400 Database Programming*, SC41-5701

1 These manuals are available online, see 7.4, “Printable Net.Commerce Book Files” on page 87.

How to Get ITSO Redbooks

This section explains how both customers and IBM employees can find out about ITSO redbooks, redpieces, and CD-ROMs. A form for ordering books and CD-ROMs by fax or e-mail is also provided.

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