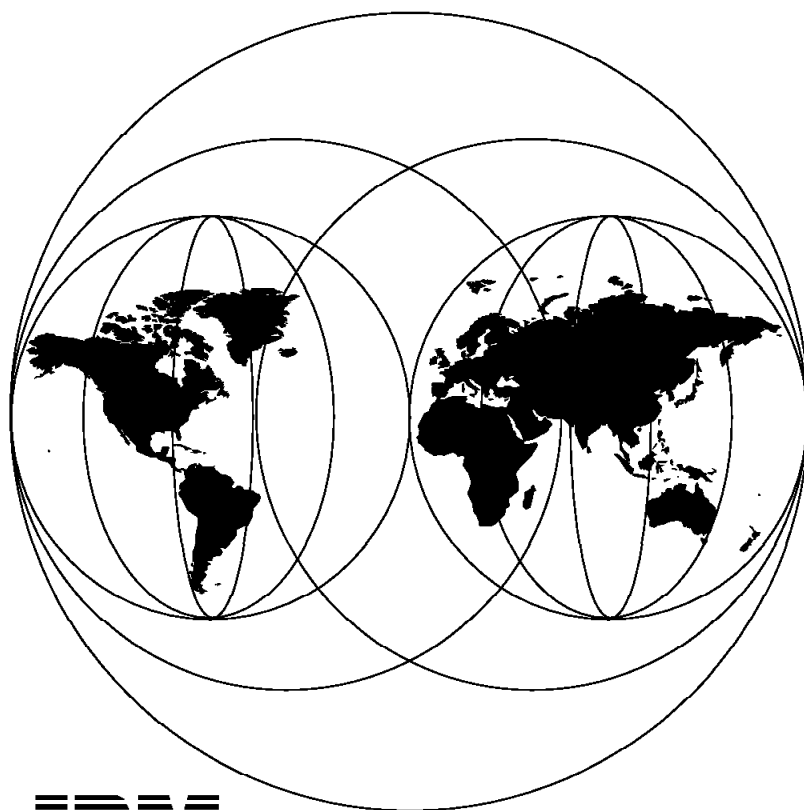


**Image and Workflow Library:  
Best Practices for VisualInfo**

December 1996



**IBM**

**International Technical Support Organization  
Poughkeepsie Center**





International Technical Support Organization

SG24-4792-00

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Best Practices for VisualInfo**

December 1996

**Take Note!**

Before using this information and the product it supports, be sure to read the general information in Appendix C, "Special Notices" on page 209.

**First Edition (December 1996)**

This edition applies to Version 2 Release 2 Modification 1 of IBM ImagePlus VisualInfo, 5801-AAR to 5807-AAR for use with the OS/2, Windows (NT, 95 and 3.1), AIX and MVS/ESA operating systems.

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## Preface

IBM VisualInfo is one of the most powerful operational image products available today. To implement its complete set of features at one time might be a challenging effort. A more realistic approach is to begin with a basic installation and administration and, through VisualInfo's scalability, increase the number of users and features gradually.

This redbook presents just such an approach to assist the reader with installing, customizing, and using VisualInfo. The intent is to keep it simple. The first part, "Setting Up Your System," lists the steps for selecting, installing, and configuring your VisualInfo components. The second part, "Managing Your System," gives real-world hints and tips for avoiding or solving problems during your daily system administration activities. It also gives some pointers on migrating to the next level or platform.

Some knowledge of VisualInfo is assumed, which can be obtained by attending a class, reading the product manuals, or hands-on experience. This manual is not a substitute for the VisualInfo manuals; they are referenced where appropriate so the reader can gain further details. Some knowledge of related products and processes is also assumed in this book.

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## How This Redbook Is Organized

This book contains the following chapters:

- Chapter 1, "Creating a Solution"

This chapter describes an overview of the IBM VisualInfo Version 2 system and provides information to plan a complete solution.

- Chapter 2, "Installing the System"

This chapter presents all of the available implementations for Visualinfo and gives a complete road map to install and test the system.

- Chapter 3, "Configuring the VisualInfo System Solution"

This chapter explains how to define your system and how to customize and implement all of the system features.

- Chapter 4, "Installation Practices"

This chapter presents many considerations about recommended environments, windows client, supported peripherals, deletion procedures, and Visualinfo connectivity.

- Chapter 5, "Administration Practices"

This chapter provides information about Visualinfo administration in the following areas: DB2/2 tuning for Library/Object Servers, backup and restore, OS/2 client tips, CM/2 tips, and Object Server/Staging area administration.

- Chapter 6, "Migration"

This chapter shows a road map of how to migrate from Visualinfo Version 1 to Version 2 and provides general information about Visualinfo migration from OS/2 to an MVS platform.

- Appendix A, “MVS/ESA Environment”

This appendix gives tips and hints about VisualInfo for MVS/ESA. It provides general information about performance, problem determination and related publications.

- Appendix B, “A Project Management Methodology”

This appendix describes an IBM project management methodology, which can be used as a model/skeleton for your project.

---

## The Team That Wrote This Redbook

This publication is a result of a residency conducted at the International Technical Support Organization, Raleigh Center and was produced by a team of specialists from around the world.

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---

## Comments Welcome

We want our redbooks to be as helpful as possible. Should you have any comments about this or other redbooks, please send us a note at the following address:

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**Your comments are important to us!**



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## Part 1. Setting Up Your System

This part contains information about configuring and installing your system. Although it is primarily intended for someone new to VisuallInfo, there is information of interest to experienced users as well.

It includes the following chapters:

- Chapter 1, "Creating a Solution"
- Chapter 2, "Installing the System"
- Chapter 3, "Configuring the VisuallInfo System Solution"





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## Chapter 1. Creating a Solution

The IBM ImagePlus VisualInfo solution offers document processing for both large and small organizations. It lets users capture, store, and retrieve documents on-line and provides document, folder, and workflow management capabilities. VisualInfo also provides extensive data integrity and security.

With the VisualInfo system, you can develop a customized document management solution that includes library and information processing capabilities for multiple media types, including image, audio, spreadsheets, and PC-generated word processing documents. You can create image, workflow, facsimile (using IBM FaxRouter/2) and other applications to automate and gain control of the information your enterprise processes each day. You can increase productivity, lower storage costs, and improve customer service.

---

### 1.1 Using Project Management Methods

As a consultant or customer who is studying a VisualInfo solution, you need to gauge the expectations and experience level of the project team. Some assume that a LAN-based solution is always simple, and they may not have personnel available with the broad range of skills that are needed. They may not have a support structure (external and internal) to resolve hardware and software problems. Other clients have personnel who possess various skills, but they don't have a structure in place to allow these people to communicate with each other on the project.

While project management methods are not covered in this redbook, here are some tips to keep in mind. Early in the project you want to:

Appoint a project manager.

Assemble a team of IBMers, customers, and business partners.

Decide if you want to propose an out-of-the-box solution or a custom-programmed solution.

Many VisualInfo projects are custom-programmed, since each customer's business processes and requirements are different. For example, many customers request that a data capture application be included, which can handle forms recognition and OCR. Your solution may include installing VisualInfo as part of a new system or using VisualInfo to image-enable an existing system. Programming skills in C or REXX must be available, rather than the traditional COBOL.

Project consultants and planners are encouraged to use a logical, step-by-step approach when implementing any imaging system. These steps may include: enterprise analysis, business area analysis, solution definition, external design, internal design, procedures and training, solution generation, solution validation, solution deployment, technology selection and implementation, and maintenance and enhancement. One popular list of solution steps includes:

- Definition: gather requirements.
- Design: make a prototype.
- Generation: write code.

- Validation: test your solution.
- Deployment: roll out your system.

For more on project management methodology, see Appendix B, “A Project Management Methodology” on page 205.

---

## 1.2 Understanding the VisuallInfo Solution

VisuallInfo is a client/server solution. It has three main components:

- Library (or index) server
- Object server
- Client application

Each of the components can operate on any supported platform without operationally affecting any of the other components.

The family of platforms is designed to grow from OS/2, AIX, and MVS/ESA to include possibly other servers, as well as Windows clients. As other platforms are added, the VisuallInfo product will provide even more solution options for the user.

### 1.2.1 System Overview

The VisuallInfo system provides enterprise-wide access to document processing and library management. The system consists of one or more clients connected to one library server and one or more object servers.

- One or more Windows and OS/2-based client workstations (any mix)
- One OS/2, AIX, or MVS-based library server
- One or more OS/2, AIX, and MVS-based object servers (any mix)
- One or more OS/2 workstations to run the System Administration program

**Note:** If you are mixing different versions of VisuallInfo in your system, then certain server combinations may require that TCP/IP be used instead of SNA. Check the announcement materials or consult your IBM representative.

Figure 1 on page 5 shows the client/server relationship in the VisuallInfo system. Departments located anywhere across an enterprise can access their own documents as well as enterprise documents. The system also provides for a distributed placement of documents and other data on a variety of LAN-based and host-based servers, while maintaining seamless user access.

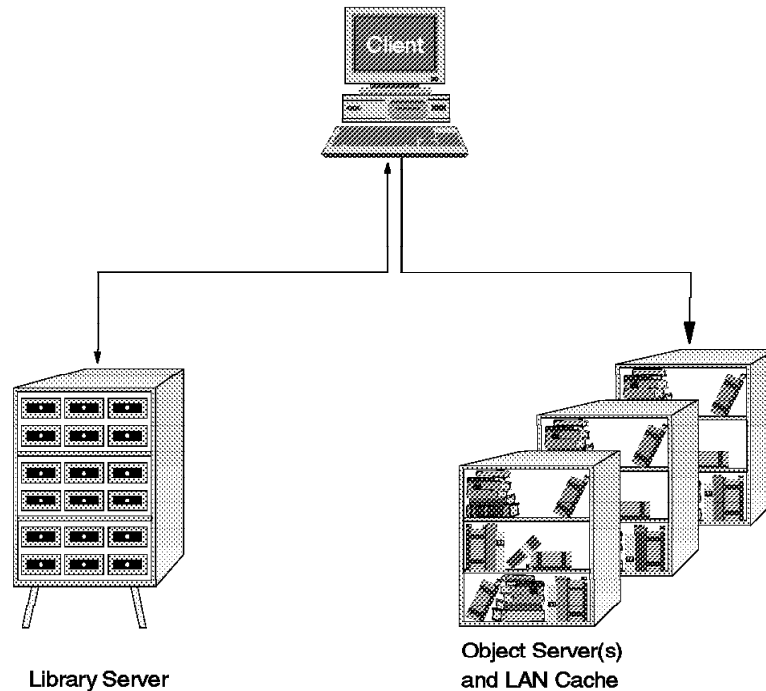


Figure 1. The Client/Server Relationship in the VisualInfo System

Typical end-user functions in a VisualInfo solution include:

- Storing a document.
- Indexing a document.
- Displaying a document.
- Requesting a document from a workbasket.

All of these activities use functions provided in the client and library server. That is, most VisualInfo functions requested by a user at the client workstation result in activity at the library server. The library server stores the indexing and retrieval information that you assign to each of your documents. The object servers are the actual repositories for your stored documents in the system.

In general, the message flow from a client to the servers is:

1. The end user requests function on a client workstation.
2. The VisualInfo client does some processing and sends a message to the library server.
3. The library server does some processing and sends a message to the object server.
4. The object server does some processing and sends a message to the client workstation.
5. If necessary, an object moves between a client and an object server.

## 1.2.2 Understanding VisuallInfo Communication Flow

The communications flow among client workstations, its assigned library server, and the available object servers follow a sequence that can be understood from the following picture.

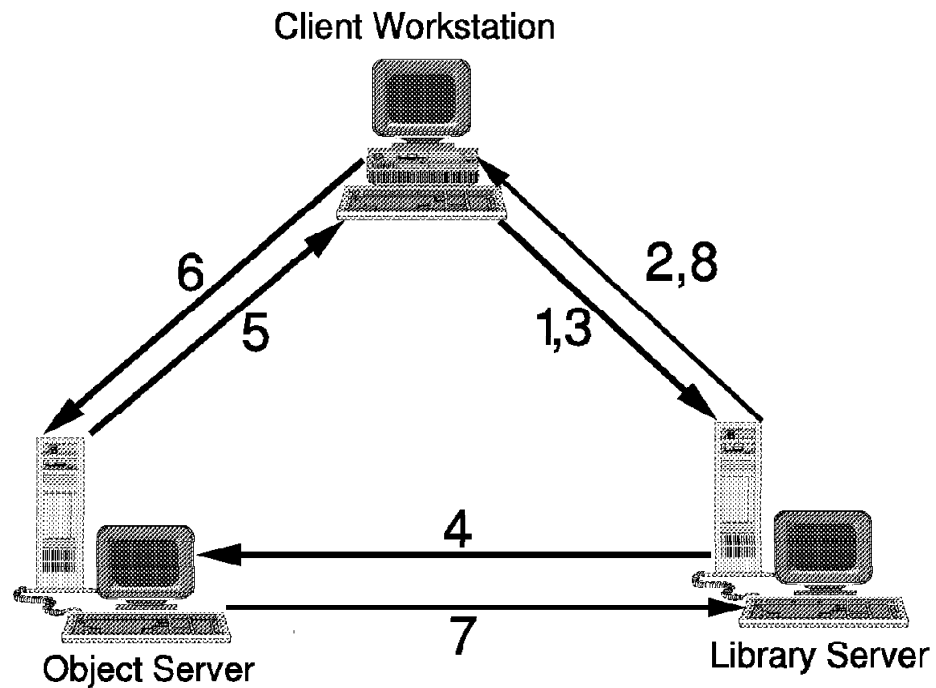


Figure 2. VisuallInfo Communications Flow

Figure 2 shows a complete VisuallInfo flow. Follow the sequence:

1. The client workstation does an object (document) request to its assigned library server.
2. The library server receives the request and sends back the object ID to the workstation client. This process is done because the client workstation checks to see if it has the object stored in its WORKSTATION LOCAL CACHE and if it is the latest update. If the object is found in the local cache and it is the latest update, the process finishes here.
3. If the object is not found in the local cache, the client workstation sends a notification to the library server saying that it does not have the object.
4. Then the library server sends an object request to the appropriate object server that owns the object. The client workstation ID that is requesting the object is also sent.
5. The object server sends the object to the client workstation.
6. The client workstation notifies the object server that the object was received successfully.

7. The object server notifies the library server that the operation was completed successfully.
8. The library server finishes the object request process. This process uses the DB2 two-phase commit feature.

## **1.2.3 Interaction of VisuallInfo Components**

### **1.2.3.1 Role of DB2**

DB2 is used by VisuallInfo to maintain all of the databases that control the objects that are stored in the system. Through DB2 databases and tables, VisuallInfo knows, for example, where the objects are stored and which keys retrieve them.

DB2 performance is very important for VisuallInfo overall performance, so database administration is a very important point to consider when you are planning your solution.

### **1.2.3.2 Role of TCP/IP or SNA**

All of the communication done among VisuallInfo components (when they do not reside in the same workstation) is managed by TCP/IP or SNA (CM/2 and VTAM).

When a client machine performs an object request, TCP/IP or SNA are responsible for transporting this request to the library server workstation. They are also responsible for transporting the object from the object server workstation to the client machine.

### **1.2.3.3 Role of VisualAge C++**

VisualAge C++ provides the runtime libraries and the compiler that VisuallInfo needs to build the DLLs for each index class that is created by the system.

If you have a development environment or if you want to create applications to work with VisuallInfo, there are many VisualAge tools and samples that you can install to optimize your application programming.

## **1.2.4 A Closer Look at the VisuallInfo System**

To better understand the VisuallInfo system, let's take a closer look at its components and the ways you can work with them.

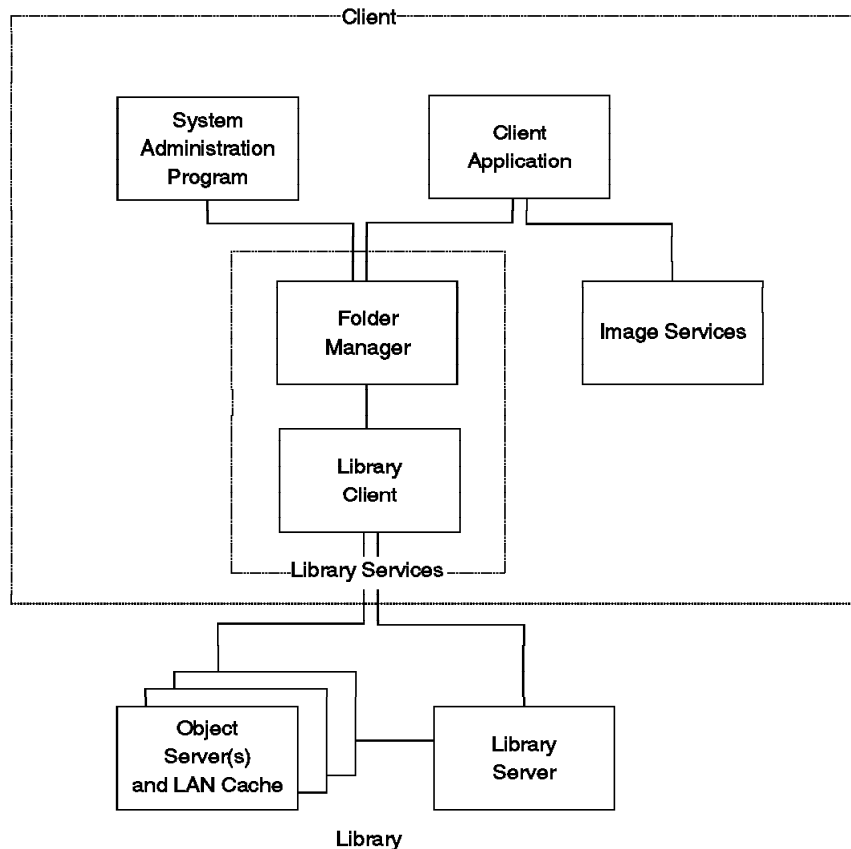


Figure 3. The Main Components in an OS/2 VisualInfo Implementation

Figure 3 shows the relationship between the components of the system:

- Client Components
  - Client Application (customizable)
  - Image Services
  - Folder Manager
  - Library Client
  - System Administration program
- Library Server
- Object Server

#### 1.2.4.1 Client Features

The VisualInfo system includes a choice of configurable client applications that provide a complete end-user interface for your document management system.

The system also includes a wide variety of application programming interfaces (APIs) that let you use your business applications with the VisualInfo system and the available fax processing, workflow, and document capture complementary offerings.

User exits provide points where you can create application-specific processing routines to customize your VisualInfo system.

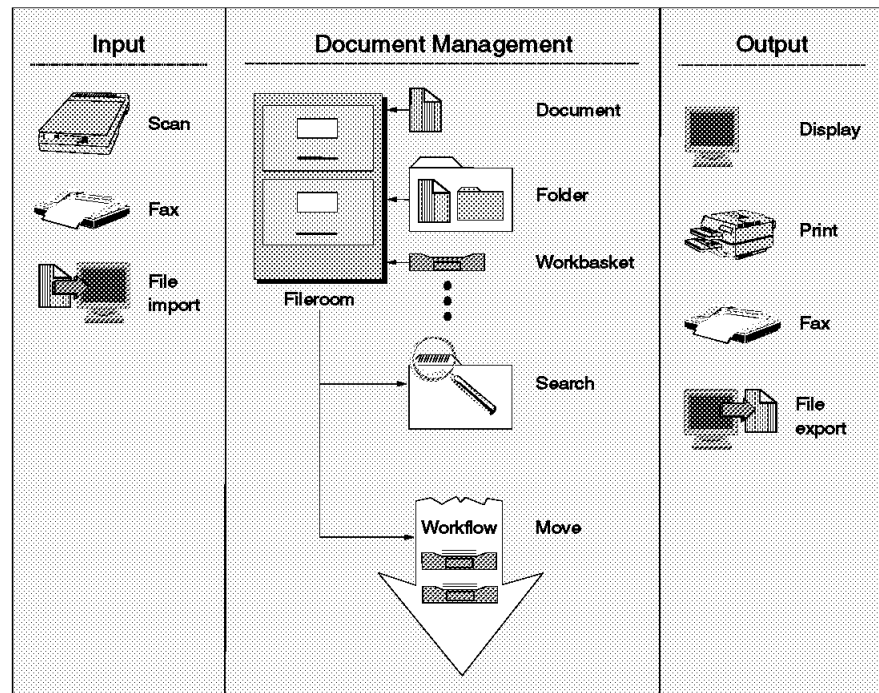


Figure 4. VisuallInfo Client Implementation

**Client Applications:** The Windows and OS/2 client applications provide a complete imaging and document processing system that you can customize to meet the needs of your enterprise. The client applications interact with all of the VisuallInfo components through an end-user interface. The client applications do not require additional programming; they integrate the features of the VisuallInfo system, including the folder manager services, into one application.

The client applications let you input documents by scanning, importing, or fax input (through FaxRouter/2). Then you can manage the documents and the folders containing the documents in an on-line file room. You can search for documents and folders and move them through a predetermined workflow. You can also output documents by displaying, printing, or exporting files.

The client applications provide APIs to let you integrate folder, workflow, and document management with your existing information systems. You can easily integrate your custom software and other applications. Figure 4 shows a typical VisuallInfo client implementation. You can use the client applications as an interface to all of your document management needs, customize the client applications, or use the Folder Manager, Library Client, and Image Services APIs to interface with your own applications.

**Image Services:** Image Services provides the capture (scanning support), display, and print services available through the client applications. You can create your own customized application to capture, print, and display documents using the Image Services APIs.

**Folder Manager:** The folder manager provides a document management programming interface that uses the library client to access information stored on the library server and object servers.

The folder manager provides a data model for managing on-line documents and folders as you do with paper documents. It submits API requests to the library client to perform library functions for your applications. The library client then interacts with the library server and the object server independent of whether the servers are MVS, AIX, or OS/2. Because of this, you can expand your VisuallInfo system without having to change your applications.

Your system can access these folder manager services through a Windows or OS/2 client application. You can also interface directly with the VisuallInfo system through the folder manager APIs to create a customized document management, workflow, or other business application.

Depending on your level of access to documents, you can perform the following operations using the folder manager.

- Store a document.
- Index a document or folder.
- Process a document or folder.
- Retrieve a document or folder.

**Library Client:** As an alternative to using the folder manager, you can use the library client, a lower-level interface that lets you create your own data model. The library client increases your flexibility in creating your own applications. It lets you interface directly with the library server and object server in your VisuallInfo system through APIs. You can use the library API calls directly if you decide not to use the folder manager, or you can mix the two API sets in a customized application.

Compared to folder manager APIs, the library client APIs provide access to a more detailed level of the underlying product structure.

Figure 5 on page 11 shows how the client application and the VisuallInfo APIs logically fit together.

You can also use library client APIs for services not available through the folder manager to take advantage of different performance characteristics.



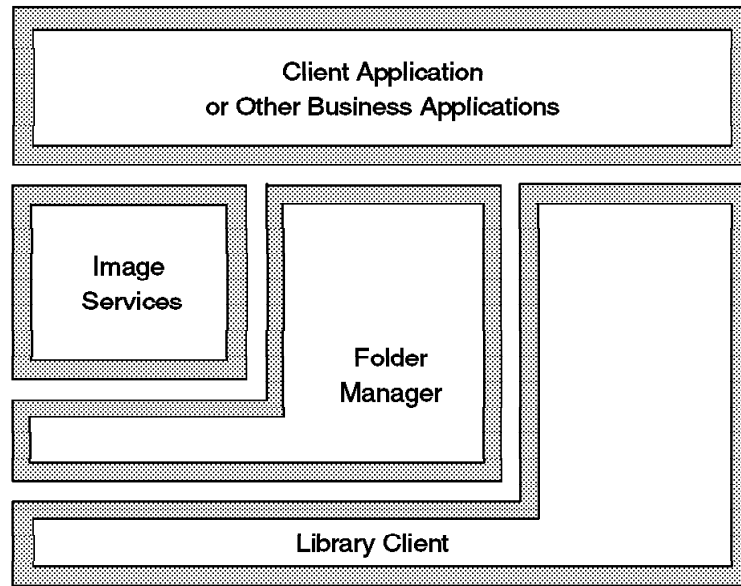


Figure 5. VisualInfo Layers

**System Administration Program:** The system administration program is a powerful end-user interface that lets you configure your VisualInfo system. It lets you manage all of your system components, no matter which platform they run on. The system administration program can reside on any OS/2 workstation in your VisualInfo network.

**Note:** It is an OS/2 program, so it cannot run on a Windows client.

You can use this program to configure resources such as workbaskets and workflow. The system administration program lets you control the level of access that users have to the VisualInfo system and customize the document management services to meet the specific needs of your enterprise.

See Chapter 5, "Administration Practices" on page 159 for more information.

### 1.2.4.2 Library Server Features

The library server uses relational database technology to maintain the library contents, and provides data integrity by performing the following functions:

- Managing library data.
- Maintaining index information.
- Controlling access to documents stored in the object servers.

For instance, the library server routes requests from the library client for the following:

- Store, retrieve, and update documents stored in object servers.
- Update and query the indexes and descriptive information stored in the library catalog.

The Client Application can log onto only one library server at a time. However, you can develop applications to reference multiple library servers using the folder manager or the library client interface.

### 1.2.4.3 Object Server Features

Each object server is associated with one library server and maintains documents stored in the library. The object server receives requests from the library server and communicates with the library client to complete requests from your application.

Object servers support attachment of both direct access storage devices (DASD) and a range of optical storage devices. They also provide system-managed storage to automatically move documents from one storage medium to another, such as from DASD to optical disk.

Object servers can be installed on any of three platforms (OS/2, AIX, and MVS) for maximum configuration flexibility and performance.

### 1.2.4.4 Configuration Server Features

The configuration server component has information about a group of OS/2 clients. It stores the "user preferences" for the user interface of the client application, plus machine specific information and configuration. A user can thus walk to any workstation attached to that configuration server, log on to VisualInfo, and have his/her preferences and screen layouts active.

It is also responsible for the setup and administration of all communications between a client and a library server. When a client initiates a Logon, its configuration server displays and validates the library servers that the client can log onto.

Your VisualInfo system can have many configuration servers, but each client can only be connected to one configuration server. If many users will log on to the VisualInfo system at once, you may want to divide them among two or more configuration servers. The recommended maximum is 50 clients per configuration server; however, 100 clients on one server has been used with little problem.

### 1.2.4.5 Complementary Offerings

You can extend the services that the VisualInfo system provides by integrating workflow and fax products into your system. Here are some IBM products that can extend your VisualInfo capabilities.

**IBM FlowMark for OS/2:** IBM FlowMark is a distributed client/server application for workstations on a LAN that expands the workflow capabilities of the VisualInfo system. It automates the control and flow of your business activities by enabling you to model a business process and then run the model. The FlowMark product automatically routes work for you. The application programs that you need start automatically when you select an activity.

FlowMark does the following major functions for process modeling:

- Specifies work flows involving multiple activities and staff members.
- Simulates and analyzes the operations of your process.
- Stores activity assignments and access control.
- Defines programs that run under FlowMark.
- Provides data structure definition to detail the structure of input and output.

The VisuallInfo system includes sample code to help you use FlowMark activities that interact with the VisuallInfo system.

**IBM FaxRouter/2:** IBM FaxRouter/2 Version 2 is an industrial strength enterprise ImagePlus facsimile solution for companies of all sizes. FaxRouter/2 is a local area network (LAN) based solution that provides the capability to send, receive, archive, display, distribute, print, and delete faxes from a user's Windows or OS/2 workstation. Outgoing faxes can originate from a standard text file, another fax, or several types of image files. All hardware required by a fax solution is installed in the FaxRouter/2 server, thus eliminating the need for additional hardware or telephone lines at the user's workstation.

FaxRouter/2 is fully integrated with IBM VisuallInfo, allowing incoming faxes to be routed directly to a designated VisuallInfo workbasket and allowing documents to be faxed out from any VisuallInfo workstation. The FaxRouter/2 server stores incoming documents and retrieves outgoing documents from the VisuallInfo system.

FaxRouter/2 Version 2 provides the ability to integrate your business process with the use of a virtual print driver. Files can be faxed just by printing from an OS/2, WIN-OS/2, or Windows application.

**IBM SearchManager for OS/2:** IBM SearchManager/2 is an IBM solution for information retrieval. It is installed in a LAN environment and lets you locate documents by searching for words and phrases in the documents stored on your system.

Using the SearchManager/2 product with the VisuallInfo system lets you perform content searches for documents stored in your system.

Some of the functions provided by the SearchManager/2 product include the following:

- Boolean and proximity search for simple, hyphenated, and compound words.
- Boolean and proximity search for phrases.
- Wildcard search for words and phrases using character and word masking.

The SearchManager/2 product provides integration code that lets you access documents stored in VisuallInfo. You can set up index classes in the VisuallInfo system so that SearchManager/2 can productively search for information in your documents.

**IBM ImagePlus Capture Facility/2:** IBM ImagePlus Capture Facility/2 (ICPF) is a LAN-based, high-volume document capture subsystem. It offers flexibility in document capture and the ability to scan and index large document volumes.

ICPF provides the following functions:

- Indexes large document volumes.
- Stores large document volumes.
- Manages batch processing.

Using IBM ImagePlus Workstation Program/2 (IWPM/2), ICPF also supports barcode recognition and high-speed scanning. Using IBM ImagePlus intelligent Forms Facility/2 (IPFO), ICPF also performs optical character recognition (OCR).

The latest version of ICPF extends services to work with the VisualInfo system for document capture.

**Lotus Notes:** Lotus Notes is a new type of software called workgroup software or groupware. It helps people within a company exchange almost any type of information through a computer network. Two main examples are:

- Electronic mail (e-mail)
- Shared databases

Lotus Notes can be a client to VisualInfo by using its viewer capability, through a product called "Lotus Notes to IBM ImagePlus Connection." If you want to update a document through the Lotus Notes client, you can add a feature called Lotus Notes: Document Imaging. One of the functions of LN:DI allows users to input documents using a digital scanner.

## 1.2.5 Growth Potential

VisualInfo is designed to provide a system that meets your current needs and can grow from there. You can start with a small LAN-based system and add AIX or MVS components as needed to grow vertically. You can also add additional servers, workstations, and LANs to grow outward.

### 1.2.5.1 Moving from Other ImagePlus Products to VisualInfo

The VisualInfo system is a client/server solution that builds on the strengths of existing ImagePlus products. IBM can provide help and documentation to migrate successfully from existing ImagePlus products to a VisualInfo solution.

### 1.2.5.2 Scalability

The scalability of the VisualInfo product provides a solution that covers stand-alone and local area network (LAN) systems, up to an enterprise environment where multiple departments of an enterprise, located in one or several locations, access local data as well as enterprise data.

Hence, user growth is simplified through the ability to support:

- Separate object and library servers.
- Multiple object servers on the LAN.
- MVS/ESA-based object and library servers.

For example, a configuration can grow through the following stages:

1. Initial installation of a *stand-alone configuration* for demonstration or application development purposes.
2. A *combined object server and library server* on a LAN with several client machines.
3. *Separate object and library servers* on the LAN.
4. A single library server and *multiple object servers*.
5. Migration of the *library server to MVS/ESA* while continuing with LAN-based object servers for local storage of objects.
6. Addition of a central archive *object server on MVS/ESA*.

Adding and moving servers can take place using a database unload and reload operation, which can be made transparent to the end user.

## 1.3 Review System Requirements

This section lists general hardware and software requirements (both minimum and recommended) for a VisualInfo system. It covers all three supported platforms: Workstation (OS/2 and Windows), AIX and MVS.

### 1.3.1 Hardware Requirements

Here are the hardware requirements for OS/2, Windows and AIX platforms. For more information, consult the VisualInfo Planning and Installation Guide, GC31-7772.

#### 1.3.1.1 OS/2 and Windows

This table covers hardware for OS/2 and Windows.

Component	Processor	Memory	Storage	Display	Other Hardware
<i>Client for OS/2</i>	33MHz 80486DX	16MB	250MB	VGA	Network adapter, mouse, CD-ROM (for install)
<i>System Administration and Utilities</i>	33MHz 80486DX	16MB	250MB	VGA	Network adapter, mouse, CD-ROM (for install)
<i>Library Server</i>	33MHz 80486DX	16MB	320MB	VGA	Network adapter, mouse, CD-ROM (for install)
<i>Object Server</i>	33MHz 80486DX	16MB	320MB	VGA	Network adapter, mouse, CD-ROM (for install)
<i>Stand-alone System</i>	33MHz 80486DX	24MB	320MB	VGA	Network adapter, mouse, CD-ROM (for install)
<i>Windows Client</i>	33MHz 80486DX	16MB	200MB	VGA	Network adapter, mouse, CD-ROM (for install), ASPI-compliant, SCSI adapter for scanning

Recommended for OS/2 and Windows:

- 24MB minimum on OS/2, Windows 95 and NT clients
- 32MB minimum on servers (64MB is better)
- 512MB hard disks on all systems
- Pentium processors on OS/2, Windows 95 and NT machines (be sure the BIOS is upgraded to a recent level, at least 56 or 59A)
- SVGA displays for heavy-use clients
- 16MB minimum on Windows 3.1x clients

### 1.3.1.2 AIX

This table covers hardware for AIX. A separate machine is needed for each server type, unless you have VisualInfo V2.2.1 (when this restriction for AIX was removed).

<i>Table 2. AIX Hardware Requirements (VisualInfo/AIX V1.1 and above)</i>					
<b>Component</b>	<b>Processor</b>	<b>Memory</b>	<b>Storage</b>	<b>Additional features</b>	<b>Other Hardware</b>
<i>Library Server or Object Server for AIX</i>	RISC System/6000 single processor (minimum 33 MHz)	128MB	1GB	Level two cache recommended	8MM tape drive, Network adapter, CD-ROM (for install)

See product documentation for supported peripheral devices. These include scanners, printers, and auxiliary storage (such as optical disk drives and libraries).

## 1.3.2 Software Requirements

This section lists the software requirements for OS/2, Windows, AIX, and MVS. For more information, consult the VisualInfo Planning and Installation Guide, GC31-7772.

### 1.3.2.1 OS/2

The requirements for OS/2 are in Table 3.

<i>Table 3. OS/2 Minimum Software Requirements</i>	
<b>Component</b>	<b>Requirements</b>
<i>OS/2 Library Server</i>	<ul style="list-style-type: none"> <li>• OS/2 V3.0 or higher</li> <li>• MPTS **</li> <li>• Communications Manager/2 1.11 or TCP/IP V2.0**</li> <li>• DB2/2 V2.1.1</li> <li>• VisualAge C++ V3</li> <li>• WARP Toolkit</li> </ul>
<i>OS/2 Object Server</i>	<ul style="list-style-type: none"> <li>• OS/2 V3.0(WARP) or higher</li> <li>• MPTS **</li> <li>• Communications Manager/2 1.11 or TCP/IP V2.0 **</li> <li>• DB2/2 V2.1.1</li> </ul>
<i>OS/2 Client or Configuration Server or List Manager Server</i>	<ul style="list-style-type: none"> <li>• OS/2 V3.0 or higher</li> <li>• MPTS **</li> <li>• Communications Manager/2 1.11 or TCP/IP V2.0 **</li> </ul>
<i>Facsimile, OS/2 Client</i>	FaxRouter V2.07

\*\* Not required for stand-alone

**Note:** If you are installing VisualInfo V1.1.2 with DB2/2 V2.1.1, you must install the VisualInfo V1.1.2 fixpak.

Recommended:

- Use OS/2 Warp Connect which comes with MPTS and TCP/IP.
- Using TCP/IP is preferred rather than CM/2. It is easier to configure.

### 1.3.2.2 Windows

The software for Windows is listed in Table 4.

<i>Table 4. Windows Client Software Requirements</i>	
<b>Component</b>	<b>Requirements</b>
<i>Client for Windows 3.1 or Windows for Workgroups 3.11</i>	<ul style="list-style-type: none"> <li>• Operating System               <ul style="list-style-type: none"> <li>- MS DOS 6.22 or</li> <li>- IBM PC DOS 6.3 or higher</li> </ul> </li> <li>• TCP/IP Support               <ul style="list-style-type: none"> <li>- IBM DOS TCP/IP V2.1.1 or</li> <li>- MS TCP/IP V3.11a (recommended) or</li> <li>- Novell LanWorkGroup V5.0 or</li> <li>- Attachmate V3.3</li> </ul> </li> <li>• Win32s Support               <ul style="list-style-type: none"> <li>- Win32s V1.30</li> </ul> </li> </ul>
<i>Client for Windows 95</i>	<ul style="list-style-type: none"> <li>• Operating System               <ul style="list-style-type: none"> <li>- Windows 95</li> </ul> </li> <li>• TCP/IP Support               <ul style="list-style-type: none"> <li>- Already bundled with the system</li> </ul> </li> <li>• Win32s Support               <ul style="list-style-type: none"> <li>- Not required</li> </ul> </li> </ul>
<i>Client for Windows NT</i>	<ul style="list-style-type: none"> <li>• Operating System               <ul style="list-style-type: none"> <li>- Windows NT V3.51</li> </ul> </li> <li>• TCP/IP Support               <ul style="list-style-type: none"> <li>- Already bundled with the system</li> </ul> </li> <li>• Win32s Support               <ul style="list-style-type: none"> <li>- Not required</li> </ul> </li> </ul>



### 1.3.2.3 AIX

The software requirements for AIX are in Table 5. Note that the AIX environment provides Oracle database support in addition to Database 2 support. Also note that, unless you have VisualInfo V2.2.1, you must provide separate machines for each server.

<b>Component</b>	<b>Requirements</b>
<i>AIX Library Server and, for VisualInfo V2.2, AIX Object Server</i>	<ul style="list-style-type: none"><li>• AIX V4.1.4 (with Motif 1.2)</li><li>• TCP/IP (even if using SNA)</li><li>• CSet++ for AIX 3.1.3 (w/ PTF U443309 if Lib Svr)</li><li>• DB2 6000 for AIX V2R1 (w/ PTFs) or Oracle for UNIX 7.2 with Server Manager and PL/SQL</li><li>• AIX SNA Server/6000 V2.1 or V3.1, required only if using SNA</li><li>• ADSM Client and API 2.1 (Obj Svr only. Not required with V2.2.1)</li></ul>
<i>AIX Library Server</i>	CSet++
<i>AIX Library Server</i>	AdStar Distributed Storage Manager (ADSM) 2.1 (not required with V2.2.1)

### 1.3.2.4 MVS/ESA

The software requirements for MVS are in Table 6.

<i>Table 6. MVS Software Requirements</i>	
<b>Component</b>	<b>Requirements</b>
<i>MVS Library Server / Object Server</i>	<ul style="list-style-type: none"> <li>• MVS/ESA V4.2.2 or later with one of the following:               <ul style="list-style-type: none"> <li>- MVS/SP JES2 V4.2.2 (5695-047), or later</li> <li>- MVS/SP JES3 V4.2.2 (5695-048), or later</li> </ul> </li> <li>• One of the following               <ul style="list-style-type: none"> <li>- MVS/DFP V3.3.1 (5665-XA3)</li> <li>- DFSMS/MVS V1.2 (5695-DF1), or later</li> </ul> </li> <li>• Database 2 (DB2) V2.3 (5665-DB2) or later</li> <li>• CICS/ESA V3.3 (5685-083), or later</li> <li>• One of the following               <ul style="list-style-type: none"> <li>- ACF/VTAM V3.4.1 for MVS/ESA (5685-085)</li> <li>- TCP/IP V3.1 for MVS (5665-HAL) with TCP/IP CICS Sockets feature</li> </ul> </li> <li>• SMP/E V1.7 (5668-949), or later</li> <li>• ISPF V3.3 (5685-054), or later</li> <li>• ISPF/PDF V3.3 (5665-402), or later</li> <li>• TSO/E V2.3.1 (5685-025), or later</li> <li>• ASSEMBLER H V2.1 (5668-962) (use "high-level assembler" with OS/390)</li> <li>• FFST/MVS V1.2 (5695-044)</li> <li>• IBM SAA AD/CYCLE C/370 V1.2.1 (5688-216) (for VisualInfo MVS Library Server only)</li> <li>• One of the following               <ul style="list-style-type: none"> <li>- C/370 Library V2.2 (5688-188) ** -- recommended</li> <li>- AD/Cycle LE/370 (5688-198) with APAR PN81700</li> </ul> </li> <li>• PL/1 V2.3 (5668-911) Runtime Library, for MVS Object Server only</li> </ul>

\*\* Has two components: Common Library and Specific Library.

### 1.3.2.5 OS/2 Software Prerequisite Details

Here we list the software products that you need before you install VisualInfo, along with some installation tips.

**Note:** For TCP/IP and CM/2, you pick one or the other.

**Note:** If you want to retrieve the latest levels of products and fixes, access this FTP site: FTP.SOFTWARE.IBM.COM.

- **OS/2 WARP or WARP Connect**

Consider drive partitioning, or even separate physical drives, for benefits in performance and ease-of-maintenance.

Try to keep the DB2/2 log files, the Library Server database and the OS/2 SWAPPER.DAT on separate physical drives.

Do the same for the Object Server workstation. Remember that the machine containing the object server needs an HPFS partition for the staging area.

You need to have volume identifiers (labels) in the machines containing the library server and the object server.

If you are upgrading to Warp (OS/2 V3 from OS/2 V2 and the installation fails because you have an HPFS386 partition, you will need to remove it. Use the deletion procedures found in the LAN Server documentation.

- **MPTS**

MultiProtocol Transport Services allows you to define your network adapter type.

It also provides you transport protocols such as:

- IBM OS/2 NetBIOS (needed for LAN Server communications)
- TCP/IP
- IEEE 802.2 (needed for 3270 or 5250 emulations)

When you install VisualInfo and are using TCP/IP, you need to add TCP/IP protocol support to your network adapter.

If you are using CM/2, do NOT install NTS/2 after installing MPTS/2, or you will back-level your Transport Services. Even though CM/2 posts a message that it no longer supports NTS/2, MPTS/2 contains all the code you need for communication, and it is a newer level than NTS/2.

- **DB2/2 V2.1.1**

VisualInfo installs two databases:

1. A library server database named LIBSRVR2
2. An object server database named OBJSRVR2

The minimum component of DB2/2 that you need for this is a *Single User*. You can also install the database director for managing your databases. For more details, see section 2.2, "Installing Prerequisite Software" on page 36.

After installing DB2/2 V2.1.1, you need to install the Fixpak/CSD **WR8090** and **APAR JR09065**.

- **TCP/IP (or CM/2)**

When installing TCP/IP, you need to configure your workstation. The most important information that you need to provide is:

1. Your IP address (this is unique in the network).

## 2. Your host name

VisualInfo uses the host names of the clients and servers to communicate to each other. So you need to create a HOST file that contains IP addresses and host names of workstations in the network. For VisualInfo, you need to add into the HOST list the IP addresses and the corresponding host names of each server and client in the system.

The alternative, if not using a HOSTS file, is to use a **domain name server**. This machine has the list of IP addresses and host names in the network. Every workstation that needs to communicate with another using the host name obtains its corresponding IP address from this domain name server.

- **Communications Manager/2** or TCP/IP

If you are not using TCP/IP to communicate between workstations, you will use SNA. SNA uses the Advanced Program-to-Program Communication (APPC) and Advanced Peer-to-Peer Networking (APPN) protocols.

In an SNA network, nodes can act as either a network node server or as an end node. The first one provides access to all functions in the network and the second one can participate in an APPN network with a network node server.

OS/2 Communications Manager/2 contains the SNA code you will need. Be sure to get the level of CM/2 which is written for your operating system. For example, if you have OS/2 Warp, get the CM/2 V1.11 "for Warp" product.

For each node in an Communications Manager network, you need to know:

- Whether the node is an end node or a network node server.
- Destination addresses of network node servers.
- Unique node name (fully-qualified network name).
- Nickname for every computer.

To determine the destination address of an OS/2 workstation, go to the IBMCOM subdirectory and using any text editor look for the following line in the LANTRAN.LOG file:

```
Adapter 0 is using node address XXXXXXXXXXXXX
```

where XXXXXXXXXXXXX is the destination address for that computer.

- **VisualAge C++**

VisualInfo uses C++ to create the index classes.

The minimum components of VisualAge that you need are:

1. Compiler and run-time libraries
2. Warp Toolkit development tools

The Warp Toolkit compiles, links, and binds code for static SQL queries.

If you use VisualAge C++ for development, you need 32MB of memory. You can then install the other components: standard class libraries, Warp Toolkit headers and libraries, samples, and documentation. For more details, see section 2.2, "Installing Prerequisite Software" on page 36.

## 1.3.3 Customizing the Solution

Although VisuallInfo can be used out-of-the-box and is fully functional, most customers want to change or add features. This involves some degree of custom coding or services. There are a number of opportunities in VisuallInfo to do this, including:

### 1.3.3.1 Index Class Configuration

After VisuallInfo is installed, its "Fileroom" must be set up to fit the customer's business processes and workflow needs. Much thought and planning should go into choosing how many index classes are used and what attributes and search keys are chosen. Advanced (Boolean) searches can be set up to meet the needs of individual departments.

### 1.3.3.2 User Exits

The Client Application delivered with VisuallInfo has user exit "hooks" or calls. There is no code in these exits as installed, but you can write brief customized functions to do additional processing as appropriate, or to call asynchronous routines. For example, during indexing of new documents, you might do record lookups from a user exit to fill in name and address fields when a customer number is keyed in. Or, when a filerom search is performed, you may have a user exit which prevents certain information from being displayed or accessed.

Using user exits can change the look and feel of the user interface and enhance its functional capability.

### 1.3.3.3 Writing API Programs

VisuallInfo is written using APIs (high and low level), and most of these are available for user programs to call. There are APIs for the library server, the object server, and the client. You can write a custom utility or user program which calls APIs and controls the input/processing/output of these APIs to get the desired results. This capability allows you to customize the user interface far beyond the standard client application. You can call these APIs from any user exit, stand-alone utility or program.

### 1.3.3.4 Custom-Coding

Some customers have written their own client application (or had a services vendor do so). This allows them to have a user interface which is completely tailored to their needs. VisuallInfo provides client APIs at four levels:

1. High-Level Programming Interface

This level allows interfacing with FlowMark, a workflow manager middleware product from IBM.

2. Folder Manager (mid-level)

3. Image Services (mid-level)

4. Library Client (low level)

**Note:** For more information, see Appendix D, "Related Publications" on page 213.

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## 1.4 Estimating Capacity/Performance Requirements

This section is written to help you in your capacity planning. It gives you some aid in deciding how many servers and what size you might need.

### 1.4.1 DASD Requirements

All of the documents in a VisualInfo solution are stored on one or more object servers that support several media types: diskette, DASD (direct access storage devices) and a wide range of optical storage devices.

To plan the DASD requirements for storing documents on an OS/2 LAN-based object server, you simply multiply the number of objects that you have by their average size. For better response time, you should consider the utilization of hard disks and optical devices.

Besides the storage space for your documents and images, you should reserve space for:

- Prerequisite software
- Staging area on OS/2 for object server
- Database growth for library/object servers

For an MVS host-based object server, the objects are stored using the IBM Object Access Method (OAM). Documents are in 4K or 32K rows in the OAM DB2/2 tables while stored on DASD. When migrated to optical disks, they are stored as files equal in size to the original object.

**Hint:** If you have OS/2 clients that are going to view the same document multiple times, you should consider the utilization of the workstation local cache feature in VisualInfo to increase the performance in displaying and retrieving documents. For this, you have to reserve local disk space on the client workstation.

This feature allows a client to keep a copy of a document in its local disk after the first access to the object server. The documents reside in the directory FRNROOT\LSTMGR\MASTER\FRNCACHE and are controlled by the FRNCACHE.CTL control file located in the FRNROOT\LSTMGR\CTL\FRNCACHE.CTL directory.

The workstation local cache should be used on most workstations (90%), for increased performance. The default size is 10MB; if you have enough disk space, a size of 100MB would enhance performance. It is not necessary to use local cache on workstations that use a document only once (scanner stations, re-indexer stations, and so on).

Beginning with VisualInfo Version 2.1, we also have the new LAN CACHE feature that allows multiple clients to retrieve objects locally without disturbing a remote Object Server. This feature is beneficial when clients in the same workgroup are processing the same documents.

## 1.4.2 Measurement Methodology

All of the requests that VisualInfo clients perform are received by the library server. These requests are then redirected to the appropriate object server when necessary.

To determine the workload that a library server can perform, a unit of measure was created, called the Library Server Functional Request. LSFR is a request block sent by the VisualInfo client to the server to do a piece of work.

In the following table, we have a list of the main client application functions and the number of LSFRs that are required to perform them:

*Table 7. Client Application LSFRs by Function*

Function	LSFRs
Create Document	3
Add to Workbasket	2
Open Document	4
Index/Save Document	4
Add to New Folder	20
Add to Folder	13
Basic Search	7
Open Folder	8
Start Workflow	4
Complete Workflow	10
Get Next in Workbasket	3
Route to Next Workbasket	3

The following machines were measured with a library server and an object server coexisting on the same machine. They are able to support, on an average:

*Table 8. LSFRs Per Hour for Configuration Machine*

Processor	Memory	LSFRs per Hour
486/33 MHz	24MB	13,015 (LAN based)
486/66 MHz	32MB	21,059 (LAN-based)
Pent/60 MHz	64MB	33,317 (LAN-based)
Pent/90 MHz	32MB	40,592 (LAN-based)
ES/9000-480		71,273 (Host-based)

It has also been measured that a normal client can generate 750 LSFRs in one hour doing a "typical" mix of functions.

As an example, we can calculate the number of LSFRs that a system generates if:

- It receives 3000 documents per day into 600 folders.
- Each folder is opened (on an average) twice.
- Each document is viewed (on average) three times.

*Table 9. Number of LSFRs Generated by a Typical User*

Function	Daily #	Daily LSFRs	Hourly LSFRs (8 hour day)
Document stores	3000	9000	1125
Add document to new folder	800	16,000	2000
Add document to existing folder	2200	28,600	3575
Folder opens (2 x 600)	1200	9600	1200
Document opens	9000	36,000	4500
TOTAL Generated		99,200	12,400

In this example, we achieved 12,400 LSFRs per hour. This represents 95.27% of the total LSFRs per hour that a 33 MHz system (the first machine shown in Table 8 on page 25) is able to perform.

### 1.4.3 Object Server Considerations

Machines working as object servers typically have heavy I/O loads and relatively light CPU loads. The object server has to send a document or image to a client only when a valid copy does not already exist in the client's local cache.

Every object server has a specific work area called a staging area. Documents are placed in the staging area when they are entered into the system and when they are retrieved.

If possible, you should have the staging area, DB2/2 database, and storage drives separated physically. For maximum configuration flexibility and performance, VisualInfo provides that one system can have multiple object servers, so you can start with one single object server and add new ones as your data grows. See additional information about the staging area and object server management in Chapter 5, "Administration Practices" on page 159.

### 1.4.4 Library Server Considerations

Machines working as library servers are primarily database machines. Their function is to build SQL requests through DB2 and transmit results from the queries.

Generally, a client machine sends a request to the library server that is accepted and processed. The library server decides if it is necessary to resend this request to the object server for further processing or not.

The library server machines have heavy input/output workload and need to have a powerful processor that can process concurrent requests from multiple users.



As the library server uses DB2 to maintain the library contents and control access to documents, it is important to reserve disk space for the database and for its growth.

With the new version of DB2/2 (2.1.1), the size limit of a single table was increased to 64GB. This new DB2/2 version also eliminates the requirement that the entire database must be on the same drive.

### 1.4.5 Client Considerations

The amount of work able to be performed by a client depends heavily on user workload and on the kind of job that the workstation has to do.

We can divide client workstations into three types: scanning, displaying, and indexing workstations. For display workstations, we strongly recommend the use of a local cache.

If you run other applications concurrently on the same machine, a VisuallInfo client DLL may get swapped out and affect performance. This depends on the amount of RAM memory that this workstation has.

---

## 1.5 Selecting a Platform

The VisuallInfo system is an open, scalable, production image solution that capitalizes on the benefits of a client/server architecture. The scalability of the VisuallInfo solution comes in two forms:

- The ability to choose hardware platforms ranging from Intel-based machines to System/390 servers.
- The ability to add object servers as your data volume or data distribution grows.

An image solution based on VisuallInfo Version 2.2 offers library and object servers on all three platforms (OS/2, AIX, and MVS/ESA). A solution using VisuallInfo V2.1 supports servers on OS/2 and MVS/ESA, while VisuallInfo for AIX V1.1 offers an AIX library server which will work with V2.1 components of OS/2 and MVS/ESA.

When selecting platforms (OS/2, AIX, or MVS), the user should bear in mind the reliability, security, and control that a given platform can provide.

A customer may decide to install VisuallInfo servers in MVS/ESA to achieve:

- The capability to support large applications (hundreds of users, millions of documents).
- Centrally managed, tight control.
- A high degree of security.
- A high degree of recoverability.

If a customer decides to install VisuallInfo servers on a OS/2 platform, this allows:

- Easy installation, configuration, and management.
- Fast deployment.
- Scalability (start small).

- High degree of control by end users.
- Capability to support small and medium applications.

A customer may choose the AIX platform for servers, and achieve performance results closer to MVS than to OS/2, but without the security, recovery and central management that MVS offers.

Your library server can be on any of the three platforms, independent of other server or client platforms. You can mix object servers in OS/2, AIX and MVS platforms. This can be a good way to improve the retrieval performance of remote documents that can be temporarily stored in a local object server.

**Note:** When mixing versions older than V2.2, check product documentation to see which releases of clients and servers can work together.

You can also have a local library server in OS/2 working with both a local LAN CACHE Object Server (OS/2) and a remote Object Server (AIX or MVS) together.

---

## 1.6 Connectivity Considerations: TCP/IP or SNA

A VisuallInfo system can use *either* SNA or TCP/IP communications for the physical connections between the nodes in the network. You cannot mix VisuallInfo clients using different protocols (for example, OS/2 clients using SNA with Windows clients using TCP/IP). This is not supported.

**Recommendation:** If the customer already has communications set up using TCP/IP or SNA, they probably want to use the same communications software for VisuallInfo. However, if the customer's system has no existing communications, use TCP/IP. It is easier to set up and maintain. But remember that SNA systems often give better performance, especially in a host-based environment.

Another important point is that if you plan to have Windows clients, then you must have TCP/IP.

Even if you have your communications set up correctly, you have to ensure that the information in the "network table" is the same as you configured in TCP/IP or in Communications Manager.

The network table is an ASCII file that contains information about where (or which node) each component of VisuallInfo resides. ALL the VisuallInfo workstations (clients or servers) must have a network table customized. To see additional information about creating a network table, take a look in section **Creating the Network Table** in chapter 2.

Even if TCP/IP or SNA information in the network table is not correct, you do not receive any error messages during its generation. But when you try to perform the Configuration Server Refresh (a mandatory step), you receive a VisuallInfo error and the operation is aborted.

For a stand-alone System, VisuallInfo provides a default network table file, but for a custom system or a standard client/server system, you must create a network table that contains information about your network.

**Tip:** The network table information is stored in an ASCII file called FRNOLINT.TBL that resides in the FRNROOT directory. You can use any text editor to see the contents of this file (but be careful!).

---

## 1.7 Choosing the Appropriate Hardware

After making an accurate capacity plan using the LSFRs (Library Server Functional Requests) described in the previous section, 1.4, “Estimating Capacity/Performance Requirements” on page 24, it is time to configure the appropriate hardware to support it and satisfy all of the system requirements.

The capacity of a system is related to its ability to service multiple user requests while providing adequate response time. In a VisualInfo system, this means equipping a server (through its disk, memory and processor configuration) to provide adequate response time to user requests, as well as providing the appropriate hardware configuration to each client workstation according to its workload.

Section 1.3, “Review System Requirements” on page 15 describes all of the hardware recommendations for each type of machine (servers and clients) on all available platforms.

For the customer who is implementing an image solution for the first time and who does not have any special needs, these recommendations are very useful.

## 1.8 International Considerations

VisuallInfo V2.1 supports English clients and servers. V2.2 provides orderable support for additional languages. The installation program provides the capability to specify the language support desired.

### 1.8.1 Translated Languages

VisuallInfo V2.2 is translated for Single-Byte Character Set (SBCS) languages shown in Table 10. Double-Byte Character Set (DBCS) languages, as well as Arabic and Hebrew, are translated in VisuallInfo V2.2.1.. See Table 11. Check the tables and text below for details on each platform.

<i>Table 10. Additional Languages Supported by VisuallInfo V2.2 Clients. OS/2 and Windows Platforms</i>
Arabic *
Brazilian-Portuguese
Danish
Dutch
Finnish
French
German
Hebrew
Italian
Japanese *
Korean *
Norwegian
Spanish
Swedish
Traditional Chinese *
Arabic *
Japanese
Korean
Simplified Chinese
Traditional Chinese
<b>Note:</b> * = OS/2 support only.

<i>Table 11. Additional Languages Supported by VisuallInfo V2.2.1 Clients</i>	
<b>EMEA</b>	<b>AP (DBCS)</b>
Arabic	Japanese
Hebrew	Korean
	Simplified Chinese
	Traditional Chinese

V2.2 of VisuallInfo also provides an OS/2 server component which supports four languages. See Table 12.

<i>Table 12. Languages into Which the OS/2 Server is Translated</i>
French
German
Italian
Spanish
Brazilian-Portuguese
Japanese
Korean
Simplified Chinese
Traditional Chinese

For VisuallInfo Version 2.2, Library Server for AIX and Object Server for AIX are available only in U.S. English. VisuallInfo Version 2.1 levels of Library Server for MVS/ESA and Object Server for MVS/ESA are available only in U.S. English.

## **1.8.2 Enabled Languages and Supported Code Pages**

VisualInfo 2.2 is enabled for the Single-Byte Character Set (SBCS) languages and code pages shown in the following table.

*Table 13. Supported Code Pages (V2.2)*

Languages	Windows	OS/2	AIX	MVS
Arabic		864		
Danish	850/1252	850	850	500
Dutch	850/1252	850	850	500
Finnish	850/1252	850	850	500
French	850/1252	850	850	500
German	850/1252	850	850	500
Hebrew	850/1252	850	850	500
Italian	850/1252	850	850	500
Norwegian	850/1252	850	850	500
Spanish	850/1252	850	850	500
Swedish	850/1252	850	850	500
Brazilian-Portuguese	850/1252	850	850	500

Before ordering, check the latest announcement information. This will let you know if your desired language support is available, as well as which levels of servers and clients work together.

VisualInfo V2.2.1 is enabled for Double-Byte Character Set (DBCS) languages and code pages shown in the following table.

**Note:** VisualInfo V2.2 and V2.2.1 for Windows 3.1 are not DBCS enabled for Japanese, Korean, and both Chinese languages.

*Table 14. Additional Supported Code Pages (V2.2.1)*

Languages	Windows	OS/2	AIX	MVS
Arabic	850	850	850	500
Hebrew	850	850	850	500
Japanese	MS 932 (IBM 943)	932,942	IBM-932	930,939
Korean	MS 949 (IBM 1363)	949	IBMeucKR	933
Simplified Chinese	MS 936 (IBM 1386)	1381	IBMeucCN	935
Traditional Chinese	950	950	big5	937

---

## Chapter 2. Installing the System

Now that you have selected your solution, here are step-by-step hints on how to install it.

---

### 2.1 Planning a Configuration for the Solution

There are three different ways to implement a VisualInfo system:

- As a stand-alone system (OS/2)
- As a standard client/server (OS/2)
- As a custom system (all platforms)

#### 2.1.1 Stand-Alone System

You can install VisualInfo as a stand-alone system on an OS/2 platform. You might do this for demonstration purposes to show both client and server capabilities on a single computer, or for a single developer system.

It can be also useful for learning about the VisualInfo solution or for a test environment. However, a stand-alone system does not allow you to demonstrate the client/server features of the solution.



*Figure 6. Stand-alone System*

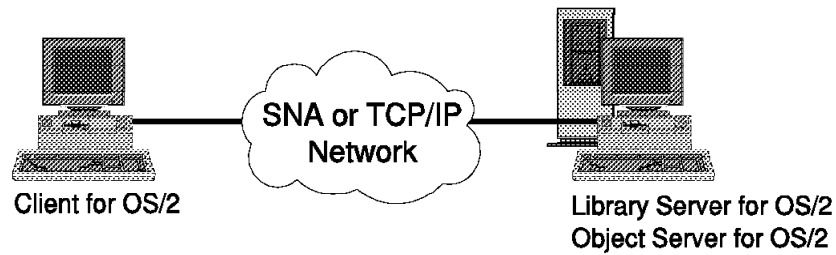
Key features and benefits of a stand-alone system:

- Inexpensive
- Easy to install
- Good for demonstration
- Good for trial and learning
- Single user
- Fewer prerequisites

#### 2.1.2 Starter System or Standard Client/Server System

You can install the VisualInfo as a starter system on two OS/2 computers connected by a local area network (LAN). In this configuration, one computer has the server components and the other has the client code.

This environment is useful to demonstrate the client/server technology and it lets multiple users work with VisuallInfo concurrently.



*Figure 7. Standard Client/Server System*

Key features and benefits of a starter system:

- Expandable to many users.
- Useful for developing applications.
- Useful for preparing for a custom system.
- Useful as a production system.
- LAN technology

### **2.1.3 Custom System or Selectable Components System**

You can install the VisuallInfo system in a custom system configuration, on any combination of supported platforms (OS/2, AIX, and MVS as of this writing). Depending on your requirements and your existing system, you can mix and match VisuallInfo components to meet your needs.

This environment is recommended for multiple users who work in a distributed environment and want their workload balanced by the system.



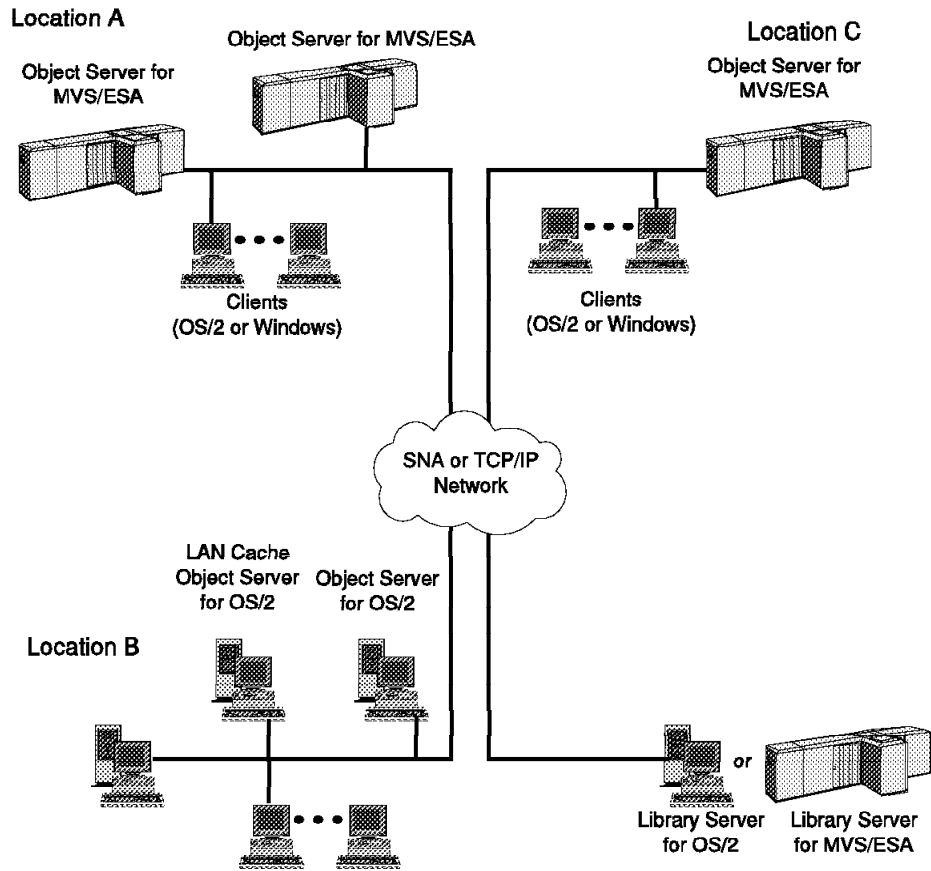


Figure 8. Custom System or Selectable Components System

Key features and benefits of selectable components:

- Multiple users
- Maximum growth
- Customized for the enterprise needs
- Great versatility
- Multiple object servers and LAN cache usage for capacity and performance

**Note:**

You can install only one pre-configured VisualInfo system on a single computer. For example, a standard client/server system cannot coexist with a stand-alone system. If you want to install a different VisualInfo system, you must first delete or modify the existing system.

Most installers choose the Selectable Components method, so they can configure for both current and future requirements.

---

## 2.2 Installing Prerequisite Software

This section describes how to install the prerequisite software products to support a VisualInfo solution using TCP/IP as the network protocol. These products are covered:

- IBM Database 2 (DB2/2)
- VisualAge C++

For detailed information about SNA installation and customization in a VisualInfo system, please see the *VisualInfo Planning and Installation Guide*, GC31-7772.

Now we are going to take a look at the installation of the prerequisite products for VisualInfo. Remember that you may not need all of them; it depends on the VisualInfo components you are going to install.

### 2.2.1 Installing IBM DATABASE 2

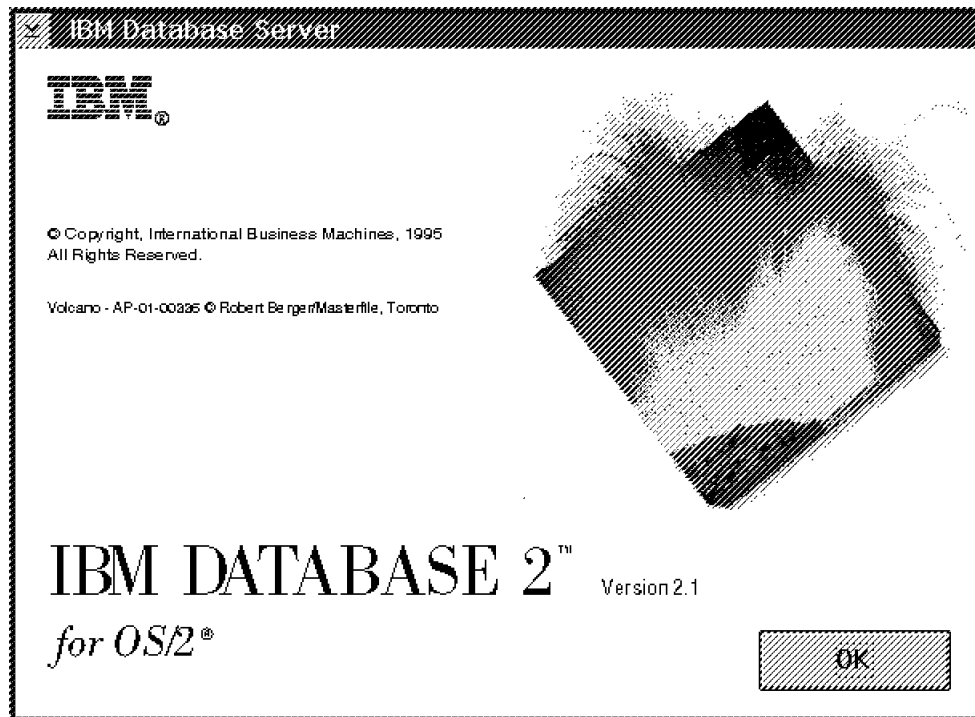


Figure 9. IBM Database 2 Installation

You need DB2 for the workstations that contain library or object servers. The minimum component that you need is DB2 "single user," but it is recommended that you install also the Database Director, which may be necessary for administrative tasks.

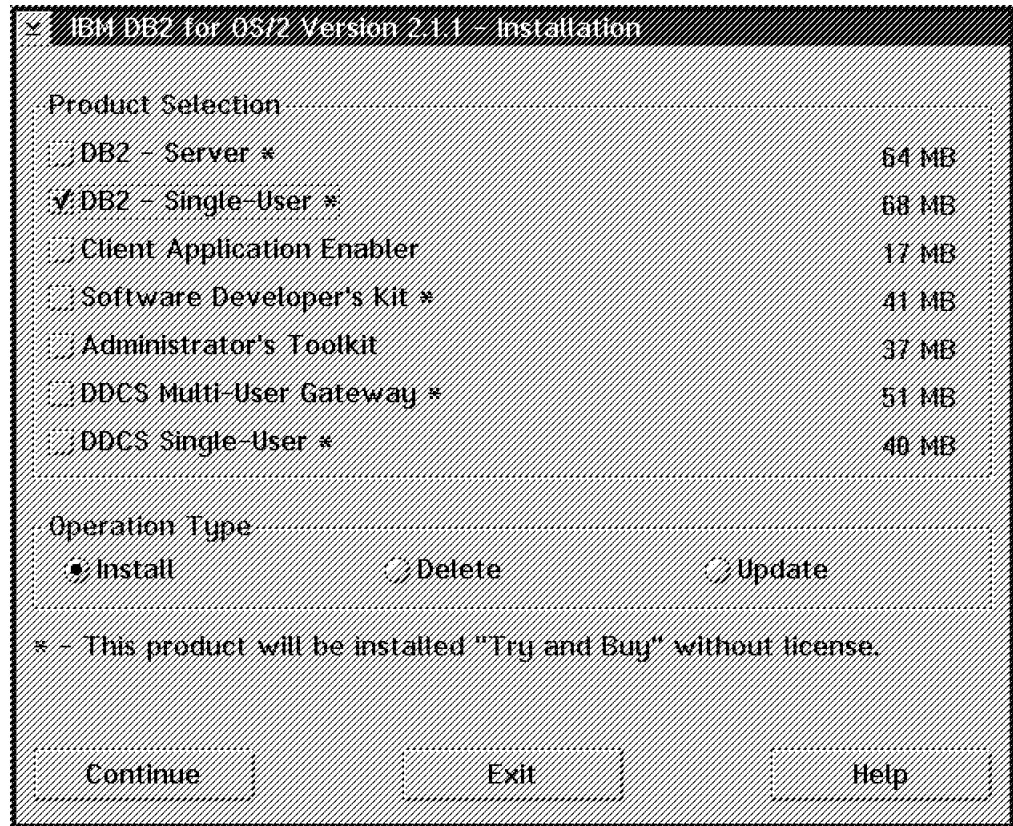


Figure 10. IBM Database 2 Installation

Select DB2 single-user and click on **Continue**.

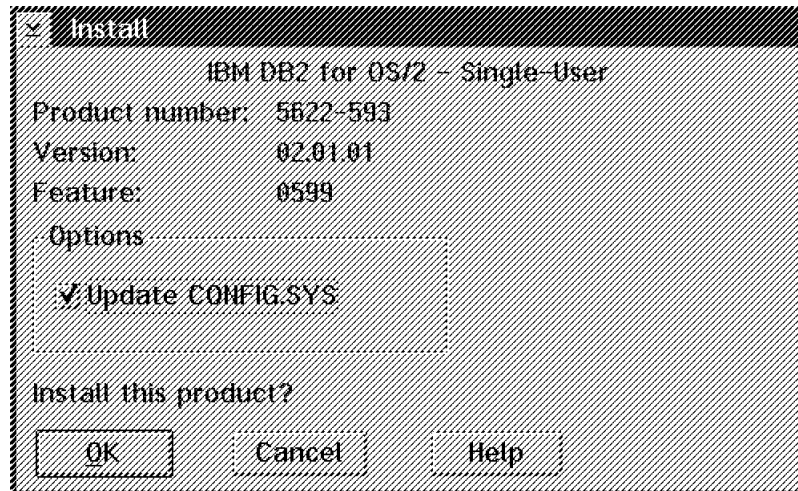


Figure 11. IBM Database 2 Installation

Click on **OK** to update your CONFIG.SYS file.

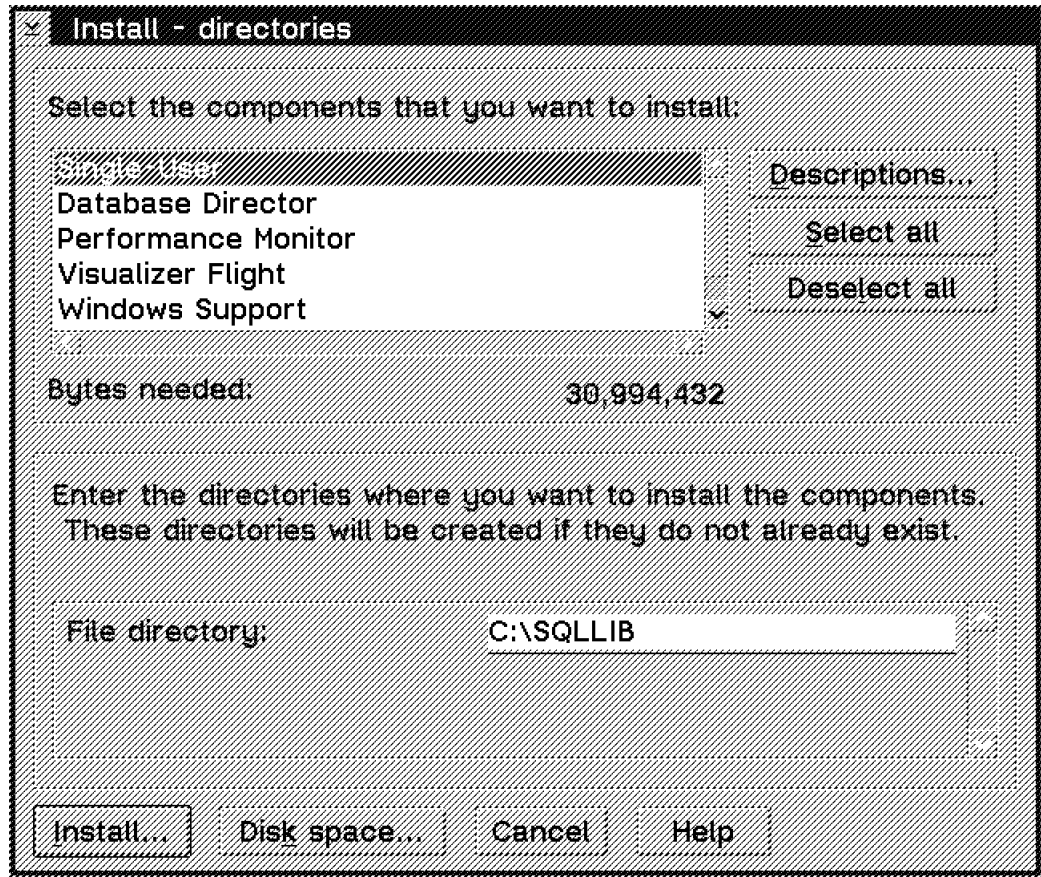


Figure 12. IBM Database 2 Installation

This is the list of components of the DB/2 single user:

- *Single-User*  
DB2 Single-User is a full-function, robust database management system that includes graphical database management tools and application development tools. DB2 Single-User can be accessed only from local applications. This includes any application that runs on the same computer where the database resides. This component must be selected.
- *Database Director*  
The Database Director provides a graphical interface for administration tasks such as configuring the system, managing directories, backing up and recovering the system, and for analyzing query plans with Visual Explain.
- *Performance Monitor*  
The Performance Monitor is a tool to help you monitor the performance of your DB2 system for tuning purposes
- *Visualizer Flight* Visualizer Flight is an efficient, small, fast print, front-end tool for DB2 that offers basic graphical query builder capacity to a DB2 end user. Flight also offers a direct SQL option for SQL-literate users to create queries. Additionally, it offers database browsing and charting. Flight end-users can create and drop tables, query and view data, and draw various types of charts.
- *Windows Support*

This component allows Windows applications to access local or remote database servers. In addition, it provides tools to help create database applications for Windows.

- *Documentation*

Documentation is provided in IPF format. IPF format allows you to use hypertext links to search for information and link to different books in the library.

The minimum component that you need is DB2 "single-user."

## 2.2.2 Installing VISUALAGE C++

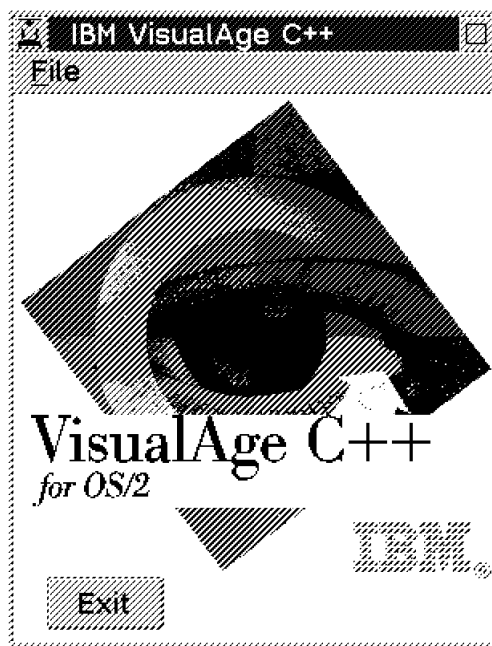


Figure 13. VisualAge C++ Installation

You need VisualAge C++ for the workstation that contains the library server. It is used for working with index classes by the database manager. No other VisualInfo workstation needs to have VisualAge C++. After invoking the installation program, click on file and install.

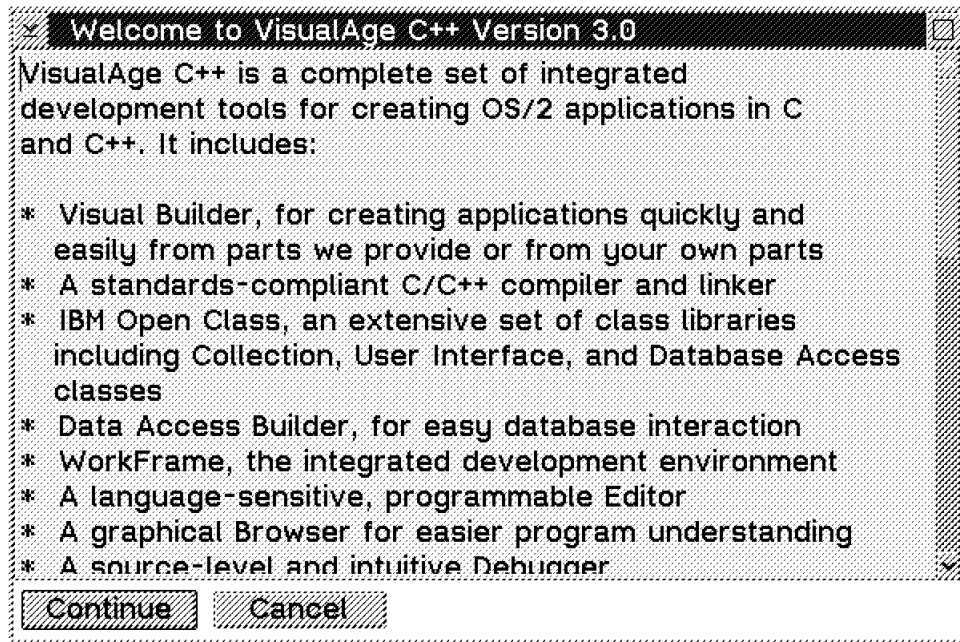


Figure 14. VisualAge C ++ Installation

When you see the screen in Figure 14, click on **Continue**.

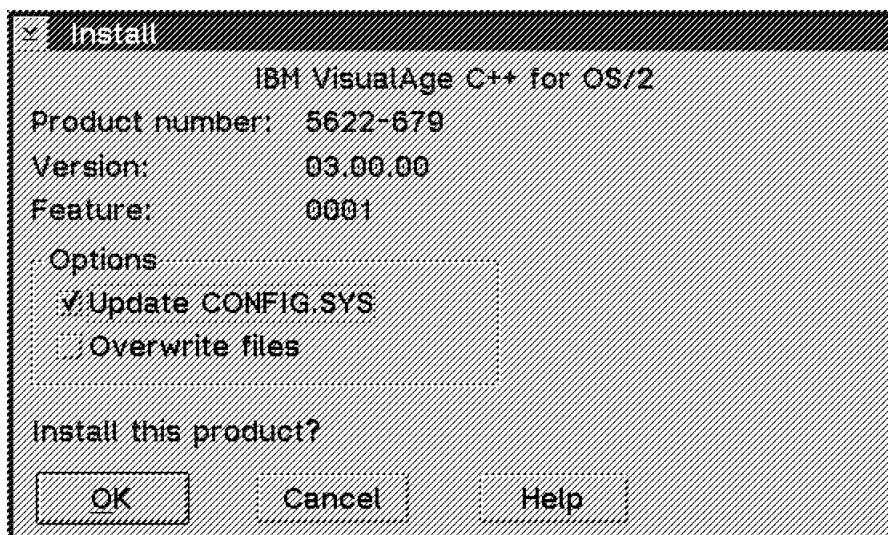


Figure 15. VisualAge C ++ Installation

Click on **OK** to update your CONFIG.SYS.

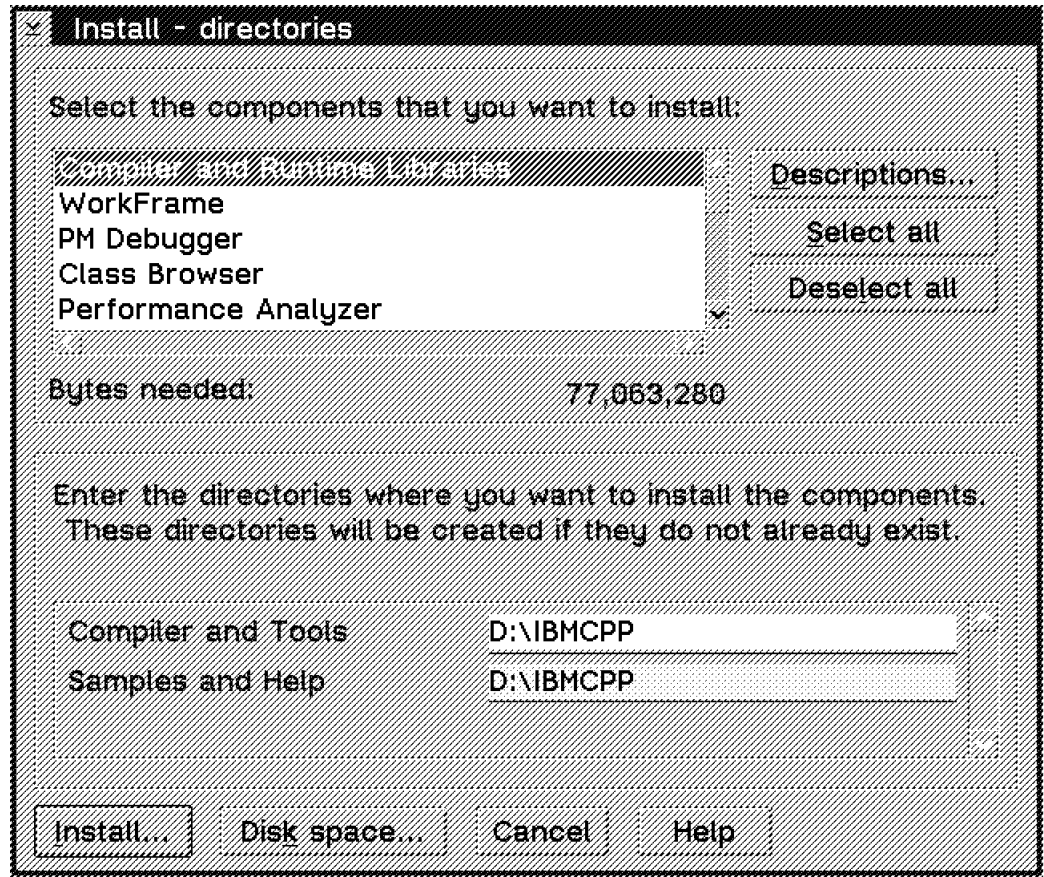


Figure 16. VisualAge C++ Installation

The *minimum components* that you need are:

- Compiler and runtime libraries
- Standard Class Library
- Warp Toolkit Headers and Libraries

You may want to install additional components. After the installation is finished, you can run the SYSLEVEL command from an OS/2 command prompt, and you should see at least these components:

- AD Common Run-time DLLS
- VisualAge C++ Compiler
- AD Common Linker/Librarian
- Distributed SOM Framework
- SOM Event Management Framework
- SOMobjects Interface Repository
- SOM Run-time Kernel
- SOMobjects Utilities Classes
- Warp toolkit development tools

This is the list of all components for VisualAge C++.

- *Compiler and run-time libraries*

A 32-bit C/C++ compiler for OS/2 featuring optimization and support for multi-threading, 32-bit and 16-bit coexistence, templates, and exception handling. This component also includes single-thread, multi-thread, and subsystem run-time libraries for static and dynamic linking.

- *WorkFrame*

A unique and highly-customizable application development environment that seamlessly integrates the Visual Age C++ tools and puts all tools at your fingertips.

- *PM Debugger*

A 32-bit PM debugger for both C and C++ programs. It allows monitoring of variables in context, stack, storage, registers, message queue, and more. It also provides additional support for C++ templates and exception handling for PM programs.

- *Class Browser*

A tool for understanding the complexities in a set of classes. It helps you navigate through an inheritance hierarchy to quickly locate member definitions, view program relationships, and more.

- *Performance Analyzer*

A tool to help you tune the performance of C and C++ programs. It traces the program as it runs, then provides information about performance, using different graphical formats.

- *Visual Builder*

A tool that allows you to build object-oriented applications using direct manipulation (drag-and-drop) construct applications by connecting standardized parts from the Visual Builder Parts palette and then generating C++ code.

- *Data Access Builder*

Graphical Development tool and class library you can use for object-oriented access to a DB2/2 V1.2 database.

- *Editor*

A live parsing, extensible editor that features system highlighting and an interface you can customize from menus and key assignments to external commands and parsers.

- *IBM Open Class Library*

C++ classes including data types and exceptions, collections for creating generic data structures and containers, database access for accessing DB2/2 databases, and a user interface for creating graphical user interfaces with support for controls, 2-D graphics, and multimedia. All can create Visual Builder parts.

- *Standard Class Library*

C++ classes for input and output (I/O stream) and complex mathematics.

- *Documentation*

Reference and "how-to" information about C and C++ languages and libraries, the C++ class libraries, and all the VisualAge tools.

- *Samples*



Sample programs that show the range of applications you can build with VisualAge C++. Each sample demonstrates a particular programming technique, tool feature, or operating system principle.

- *Warp Toolkit Development Tools*

Tools from IBM developers toolkit for OS/2 WARP, including the make utility, help compiler (IPFC), resource compiler (RC), message file creation, and message binding utilities.

- *Warp Toolkit Information*

References and information about how to use OS/2 APIs (including PM graphics, and multimedia), create on-line help, create SOM and REXX programs, use the kernel debugger, and more.

- *Warp Toolkit Headers and Libraries*

The header files and libraries you need to use OS/2 APIs (including PM, graphics, and multimedia APIs).

- *Warp Toolkit Sample Programs*

Sample programs that show how to use various OS/2 and Presentation Manager programming techniques, source codes, executable versions, and workframe projects.

- *Warp Toolkit Multimedia Bitmaps*

Bitmaps you can use in your multimedia applications.

---

## 2.3 Installing VisuallInfo Software in OS/2

Here are the steps for the installation of the system.

Before you start the installation, you must read the README file in the FRNOS2 directory to check important information about the installation.

If you are installing VisuallInfo components on OS/2, you need to go to the FRNOS2 directory of the CD and type INSTALL. There is an FRNWIN directory for Windows clients (for Windows installation, see section 2.4, "Installing a VisuallInfo Windows Client" on page 62).

**Note:** Depending on the release level of VisuallInfo that you are using, screens may differ from this redbook, and you may see additional screens as the product is enhanced.

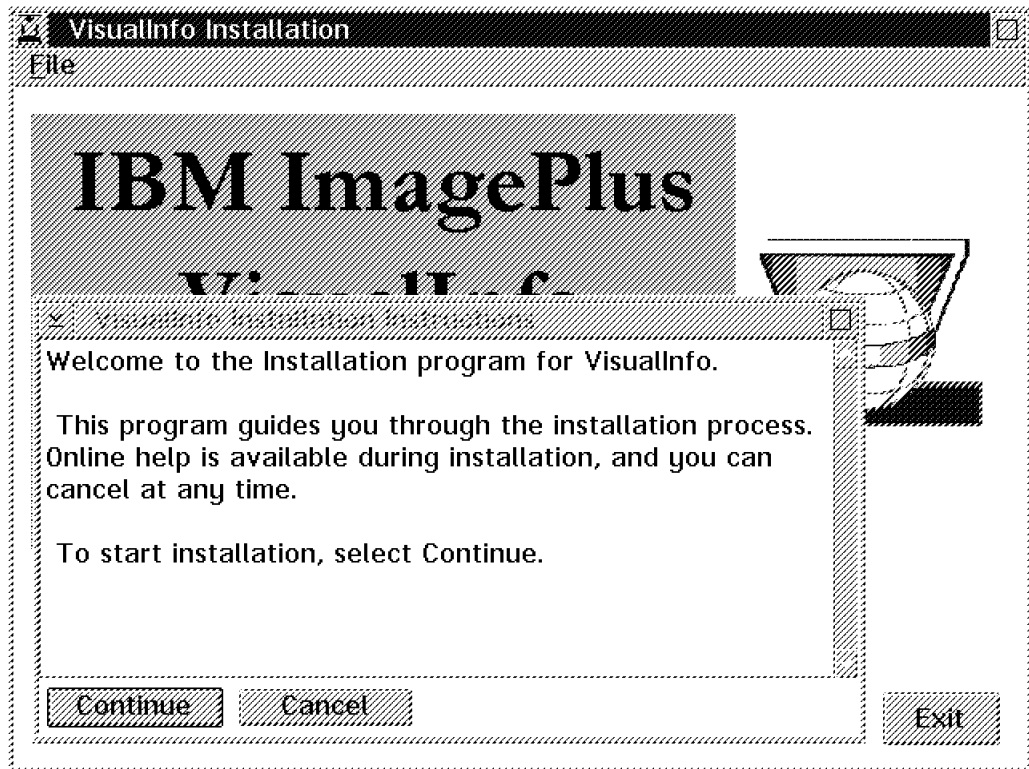


Figure 17. Beginning the VisualInfo Installation

Click on **Continue**.

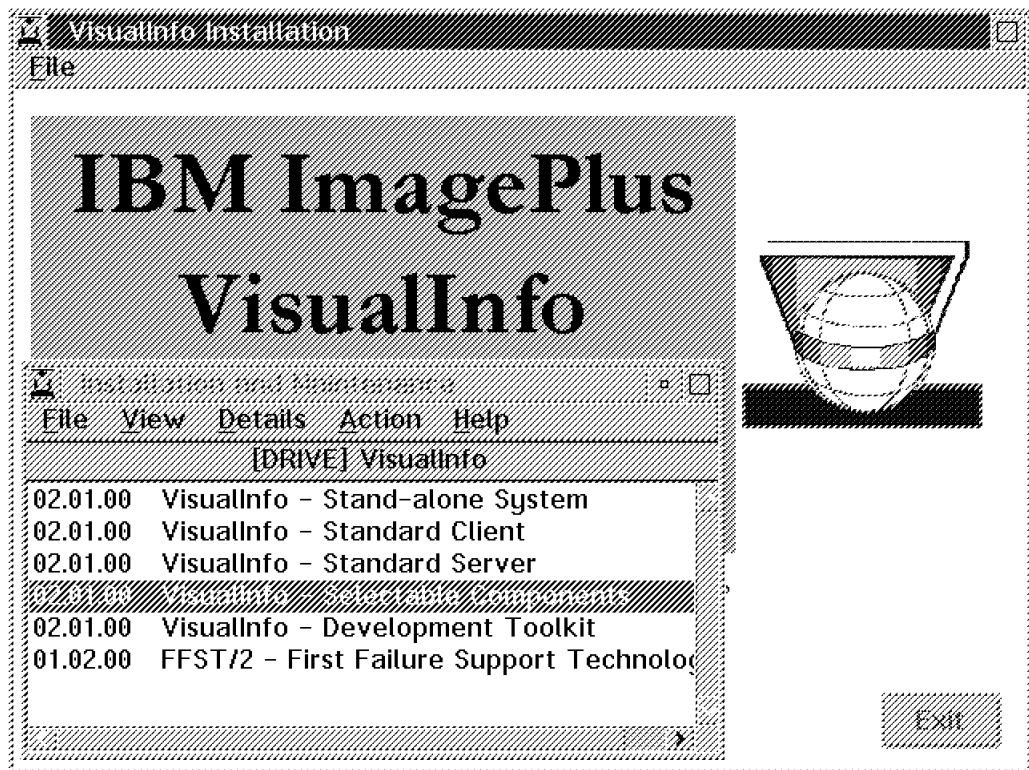


Figure 18. Selecting the VisualInfo Configuration

In Figure 18, you can choose between:

- **VisuallInfo - Stand-alone System**

If you select this configuration, the following components are installed on your workstation:

1. Client for OS/2, which includes:
  - Client Application with cache
  - Library Client with cache
  - IBM Image Services
2. Library Server for OS/2
3. Object Server for OS/2
4. System Administration program
5. System Configuration Utility
6. Configuration Server

Installing a stand-alone system may not limit your growth. If you do not want to reinstall VisuallInfo as a standard or custom system, you can go through a re-configuration, including changing your Network Table. (This is not recommended except for advanced administrators.) It allows you to add additional OS/2 or Windows clients that can access this workstation. To see what this entails, see section 2.5.2, “Creating the Network Table (System Configuration Utility)” on page 67.

- **VisuallInfo - Standard Client**

If you select this configuration, the following components are installed on your workstation:

1. Client application with cache
2. Library client with cache
3. IBM Image Services
4. System administration
5. System Configuration Utility

- **VisuallInfo - Standard Server**

If you select this configuration, the following components are installed on your workstation:

1. Library Server for OS/2
2. Object Server for OS/2
3. System Configuration Utility
4. Configuration Server

- **VisuallInfo - Selectable Components**

If you select this configuration, you can choose the components that you want to be installed on your workstation. This is called a custom system.

**Recommendation:** The selectable components installation is preferable because you can choose exactly which VisuallInfo components you want to install and which components you do not need. This method is the one most often used.

The following are the components that you can select from:

1. VisuallInfo installation program:

A VisuallInfo install/maintenance program.

2. Client application with cache.

The client application is the end-user interface for VisuallInfo. The cache provides temporary copies of images in your workstation. If for disk space reasons (or any other reason), you want a client without cache, you can change it later.

3. Library client with cache:

Allows you to access and work on objects contained in the VisuallInfo library and object servers.

4. IBM Image Services:

Provides full capture, presentation, and rendering facilities for image objects.

5. Library Server for OS/2:

Manages a catalog of library objects by storing, maintaining, and controlling access to index information.

6. Object Server for OS/2:

Contains objects that have been stored into the library.

7. System administration: A system administration utility that allows you create index classes, users, collections, and so on.

8. System configuration utility:

Used to configure the VisuallInfo system. This utility should be run after the first installation.

9. Configuration server:

Contains configuration information for workstations (clients and servers).

10. List Manager server:

Allows you to install a stand-alone List Manager server to maintain application data accessed by many workstations.

11. VisuallInfo Fax support:

Used to support a FaxRouter/2 server as a VisuallInfo client.

• **VisuallInfo - Development Toolkit**

This would be selected for any workstation where application programming with VisuallInfo APIs will be done. If you install the VisuallInfo development toolkit, you can select any or all of the following:

– VisuallInfo Application Programming Toolkit:

Allows programmers to create image applications using VisuallInfo. It needs 2,439,000 bytes of disk space. In V2.2, selecting this option also gives you the high-level programming interface (listed below).

– IBM Image Services Toolkit:

Allows programmers to create image applications using IBM image services. It needs 1,897,000 bytes.

– VisuallInfo high-level programming interface:

This provides a high-level interface to VisualInfo. These APIs also are used for FlowMark integration (using the Service Broker Manager). It needs 176,100 bytes. In V2.2, this is included in the Application Programming Toolkit.

The following picture shows the existing APIs for the different components of the VisualInfo client in OS/2 and Windows.

## APIs relation

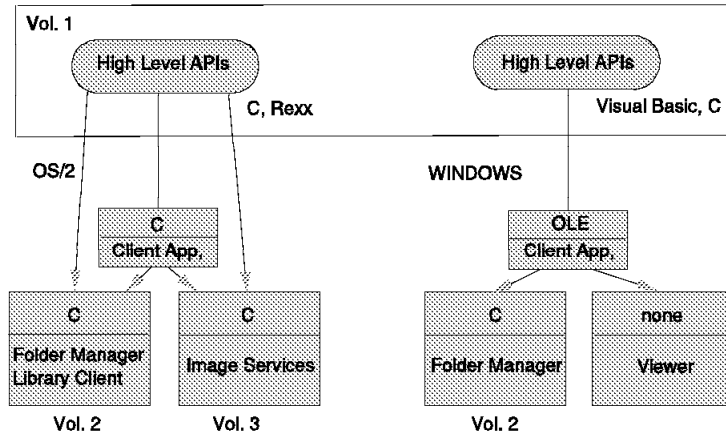


Figure 19. VisualInfo APIs

In the OS/2 environment, VisualInfo has APIs for all of the components of the client: Client Application, Folder Manager/Library Client, and Image Services. These are C APIs. There are also APIs which can change server processing on the library and object servers. They are called from a client application. On a higher level, we have APIs called from a C or REXX program which can interact with the previous lower-level APIs.

In the Windows environment, VisualInfo provides APIs for the Client Application and Folder Manager, but not for Image Services. The Folder Manager APIs are used in C programming. The client application APIs support OLE. The Image Services APIs are planned to support OLE also. We have high-level APIs that are in C or Visual Basic. They can interact with the previous lower-level APIs.

Detailed information about these APIs can be found in the VisualInfo Application Programming Guides. See Appendix D, "Related Publications" on page 213.

- **FFST/2 - First Failure Support Technology**

You need the Failure Support Technology product. It gives you log entries for any errors, not only from VisualInfo but also from OS/2.

Whether FFST/2 is currently installed or not, it is best to install it (again) from the VisualInfo CD. Versions of FFST from other products could become non-functional and cause problems. Be sure to shut down your current FFST/2 before installing the new one. Type "epw off" from the command line or double-click on the "Stop FFST/2" icon in the FFST/2 folder.

Choose the configuration that you want to use, then from the pull-down menu, press ACTION and INSTALL. This dialog is shown:

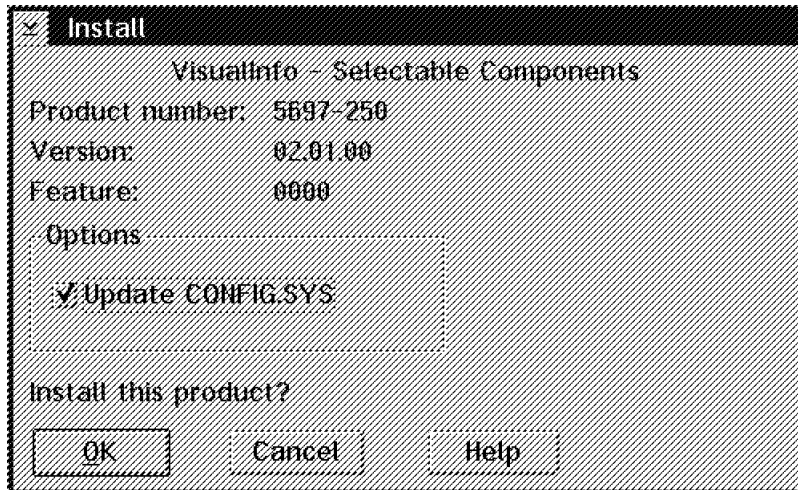


Figure 20. VisualInfo Installation

Press **OK** so the installation program updates your CONFIG.SYS.

Depending on the configuration you have selected, you see different installation windows.

### 2.3.1 Installing VisualInfo - Selectable Components System

If you chose *Selectable Components* (see Figure 18 on page 44), the VisualInfo installation program lists all of the available components.

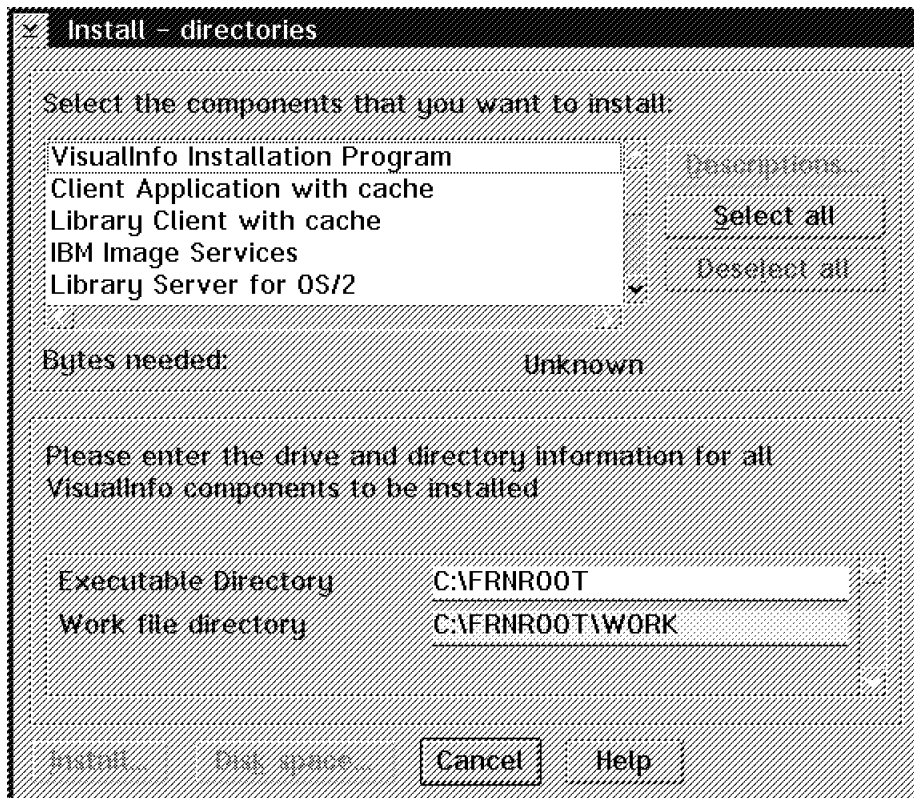


Figure 21. Selecting Components

Select the components you need, check the disk space and change the drive if needed. Then press **OK** to begin the installation.

For this sample, we selected:

- Client Application
- Library Client
- IBM Image Services
- Library Server for OS/2
- Object Server for OS/2
- System Administration
- System Configuration Utility
- Configuration Server

This sample is the same as a stand-alone system, but installed from selectable components.

In Version 2.2 and above, at this point you can select the language support (NLS) for your VisualInfo installation. This replaces the selection box in Figure 24 on page 51 for this release.

After a few seconds, you see this next window.

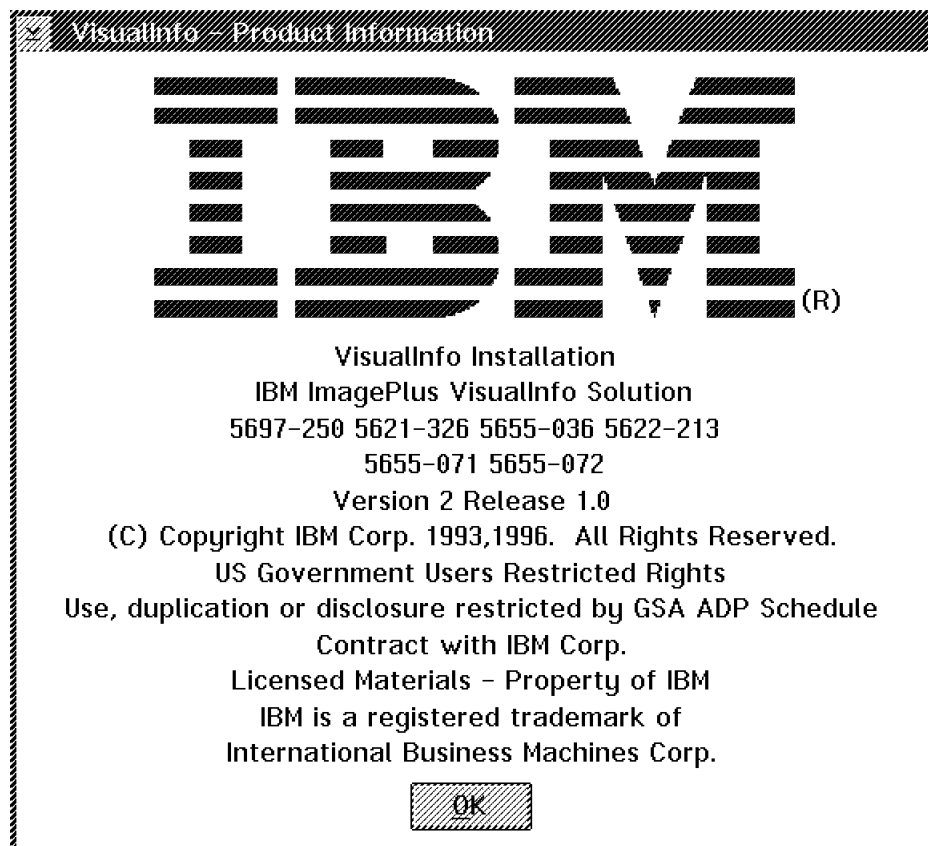


Figure 22. VisualInfo Installation

Press **OK** to continue.

You are prompted to select:

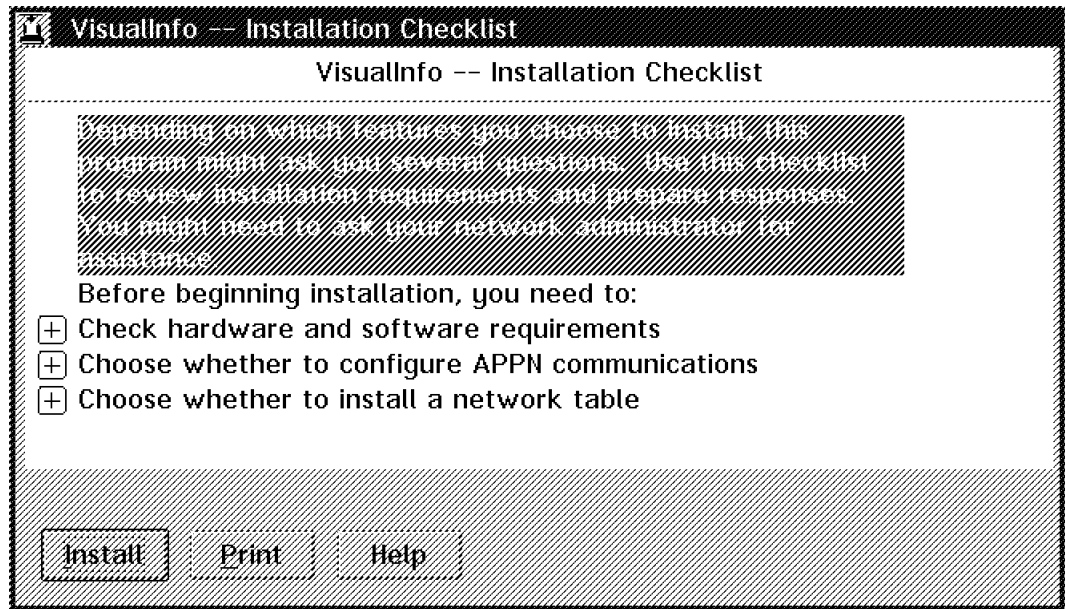


Figure 23. Beginning the VisualInfo Installation

This window is a reminder for you to check your configuration for prerequisite hardware and software. It also tells you what choices you need to make later. If you need to research any of these items, you can print out this list. The "+" sign gives a more detailed explanation of each of the three items. You can cancel the installation now (using standard OS/2 techniques) or continue by clicking on the "install" button if you have the needed information.

If, in Figure 23, you did not de-select the item "Choose whether to install a network", after a few minutes, you see the following window:



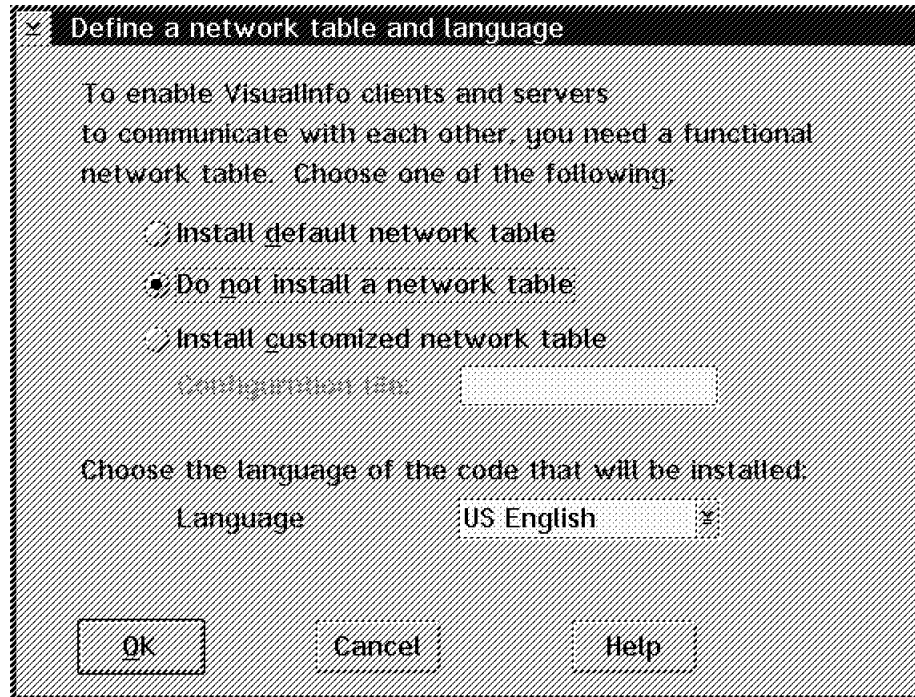


Figure 24. Installing a Network Table

If you are installing a stand-alone machine, you can select *Install default network table*.

If you are installing a more complex VisuallInfo system, choose *Do not install a network table*. You can create a network table for your system after the installation finishes. See 2.5.2, “Creating the Network Table (System Configuration Utility)” on page 67.

If you already have a VisuallInfo system working and you are just adding components or nodes, then you already have your network table (in a file). You can select *Install customized network table*, which will allow you to use a utility later to add to your table.

**Tip:** We recommend that you select ***Do not install a network table***. You can create your network table after the installation, or copy it from another machine (in the case you already have one) and change it. See section 2.5.2, “Creating the Network Table (System Configuration Utility)” on page 67. It is beneficial to do your network table yourself so you are familiar with its contents. This allows you to modify it, match it to your communications software, and solve any problems that may arise.

**Note:** In V2.2, you have already selected your language, and the listbox on this window is disabled.

The installation continues. You can watch its progress using the screen shown in Figure 25 on page 52.

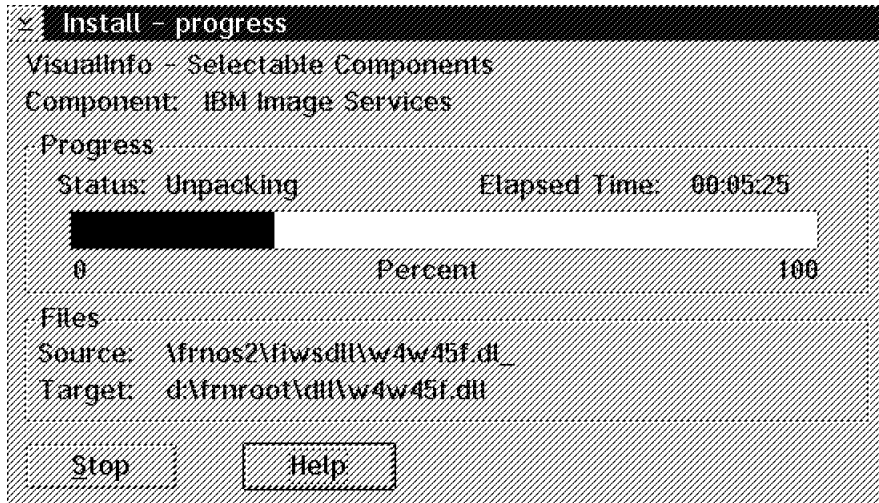


Figure 25. VisuallInfo Installation

Later, the installation program asks if you want to install the database for the Library Server at this time.

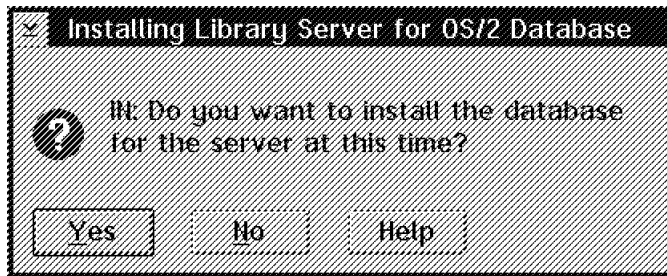


Figure 26. VisuallInfo Installation

Select Yes if you want to install the database now or No if you do not.

You can install the databases after the installation finishes (see VisuallInfo Utilities folder inside the VisuallInfo folder). If you have a database already, you will probably say No to installing a new one, so you can use the old one. For example, you may be migrating to a newer VisuallInfo version or to another platform (see Chapter 6, "Migration" on page 197). But if you want VisuallInfo to create a new database and erase your old one, you will say Yes at this time.

**Note:** If your Database 2 system is V1.2, you should not install the database at this time. Say No and let the installation run to completion, then install the database using the utility provided with VisuallInfo.

If you selected to install the Library Server database, you are prompted:

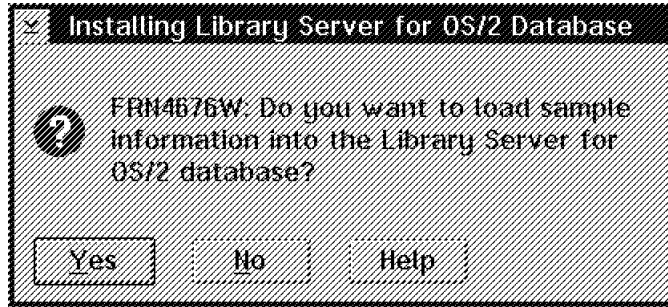


Figure 27. VisuallInfo Installation

Click on Yes to load sample information in the database.

It starts the database and asks you for a local Logon; you should enter a User Profile Manager (UPM) user ID and password. The user ID must have Database Administrator authority (from the UPM application). This user ID becomes the "owner" of the database so, to use this database for VisuallInfo, you must logon to UPM with this ID in the future.

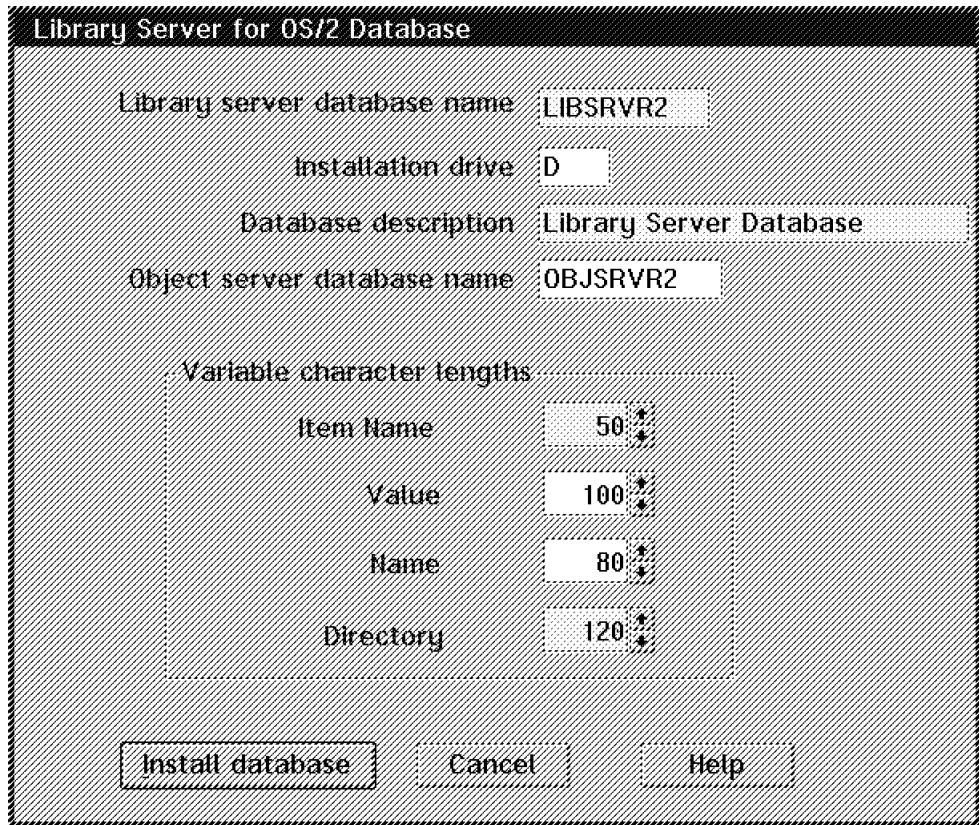


Figure 28. VisuallInfo Library Server Database Installation

Here you can choose:

- *The Library Server database name:* The default is LIBSRVR2. We recommend that you do not change it unless you are installing an additional Library Server (an additional system). You might do this so that a user can choose which Library Server to log on to, one at a time. In this case, you must supply another database name (for example, LIBSRVR3).

- *Installation drive:* where the database reside physically. If possible, install the database in a separate partition (or hard disk, if available) from OS/2, SWAPPER.DAT, and from your own workstation data.
- *Database description*
- *Object Server database name:* The name of the object server associated with the Library server. If later you install more object servers, you can link to the same Library Server. See 5.9, “Adding Object Servers” on page 179.
- *Variable character lengths:*
  - Item Name:  
To specify the maximum number of characters for the *item name* field in the database.
  - Value:  
To specify the maximum number of characters for the *value* field in the database.
  - Name:  
To specify the maximum number of characters for the *name* field in the database.
  - Directory:  
To specify the maximum number of characters for the *directory* field in the database.

Then click on *Install database* so the Library Server database installation begins. You can watch its progress using the screen shown in Figure 29 on page 55.

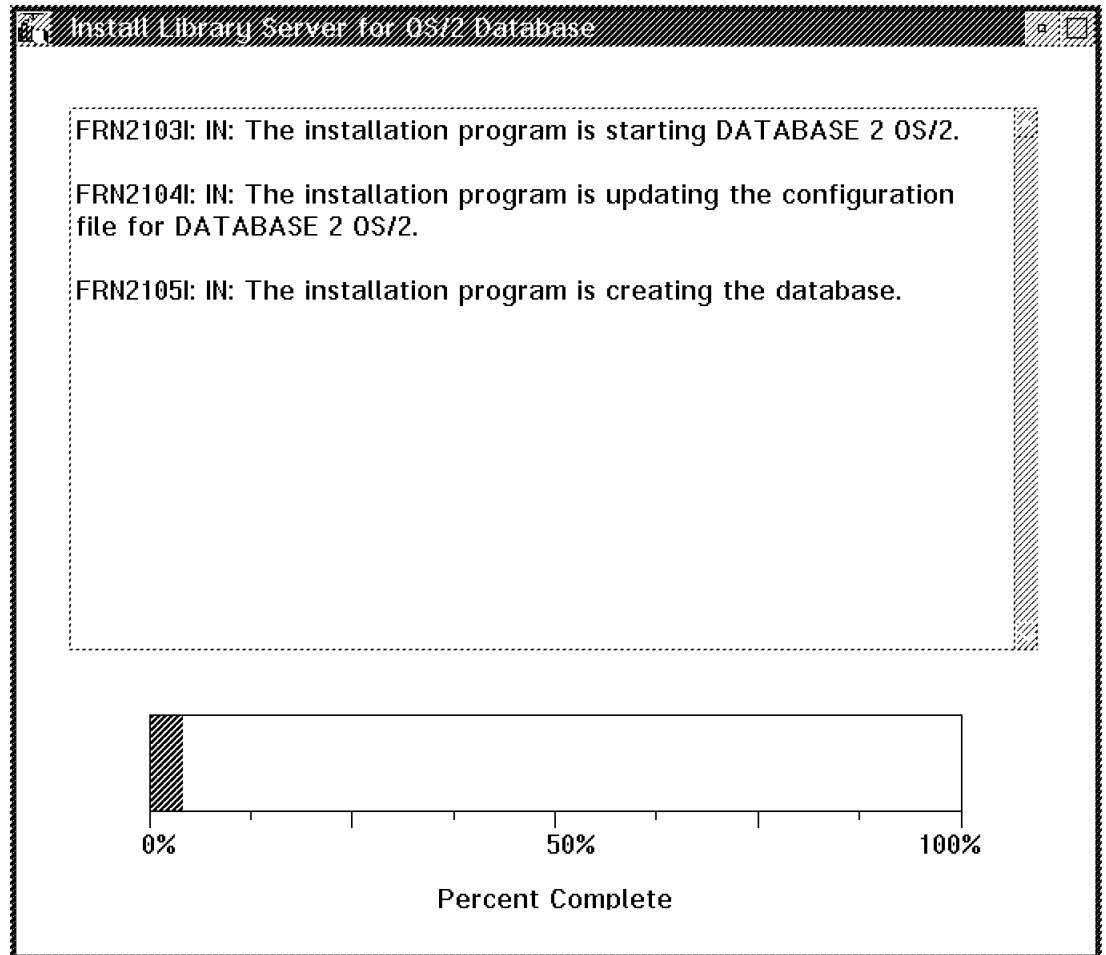


Figure 29. VisuallInfo Library Server Database Installation

After installing the database, the installation program automatically binds your database.

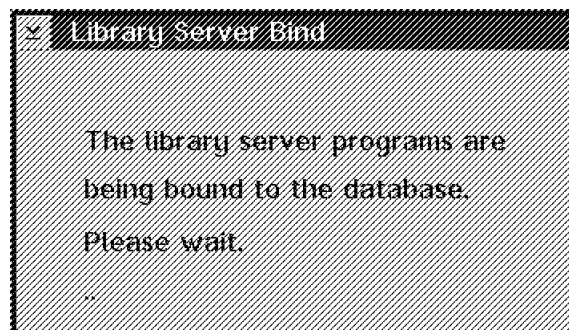


Figure 30. Library Server Database Bind

The installation program checks your environment.

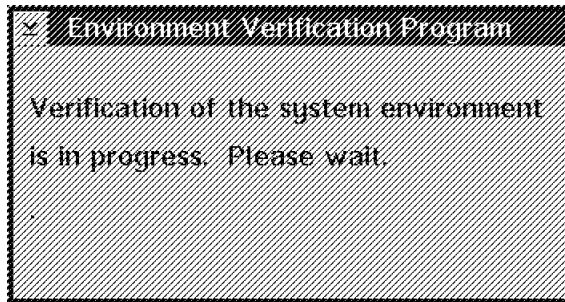


Figure 31. Environment Verification

If there are any errors, the installation program notifies you and the errors are registered in the files FRNODLL.LOG and FRNODLL.OUT; the installation continues. Check these files after the installation to find the problem. Sometimes you did not install a required software component, or the software is incorrectly installed (for example, the CONFIG.SYS does not have the DLL location in the LIBPATH statement).

After a few minutes, you are prompted to install the Object Server database.

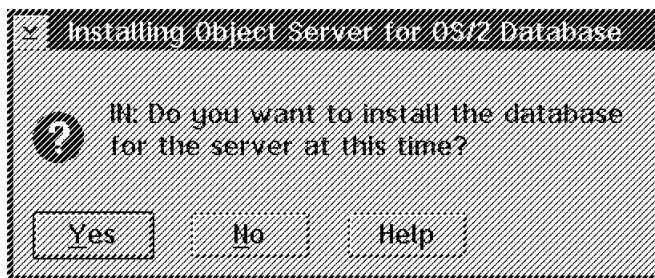


Figure 32. VisuallInfo Installation

Select Yes if you want to install the database now or No if you do not.

You can install the databases after the installation finishes (see VisuallInfo Utilities folder inside the VisuallInfo folder). or you can use your older database if you are migrating to a newer version or to another platform (see Chapter 6, "Migration" on page 197).

**Note:** If your Database 2 system is V1.2, you should not install the database at this time. Say No and let the installation run to completion, then install the database using the utility provided with VisuallInfo.

If you selected to install the Object Server database now, you are prompted:

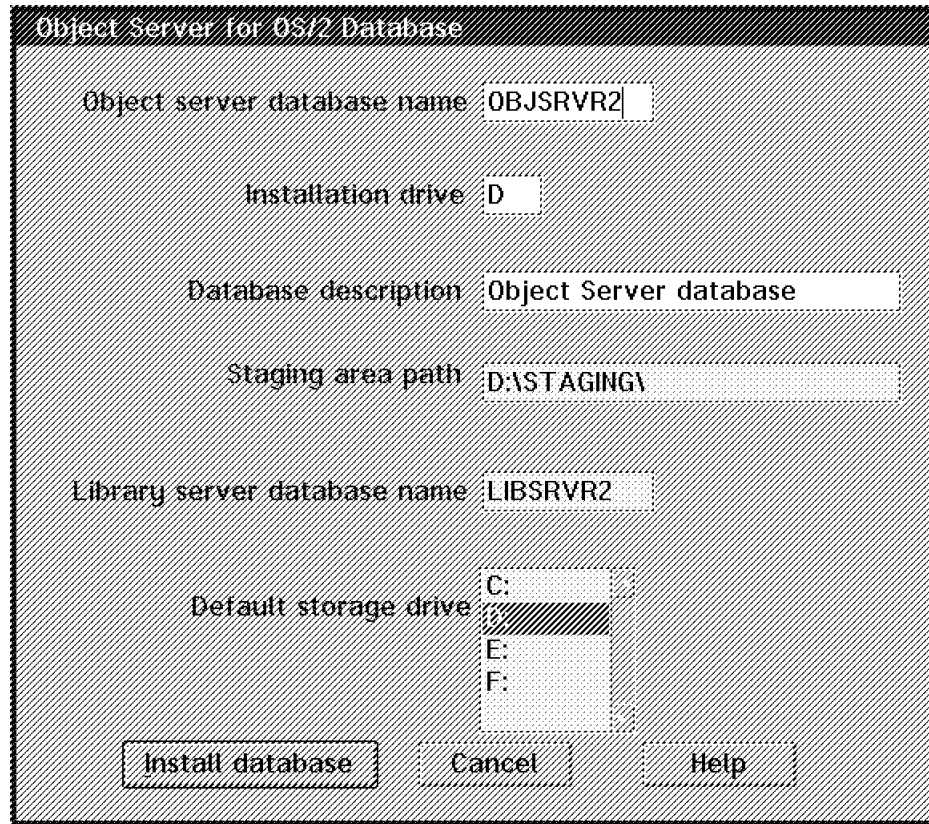


Figure 33. VisuallInfo Object Server Database Installation

Here you can define:

- *The Object Server database name:* The default is OBJSRVR2. We recommend not changing it unless you are installing an additional Object Server on your VisuallInfo System. In this case, you must enter another database name (for example, OBJSRVR3).
- *Installation drive:* where the database physically resides. If possible, install the database in a separate partition (or hard disk, if available) from OS/2, SWAPPER.DAT, and the staging area.
- *Database description*
- *Staging Area Path:* This is the directory where the objects entering VisuallInfo for the first time (or when they are retrieved by a client) are stored by Object Server. Be sure you include the trailing \ when entering the name (as shown in Figure 33). If possible, place this directory in a separate partition (or physical disk if available) from OS/2, SWAPPER.DAT, DB2/2 databases, and log datasets. The staging area must be formatted as HPFS.
- *Library Server database name:* The name of the Library Server to which the Object Server is linked.
- *Default storage drive:* By default, it points to the drive where VisuallInfo is being installed, but you can change it to a drive with more disk space. This drive is the first *volume* defined by VisuallInfo in system-managed storage. (See Section 3.1, "Configuring System Managed Storage" on page 83 for more details.)

Then click on *Install database* so the Object Server database installation begins.

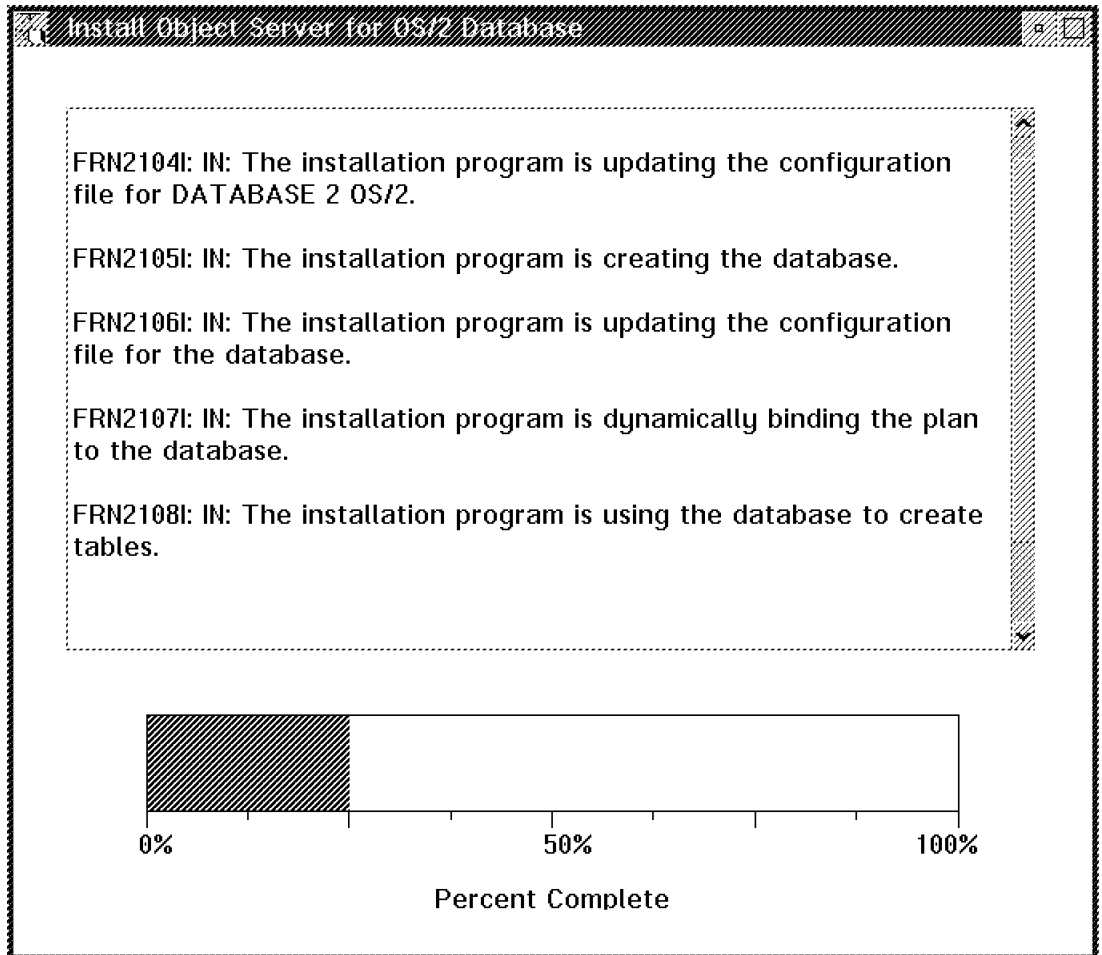


Figure 34. VisulInfo Object Server Database Installation

After installing the database, the installation program automatically binds your database.

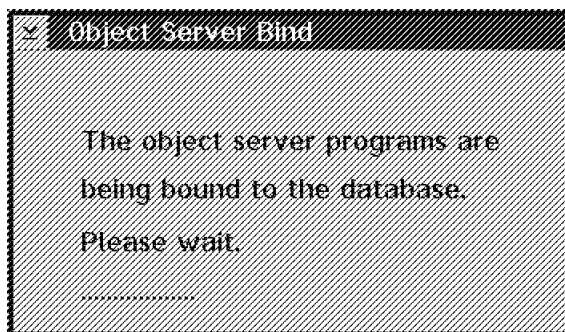


Figure 35. Object Server Database Bind

This is the final step. After processing and transferring some files, the installation is finished.



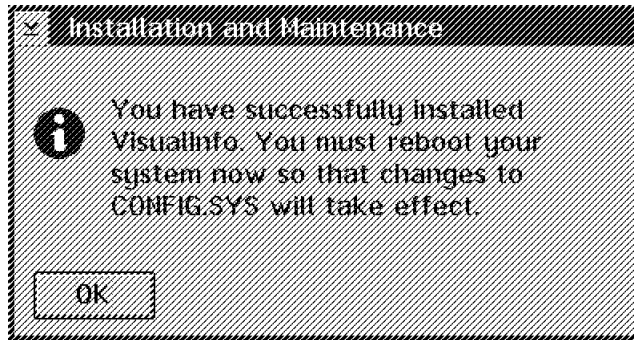


Figure 36. Object Server Database Bind

Now you have to create and generate a network table so your VisualInfo components and nodes can communicate. Continue to Section 2.5, “Configuring VisualInfo” on page 64.

### 2.3.2 Installing VisualInfo Stand-alone System

If you chose VisualInfo Stand-alone in Figure 18 on page 44, you see this window:

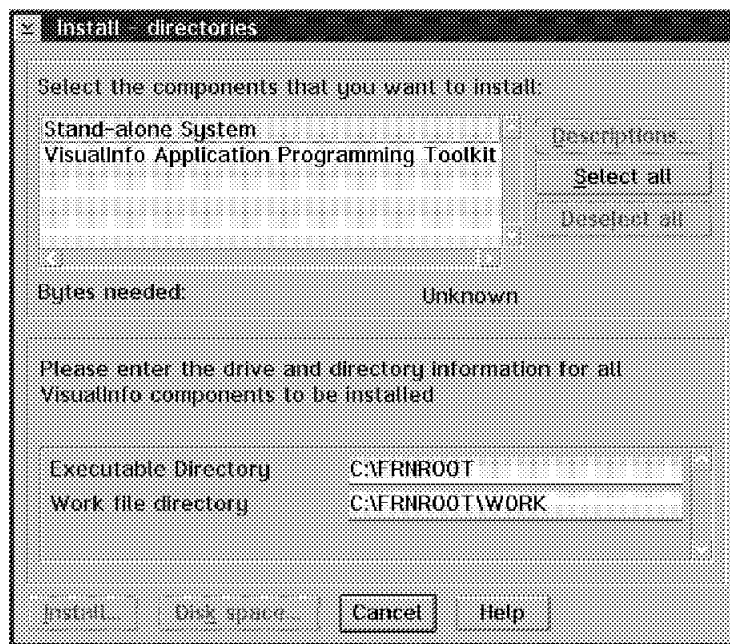


Figure 37. VisualInfo Stand-alone Installation

You can select the Stand-alone system and the VisualInfo Application Programming Toolkit (Development Toolkit in V2.2).

The application programming toolkit allows programmers to create image applications using VisualInfo. It needs 7,038,552 bytes of disk space.

Select stand-alone and toolkit if you need both; press the **Install** push button.

The installation is exactly the same as the sample installation in the selectable components (previous point). Go to Figure 22 on page 49 and follow all of the steps to complete the installation.

### 2.3.3 Installing VisuallInfo Standard Server System

If you chose VisuallInfo Standard Server in the window of Figure 18 on page 44, you see the window.

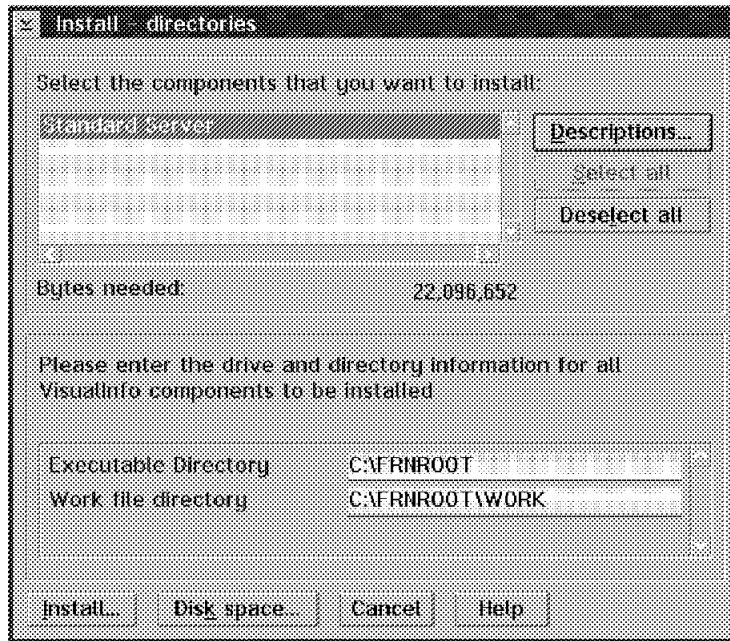


Figure 38. VisuallInfo Standard Server Installation

Select the only item that appears, change the disk space if needed, and then press the **Install** button.

Since the Standard server includes all of the components of a VisuallInfo server machine (Object Server, Library Server, Configuration Server, and Configuration Utility), the next installation windows are exactly the same as in the previous sample. The only difference is that the client code is not installed.

Go to Figure 22 on page 49 and follow all of the steps to complete the installation.

The standard server code needs 22,096,652 bytes of disk space.

### 2.3.4 Installing VisuallInfo Standard Client

If in Figure 18 on page 44, you chose VisuallInfo Standard Client, you see Figure 39 on page 61.

**Note:** If you have V2.2, that screen is different. The Application Programming Toolkit is called the Development Toolkit, and it includes other toolkits (Image Services and High Level Programming Interface).

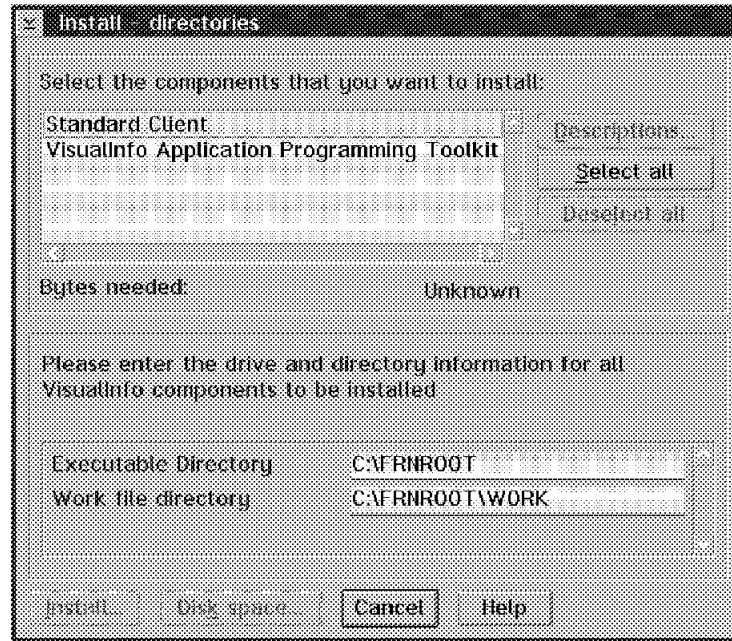


Figure 39. VisualInfo Standard Client Installation

You can select the Standard Client and the VisualInfo Application Programming Toolkit (Development Toolkit in V2.2).

The Application programming toolkit allows programmers to create image applications using VisualInfo. It needs 7,038,552 bytes of disk space. The Standard client needs 24,993,652 bytes.

The standard client installs the client application, Image Services, the library client, System Administration, and the System Configuration utility.

Select standard client and toolkit if you need both and press the **Install** push button.

You see the window in Figure 22 on page 49 and then the installation begins. You are also prompted for the network table definition (this can also be done after the installation of VisualInfo is completed). Also select *Do not configure Communications Manager* when prompted (because we are going to use TCP/IP).

There were no databases installed since this is a client.

### 2.3.5 Installing VisualInfo Development Toolkit

If you chose VisualInfo Development Toolkit in Figure 18 on page 44, you now see the window in Figure 40 on page 62.

**Note:** If you are using V2.2, the next window shows only two choices, the Application Programming Toolkit (which now contains the VHLPI interfaces) and the Image Services Toolkit.

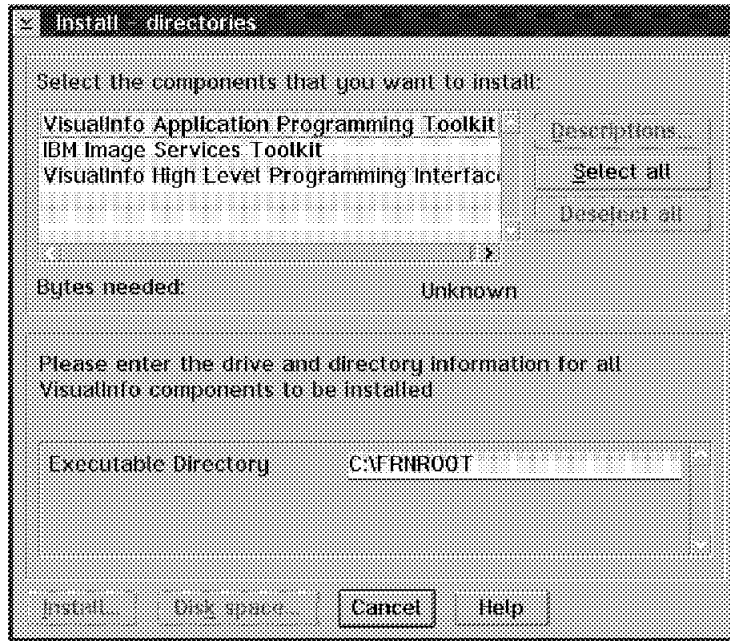


Figure 40. VisualInfo Development Toolkit Installation

Select what you need to install and press the **Install** push button.

You see the window in Figure 22 on page 49 and you are not prompted until the installation finishes.

## 2.4 Installing a VisualInfo Windows Client

The VisualInfo Standard Client for Windows is an end-user interface to VisualInfo that provides document and folder management, scanning support, import and export, workflow, and search capabilities. In the Windows environment, you do not have a System Administration component available, so you must have at least one OS/2 workstation on your Windows system to run administrative tasks.

VisualInfo V2.1 supports only English for the Windows client. See section 1.8, "International Considerations" on page 30 for V2.2 support.

Do not forget that before you start the installation, you must read the README file in the FRNWIN directory to check important information about the installation. The README file also lists certain limitations of a Windows client. For example, TIFF must be used (MO:DCA is not supported) and highlighting/annotations cannot be updated.

If you are installing a Windows client on a system with no current Windows client, continue with the steps below. If you are upgrading from the VisualInfo Client for Windows V2.1, please refer to the steps in section 2.4.1, "Removing a Windows Client" on page 64, then follow this section.

Like an OS/2 client, a Windows client has three steps: installation, network table generation and server connection verification. Here is the installation step for a Windows Standard Client. The other two steps are covered later in this chapter.

1. From the *FILE* menu, select **RUN**.

2. In the Run dialog box, go to the drive that represents the CD-ROM drive, change to the directory FRNWIN, type Setup, then click the **OK** pushbutton.
3. The software shows a setup wizard to help guide you through the installation. Shut down all of the other products.
4. In the VisualInfo Setup Window, click **NEXT** to continue.
5. In the installation window, you see three choices:
  - Standard Client (recommended)
  - Selectable Components (customizable)
  - Development Environment (Standard Client + Toolkit and Sample Code)
6. Click the **Standard Client** pushbutton.
7. In the Select Destination directory, click the **Next** pushbutton to accept the default location for installation (if you want to change the destination location, click on the **Browse** pushbutton).
8. In the Folder Selection Windows, click on **Next** to accept the default folder name.
9. In the Start Copying files windows, you can review and verify the settings that you have made before the installation begins. If you are satisfied with the settings, click on **Next**; otherwise click on the **Back** push button to change your choices.
10. The installation continues. After all of the files have been copied, you are prompted to generate the network table.
 

You can choose between *Copy an existing Network Table* (if you have an existing network table) or *Generate a Network Table* (to generate a new network table). Make a choice and press the **Next** push button.

If you choose to create a new network table, you have to provide:

  - The operating system of the Library server.
  - The name of the Library Server.
  - Its Port Number (look on the Library Server).
  - Host Name of the workstation.

After specifying the information, click on the **Continue** push button.
11. If your installation choices require changes to either CONFIG.SYS or AUTOEXEC.BAT, you are prompted to have the changes made automatically and then restart your workstation. Click on the **YES** push button to accept the changes.
12. The Setup Complete dialog allows you to restart your workstation. Click on the **Finish** push button to restart the computer.

During the installation, the following registry DBs are updated. These DB entries are used by applications such as OLE, uninstalls, version controlling, fixpak installation, etc. If you want to update these entries, use the following commands:

```
regedit /v for Win31, Win311
regedit for Win95
regedt32 for WinNT
```

## 2.4.1 Removing a Windows Client

If you previously installed VisualInfo Client for Windows V2.1, you must remove it before installing V2.2. If the V2.1 client is present when you install V2.2, the results vary depending on the version of Windows you are using.

### 2.4.1.1 For Windows 95 or NT

After you start the setup program and choose a language, a window opens to tell you that it has detected V2.1 on your system and asks if you want to upgrade or quit. If you select Upgrade, the installation program deletes the previous version and installs V2.2. If you select Quit, the installation program ends.

### 2.4.1.2 For Windows 3.1 or 3.11

After you start the setup program and choose a language, a message box opens to tell you that it has detected V2.1 on your system. Click OK to close the message box and exit from the installation program. From the VisualInfo program group, select Remove VisualInfo and follow the instructions to remove your previous version of VisualInfo. Now you can return to the installation program and install your new version of VisualInfo.

---

## 2.5 Configuring VisualInfo

Before proceeding with the VisualInfo configuration, you must have the TCP/IP customized correctly. If you have already configured TCP/IP, go to section 2.5.2, "Creating the Network Table (System Configuration Utility)" on page 67.

### 2.5.1 Configuring Your TCP/IP in OS/2

There are two important parameters that you need to configure in TCP/IP:

1. Your *IP Address*
2. Your *Hostname*

The IP address is your workstation identification in the network and it allows other VisualInfo machines to communicate with you by using just your IP ADDRESS or your Hostname (that is, your name in a TCP/IP network).

To configure this, you go to the TCP/IP configuration icon and double-click, or type TCPCFG.EXE in an OS/2 window.

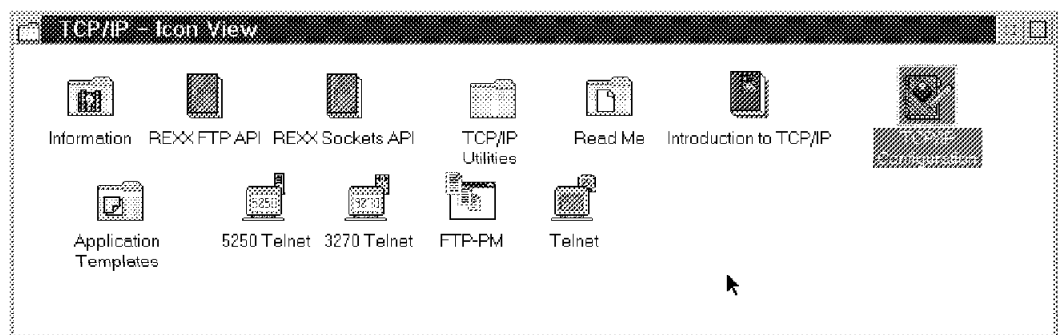


Figure 41. TCP/IP Configuration

In the **Network Tab**, enable your LAN adapter interface. If you only have one network adapter, it is LAN adapter 0.

Then type your *IP address*. It should be of the form XXX.XXX.XXX.XXX.

The *Subnet Mask* is also in the form XXX.XXX.XXX.XXX, where XXX can be:

- 255 if this term is always the same in all IP addresses in the network (11111111 in binary).
- 0 if this term varies in the network (00000000 in binary).

That means that if all of the IP addresses in the network contain 9.10.11.XX and the only term that varies is the fourth term, then the subnet mask is 255.255.255.0.

In the sample in Figure 45 on page 68, we are going to configure a machine with:

<b>HostName</b>	VISERVER
<b>IP Address</b>	9.10.11.10
<b>Subnet Mask</b>	255.255.255.0
<b>Name Server</b>	None (using Host List)

Now go to the *HostName Page* (shown in Figure 42).

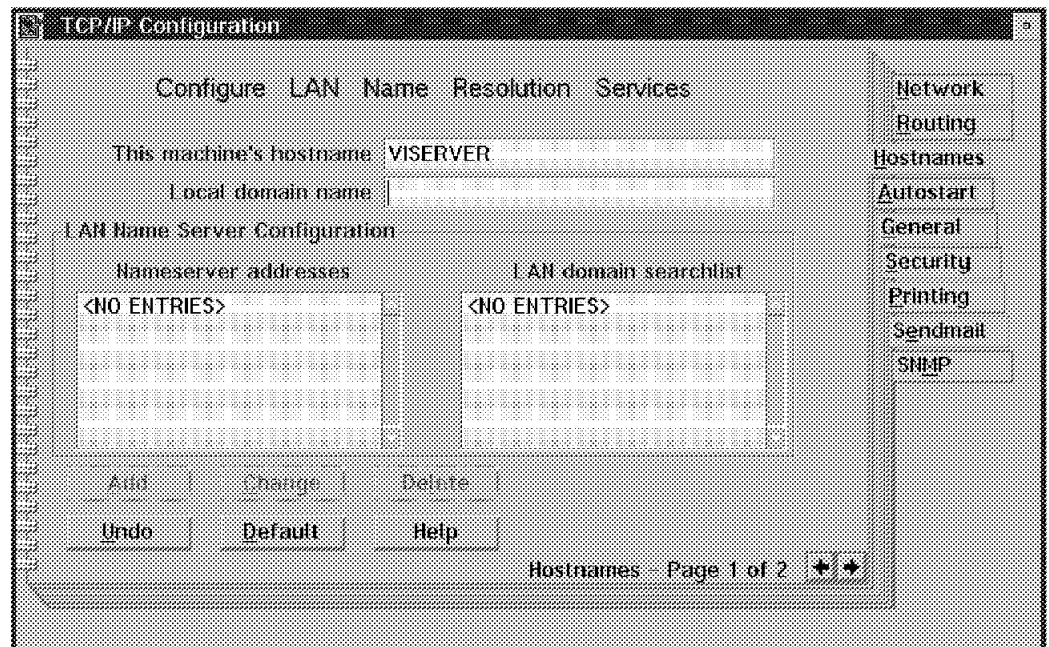


Figure 42. TCP/IP Configuration

Type your *HostName* in the *This machine's hostname* field. It can be up to eight characters.

There is another parameter to configure for VisualInfo communications. This is the *Hosts List* or *Hosts File*.

Now you have an IP address and you have a name. Even if no one in the network knows that your hostname corresponds to your IP address, they can reach you by using just your IP address.

However, VisuallInfo uses hostnames, not IP addresses, for communication between its components, so you need to set up this relation through TCP/IP.

There are two ways to do this.

1. You can add the IP addresses with corresponding Hostnames to your HOSTS list.

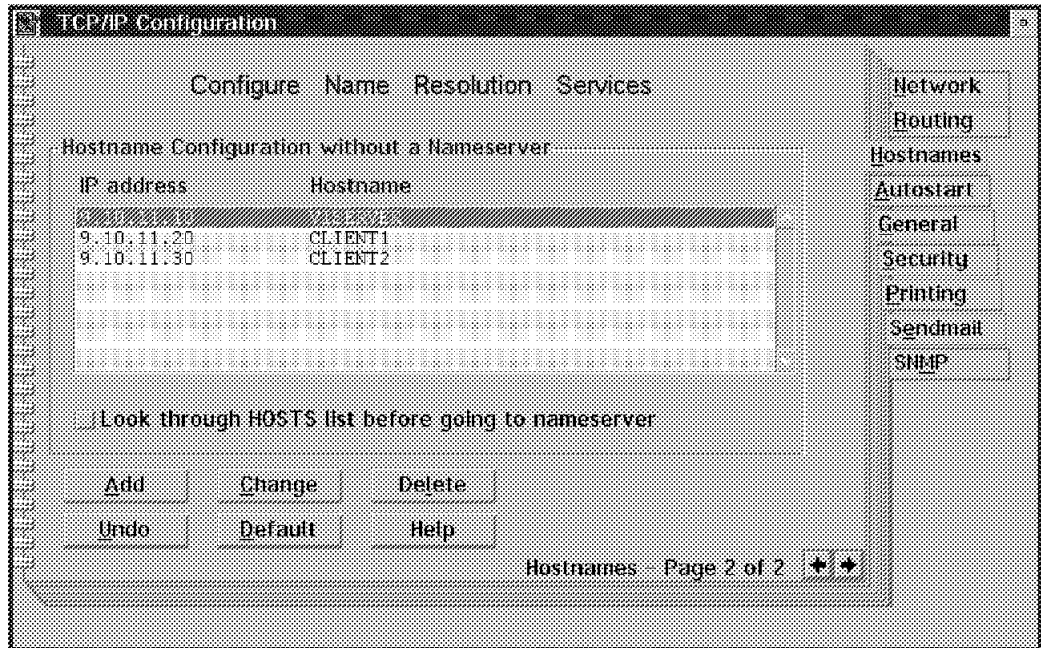


Figure 43. TCP/IP Configuration

In this example, this is the HOSTS list of the VisuallInfo server whose hostname is VISERVER and IP address is 9.10.11.10. We have also added the IP addresses of two VisuallInfo clients, CLIENT1 (9.10.11.20) and CLIENT2 (9.10.11.30), so they can communicate through TCP/IP.

2. Or you can have a LAN nameserver, a workstation that has all the information about IP addresses and hostnames in the network. Then each time that VisuallInfo needs to resolve a name, it goes to this machine and obtains an IP address or hostname from it.

To set this up, you need to put the IP address of the LAN nameserver in the *Nameserver addresses* listbox. In the next figure, we can see the LAN nameserver definition.



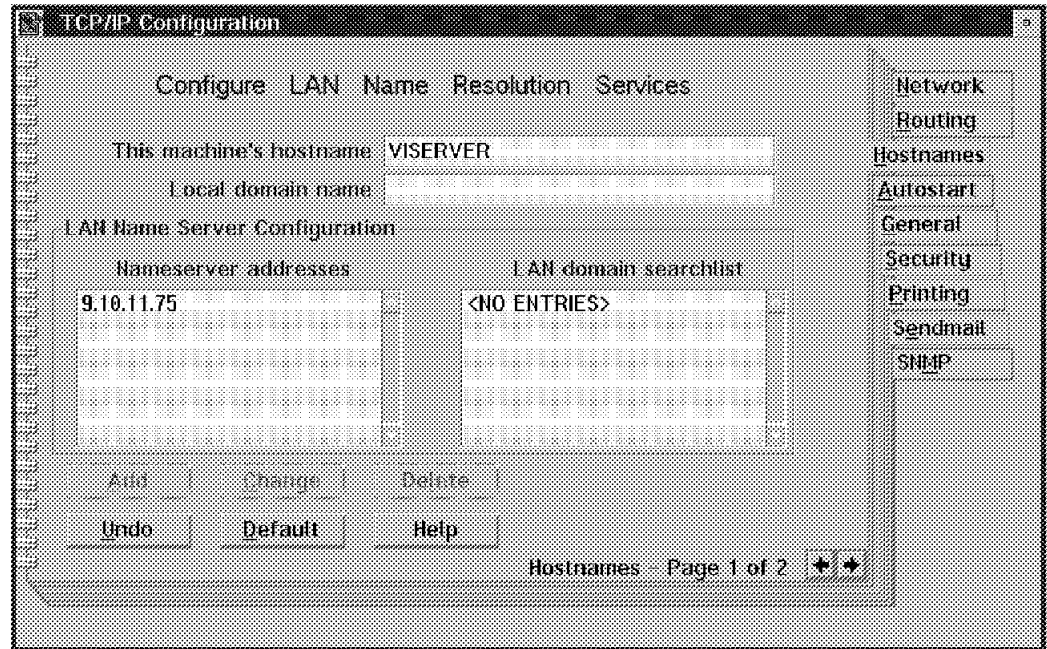


Figure 44. TCP/IP Configuration

In this figure, we have a LAN nameserver whose IP address is 9.10.11.75.

Now you can try the communication between your workstations. Try the TCP/IP "ping" command from the Server machine (or machines): `ping HOSTNAME` and also try the PING command from the client machines. For HOSTNAME, use the IP address or hostname of the machine you are pinging.

If ping is successful, you are told how many data packets were sent and received. If unsuccessful, no output is shown. Press **CNTL-C** to terminate the Ping command.

## 2.5.2 Creating the Network Table (System Configuration Utility)

Now that you have TCP/IP communication, you need to tell the VisualInfo system about the clients, the servers, and how are they related. This is done through the system configuration utility and through the network table generation utility.

We are going to configure this scenario as an example:

# Example Scenario

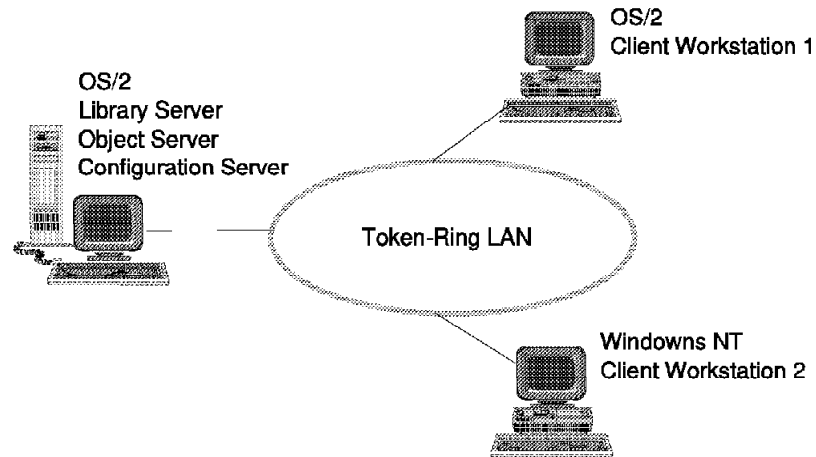


Figure 45. Example Scenario

We have two OS/2 clients and one Windows NT client connected to one configuration server. This configuration server coexists with one library server and one library object server, all in the same machine. We can run the System Administration program from the server also, a common practice for this scenario.

**Note:** SysAdmin can be installed and run on any OS/2 workstation. Be sure that whichever workstation contains SysAdmin is defined in the Network Table as having the Client function on it, as we did below.

The server machine has:

<b>HostName</b>	VISERVER
<b>IP Address</b>	9.10.11.10
<b>Subnet Mask</b>	255.255.255.0
<b>Name Server</b>	None (using Host List)

The OS/2 client machine has:

<b>HostName</b>	CLIENT1
<b>IP Address</b>	9.10.11.20
<b>Subnet Mask</b>	255.255.255.0
<b>Name Server</b>	None (using Host List)

The Windows NT client has:

<b>HostName</b>	CLIENT2
<b>IP Address</b>	9.10.11.30

**Subnet Mask**            255.255.255.0  
**Name Server**            None (using Host List)

The host list in every machine is equal to the host list showed in Figure 43 on page 66. That is, it includes the hostname and IP address of the server and both clients.

Go to the VisuallInfo utilities folder and double-click on System Configuration Utility. You see the following window:

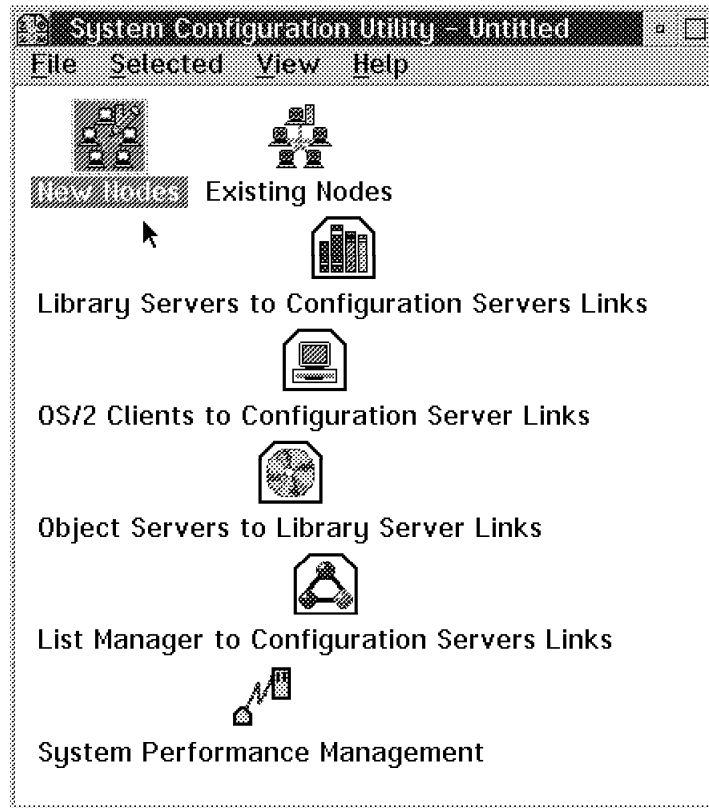


Figure 46. VisuallInfo Utilities Folder

You need to enter the information for *ALL NODES* in your system (that is, the network names and what VisuallInfo component (or components) they contain).

1. Create the network table:  
Double-click on **New Nodes**.

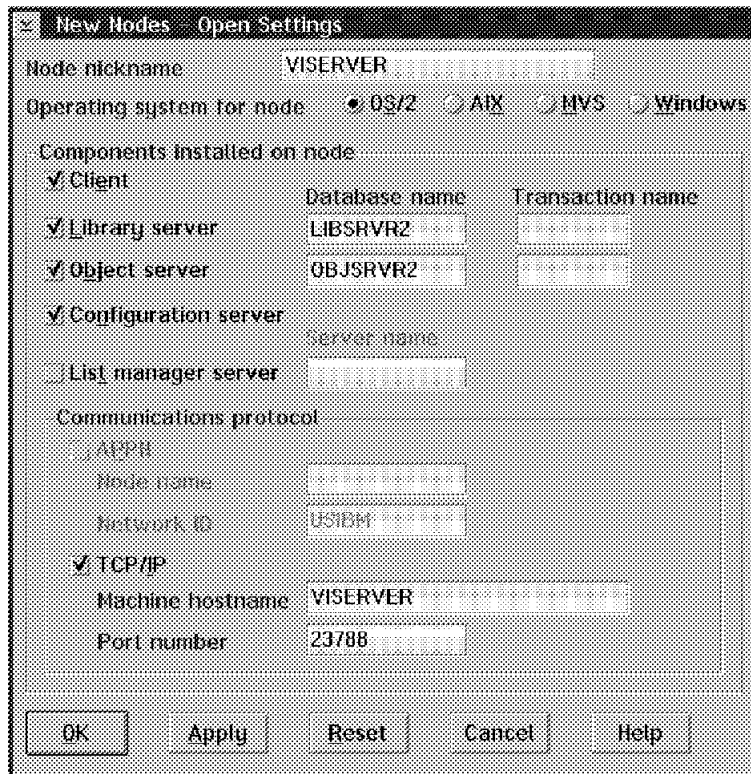


Figure 47. Creating a New Node

Enter the required information:

- Nickname:  
This is the name of a machine in the VisualInfo system. It can be any name; in this example, we made every nickname equal to its respective hostname.
- Operating System:  
Choose between OS/2, Windows, AIX, or MVS.
- Components:  
Check all the components in each node.
- Communication:  
You can choose between SNA and TCP/IP. In our example, we are using TCP/IP, so we entered:
- Node Name: The machine's TCP/IP hostname.
- Port number: A number between 5001 and 65535. You can leave the default.

Press **Apply** to add one node and clear the window to add more nodes.

In our example, for the node REDVISRV, we have:

- OS/2 Library Server
- OS/2 Object Server
- OS/2 Configuration Server
- OS/2 Client (to support the SysAdmin function)

The previous figure shows the node information for our sample server machine (VISERVER).

For the OS/2 client node (CLIENT1), we have:

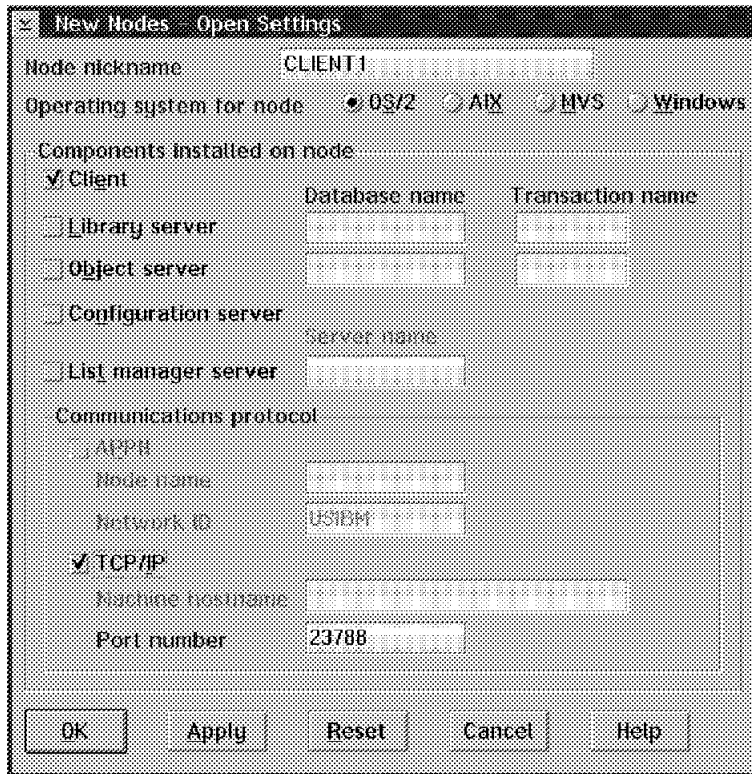


Figure 48. Creating a New Node

For the windows NT client node (CLIENT2), we have:

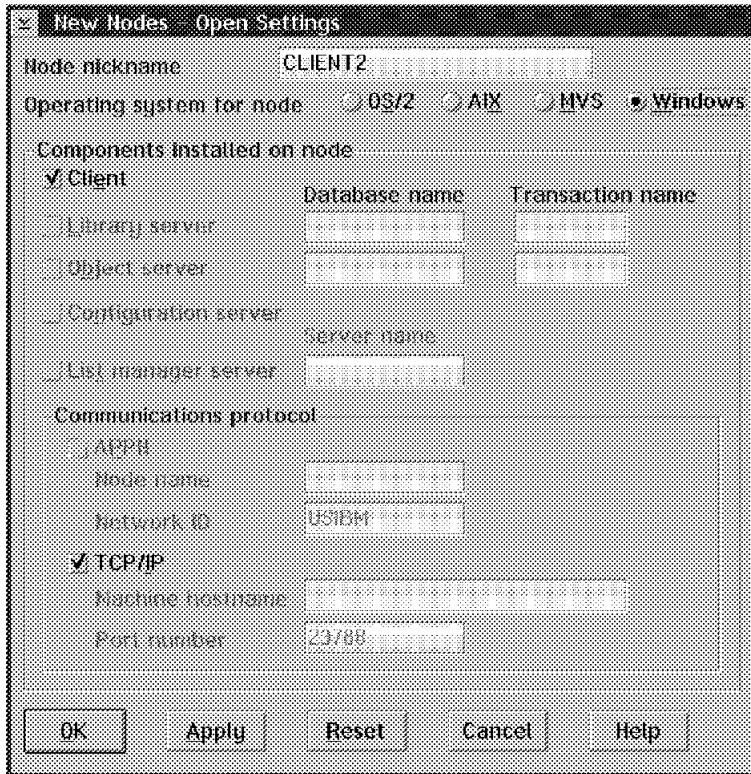


Figure 49. Creating a New Node

Press **OK** when you finish defining all the nodes in your system.

Now we must tell VisualInfo which nodes should connect with which. First, double-click on the Library Server to Configuration Server icon.

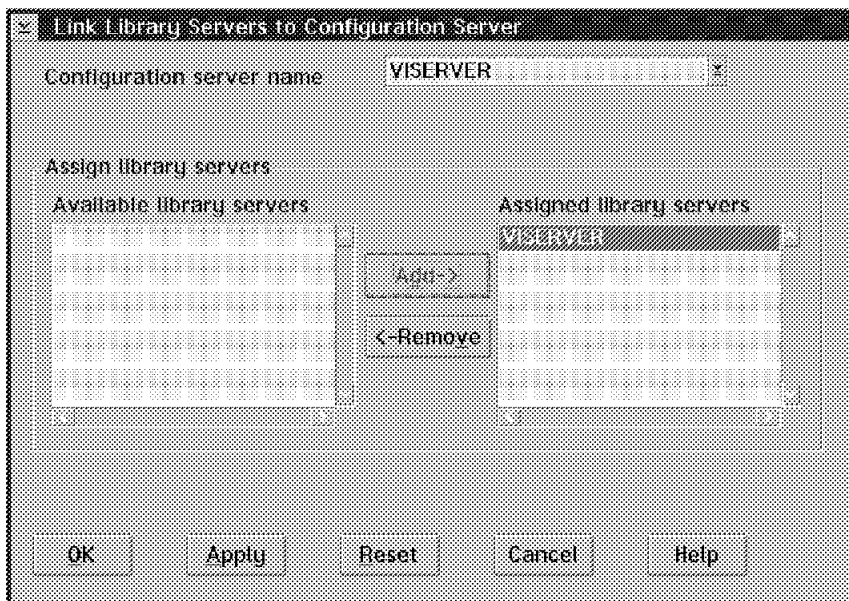


Figure 50. Linking Library Servers to Configuration Server

Add the Configurations Servers you want to have access to a specific Library Server.

Here we only have one configuration server in VISERVER, so we link it with the Library Server which is also on VISERVER.

Next, double-click on the clients to Configuration server links.

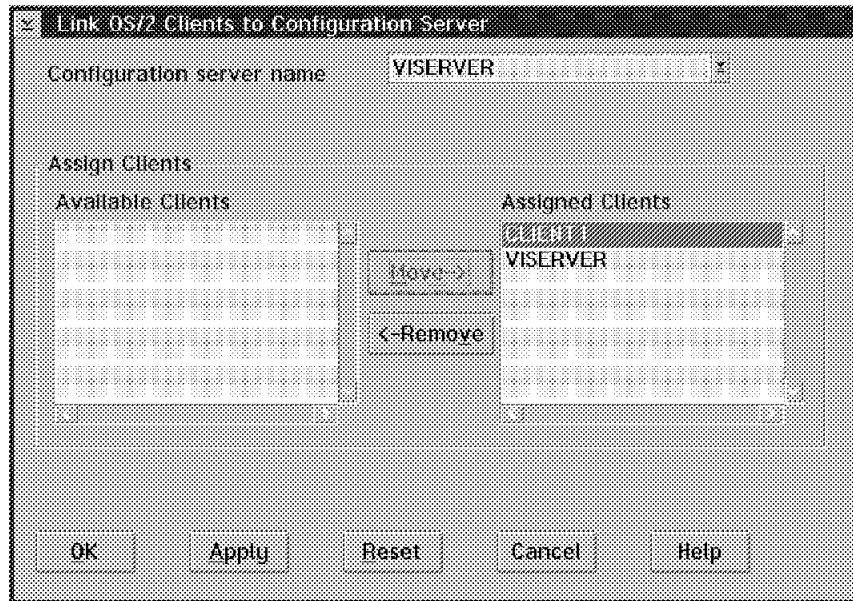


Figure 51. Linking Clients to Configuration Server

Link all of the OS/2 clients (nodes) you have defined to at least one configuration server; otherwise, you get an error. See hint on page 74. for a shortcut in this link process.

In this case, we have two OS/2 clients, one on VISERVER and another on CLIENT1, so we associate both to our only configuration server on VISERVER.

Now double-click on the Object Server to Library Server links icon.

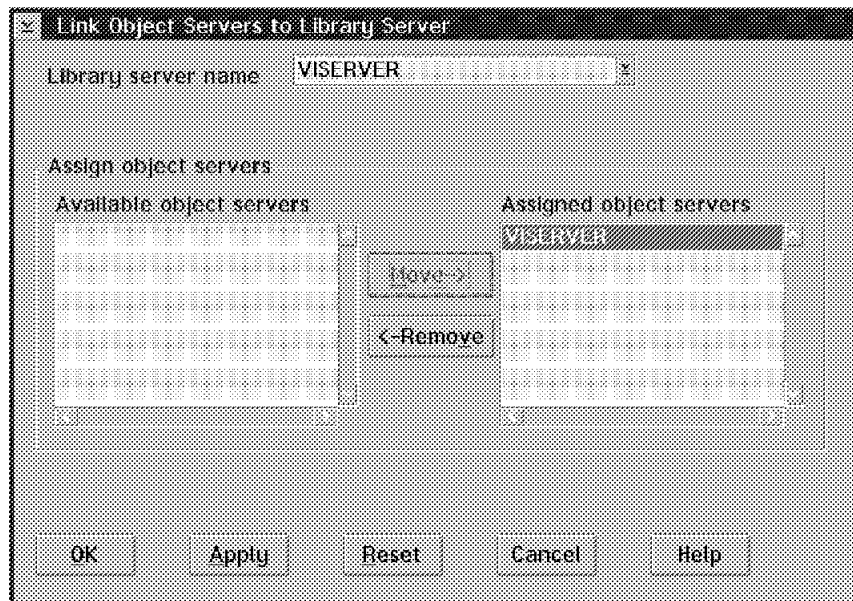


Figure 52. Linking Object Servers to Library Servers

Add the Object Servers you want to associate with a specific Library Server.

In this case, we only have one Object Server in VISERVER, so we link it to the Library Server which is also in VISERVER.

Now select File from the pull-down menu and then verify.

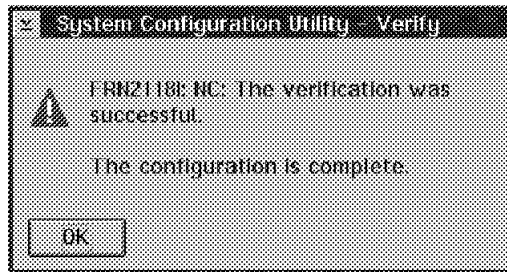


Figure 53. Verification of the Configuration File

Once the verification is successful, select the File menu and save your configuration in a file using the file type of CFG. In our example, we saved it as RED.CFG.

VisuallInfo does not use this Configuration File for the actual communication between nodes. This is done by actual addresses stored in CM/2 or TCP/IP. So if you have more than a few clients to define, you can define one client for each configuration server, and this provides all of the information that VisuallInfo needs for its configuration. To say it another way:

**HINT**

Rather than defining client after client:

- Define all nodes that contain servers first.
- Only define a single client for every group of clients associated with a particular Configuration server.
- Use this one definition for all similar clients.
- HostName (or Node Name and Network ID if using APPN) is not important for this VisuallInfo Utility for client machines. You need to specify TCP/IP (or APPN) communication.

2. Generate your network table:

Once created, you need to generate the table in each workstation (node) of your VisuallInfo system.

Select the Network Table Generation icon from the VisuallInfo utilities folder.

Enter the name of the configuration file you have just saved (RED.CFG). Press **OK**.

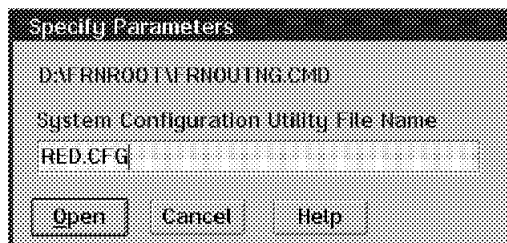


Figure 54. Generate the Network Table



Enter the nickname of the machine on which you are generating the table.

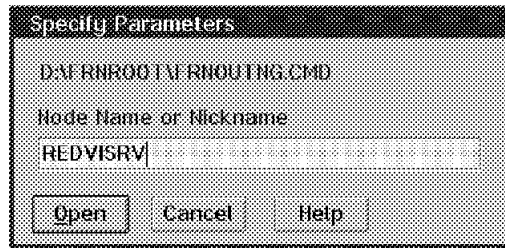


Figure 55. Generating the Network Table

Remember, you are going to do this in all the machines (for example, in the VISERVER, and CLIENT1 workstations). For the Windows client, the process is a little bit different. See Section 2.5.3, “Network Table Generation Utility for Windows” on page 76.

Copy the file \*.CFG (RED.CFG in this case) to every machine in the VisualInfo system (in the \FRNROOT directory if OS/2) and generate the network table using the utility in the VisualInfo folder.

When you generate a network table, you create a file, FRNOLINT.TBL. This file contains one or more server entries.

Each server entry contains:

- Server name
- Server scope:
  - LOCAL: A stand-alone system
  - LOCAL LAN-WIDE: When you have the Library Server and the Object Server on one workstation (with or without a client) and clients on separate workstations.
  - REMOTE: When you have a Library Server on a workstation, an Object Server on another workstation and separate clients.
- Protocol to be used example
- Protocol-specific information needed

Here is an example of a network table. It is the table generated for a Library/Object Server workstation which also has an OS/2 client and a Configuration server:

```
/* Network Table Generation Utility
/* VISERVER/.
/* Tue Jul 16 10:40:46 1996
```

```
SERVER: OBJSRVR2 LOCAL LAN_WIDE SOCKETS
        PORT          = 23788
        SERVER_TYPE   = FRNOSOS2
```

```
SERVER: OBJSRVR2ADMIN LOCAL LAN_WIDE SOCKETS
        PORT          = 23788
        SERVER_TYPE   = FRNOSADM
```

```
SERVER: OBJSRVR2.REXE LOCAL LAN_WIDE SOCKETS
```

```

        PORT          = 23788
        PATH          = \FRNOUTSS.EXE
        START        = WINDOW
        PASSNAME
        SERVER_TYPE  = \FRNREXE
SERVER: LIBSRVR2 LOCAL LAN_WIDE SOCKETS
        PORT          = 23788
        SERVER_TYPE  = FRNLSOS2

SERVER: LIBSRVR2.REXE LOCAL LAN_WIDE SOCKETS
        PORT          = 23788
        PATH          = \FRNOUTSS.EXE
        START        = WINDOW
        PASSNAME
        SERVER_TYPE  = FRNREXE

SERVER: FRNOCSVR LOCAL LAN_WIDE SOCKETS
        PORT          = 23788
        PATH          = \FRNOLMLM.EXE
        START        = WINDOW
        ICON         = \FRNOLMLM.ICO
        PASSNAME
        SERVER_TYPE  = FRNCS
SERVER: FRNCACHE LOCAL LOCAL_ONLY
        PATH          = \FRNOLMLM.EXE
        START        = WINDOW
        ICON         = \FRNOLMLM.ICO
        PASSNAME
        SERVER_TYPE  = FRNCACHE

ALIAS: FRNONSVR FRNOCSVR

SERVER: FRNODAOS LOCAL LAN_WIDE SOCKETS
        PORT          = 23788

```

### 3. Refreshing the Configuration Server:

The last step you need to do after you have generated the Network Table is refresh the configuration so the information that you provided can take effect.

You only need to do this step in the machine that contains the Configuration Server.

Double-click on the "refresh configuration server" icon or type FRNOLIRN from an OS/2 command prompt (on the Configuration Server workstation).

Now your VisualInfo system is ready to work and you can test it.

## 2.5.3 Network Table Generation Utility for Windows

For a Windows client, you create a different network table (you do not have to copy the file as you did for OS/2 nodes).

To create the network table file:

1. Double-click the Network Generation Table Utility icon which is in the VisualInfo program group on the desktop.

2. Specify the operating system environment of the Library Server you are connecting: (OS/2 in this case).
3. Specify the name of the Library Server: LIBSRVR2 in this case.
4. Specify the port number: It is the port number you specify when creating the table on the servers. It is unique for all of the nodes of the system (23788 in this example).
5. Specify the Hostname: The TCP/IP Hostname of the Windows workstation.
6. Click on the **Continue** push button to create the Network Table file. When the file is created, the utility closes.

---

## 2.6 Testing the System

After installing your system, you want to bring it up and logon to ensure that it was installed successfully. This section tells how to test the servers and clients.

### 2.6.1 Testing the Servers

Double-click on the **Library Server** icon (in the VisualInfo folder) to start this server.

Double-click on the **Object Server** icon (in the VisualInfo folder) to start this server.

At this time, you may be asked for a local logon for the DB2/2 database access. This must be the UPM user ID that you used when you installed the databases. The default is (USERID/PASSWORD).

If you have not created, generated, and refreshed a network table, you receive an error. The Library server cannot connect to the Communications Isolator. The same error occurs for the Object Server.

Wait until you see **Accepting Requests** in the Server status box. See Figure 56 on page 78 and Figure 57 on page 78.

If this does not happen, run the Configuration Server Refresh Utility from the Utilities folder on the configuration server. If no results, check your network tables on all systems and your communication parameters. Use ping for TCP/IP. From CM/2, start the Subsystem Management utility, then chose SNA Subsystem and LU 6.2 sessions.

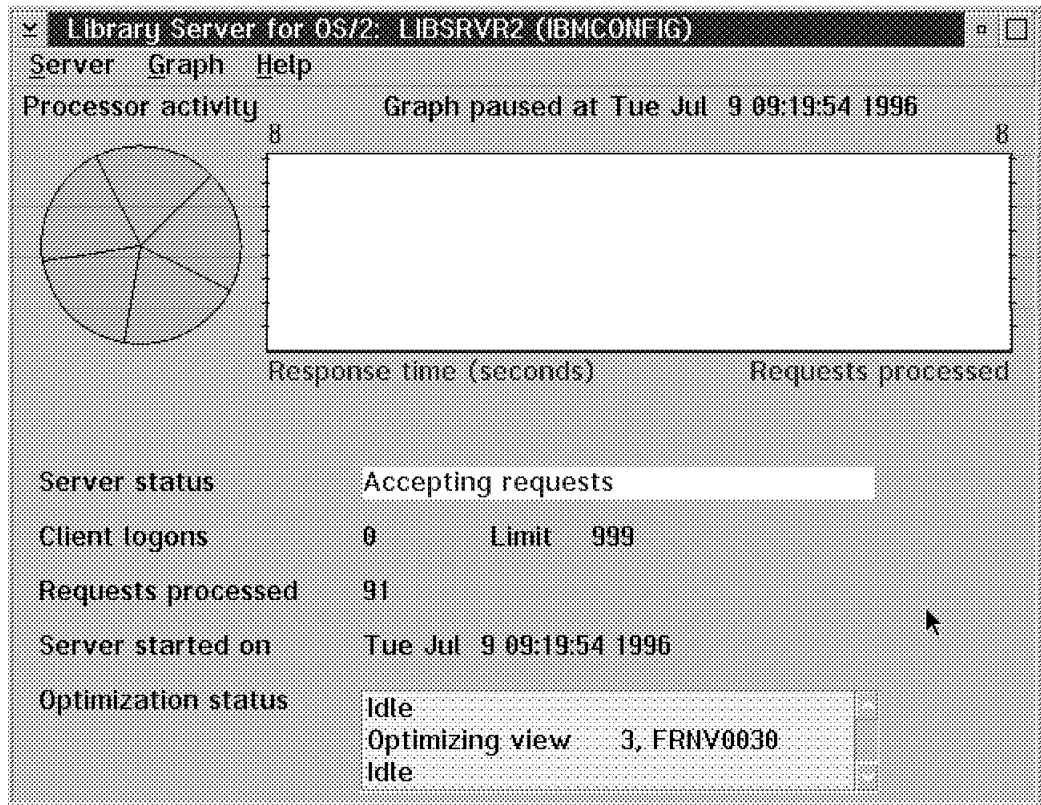


Figure 56. Library Server Accepting Requests

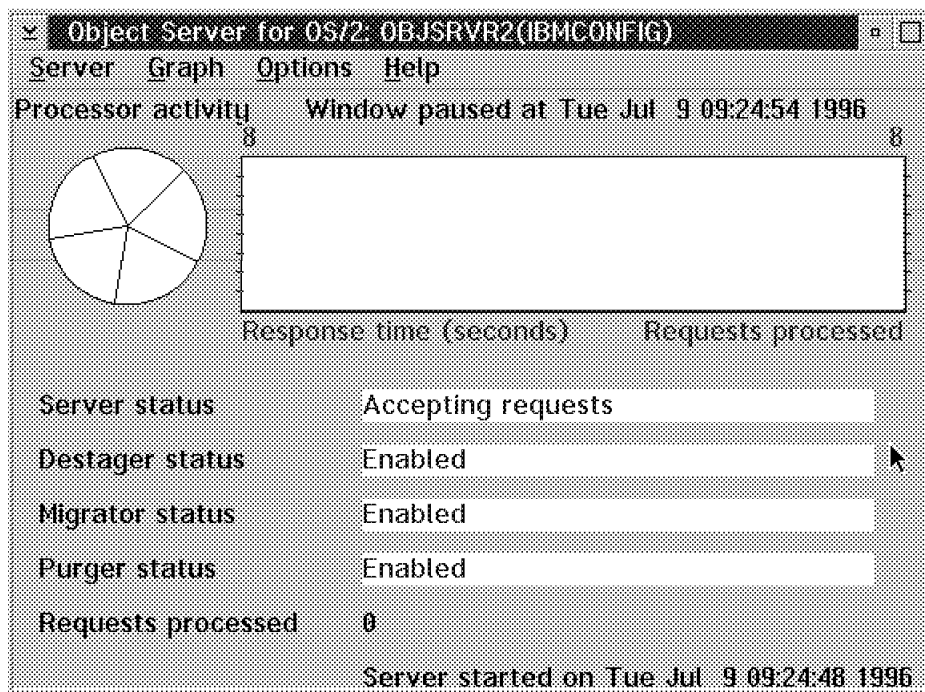


Figure 57. Object Server Accepting Requests

## 2.6.2 Testing an OS/2 Client

Now try to log on to a client.

Double-click on the Client application icon or the System Administration icon.

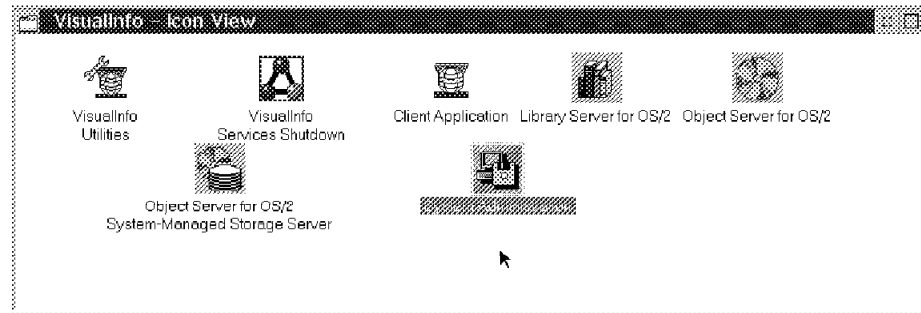


Figure 58. VisuallInfo Icon View

Enter the default user ID (FRNADMIN) and the default password (PASSWORD), and press **OK**.

You should get a "Logon was successful" message.

## 2.6.3 Testing a Windows Client

To test a Windows client, there is a "Server Connection Verification Utility" in the VisuallInfo folder. It helps you locate problems with the communication portion of the system.

To use the utility:

1. Ensure that the library server is up and ready to accept requests from the client.
2. Start the utility by double-clicking on the icon.
3. Click the Connect pushbutton to start the verification, which:
  - a. Initializes the WinSock socket.
  - b. Reads the network table file.
  - c. Attempts to connect to the library server.
  - d. Closes the connection with the library server.
4. If the connection was successful, you get a message saying "Connection completed successfully." Click the OK pushbutton.

In addition to the successful connection message, the pie graph on the library server has one red slice. You should be able to connect your client to the library server.

5. When you are finished, click the Exit pushbutton to leave the utility. You should now be able to log on with your Windows client.

### 2.6.3.1 Solving a Windows Client Connection Problem

If the steps do not complete correctly, your communications have not been set up correctly. In general, ensure that:

- The library server is up and ready to accept requests.
- The information in the network table file is accurate.
- TCP/IP is installed correctly.
- TCP/IP is started.
- The port number specified in the FRNOLINT.TBL exactly matches the entry in the library server FRNOLINT.TBL.
- The path information specifying the location of the client is set correctly.
- The hardware is installed correctly and is working.

If TCP/IP is not installed, you get a message stating that the WINSOCK.DLL could not be found. Go back and install TCP/IP.

---

## 2.7 Software Registration

The first time you start the Library Server, it has a red message saying: *Your request has been accepted; however you need to upgrade your license.*

You can do this from the system administration. From the pull-down menu, select License and then Upgrade.

Before you upgrade your license, you have to perform the Software Registration that is located in the same menu. From the License menu, select *Register Product*. The IBM software registration tool walks you through the process. The software registration object is used to access and update the IBM software Customer Profile and to register IBM Software with IBM. The customer profile section contains identification and demographic information about the user of each IBM software product.

This information should be kept current and registered with IBM on a yearly basis in order to receive the benefits of being an IBM customer. The IBM software registration section contains the information and the instructions on how to register IBM software by modem, telephone, fax, or postal service.

*Restriction:* If you start to register but choose to cancel and complete the registration later, then you cannot access the registration tool from this menu-choice for another eight days. However, you can complete the information at any time by using the *Software Registration* object in the *OS/2 System* folder (the elephant icon).

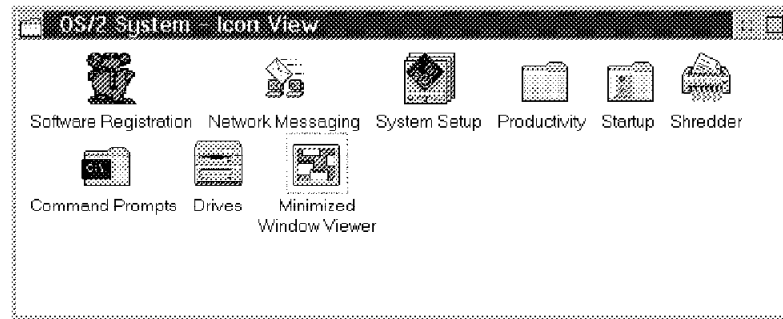


Figure 59. Software Registration Object

---

## 2.8 Software Replication and Maintenance

When you have the desired configuration for your clients and servers, you probably want to copy them to other workstations on the network. See 5.7.1, "Client Workstation Replication" on page 177 for a procedure to do this.

For maintaining software, some customers use the philosophy of testing a complete new system, then copying it to each client. The above replication procedure works for this philosophy as well. It does not, however, work for servers (which store unique data on their disks) or for client workstations where the individual users add their own applications. For these users, consider a replication program that replaces only a logical disk partition. For example, if all VisuallInfo client functions are on the D partition, your program could copy only this partition from the test machine to each client.





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## Chapter 3. Configuring the VisuallInfo System Solution

VisuallInfo provides a highly functional System Administration application. You must provide an OS/2 workstation on which to install it. We will discuss the following functions in the logical order in which you might perform each function.

- Configuring system-managed storage
- Configuring the object server
- Defining user access and security
- Creating the filerom
- Defining data formats
- Creating workbaskets
- Creating workflows
- Configuring the library server

---

### 3.1 Configuring System Managed Storage

You use system-managed storage to define a storage management policy for objects you store on the Object Server. The storage management policy defines the migration of objects between storage media and the expiration criteria for the objects.

The VisuallInfo system offers a host-based object server (HBOS) and a LAN-based object server (LBOS). The HBOS runs on MVS/ESA. It uses the IBM Object Access Method (OAM) to store objects. OAM defines the SMS architecture that the HBOS uses. You cannot control the SMS architecture for MVS/ESA Object Servers from the system administration program. If you need information about this, refer to the following publications:

- *IBM MVS/DFP V3R3 OAM Planning, Installation, and Storage Administration Guide*, SC35-0120
- *DFSMS/MVS V1R2 OAM PISA for Object Support*, SC26-4918
- *DFSMS/MVS V1R2 OAM PISA for Tape Libraries*, SC26-3051

The LBOS runs on OS/2 or AIX. It uses file systems to store data objects. The SMS is a feature of the System Administration program that you use to manage the storage and migration of objects on the Object Servers on each LAN. Although you must define SMS for each LAN-based Object Server, you can use the same definitions on multiple Object Servers.

The VisuallInfo system stores the information you define in each System-Managed Storage server and uses this information to manage the Object Server database.

**Note:** Be sure to back up the object server database regularly, since it is difficult to fix it when problems occur. It should be backed up before you use System Administration to change SMS. A regular backup schedule is desirable.

Double-click on the System-Managed Storage Server icon located in the VisualInfo folder to start this server. After a period of initialization, it tells you that it is accepting requests.

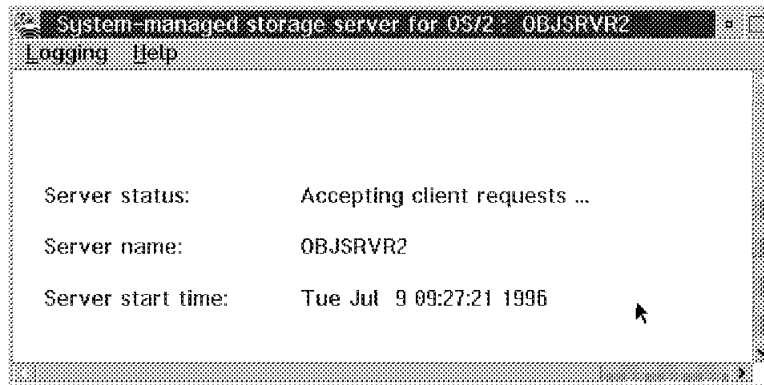


Figure 60. System-Managed Storage Server

These are the components of System-Managed Storage:

1. Device Managers
2. Storage Classes
3. Management Classes
4. Volumes
5. Storage Groups
6. Collections
7. Remote Object Servers
8. Remote Storage Classes
9. Staging Area

Double-click on the System-Managed Storage icon located in the system administration folder to begin configuring it.

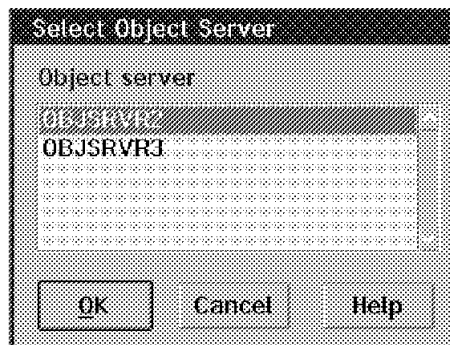


Figure 61. System-Managed Storage

Select the object server you want to configure.

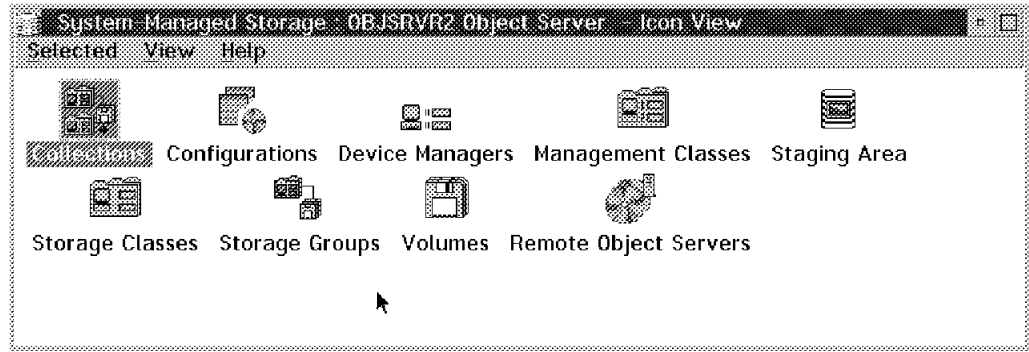


Figure 62. System-Managed Storage Folder

If the changes you plan to make affect the Staging area or the Volumes, you must shut down the object server first. Otherwise, you can make your changes, then let your changes take effect by shutting down and restarting the object server.

**Note:** To view your SMS configuration, the object server must be active.

### 3.1.1 SMS Components Relationship

Figure 63 shows the relationship of each major component of System-Managed Storage. This is the basis for the following sections that cover each component in detail.

## SMS Components Relationship

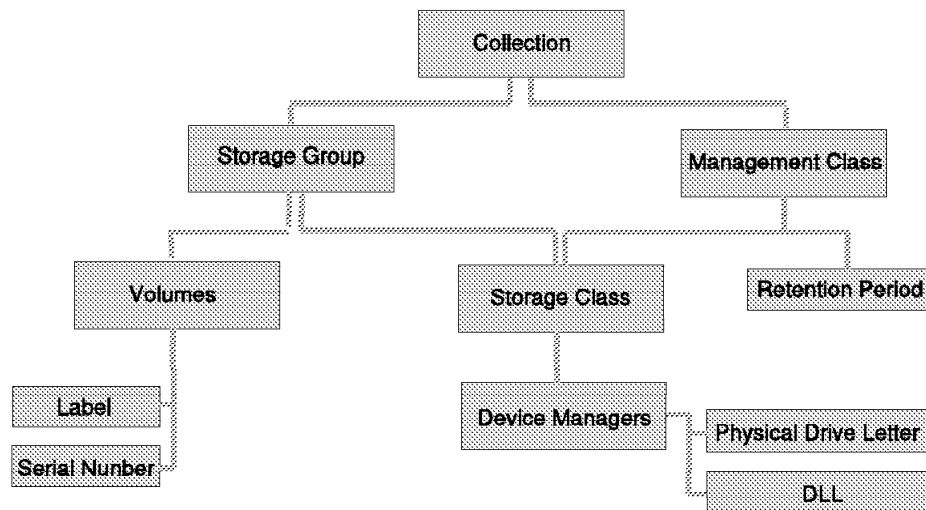


Figure 63. SMS Model Structure

The structure previously shown summarizes the relationships among the SMS components. The SMS definition process starts at the bottom of the tree. The

Device Manager configuration is where you define each physical storage device that your system has.

Next, you define the storage classes that you need. Using the storage class information, you build your management class where you define the retention period that the document resides on each type of media. With the label information of the disk volumes, you define the volumes on which VisualInfo stores its objects.

Joining volumes and storage class information, you create the storage groups, a grouping of heterogeneous storage volumes. At the top of the tree, we see the Collection definition, the final link among all of the SMS components. It associates a storage group with a management class and allows an end user or administrator to manage objects without regard to physical media. The administrator does not have to know every detail of SMS when working with collections.

In the next sections, we describe each of the SMS Components and how they work.

### 3.1.2 Defining Device Managers

The device manager is the interface between the device driver and the applications that need to access the device. This interface consists of a collection of standard routines such as:

- MOUNT
- DISMOUNT
- QUERY

To define a Device Manager, double-click on the Device Manager Icon and fill in the parameters.

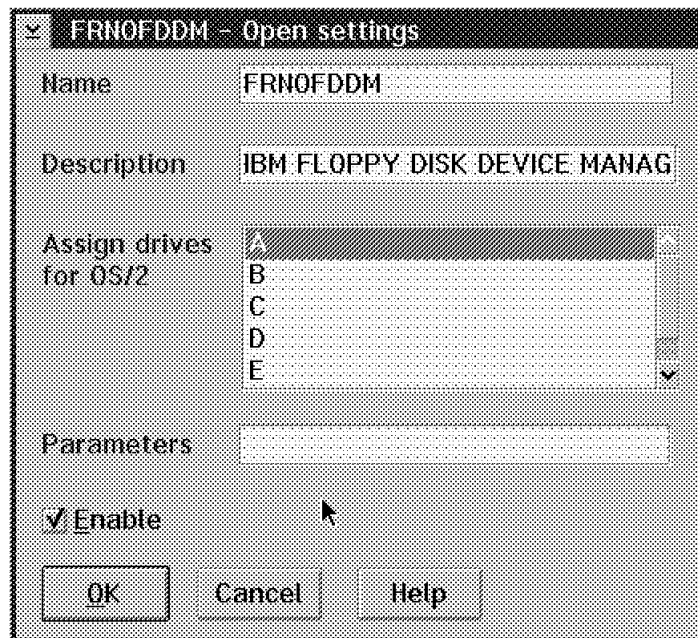


Figure 64. Defining Device Managers

- *Name*: This is the name of the device manager. If you are adding a new device manager, you should enter the name exactly as it was defined when it was installed. It can be up to eight characters. You must use the Dynamic Link Library.
- *Description* of the device manager, up to 80 characters.
- *Assign Drives*: The List Box contains all of the drives, and the selected drives are the drives that the device manager uses for the Object Server. These can be LAN accessible drives.
- *Parameters*: Any parameter that you want the device manager to use when the system initializes it or when the device manager stores objects on the volumes. It can be up to 128 characters. You do not need to specify parameters for the device managers that are shipped with VisualInfo.
- *Enable*: When it is checked, the VisualInfo system can use this device manager to move objects.

The VisualInfo system includes four device managers:

- FRNOFDDM: IBM floppy disk drive manager (drive A assigned, enabled)
- FRNOHDDM: IBM fixed disk drive manager (installation drive assigned, enabled)
- FRNOKDDM: KODAK automated disk library (no drives assigned, disabled)
- FRNOPDDM: IBM 3995 optical library device manager (no drives assigned, disable)

**Note:** If you do not store images on a floppy disk (diskette), you can disable the FRNOFDDM device manager.

If you need to create new device managers, you have to use the Device Manager Install utility. This utility is installed with the Object Server for OS/2, and resides on the same machine. OS/2 workstations where the stand-alone system, standard server, or object server are installed have the *Device Manager Install* icon in the VisualInfo utilities folder.

### 3.1.3 Defining Storage Classes

The storage classes are the storage media types. They store objects on volumes of their media type such as:

- Fixed DASD
- WORM optical
- Rewritable optical
- Floppy DASD

Generally each storage media device type has different physical attributes such as: access time, capacity, rewritability, data format, and whether volumes are removable.

To define a storage class, you need to associate it with a device manager.

The VisualInfo system includes by default one storage class, called Fixed. It is associated with the FRNOHDDM device manager so it is related to DASD media.

To define a new storage class, double-click on the Storage Class icon and then on the New Storage Class icon.

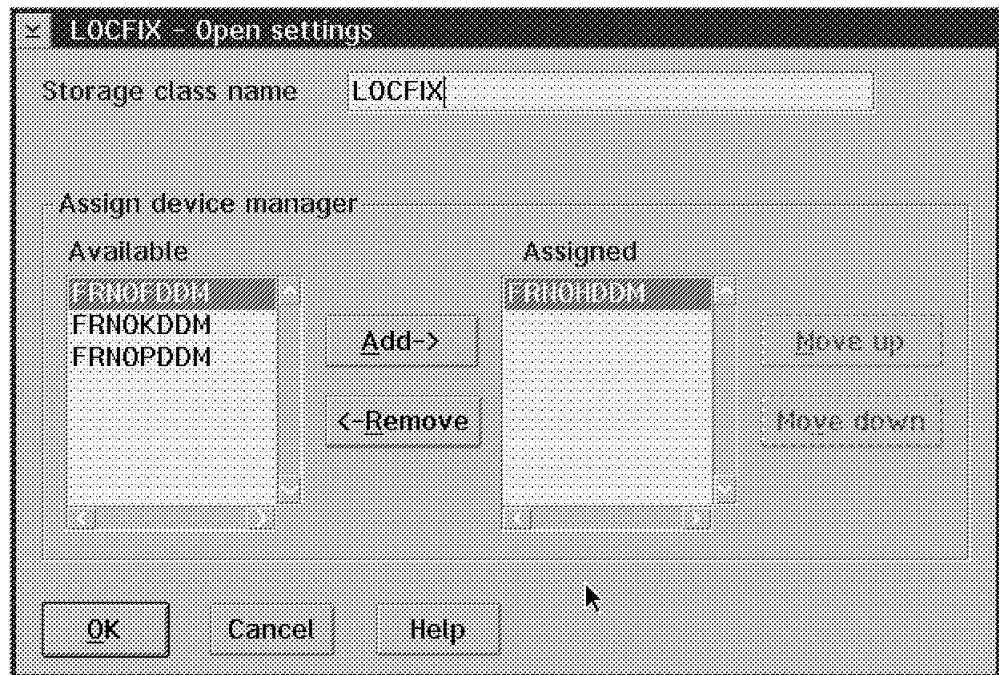


Figure 65. Defining Storage Classes

You need to specify:

- Storage class name: a unique name up to eight characters.
- Assign device manager: Select the device manager that you want to relate to this storage class and press Add.

### 3.1.4 Defining Management Classes

The management class consist of a logical entity that defines the policy for migrating objects. The VisualInfo system migrates the objects between storage classes (media). This lets you move or copy objects between different device types that you define.

An example of a management class is:

Management class = *MGTCLASS*

- Thirty days on LOCFIX storage class (DASD)
- Forever on optical storage class

VisualInfo includes by default one Management class: *MGTCLASS* which keeps the objects forever on the Fixed storage class (DASD).

To define a new management class, double-click on the Management Class icon and then on the New Management Class icon.

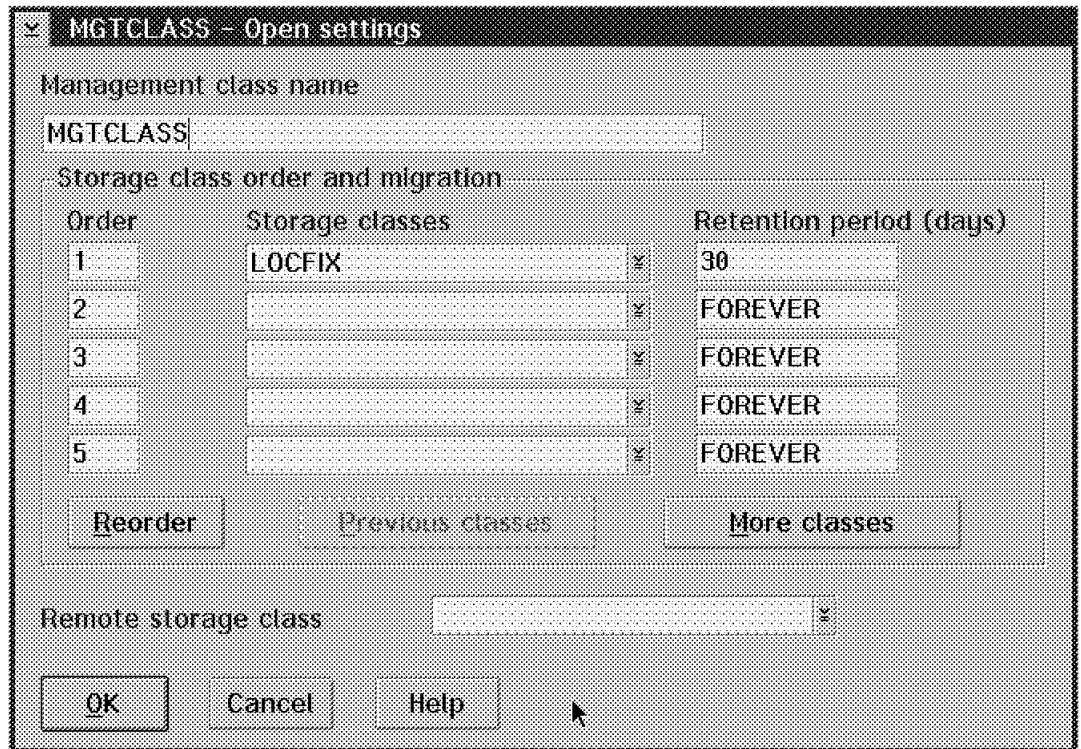


Figure 66. Defining Management Classes

You need to provide the following information:

- Management class name: Specify a unique name, up to eight characters in length.
- Order: Specify or change the order of the storage classes to which the VisualInfo system moves the objects, according to the corresponding retention period.

You can specify:

- An order from 1 to 999.
- A decimal order to place the storage class between two existing storage classes.  
For example, you can specify a sequence number of 2.5 to place the storage class between 2 and 3.
- 0, if you want to remove the storage class from the management class.
- Storage classes: Specify a storage class to associate with the order and retention period. You must specify at least one storage class.
- Retention period (days): Specify the number of days you want the object to remain in this storage class. You can specify a range of days from 1 to 32,000. To prevent the system from migrating objects from that storage class, you can specify FOREVER.
- Remote storage class: Select the name of a remote storage class if you want to assign it to this management class. When the management class is completed and the retention period is reached, the VisualInfo system migrates the object to this remote storage class.

If you increase the retention period (for example, from 10 to 20 days) all objects currently associated with the storage class and any objects added to the storage class remain for the new retention period of 20 days.

If you decrease the retention period from 20 to 10 days, the VisuallInfo system does not migrate the objects currently associated with the storage class until they reach the previous retention period of 20 days. The VisuallInfo system migrates any new objects associated with this storage class after the new retention period of 10 days.

The system moves the objects from one storage class to another based on the order and retention period you assign to each storage class. Objects remain on the last storage class indefinitely, regardless of the retention period that you specify (to prevent the system from migrating objects off the last storage class and deleting them).

**Hint:** If you change the retention period from FOREVER to a numeric value, only objects added after you change the retention period take on the new period. Any existing objects in the storage class are retained in that storage class forever. If you anticipate changing a storage class retention period from FOREVER to a numeric value, it is better to specify a numeric value initially so objects can eventually be migrated.

### 3.1.5 Defining Volumes

A volume consists of a physical storage medium that a storage class manages using actions such as READ and WRITE.

Examples of volumes are:

- A DASD partition
- A diskette
- An optical disk

VisuallInfo includes one volume by default. This is the partition in which the VisuallInfo component is installed on the machine (unless you changed the **default storage drive** during the installation of the Object Server database, see Figure 33 on page 57) and its name is the label of that partition. This is why, during server installation, you need to label your partitions with volume identifiers.

To define a new volume, double-click on the Volume Icon, and then on the New Volume icon.



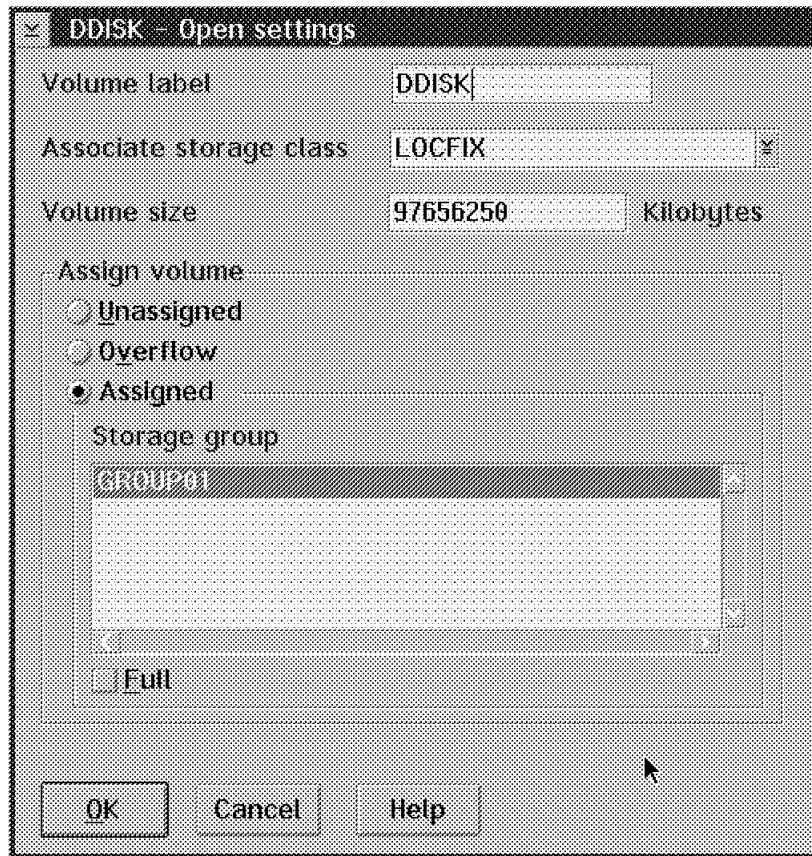


Figure 67. Defining Volumes

- Volume label: Unique label for the volume. It is up to 32 characters. This label must match the label specified when the volume was formatted.
- Storage class to associate with volume: This is the storage class (type of storage) for the volume.
- Volume assignment: The volume can be:
  1. Unassigned: The volume is not assigned to any storage group, so it does not belong to any storage group. Use it when you are creating volumes, and you have not yet created the storage group to which this volume belongs. Then, when you create a new storage group (or, from an existing storage group icon, you associate this volume to the storage group), it is automatically changed to assigned.
  2. Overflow: Specifies that this is an overflow volume and is not assigned to any storage group. If all of the volumes in a storage group are full, then this storage group can use this overflow volume to store objects.
  3. Assigned: When the volume is specifically assigned to a storage group that already exists.
- Storage group: The storage group that the volume is from (when it is assigned).
- Full: VisualInfo detects when a volume fills up and automatically marks it as Full. However, if you do not want any more objects stored on a particular volume even if it is not full, then check this "Full" box and VisualInfo does not store more objects there.

VisuallInfo recognizes drives (volumes) by their volume serial. On OS/2, when you replace or re-partition a hard drive containing the LBOSDATA directory, the system does not find the volume serial number it expects. For the system to recognize the new or changed volume, you must manually change the BASE\_VOLUMES table.

**Hint**

Set to 0 the volume serial number, freespace and size. VisuallInfo re-evaluates the drive when it next accesses it.

### 3.1.6 Defining Storage Groups

A storage group is a logical entity that contains storage volumes belonging to different storage classes. You use storage groups to store objects on a specific set of volumes.

An example of a storage group is:

Storage group =*GROUP1* which contains:

- DDISK volume of LOCFIX Storage class (DASD)
- OPTDISK1 volume of optical storage class (one optical disk from an optical library)

VisuallInfo includes by default one storage group called *GROUP01* that only contains the default volume (the partition in which VisuallInfo is installed).

**Hint**

Leave all default SMS components (storage groups, classes, collections, and so on) empty and define your own. The default set has features that work together and may not be able to be altered later. Also, leaving it empty provides you with an SMS system which is known to work, if you should encounter problems and need to test your system.

To define a new Storage Group, double-click on the Storage Groups icon and then on the New Storage Group icon.

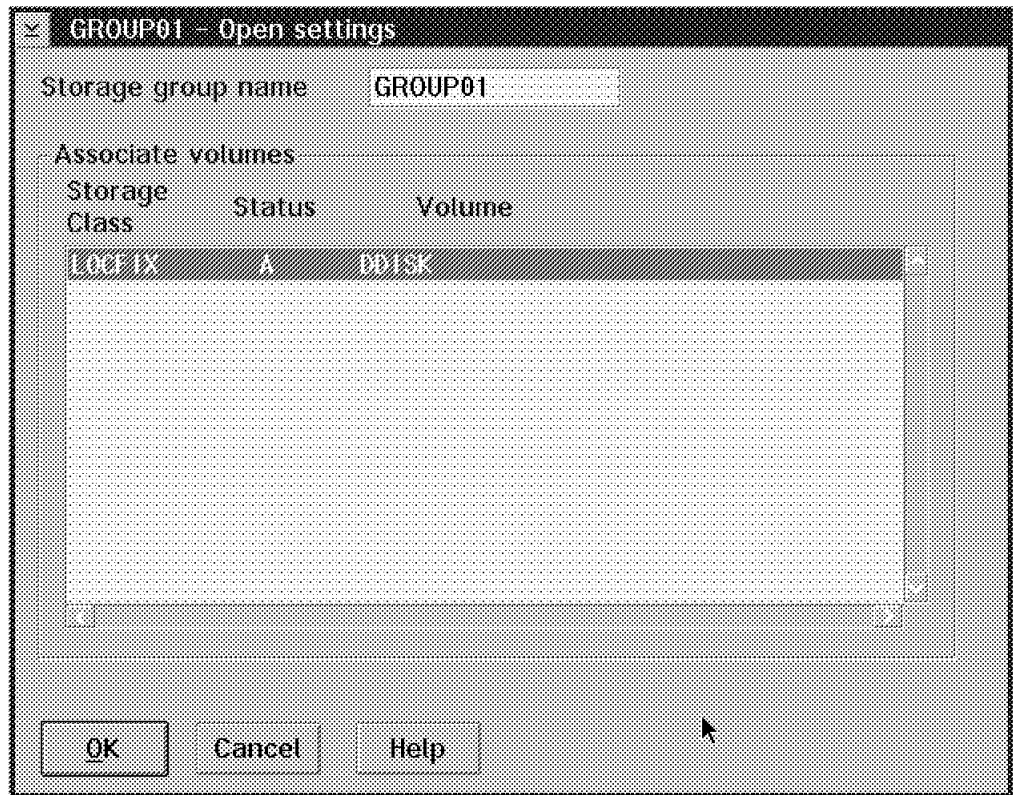


Figure 68. Defining Storage Groups

- Storage group name: Unique name of the storage group. It is up to 32 characters.
- Associated volumes: Volumes that form part of the storage group.

### 3.1.7 Defining Collections

When you define a management class, you just specify how many days an object resides in a specific storage class. This does not define which volume of that storage class the object resides on.

So you need to associate a storage group (the set of volumes of different storage classes) with a management class (the amount of days the object resides in a specific volume of a specific media).

Now let's see an example of a collection.

Collection=*COLLECT1* consists of:

- Storage group = *GROUP1* (See the example in the storage group definition.)
- Management class = *MGTCLASS* (See the example in the management class definition.)

Combining the previous examples, an object of this collection stays for 30 days on the D partition (DDRIVE) of a hard disk (DASD) and then migrates to the OPTDISK1 optical disk in an optical library (OPTICAL), where it resides forever.

VisuallInfo includes by default one collection called *CBR.CLLCT001* that relates the default storage group (GROUP01) with the default management class (MGTCLASS). So an object in this collection always resides in the partition where VisuallInfo is installed.

To define a new collection, double-click on the Collections icon and then on the New Collection icon.

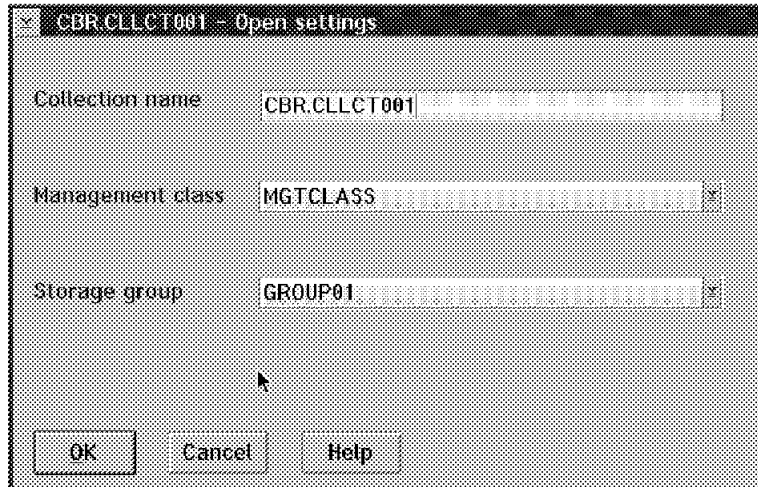


Figure 69. Defining a Collection

- Collection Name: Unique name up to 44 characters. When you define User IDs or Index classes, you specify a collection name. The VisuallInfo system uses this collection to store the objects in the system.
- Management Class: Management class associated with the collection.
- Storage Group: Depends on the management class. This storage group must have one volume for each storage class of the management class, and the storage classes for the volumes and the management class must match.

### 3.1.8 Defining Remote Object Servers

Remote Object Servers are object servers in remote locations to which the local object server moves object objects and folders, based on the system-managed storage information you define in the remote storage class. You define remote storage classes to specify system-managed storage information to control the remote object server.

To define a Remote Object Server, double-click on the Remote Object Server icon.

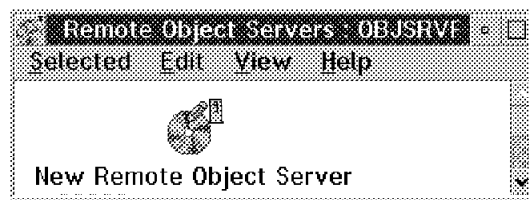


Figure 70. Remote Object Servers Icon View

Now double-click on the New Remote Object Server icon.

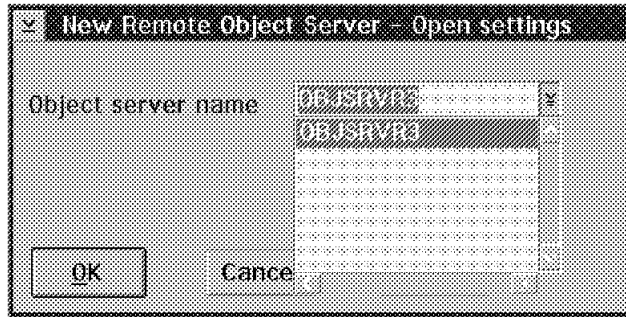


Figure 71. Remote Object Servers Settings

You select your remote object server from the list. This list shows all of the Object Servers previously assigned to your Library Server (except the Object Server on which you are configuring the system-managed storage). If you cannot see any object server because you have not assigned it to the library server before, you can assign it now. See Figure 33 on page 57, and also Figure 132 on page 184. Assign the object server, stop your library server, and start it again to recognize the new configuration.

### 3.1.9 Defining Remote Storage Classes

A remote storage class is a storage class defined as remote to the object server. Remote storage classes let you migrate objects from a local object server to a remote object server. Both object servers must be defined to the same library server.

To specify the migration between a local object server and a remote object server, the remote storage class must be last in the sequence of storage class transitions for a management class.

To plan remote storage classes, first decide which object servers you will use as remote object servers, and define them using the information in Section 3.1.8, “Defining Remote Object Servers” on page 94 before you define the associated remote storage classes.

To define a Remote Storage Class, double-click on the Device Manager icon.

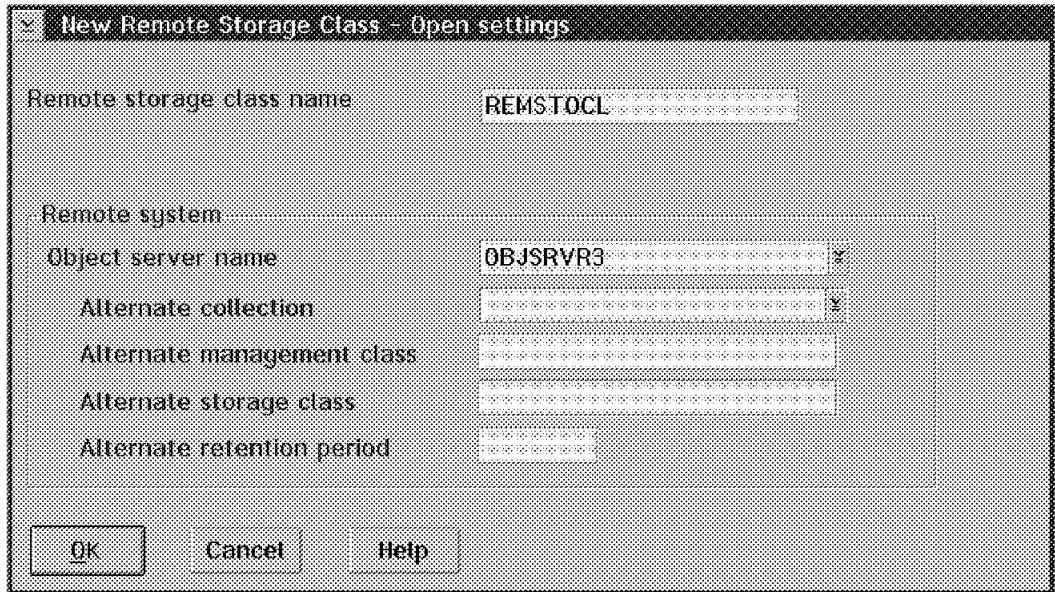


Figure 72. Defining Remote Storage Classes

You need to specify:

**Remote storage class name:** Specify a name for the remote storage class. It does not have to match any storage class defined in the remote object server; it can be any name.

**Remote system**

- **Object server name:** Specify the name of the remote object server to receive the migrated objects.
- **Alternate collection:** Specify the name of the collection (defined in the remote object server) that you want the remote storage class to use. The collection name can be up to 44 characters in length. This field is optional.
- **Alternate management class:** Specify the name of the management class (defined in the remote object server) that you want the remote storage class to use. The name can be up to eight characters in length. This field is optional.
- **Alternate storage class:** Specify the name of the storage class (defined in the remote object server). The name can be up to eight characters in length. This field is optional.
- **Alternate retention period:** Specify the number of days that you want the object to remain in the remote storage class. You can specify a range of days from 1 to 32,000. This field is optional.

If you do not specify alternate information, the VisualInfo system uses the default collection, management class, storage class, and retention period that are defined for the object server.

If you increase the retention period (for example, from 10 to 20 days), all of the objects currently associated with the storage class and any objects added to the storage class remain for the new retention period.

If you decrease the retention period from 20 to 10 days, the VisuallInfo system does not migrate the objects currently associated with the storage class until they reach the previous retention period of 20 days. The VisuallInfo system migrates any new objects associated with this storage class after the new retention period of 10 days.

## 3.2 Defining the Staging Area and Object Server Operation

The staging area is the hard disk space where objects are stored temporarily by the object server when they enter the system and when they are retrieved.

VisuallInfo configures the staging area during the installation of the object server database. By default, the staging area is created in the STAGING directory and is assigned with a space of 100MB, but you can change this size whenever you want. Remember that this directory must be in an OS/2 partition that is formatted as HPFS.

To change the definition of the staging area, double-click on the staging area icon located in System-Managed Storage Icon View.

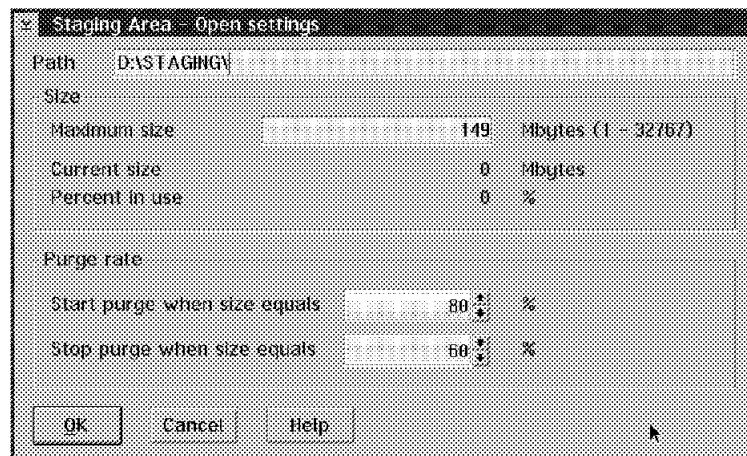


Figure 73. Defining the Staging Area

In Figure 73, you see the Maximum size parameter for the staging area. Although the system attempts to stay inside this value, it takes more space if it needs to. The purge function is discussed in the following section. For more information about managing the staging area, see section 5.10, "Administering the Staging Area" on page 193.

### 3.2.1 Defining Configuration for Object Server

The object server has three important functions:

- DESTAGE function
- MIGRATE function
- PURGE function

When a document or object enters a VisuallInfo system, it follows a policy of migration defined by you in system-managed storage.

A scanned or imported document enters the VisuallInfo system, and it is stored on the staging area. When the Destage function is performed (by a user command or by VisuallInfo), a copy of the document is moved to the first storage class defined in SMS settings (but the original copy remains in the staging area until the Purge function is executed).

When the percentage value set in "Start purge when size equals" field of the Staging Area Setting is reached, the Purge function is automatically started and begins to delete the older objects from the staging area until the percentage value set in "Stop purge when size equals" field is reached (see Figure 73 on page 97).

After the document is stored into its first storage class, it is transferred by the Migrate function when its retention period in that location expires. This migration process continues until the document reaches the last storage class defined to it.

The Migrate functions can be programmed to start at any time on a given day. See Figure 75 on page 99.

**Hint:** An application can be written to migrate objects based on criteria other than date. The application would find the objects which meet the user-written criteria, then start the Migrate function to move these objects to the next location.

**Hint:** You can define various object server configurations, and load the desired one at server startup time. For example, at the end of the month, you may want to lighten the load on storage devices by migrating less, since month-end accesses are at a peak.

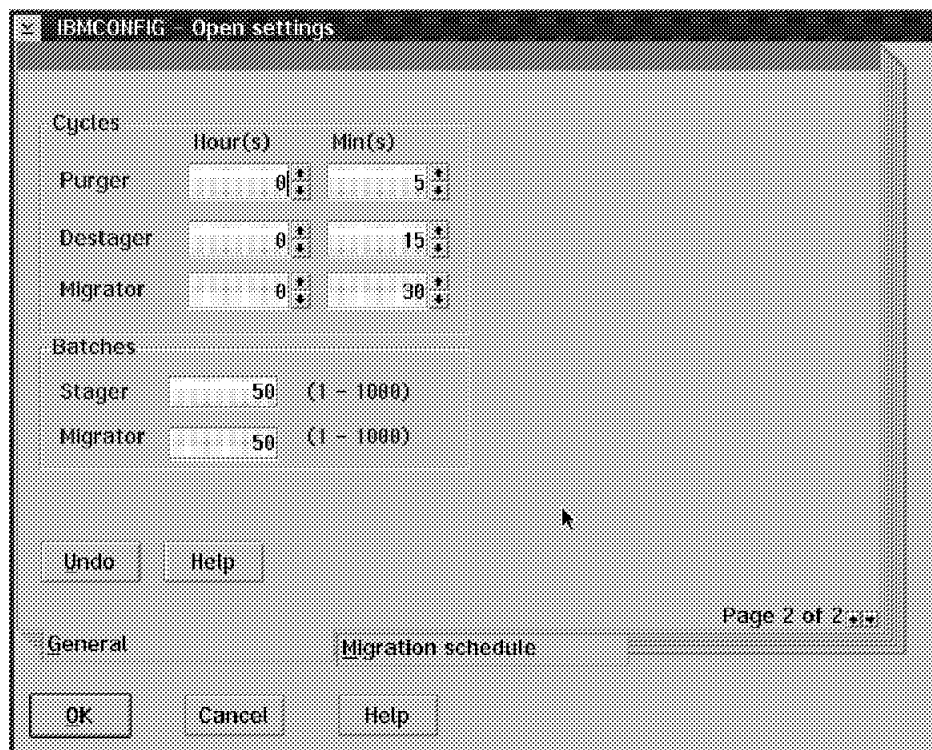


Figure 74. Configuring Object Servers



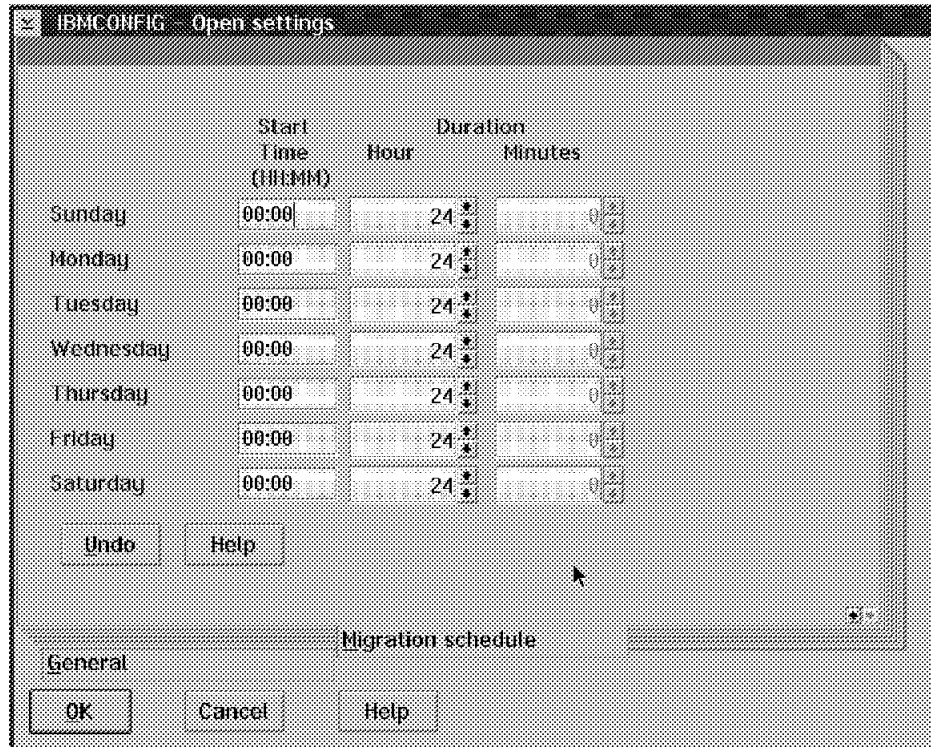


Figure 75. Configuring Object Servers

You can also manually start the Destage, Migrate, or Purge functions from the Object Server Options pull-down menu.

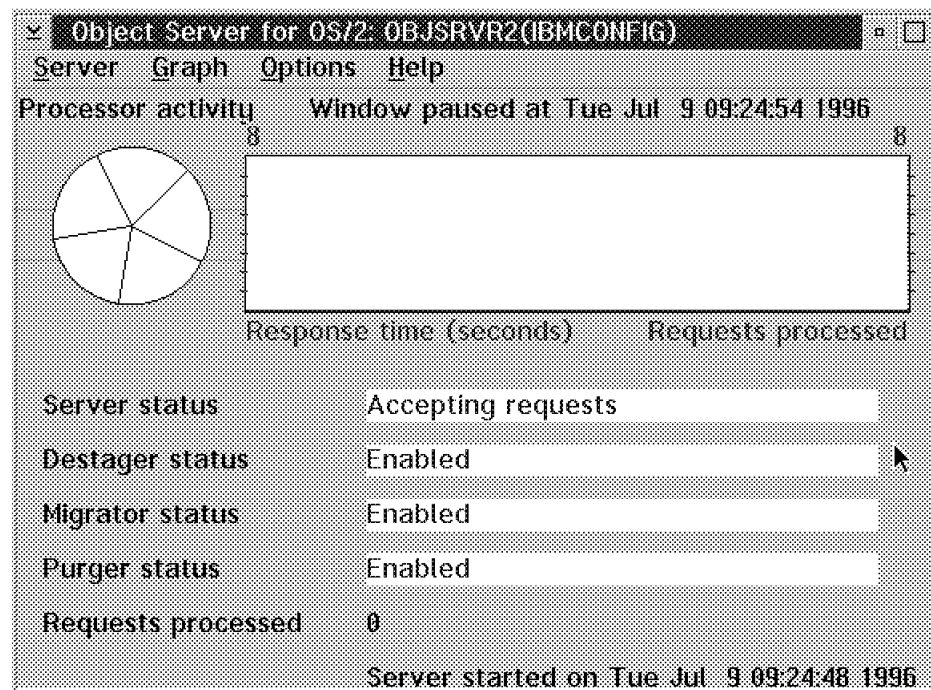


Figure 76. Configuring Object Servers

To force a Destage, open the Object Server window and from the pull-down menu, select Options -> Destager -> Start Now.

It copies all of the new documents in the staging area to their first storage place as defined by the management class.

To force the Migrate from the Object Server window, select Options -> Migrate -> Start Now on the pull-down menu.

Then the dates of the documents are checked, and all of the documents that are to be migrated (have completed the period in the respective storage classes) are moved to the next storage place.

To force the Purge, open the Object Server window and select Options -> Purger -> Start Now on the pull-down menu.

It removes the oldest documents from the staging area that have already been copied to storage until the minimum percentage is reached.

---

### 3.3 Defining User Access and Security

The system administration program provides a range of functions you can use to control how users access VisuallInfo and what actions users can perform. You choose how secure or open to make your system. Use the system administration program to:

- Specify how each user accesses the application by defining a *user ID* for each user.
- Specify what actions users can perform by assigning a *privilege set* to each user ID.

A privilege set contains all of the individual *privileges* (actions) that users can perform with the application and with the VisuallInfo system.

- Refine or restrict the privileges that you assign to user IDs by creating an *access list* and associating the access list with a component of the application or system. For example, you can create an access list and associate it with an index class you plan for the filerroom.

An Access list consists of one or more user IDs or *user groups* and a privilege set that you associate with each ID or group in the list. A user group consists of a collection of individual user IDs that you define under a single name.

Define your access control in the following order:

1. Privileges and privilege sets
2. User IDs
3. User groups
4. Access lists

**Note:** To perform searches or queries, users must be assigned the privilege of adding folders and documents to the table of contents window. This is because search results are returned in a table of contents.

### 3.3.1 Defining Privileges and Privilege Sets

You can define two categories of privilege sets: application privileges for folders and objects, workbaskets, and workflows; and administrative privileges to create, change, and delete privilege sets, user IDs, user groups, access lists, workbaskets, workflows, filerooms, data formats, system-managed storage, and the configuration for the library server.

The VisuallInfo system includes several sample privilege sets, including:

#### 3.3.1.1 MAXPRIVS

A sample system administrator privilege set that has unlimited privileges. This privilege set is assigned to the sample FRNADMIN user ID. You can use this ID when you define your system or perform any of your system administration tasks.

Because you can create only a privilege set that is a subset of your own privilege set, do not change the privileges in the FRNADMIN privilege set. If you remove any privileges from this privilege set, you cannot restore them. Also, you cannot change the password of the FRNADMIN ID.

#### Recommendation

To make your VisuallInfo system more secure, you can copy the FRNADMIN privilege set to another ID that you keep secret. Then you can delete or alter the FRNADMIN privileges without losing any of the administration privileges.

#### 3.3.1.2 USERPRIVS

A sample user privilege set that has a subset of privileges assigned to it. Users with this privilege set can do everything but add, change, or delete privileges.

#### 3.3.1.3 NOPRIVS

A sample user privilege set that has no privileges assigned to it.

Double-click on the **Users and Privileges** icon in the System Administration Icon View.

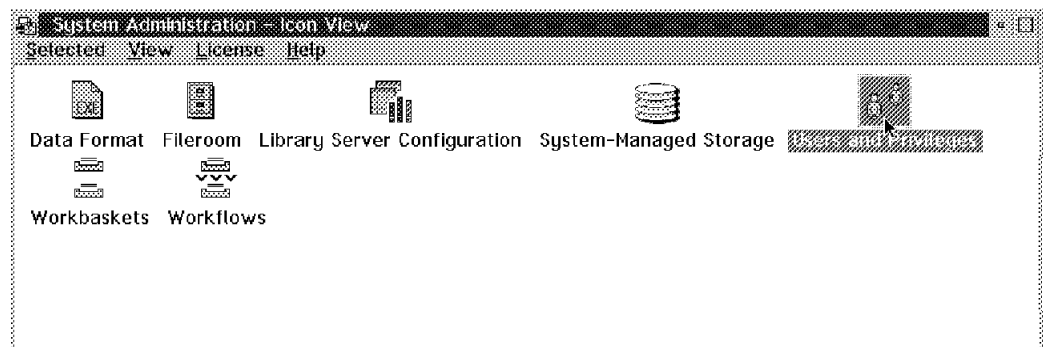


Figure 77. System Administration - Icon View

Double-click on the **Privilege Sets** icon.

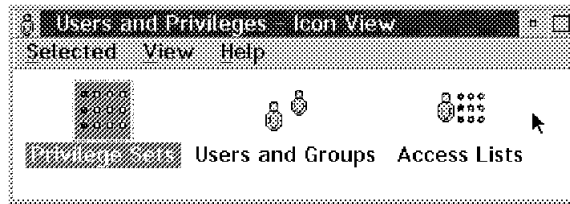


Figure 78. Users and Privileges Window

The settings notebook appears, as shown in the following pages.

Here are the General parameters, page 1 of 3 in the settings notebook.

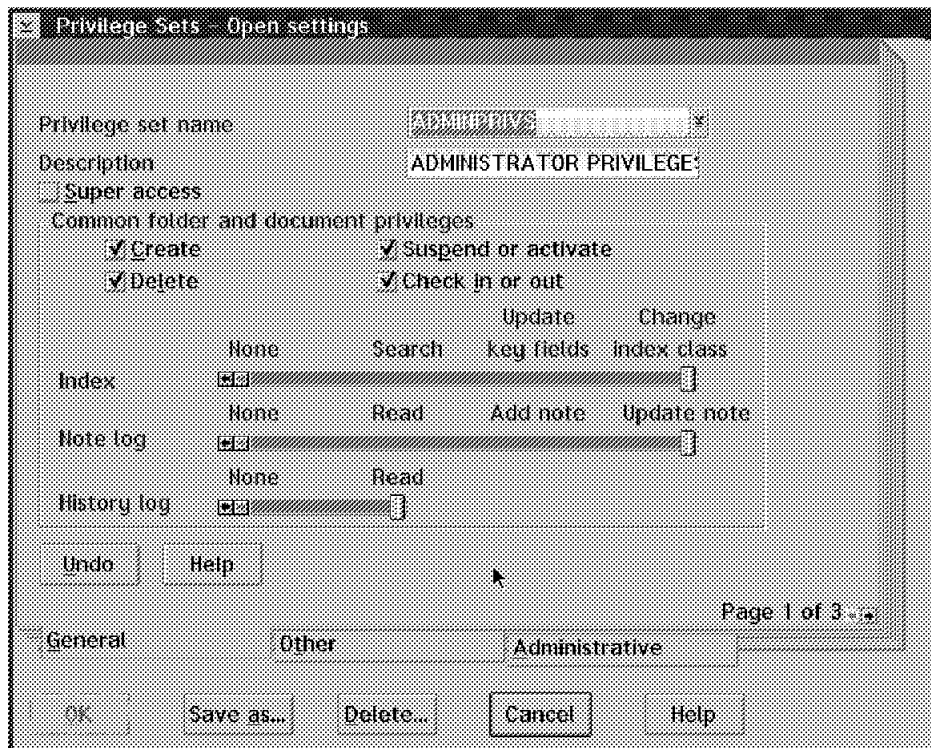


Figure 79. Privilege Sets - Open Settings (General Page 1 of 3)

<i>Table 15. Privilege Sets - Open Settings (General Page 1 of 3)</i>	
<b>Field</b>	<b>Instructions</b>
Privilege set name	Specify an unique name for the privilege set (up to 26 alphanumeric characters).
Description	Specify a description of distinguish the privilege set (up to 254 alphanumeric characters).
<ul style="list-style-type: none"> <li>• Super access</li> </ul>	If you assign a privilege set with the Super access privilege, the VisuallInfo system bypasses any access control you assign to Index classes, Index class subsets, Workbaskets, and Workflow.
Common folder and document privileges <ul style="list-style-type: none"> <li>• Create</li> <li>• Delete</li> <li>• Suspend or activate</li> <li>• Check in or out</li> </ul>	To query the filerroom, a user must have the create folder privilege because search results are returned in a new folder.
Index <ul style="list-style-type: none"> <li>None</li> <li>Search</li> <li>Update key fields</li> <li>Change</li> </ul>	None: Prevent users from viewing the index class and key fields in the end-user application. Search: Let users search for folders an objects by selecting an index class and specifying search criteria in the key fields. Update key fields: Let users update the key field an index class information for folders and objects in addition to searching for folders and objects. Change: Let users change the name of the index class in the end-user application in addition to updating key fields and searching for folders and objects.
Note log <ul style="list-style-type: none"> <li>None</li> <li>Read</li> <li>Add note</li> <li>Update note</li> </ul>	None: Prevent users from viewing the note log in the end-user application. Read: Let users read the note log. Add note: Let users add notes to the note log in addition to reading the note log. Update note: Let users update notes in the note log for folders and objects, besides adding notes to the note log and reading the note log.
History log <ul style="list-style-type: none"> <li>None</li> <li>Read</li> </ul>	None: Prevent users from viewing the history log. Read: Let users view events in the history log.

Here are the General parameters, page 2 of 3 in the settings notebook.

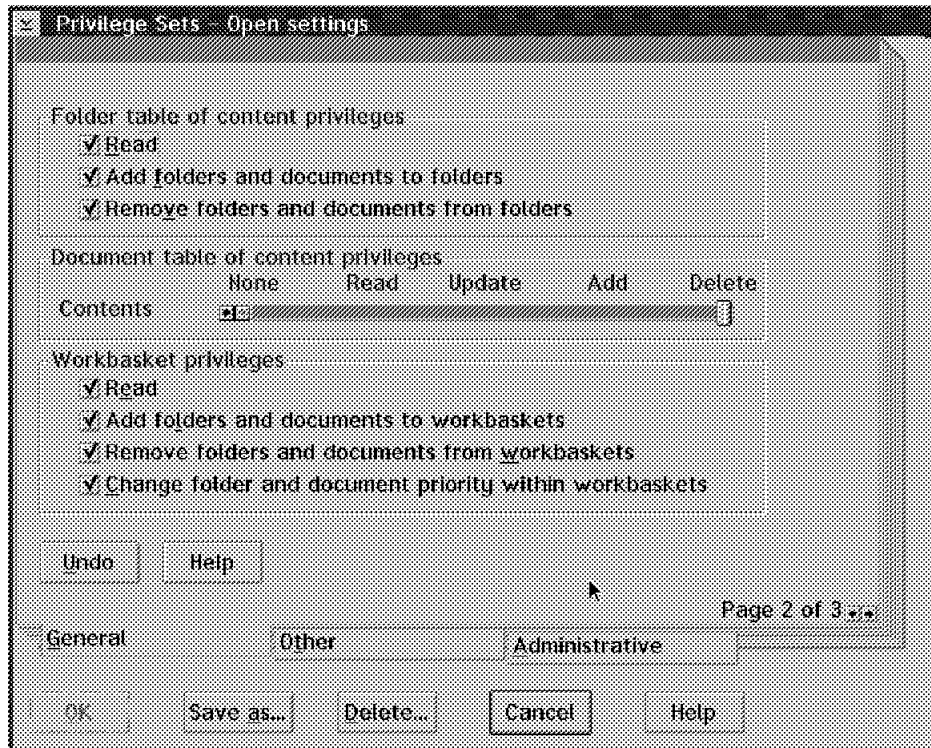


Figure 80. Privilege Sets - Open Settings (General Page 2 of 3)

Table 16. Privilege Sets - Open Settings (General Page 2 of 3)

Field	Instructions
<p>Folder table of contents privileges</p> <ul style="list-style-type: none"> <li>• Read</li> <li>• Add folders and documents to folder</li> <li>• Remove folders and documents from folder</li> </ul>	<p>Read: Let users read the table of contents only for folders.</p> <p>Add folders and objects: Let users add folders and objects to other folders.</p> <p>Remove folders and objects: Let users remove folders and objects from other folders.</p>
<p>Document table of contents privileges</p> <p>None</p> <p>Read</p> <p>Update</p> <p>Add</p> <p>Delete</p>	<p>None: Prevent users from viewing objects.</p> <p>Read: Let users read objects.</p> <p>Update: Let users update and read objects but not add pages to or delete object parts.</p> <p>Add: Let users add pages to or mark up objects in addition to updating and reading objects.</p> <p>Delete: Let users delete pages or mark ups from objects in addition to adding, updating, and reading objects.</p>
<p>Workbasket privileges</p> <ul style="list-style-type: none"> <li>• Read</li> <li>• Add folders and documents</li> <li>• Remove folder and document</li> <li>• Change folder and document priority within workbaskets</li> </ul>	<p>Read: Let users view any workbasket.</p> <p>Add folders and documents: Let users add folders and documents to workbaskets.</p> <p>Remove folders and documents: Let users remove folders and documents from workbaskets.</p> <p>Change folder and document priority: Let users change the priority in which they process the folders and documents in workbaskets.</p>

Here are the General parameters, page 3 of 3 in the settings notebook.

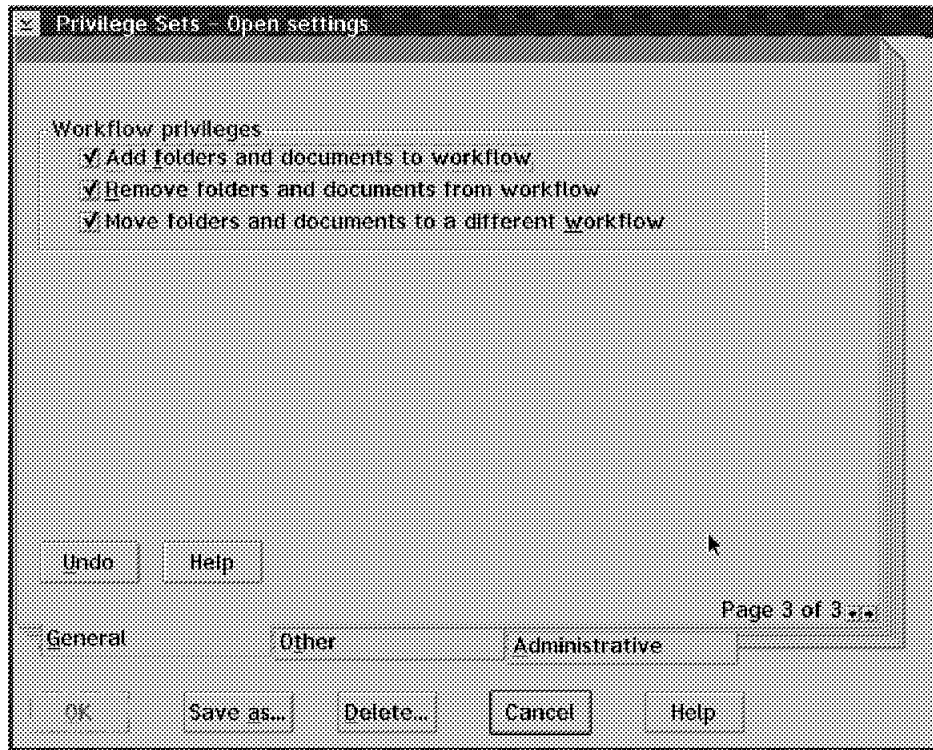


Figure 81. Privilege Sets - Open Settings (General Page 3 of 3)

Table 17. Privilege Sets - Open Settings (General Page 3 of 3)	
Field	Instructions
Workflow Privileges <ul style="list-style-type: none"> <li>• Add folders and documents</li> <li>• Remove folders and documents</li> <li>• Move folders and documents</li> </ul>	Add folders and objects: Let users add folders and objects to workflows. Remove folders and objects: Let users remove folders and objects from workflows. Move folders and objects: Let users change which workflow folders and objects follow.



Here are other privileges you can assign to users.

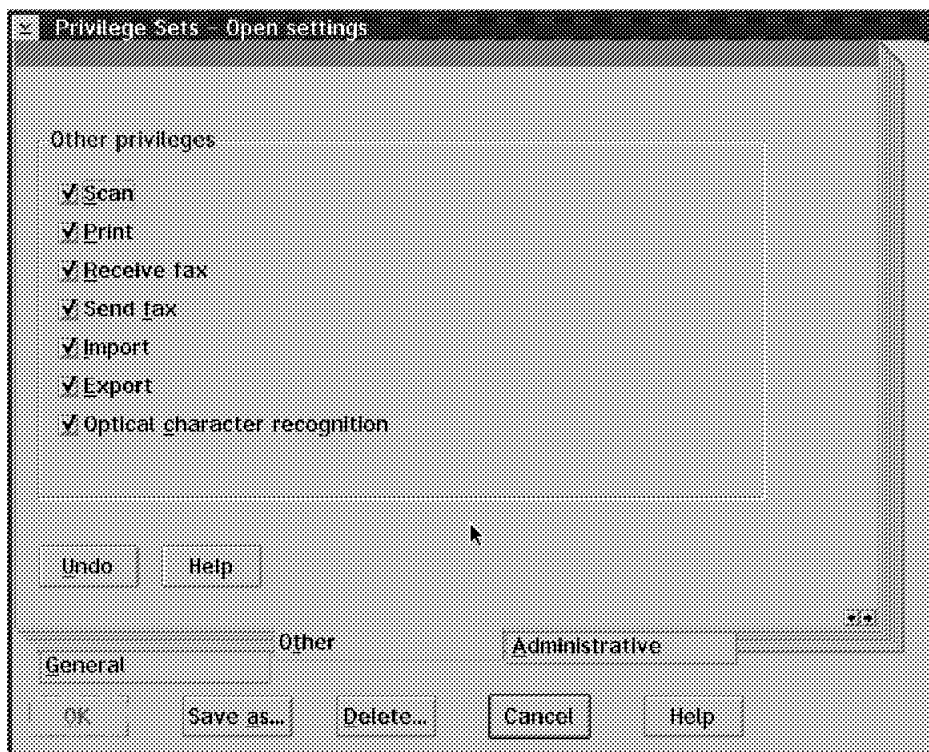


Figure 82. Privilege Sets - Open Settings (Other)

Table 18. Privilege Sets - Open Settings (Other)	
Field	Instructions
Other Privileges	Scan: Specify whether users can scan objects into the system.
• Scan	Print: Specify whether users can print objects.
• Print	Receive fax: Specify whether users can receive faxes.
• Receive fax	Send fax: Specify whether users can send faxes.
• Send fax	Import: Specify whether users can import objects into the system.
• Import	Export: Specify whether users can export objects out of the system.
• Export	Optical: Specify whether users can use optical character recognition.
• Optical character recognition	

You can also assign administrative privileges to users.

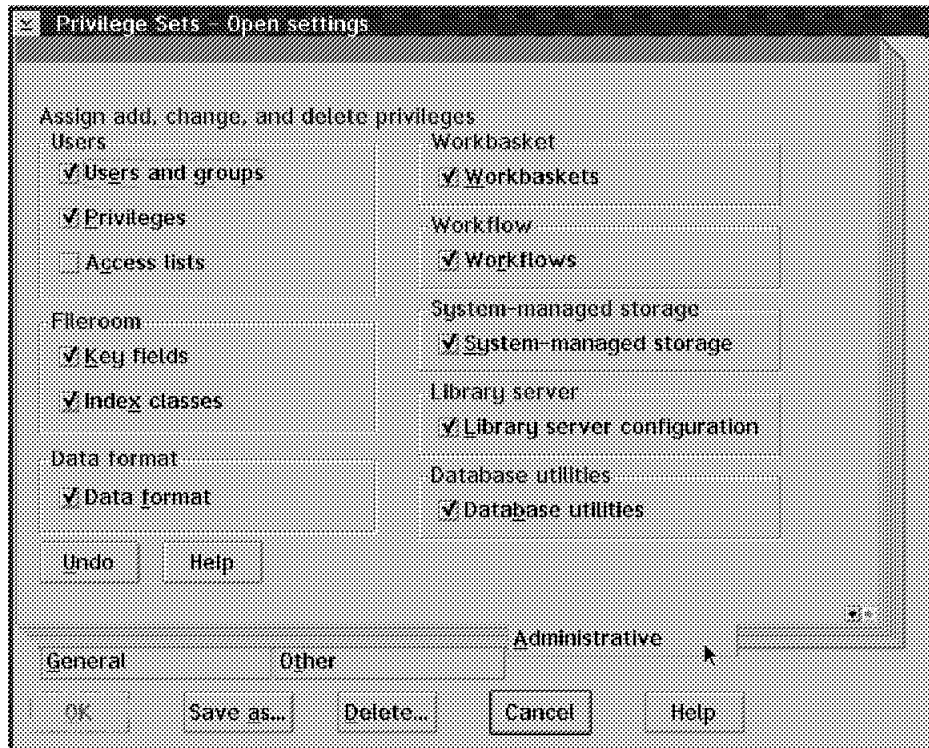


Figure 83. Privilege Sets - Open Settings (Administrative)

Table 19. Privilege Sets - Open Settings (Administrative)	
Field	Instructions
Users <ul style="list-style-type: none"> <li>• User IDs and user groups</li> <li>• Privileges</li> <li>• Access list</li> </ul>	Choose whether to assign a user ID or user group the privilege to add, change, and delete any of the following VisualInfo features. <ul style="list-style-type: none"> <li>• User IDs and user groups</li> <li>• Key fields and index classes</li> <li>• Data formats</li> </ul>
Fileroom <ul style="list-style-type: none"> <li>• Key fields</li> <li>• Index classes</li> </ul>	
<ul style="list-style-type: none"> <li>• Data format</li> <li>• Workbasket</li> <li>• Workflow</li> <li>• System-managed storage</li> <li>• Library server configuration</li> <li>• Database utilities</li> </ul>	<ul style="list-style-type: none"> <li>• Workbaskets</li> <li>• Workflows</li> <li>• System-managed storage</li> <li>• Library server configuration</li> <li>• Database utilities</li> </ul>

### 3.3.2 Defining User IDs

To provide users with access to the system, you must assign each a user ID and a password. In addition, you must associate a privilege set with each user ID.

Users can log on to the system from any VisuallInfo workstation in the LAN by typing their user ID and password. The VisuallInfo system validates the user ID and password. As users attempt to perform actions on the system, the VisuallInfo system validates these actions through the privilege set associated with their user ID.

Double-click on the **Users and Groups** icon.

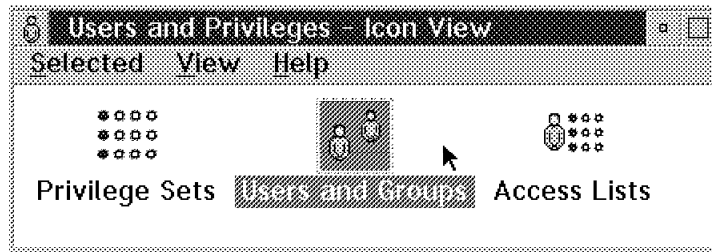


Figure 84. Users and Privileges Window

Double-click on the **New User** icon.

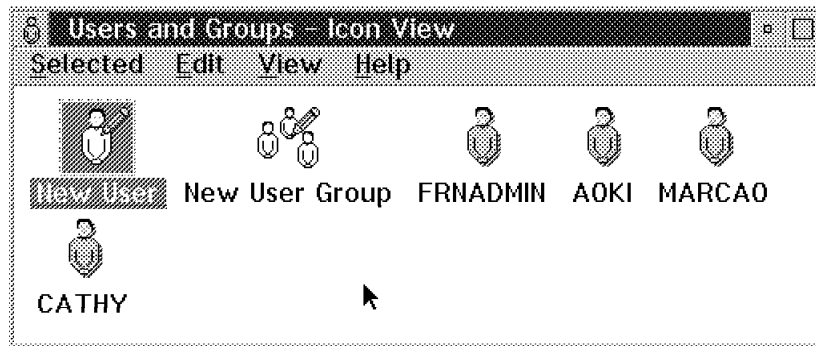


Figure 85. Users and Groups - Icon View

Fill in the fields to define the user FRNADMIN, as shown in Figure 86 on page 110 and Table 20 on page 110.

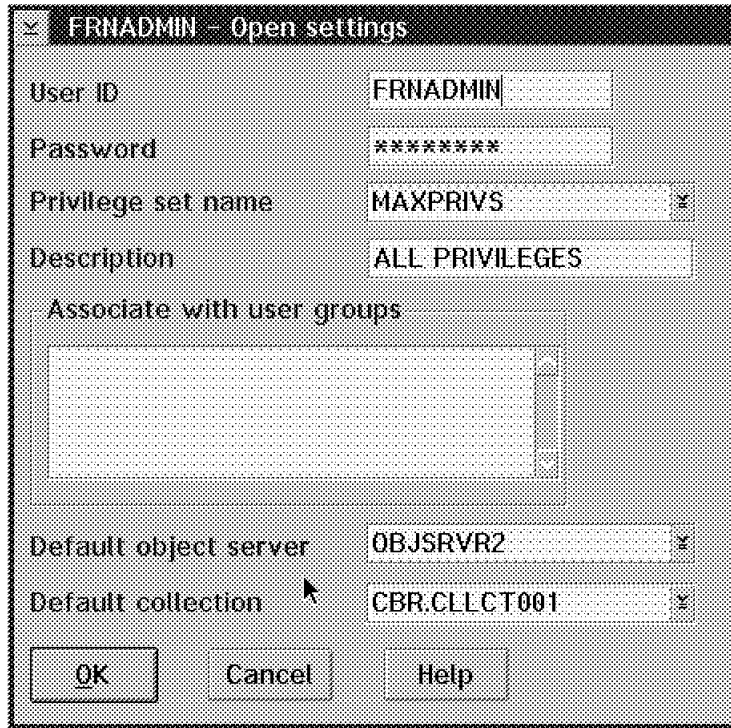


Figure 86. FRNADMIN - Open Settings

Field	Instructions
User ID	Specify a unique user ID (up to eight characters).
Password	Specify the password for this user ID (up to eight characters).
Privilege set name	Specify the name of the privilege set that you want to associate with this user ID.
Associate with user groups	You can specify one or more user groups that you want to associate with this user ID.
Default object server	The system stores objects in this object server if the user does not specify an index class when storing the object. The VisuallInfo system only uses the information if you define library server configurations to use the default object server for the user ID.
Default collection	CBR.CLLCT001 is the name of the collection included with the system administration program.  You must define the collection for the default object server that you specified.

### 3.3.2.1 Copying User Preference Data

VisuallInfo provides a utility for copying user reference data from one user ID to another. User reference data includes items such as index class order, key field layouts, print preferences, and window sizes. Copying user preferences makes it possible for you to give your VisuallInfo system a common look and feel when you are setting up user IDs.

To copy user preference data, enter the following command at an OS/2 prompt:  
FRNOAUCP sourceID destID libSrvr

where:

*sourceID* is the user ID whose user preferences you want to copy.

*destID* is the destination user ID for the user preference.

*libSvr* is the library server where the two user IDs are defined.

### 3.3.2.2 Defining User Groups

User groups simplify access control by grouping server user IDs under a single name and using this group name in an access list.

To determine whether you should assign a user ID to a user group, consider:

- Who will use the system?
- What type of information do users need to work with?
- What steps do users complete when they process information?
- Does more than one user work with the same information?
- Do any users work with confidential information?
- Does a group of users work with a specific set of objects?

### 3.3.3 Defining Access Lists

With access lists (formerly known as "access control lists"), you can refine or restrict the actions a user ID or user group can perform with:

- Index classes
- Index class subsets
- Workbaskets
- Workflow

An access list consists of user IDs or user groups and the privilege sets you associate with the user IDs or user groups. To implement this refinement or restriction, you:

1. Create the access list.
  - a. Specify the user IDs and user groups you want to include in the access list.
  - b. Associate a privilege set with each user ID or user group in the access list.
2. Associate the access list with the index class, subset, workbasket, or workflow.

If you assign the Super access privilege for a user ID or user group when you create it, the VisuallInfo system ignores any privilege you assign to the user ID or user group in an access list.

Double-click on the **Access Lists** icon.

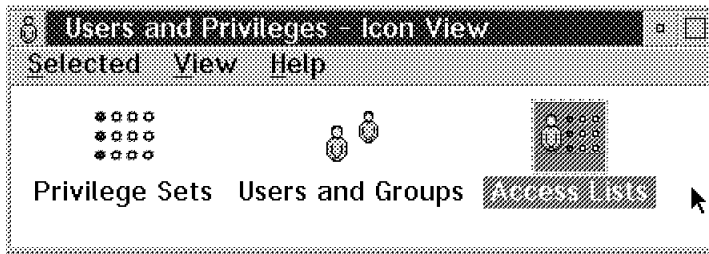


Figure 87. Users and Privileges Window

Fill in the Access list name field with a name such as Receptionist and fill in the Description field.

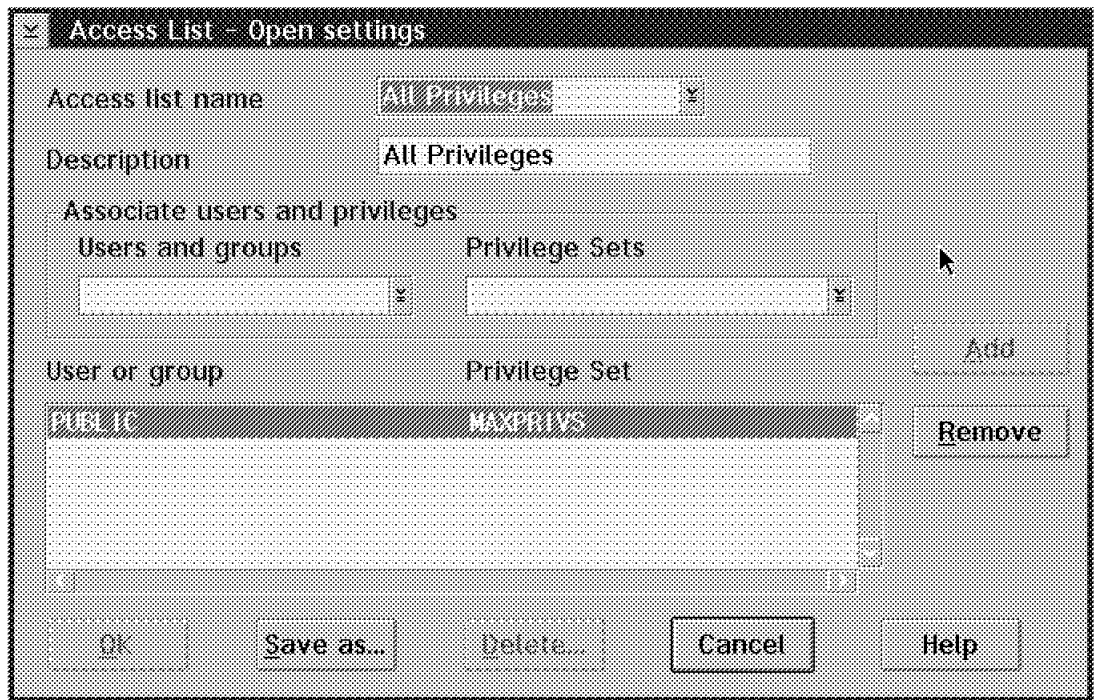


Figure 88. Access List - Open Settings

Field	Instructions
Access list name	The name must be unique (up to 16 characters).
Description	The description can be up to 254 characters in length.
Associate users and privilege Users and groups Privilege Sets	Specify each user ID and group in the access list and associate the ID or group with a privilege set. These associations make up the access list.

---

## 3.4 Creating Filerooms and Database Indexes

To define how your end user application stores and retrieves objects, use the fileroom function. The fileroom is the sum of the database records for items and parameters used in processing them. Although much of the information is defined by using the fileroom function within the system administration program, your application programmer can alter some of the processing by writing an application which uses the VisualInfo APIs. The fileroom function stores only the values you specify for the fileroom. Your application uses these values to store and retrieve objects, and to move them through the system. Workbaskets and workflows are stored in the fileroom.

### *To define a fileroom:*

1. Create key fields.
2. Create index classes using the key fields.
3. Create index class subsets to further refine or restrict the index class on a field level (optional).
4. Create database indexes using the key field you created (optional).

The following example illustrates how you can plan key fields and index classes for different business situations.

- A department receives checks from clients who have paid an invoice.
  - Create an index class to include all checks. Key fields can include the check number, amount, invoice number, and client name.
  - Create an index to include all clients. Key fields can include the client name, invoice number, amount paid, and amount due.
  - Create an index class to include all invoices. Key fields can include the invoice number, check number, amount paid, and amount due.

A personnel department receives applications for various employment positions.

- Create an index class for each employment position. Key fields can include the position name, number of applicants, date that the position was vacated, and date that the position was filled.
- Create an index class to include all applicants. Key fields can include the applicant name, position applied for, and application date.

### 3.4.1 Defining Key Fields

Key fields are the attributes you define to represent each object. In a relational database, there are column names or parameters which you can see by using SQL queries. For example, a job application may contain key fields such as Social Security number, last name, and first name.

Double-click on the **Fileroom** icon in the System Administration Icon View.

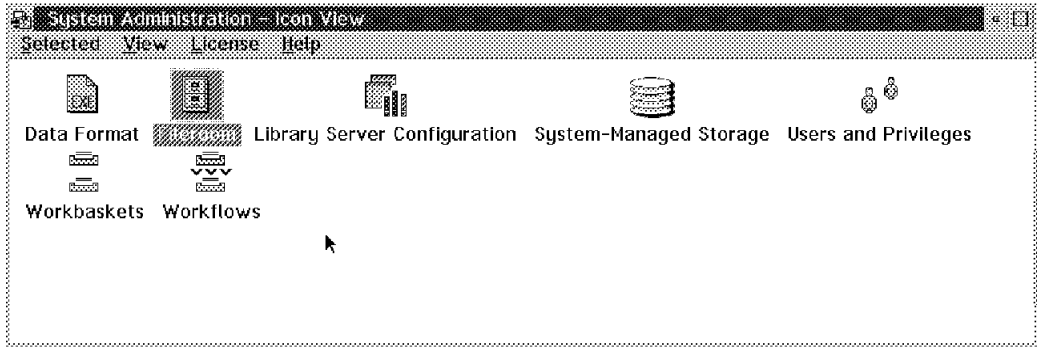


Figure 89. Fileroom - Icon View

Double-click on the **Key Fields** icon.

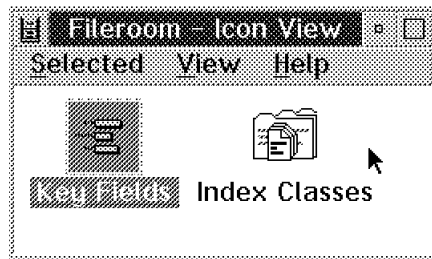


Figure 90. Fileroom - Icon View

Double-click on the **New Key field** icon.

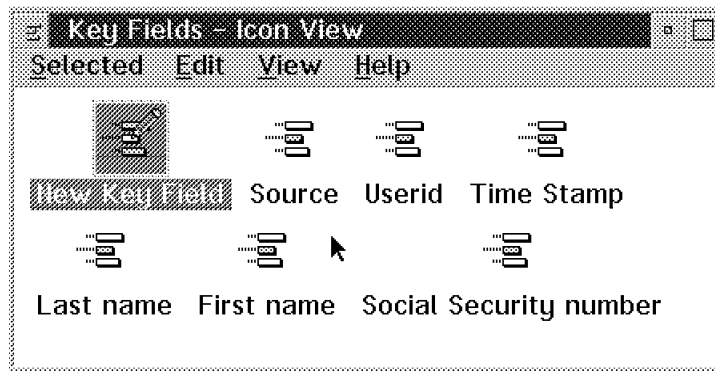


Figure 91. Key Fields - Icon View



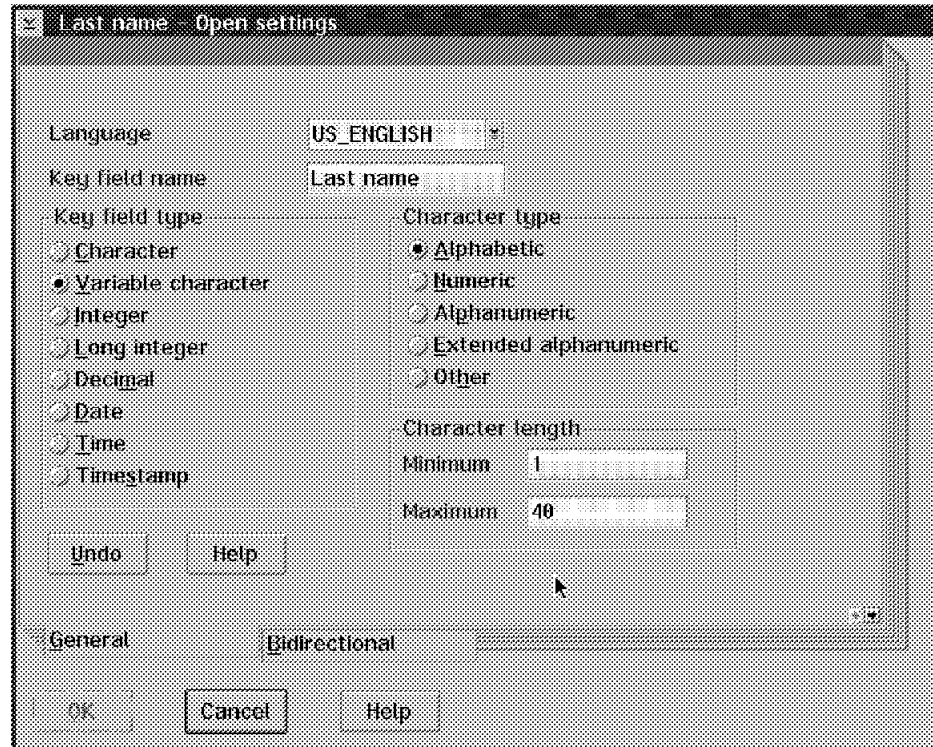


Figure 92. Last Name - Open Settings

Table 22. Defining a Key Field	
Field	Instructions
Language	Specify the language that you want to use for the key field.
Key field name	Specify a unique name for the key field (up to 32 alphanumeric characters).
Key field type <ul style="list-style-type: none"> <li>• Character</li> <li>• Variable Character</li> <li>• Integer</li> <li>• Long Integer</li> <li>• Decimal</li> <li>• Date</li> <li>• Time</li> <li>• Timestamp</li> </ul>	Choose the type of key field based on how you want the application to store the data in the database.  Character: The maximum length is 254.  Variable character: The minimum is 1. The maximum length is 3984 (it is 254 in MVS/ESA).  Integer: The minimum value is -32,768. The maximum value is 32,767.  Long integer: The minimum value is -2,147,483,648. The maximum value is 2,147,483,647.
Character type <ul style="list-style-type: none"> <li>• Alphabetic</li> <li>• Numeric</li> <li>• Alphanumeric</li> <li>• Extended Alphanumeric</li> <li>• Other</li> </ul>	Extended alphanumeric: Consists of alphanumeric and the characters ?()"/- _ & + % * = < > .  Other: Consists of any other character type.
Bidirectional	All fields apply to bidirectional language support only.

### 3.4.2 Defining Index Classes

An index class consists of one or more key fields that you assign to the index class. You use an index class to group similar types of objects together. You also use an index class to:

- Further limit access to folders and objects using access lists.
- Provide the key field that will appear as a window title or heading when displaying each object that users of an application retrieve using this index class.
- Provide user exit capability for functions such as searching, workbaskets, and workflow.
- Provide separate storage for the three parts of an object (objects, note, and history).
- Provide automatic workflow processing.
- Provide automatic placement of objects in folders.

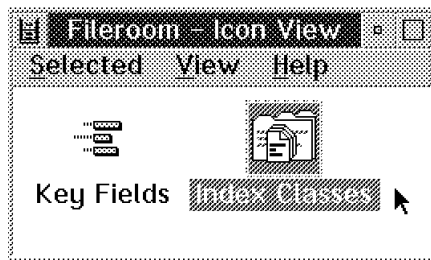


Figure 93. Filerroom - Icon View

From the Filerroom folder, double-click on the **Index Classes** icon.

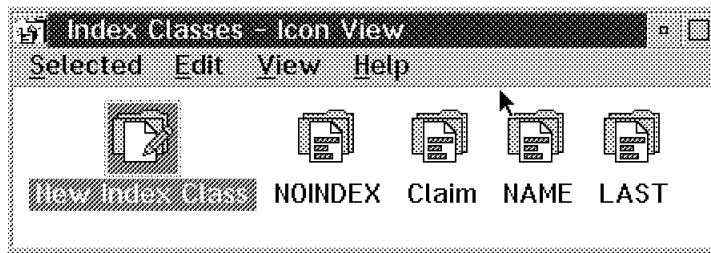


Figure 94. Index Classes

Double-click on the **New Index Class** icon. Figure 95 on page 117 shows the settings for the Claim index class (which is distributed with the sample database), as though you were defining it as a new index class.

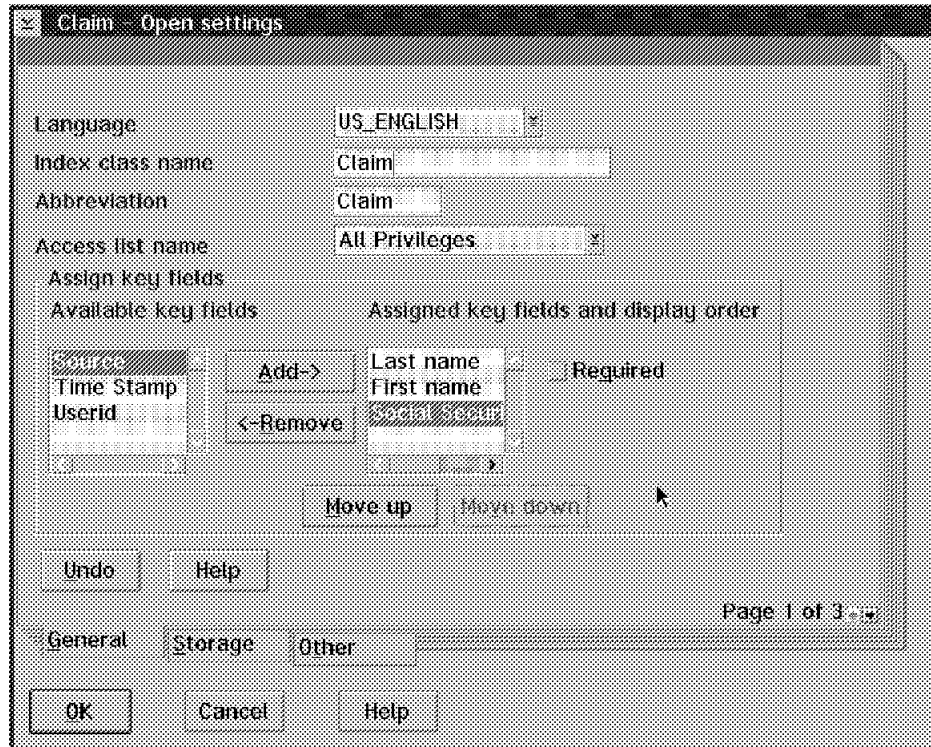


Figure 95. Index Class - Open Settings (General - 1)

Table 23. Defining an Index Class (General - 1)	
Field	Instructions
Language	Specify the language that you want for an existing index class.
Index class name	Specify a unique name for the index class name (up to 32 alphanumeric characters).
Abbreviation	Specify a unique abbreviation instead of the entire index class name to index and search for document (up to eight alphanumeric characters).
Access list name	Specify the name of the access list that you want to associate with this index class. The access list controls who can access the index class.
Assign key field Available key fields Assigned key fields and display order • Required	Specify which key fields you want to assign to the index class. Use the <b>Required</b> check box to specify whether each key field is a required key.  If you specify only one key field as an index field, the value in this field must be unique. If you specify more than one key field, the combination of values in the key fields must be unique.  When an application user receives a new document, the user assigns the document to one of the index classes. This process is called <i>indexing</i> . When a user indexes a document, the application stores the document in that index class in the fileroom.

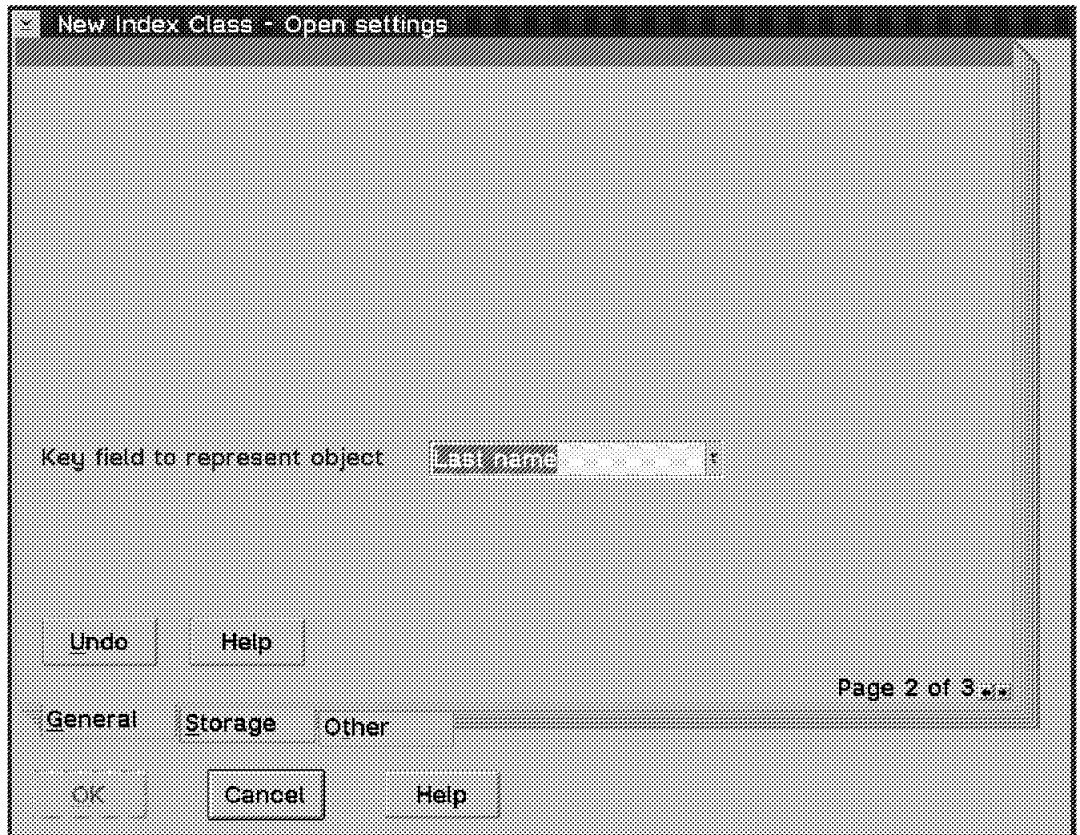


Figure 96. Index Class - Open Settings (General - 2)

General tab page 2 contains an entry for a Key Field (see the following table).

Table 24. Defining an Index Class (General - 2)	
Field	Instructions
Key field to represent object	<p>Specify the key field that will be used as a title when displaying each object.</p> <p>For example, if you specify the <i>LASTNAME</i> key field, the application displays each object that it retrieves using the value in this field, such as <i>SMITH</i> or <i>JONES</i>.</p>

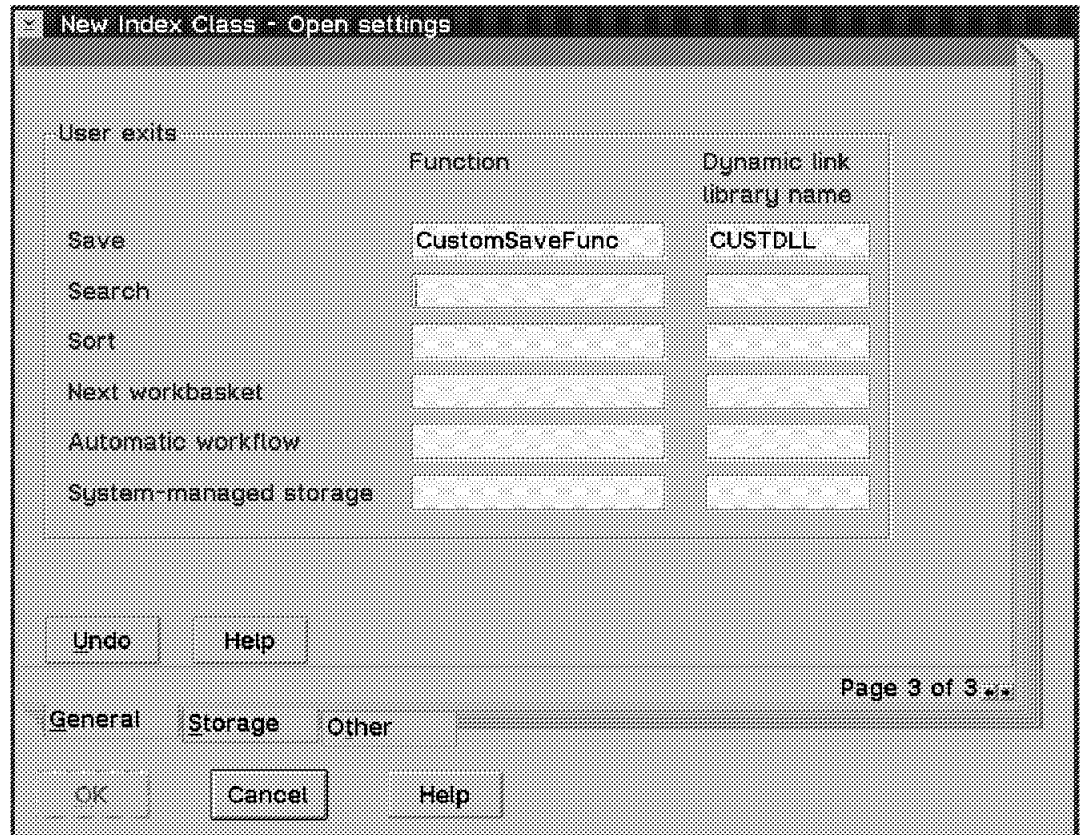


Figure 97. Index Class - Open Settings (General - 3)

General tab page 3 gives you the opportunity to register user-written exit functions that enhance and customize your VisuallInfo processing.

Field	Instructions
User Exits	Specify the name of function that you want to run or use, such as CustomSaveFunc. You must also specify the DLL where the function resides, such as CUSTDLL.
Save	This user exit determines the processing such as data verification that the client performs before it saves an object.
Search	The user exit determines the processing that the client performs when users begin searching the filerroom.
Sort	The user exit determines the processing that the client performs before displaying the results of a search. It can contain a user-written sort, or refuse to display some secure fields.
Next workbasket	When the client or user routes a folder or document of this index class to a workbasket.
Automatic workflow	When a user indexes a folder or document of this index class.
System-managed storage	When to override the defined system-managed storage of the object after a user saves it in a client application.

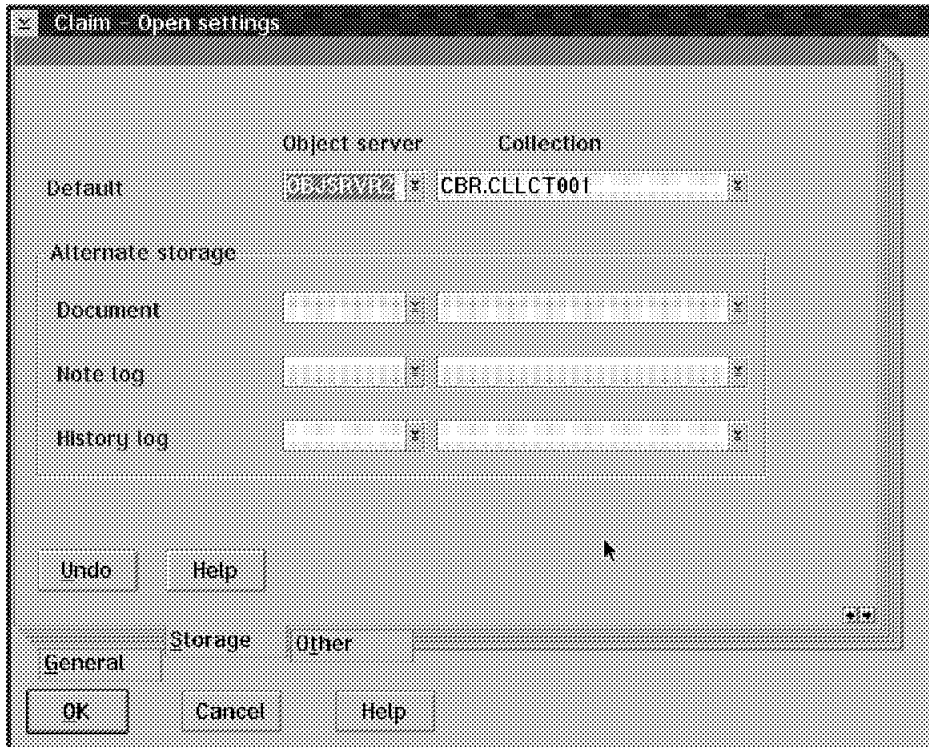


Figure 98. Index Class - Open Settings (Storage)

The Storage tab contains information on where you would like the elements of each item stored.

Field	Instructions
Default Object server Collection	Specify the default object server and collection that the library server can use to store an object based on the index class of the object.
Alternate storage Document Note log History log	Specify the object server and collection on the object server where you want to store the document, the notes assigned to the document, and the history log associated with the document.  Users can use notes to convey information to other people who use a document or folder at a later time.  The history log for a folder or document contains entries that identify the processing and actions that are performed on the folder or document while it is in a workflow.

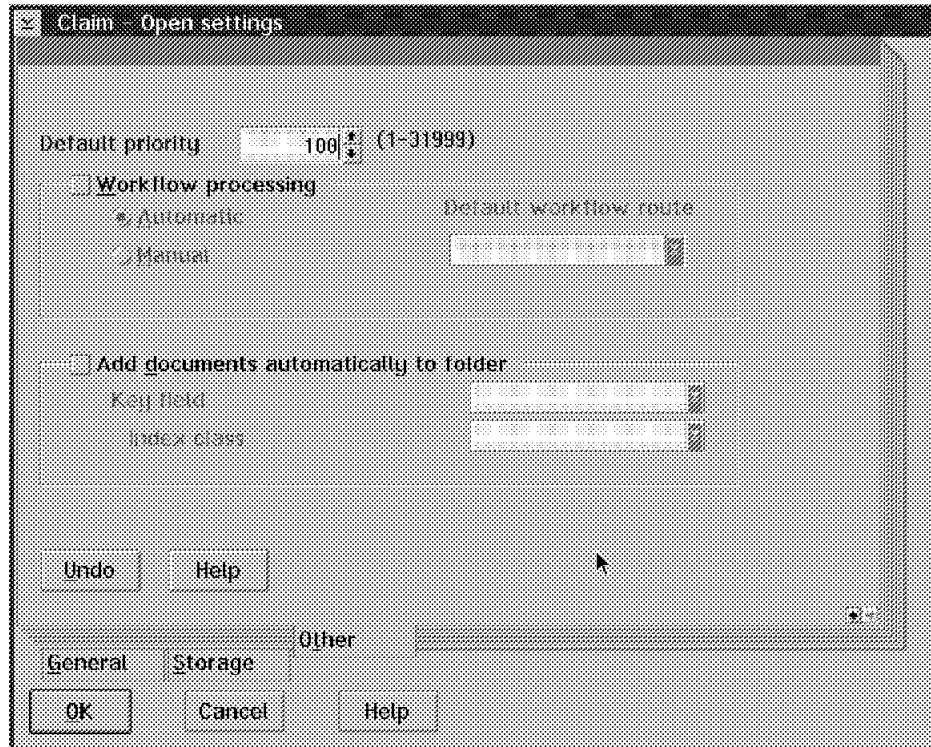


Figure 99. Index Class - Open Settings (Other)

Table 27. Defining an Index Class (Other)	
Field	Instructions
Default priority	Specify the order that you want the application to process an object of this index class within the workbasket that you assign the index class to.
<ul style="list-style-type: none"> <li>• Workflow processing               <ul style="list-style-type: none"> <li>• Automatic</li> <li>• Manual</li> </ul> </li> <li>Default workflow route</li> </ul>	<p>Specify how to add objects to a workflow.</p> <p>Automatic: When application users save objects under this index class, the application automatically adds the objects to a workflow.</p>
<ul style="list-style-type: none"> <li>• Add documents automatically to the folder               <ul style="list-style-type: none"> <li>Key field</li> <li>Index class</li> </ul> </li> </ul>	<p>Specify whether you want the application to automatically add an object to a folder of the index class that you select. The application adds the object based on the key field the application user specifies within this index class.</p> <p>Key field: Specify the key field that the application uses to index the object and automatically add the object to a folder.</p> <p>Index class: Specify the index class to associate the object with.</p>

### 3.4.3 Defining Index Class Subsets

When can you use index class subsets?

For example, you define the PERSREC index class to store and display the personal records for each employee in your enterprise. The record contains the following information:

- Name
- Title
- Business address and telephone number
- Home address and telephone number
- Salary
- Insurance information
- Performance and review information

Although people in different departments may need access to these records, not everyone needs access to all of the information in these records. For instance, you may want to create index class subsets that:

- Do not include the Salary field, so that persons using this subset cannot access this field.
- Define the Performance field as read-only, so users can only display information in this field.
- Define the Insurance field as write-only, so users can only specify information in this field.

Select the **Create subset** item in the Selected menu, shown in Figure 100.

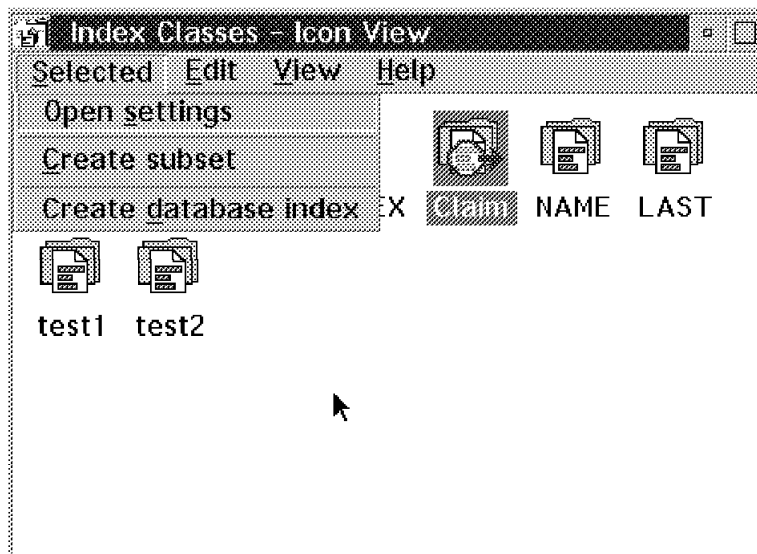


Figure 100. Index Class - Icon View



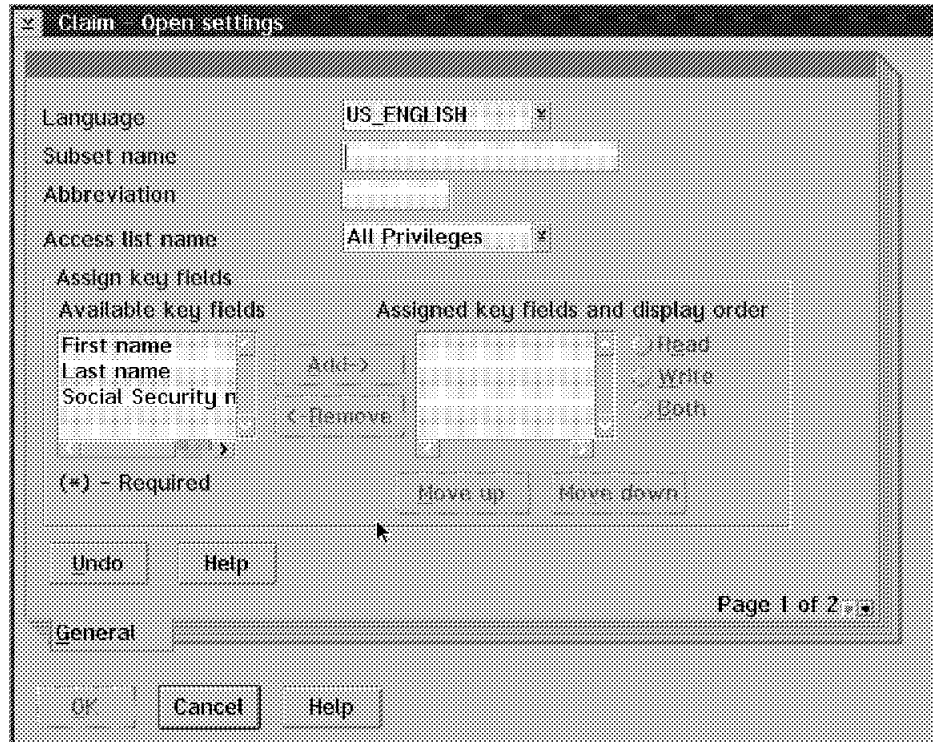


Figure 101. Subset - Open Settings General 1 of 2

You will see this notebook, described by the tables below.

Field	Instructions
Language	Specify the language that you want to define an existing index class subset.
Subset name	Specify a unique name for the index class subset name (up to 32 alphanumeric characters). For example, you can name an index class subset, <i>Checks</i> , that includes all checks.
Abbreviation	Specify a unique abbreviation instead of the entire index class subset name to index and search for document (up to eight alphanumeric characters).
Access list name	Specify the name of the access list that you want to associate with this index class subset.  The access list controls who can access the index class subset.
Key fields to assign to the index class subset <ul style="list-style-type: none"> <li>• Read</li> <li>• Write</li> <li>• Both</li> </ul>	Specify which key fields you want to assign to the index class subset.

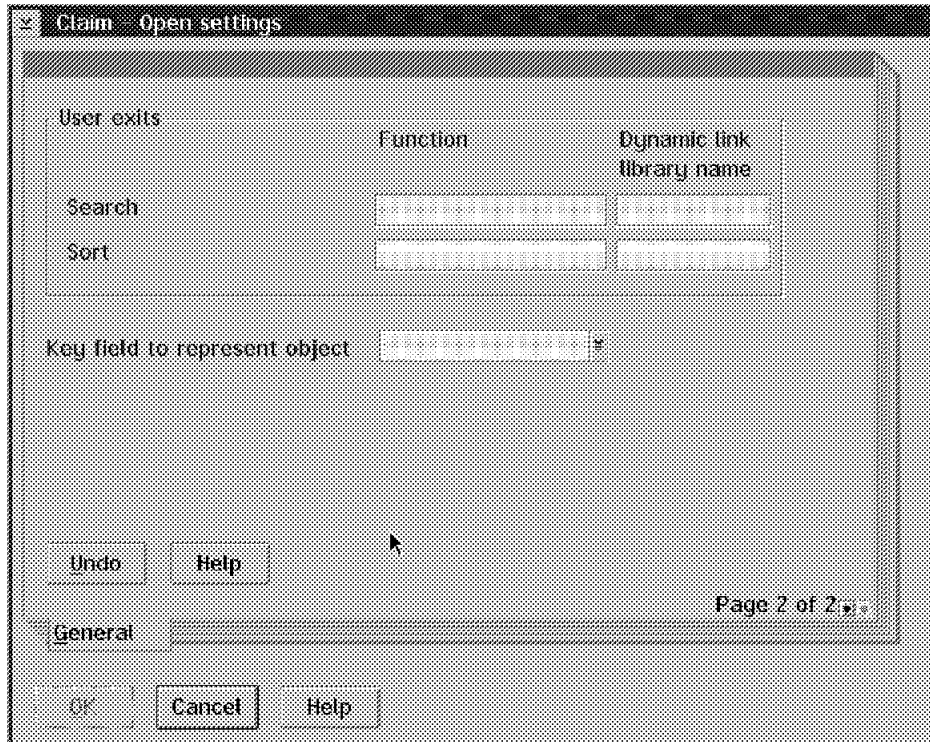


Figure 102. Subset - Open Settings General 2 of 2

Table 29. Defining an Index Class Subset (General - 2)	
Field	Instructions
User exit Search Sort	Specify the name of the function that you want to run at the user exit for performing an alternate search or sort.
Key field to present object	Specify the key field that the application should use as a title when displaying each object.  For example, if you specify the <i>LASTNAME</i> key field, the application displays each object that it retrieves using the value in this field, such as <i>SMITH</i> or <i>JONES</i> .

### 3.4.4 Defining Database Indexes

Database indexes improve the efficiency of your application when storing and retrieving objects in the database using index classes.

Select the **Create database Index** item in the Selected menu. See Figure 103 on page 125.

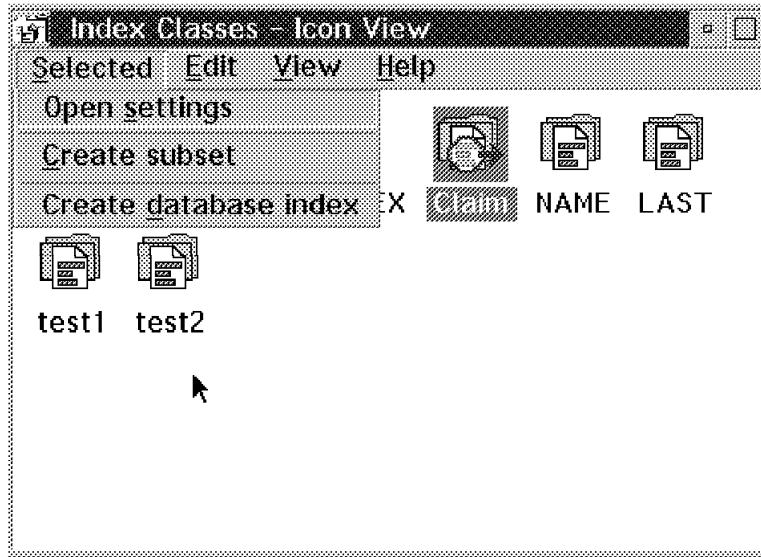


Figure 103. Index Classes - Icon View

You will see this screen. Fill it out according to Table 30.



Figure 104. Create Database Index

Table 30 (Page 1 of 2). Defining a Database Index	
Field	Instructions
Database Index name	Specify the name of the index you want to create.

Table 30 (Page 2 of 2). Defining a Database Index	
Field	Instructions
Assign key field <ul style="list-style-type: none"> <li>• Ascending</li> <li>• Descending</li> <li>• Unique</li> </ul>	Specify the key fields in the order that you want to include them in the index. In addition, specify whether: <ul style="list-style-type: none"> <li>• You want the system to store the data in ascending or descending order in the database.</li> <li>• The value that the user specifies for the key field must be unique. The system considers the value of the key field in a row of the database index as unique.</li> </ul>

### 3.5 Defining Data Formats

In the VisuallInfo system, a data format is a predefined method or set of instructions that is associated with an object. Data formats define the type of information an object contains and how to work with that object. Using this information, VisuallInfo can display and store objects in the correct format.

For example, if you use Lotus 1-2-3 to create and save an object as a 1-2-3 file, you can then import the file using the 1-2-3 Data Format and store it as an object in the VisuallInfo system.

Data formats consist of the following information:

- Name of the data format, such as TIFF, MO:DCA, 1-2-3, and Word.
- Path and filename of the display program for the data format.
- Parameters to pass to the display program.
- Whether the data format is public (for the entire system) or private (for a single computer).

The VisuallInfo system uses data formats to distinguish different data types. It can only store objects in the object server with the data formats that are defined.

#### 3.5.1 Defining Your Own Data Formats

Double-click on **Data Format** icon in the System Administration Icon View.

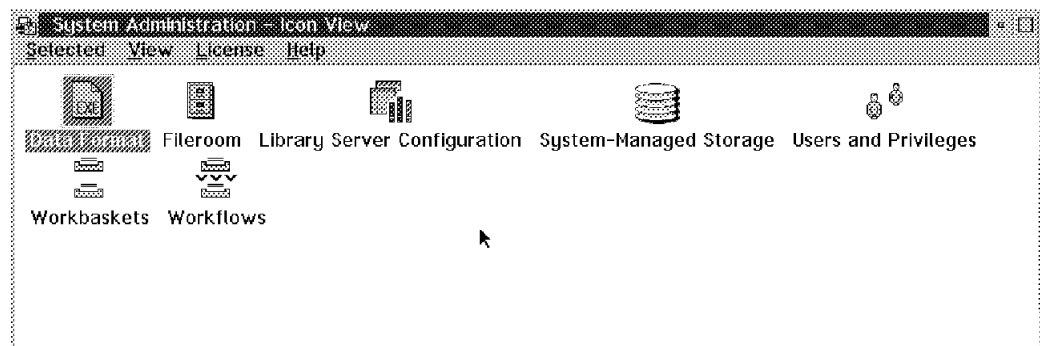


Figure 105. Data Format - Icon View

Double-click on **New Data Format** icon in Figure 106 on page 127.

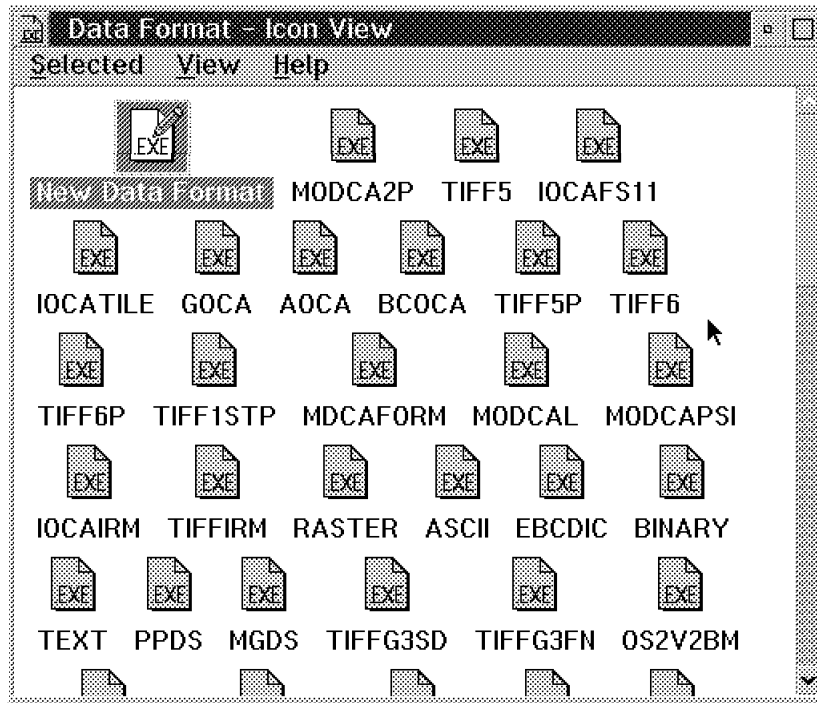


Figure 106. Data Format - Icon View

Fill out the parameters on the settings page (Figure 107 on page 128) to allow your data format to correctly process its objects. See Table 31 on page 128.

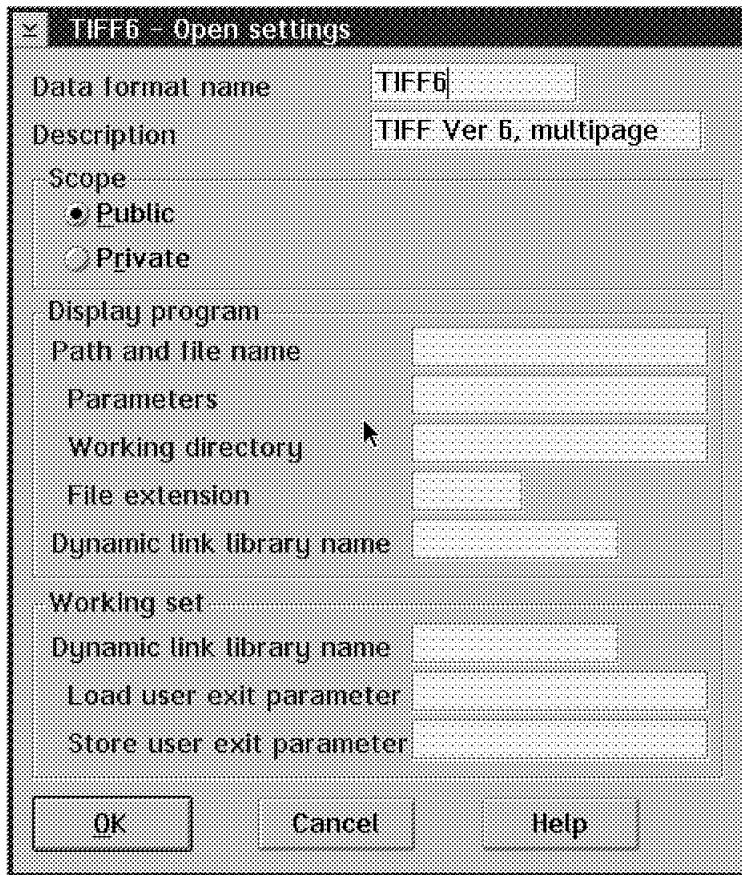


Figure 107. Data Format - Icon View

Table 31 (Page 1 of 2). Defining Data Formats	
Field	Instructions
Data format name	If you modifying an existing data format, enter its name (up to eight alphanumeric characters).
Description	The description can be up to 40 alphanumeric characters.
Scope <ul style="list-style-type: none"> <li>• Public</li> <li>• Private</li> </ul>	<p>A public data format means that all users attached to the same configuration server can use the same definition.</p> <p>A private data format is defined for the one computer only.</p>
Display program <ul style="list-style-type: none"> <li>Path and file name</li> <li>Parameters</li> <li>Working directory</li> <li>File extension</li> <li>Dynamic link library (DLL) name</li> </ul>	<p>If you do not specify a <i>Working directory</i> path, the system uses the VisuallInfo work file directory that you specified during installation.</p> <p>DLL name: If you leave this field blank, VisuallInfo calls the default DLL, FIWSXCC. This DLL lets you specify a DOS or OS/2 .EXE and .COM application as the display program. If you want to use a Windows program or a command file or save changes, you can specify FRNOUECC or your own customized DLL name.</p>

Table 31 (Page 2 of 2). Defining Data Formats	
Field	Instructions
Working set	DLL name: You can specify a working set DLL for VisualInfo to call when loading objects with this data format.
Dynamic link library (DLL) name	Load: Specify the value of the plmport parameter that the DLL uses when loading data from this content class.
Load user exit parameter	Store: Specify the value of the pExport parameter that the DLL uses when storing objects to this data format.
Store user exit parameter	

## 3.6 Workbaskets

Workbaskets are used to group information in one place and assign tasks to individual users. In a VisualInfo system, a workbasket can include objects (documents) and folders that users must process and then file or route to another workbasket.

To create a workbasket, you must previously create an access list that defines what the users IDs can do in the workbaskets. Take a look at Section 3.3, “Defining User Access and Security” on page 100 for more information about the access lists.

### 3.6.1 Creating Workbaskets

In the System Administration Icon View, double-click on the **Workbasket** icon.

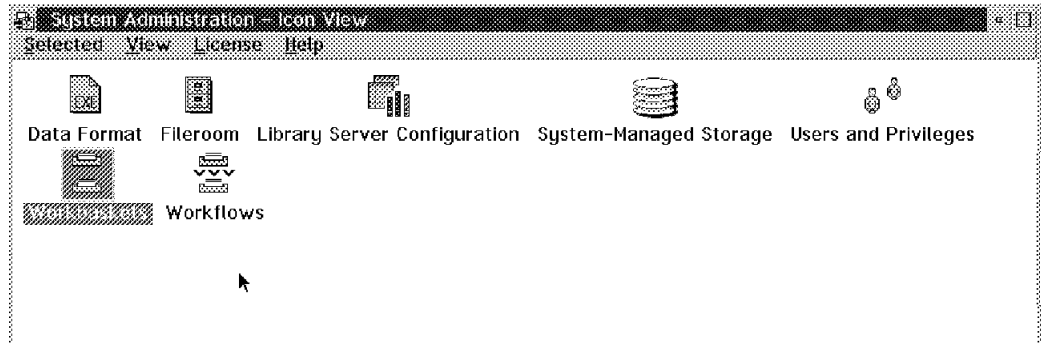


Figure 108. System Administration Window

Double-click on the **New Workbasket** icon.

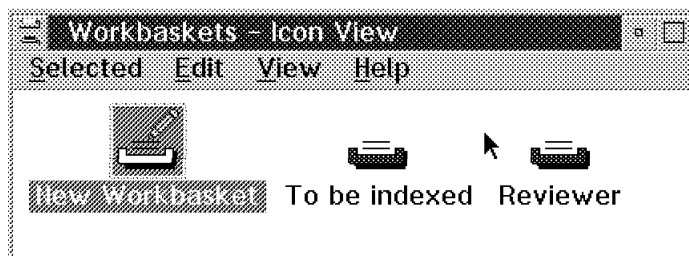


Figure 109. Workbasket Window

Fill in the blanks with the appropriate information.

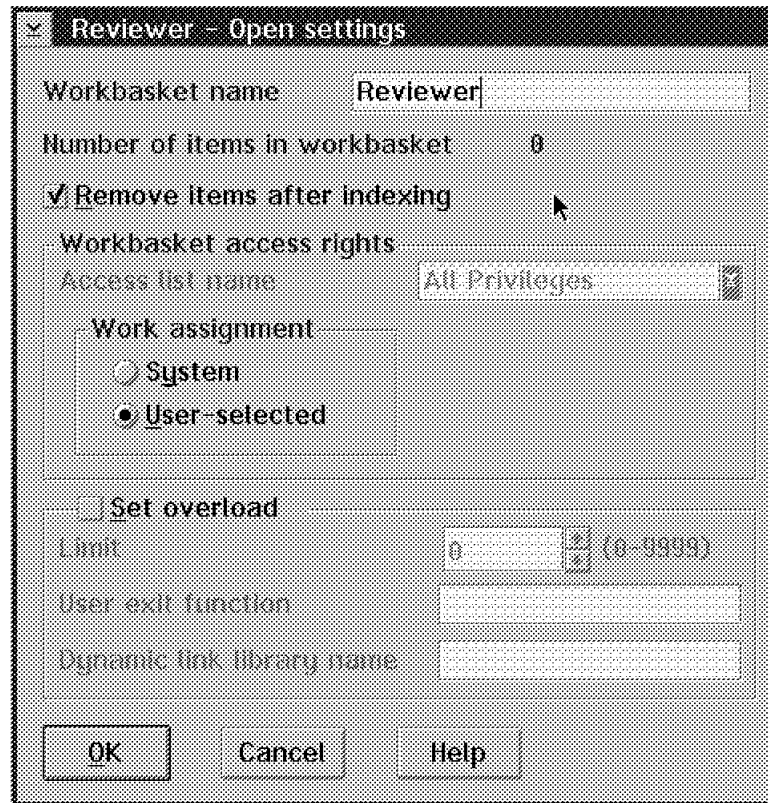


Figure 110. Workbasket Window

- Workbasket name: Specify a name for the workbasket.
- Remove items after indexing: Specify whether you want the system to automatically remove items from the workbasket after a user finishes indexing them.
- Access list name: Specify the access list that you want to associate with this workbasket.
- Work assignment: Specify the work assignment you want to assign to the workbasket.
  - System: The system determines the work assignment based on the item priority within its index class.
  - User-selected: The user determines the work assignment. This is the one most often used.
- Set Overload:
  - Limit: Specify the maximum number of items that you want the workbasket to contain before the system automatically starts the user exit for the overload function.
  - User exit function: Specify the name of the user exit for the overload function that the system starts after the workbasket reaches the overload limit.
  - DLL name: Specify the name of the dynamic link library (DLL) for the overload function.



**Note:** By default, when a user opens a workbasket, all of the items are displayed in a table of contents window that shows a maximum of 200 items. You can change this value if you add the following line in the workstation's CONFIG.SYS:

```
SET FRNDISPLAYCOUNT=XX
```

where *XX* is the number of items that you want to be displayed in your table of contents. The minimum value is one and there is no maximum, but you should consider that the greater the value of FRNDISPLAYCOUNT, the more time and resource it takes for your machine to list all the items.

---

## 3.7 Workflows

Workflows are used by VisuallInfo to define a processing sequence for documents and folders.

You define workflows using the System Administration program, or you can route your documents manually to other workbaskets as needed using the **Route to** option in the Client Application.

### 3.7.1 Creating Workflows

In the System Administration Icon View, double-click on the **Workflow** icon.

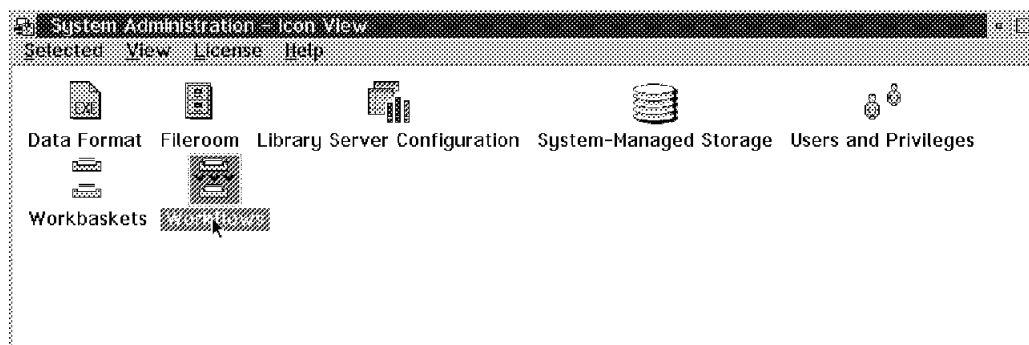


Figure 111. System Administration Window

Double-click on the **New Workflow** icon.

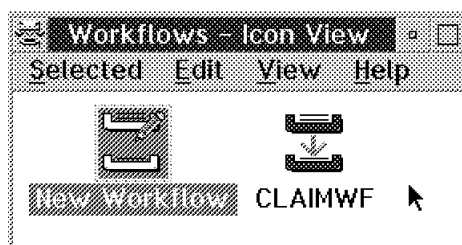


Figure 112. Workflow Window

Fill in the blanks with the appropriate information.

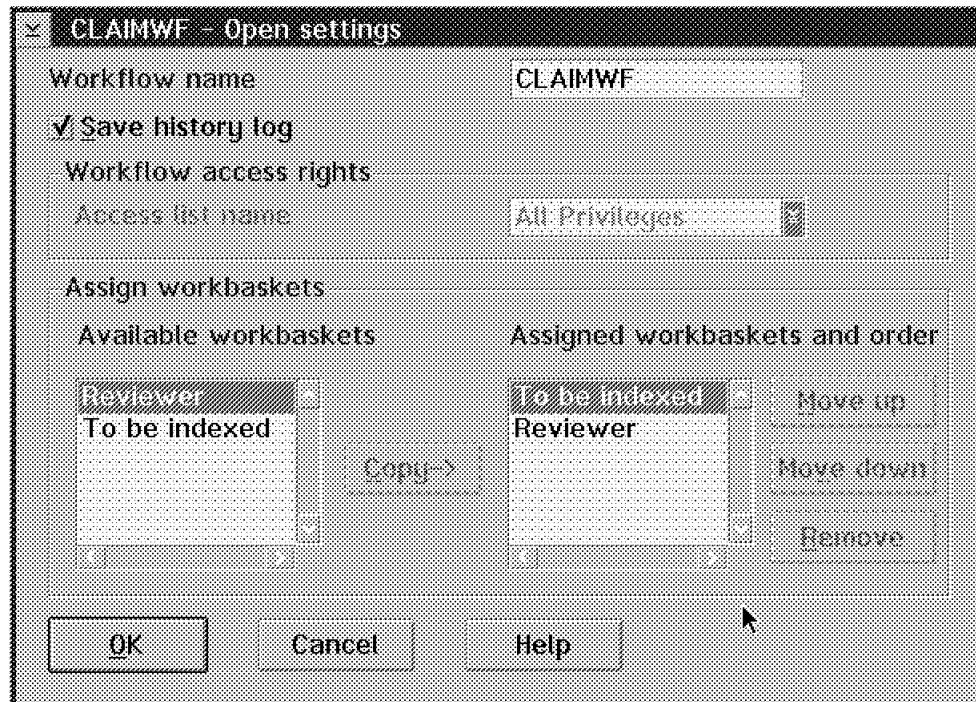


Figure 113. Workflow Window

- Workflow name: Specify the name of the workflow.
- Save history log: Specify whether you want to save a record of activities for the workflow.
- Access list name: Specify the name of the access list that includes all of the users/groups that can use this workflow.
- Assign workbaskets: Specify the workbaskets that you want to assign to this workflow and the order in which you want the documents (objects) processed.

**Note:** After you define the workflow, you cannot change the name of the access list assigned to it.

The access list specifies:

- User IDs that can access each workflow that you define.
- Workflow functions that the users can perform.

### 3.8 Configuring the Library Server

As we know, the Library Server is responsible for the fileroom. It can store objects onto one or more object servers. A VisuallInfo user may have access to several VisuallInfo systems but can only be logged on to one system (Library Server) at a time, unless you write special client application code.

The information that you specify in the Library Server Configuration folder is used by VisuallInfo to set up the environment when you start the Library Server. This information includes:

- Database default language and code page support
- Access control information

- Maximum number of user logon attempts
- Types of logon and duration of password
- LAN cache enablement
- Minimum and maximum checkout time for objects
- Query information
- Maximum amount of time the Library Server waits for a response from a client application and Object Server
- Default information for system-managed storage

### 3.8.1 Creating a New Library Server Configuration

In the System Administration Icon View, double-click on the **Library server Configuration** icon.

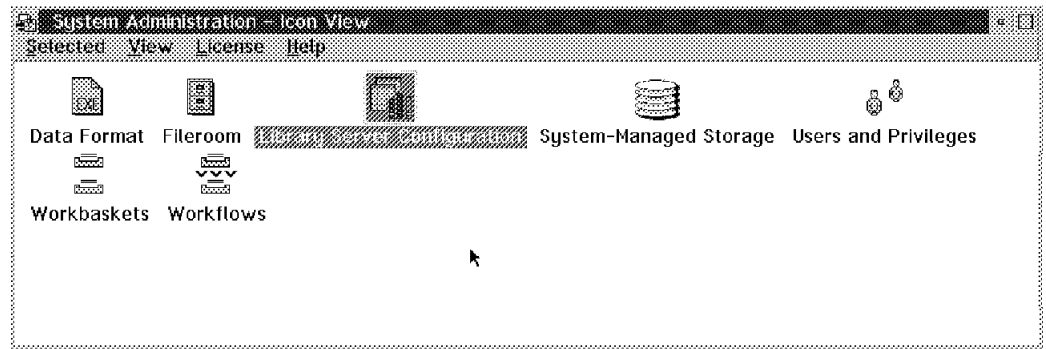


Figure 114. System Administration Window

Double-click on the **New Configuration** icon to display the configuration notebook

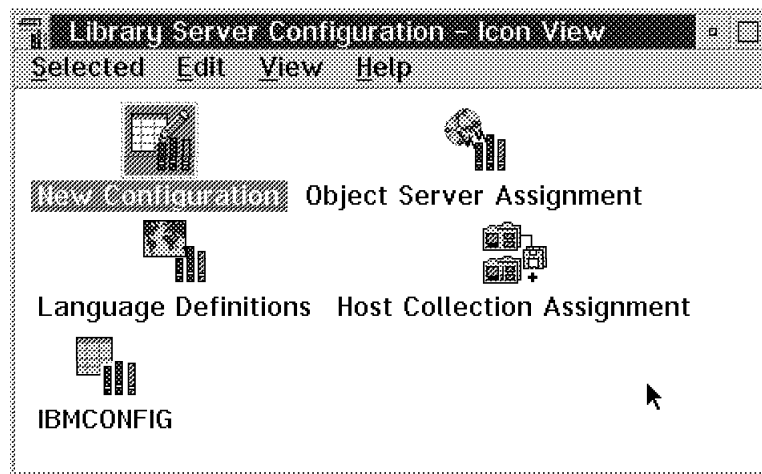


Figure 115. Library Server Configuration Window

Include the appropriate information to define the configuration. Here is page 1 of 2 of the General settings tab.

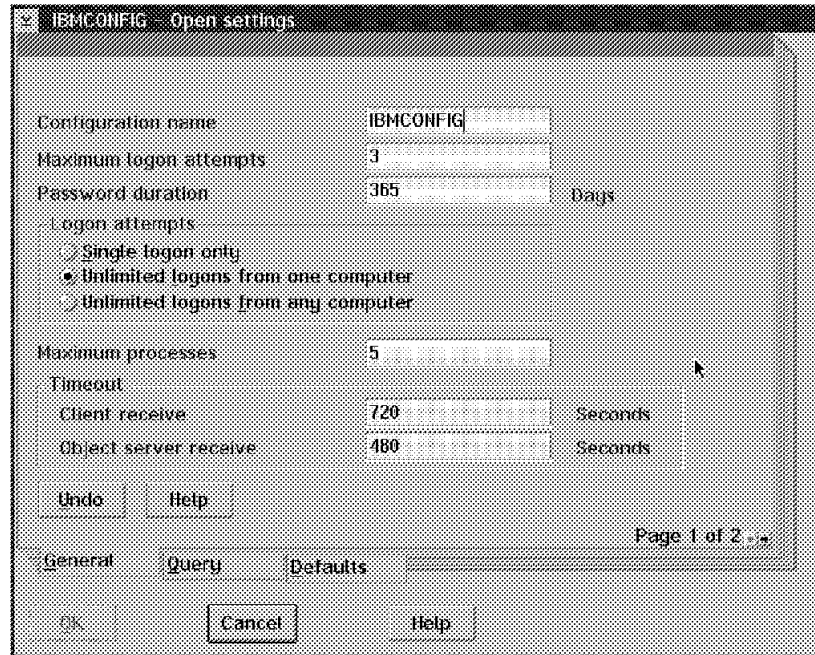


Figure 116. Library Server Configuration Settings

- Configuration name: Specify the name of the configuration.
- Maximum logon attempts: Specify the maximum number of times a user can try to log on to the VisualInfo system.
- Password duration: Specify the number of days that the password remains valid for all users of the Library Server.
- Concurrent logons: Specify the number of times a user can log on concurrently to the Library Server.
  - Single logon only: A user can log on only once from any computer.
  - Unlimited logons from one computer: A user can log on with the same user ID multiple times. Concurrent logon requests from a different computer are rejected.
  - Unlimited logons from any computer: A user can log on as many times as they want from any computer on the system concurrently.
- Maximum processes: Specify the maximum number of processes that can concurrently access data from the Library Server database. Making the number too large ties up system resources unnecessarily, while too small a number can present a performance bottleneck.
 

**Tip:** To decide for your system, watch the pie chart on the LBLS display. If all the "slices" light up in red often, you need to increase the maximum number of processes. You can see how many processes are active during production.
- Timeout (for Client and Object Server): Specify the number of seconds (value greater than 0) that the Library Server should wait for a response from the client application and the Object Server. If, in this time period, the Library Server does not receive a response, it:
  1. Rolls back the transaction.
  2. Logs an error.

3. Informs the client application or the Object Server that a timeout occurred.

Here is page 2 of 2 of the General settings tab.

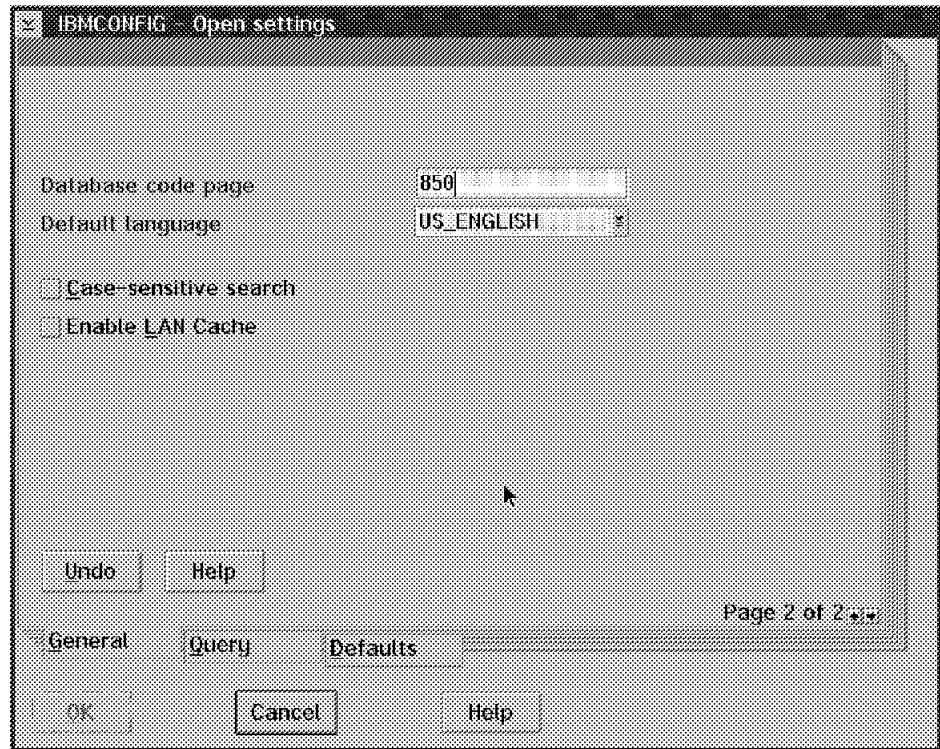


Figure 117. Library Server Configuration Settings

- Database code page: Specify the coded character set ID (CCSID) of the data stored in the library.
- Default language: Specify the language for the Library Server.
- Case-sensitive search: Specify how users can use the search criteria to retrieve documents. Although the Case-sensitive search is not the default, it can speed up the search performance greatly (up to 40 times faster) if used correctly.

If Case-sensitive search is NOT selected, then a TABLE scan is done when a user does a search on an alphanumeric field. This is because the database has to perform a TRANSLATE function to handle the search correctly. Turning on Case-sensitive search allows the database to use any INDEXES set up and it results in greatly improved response time.

Remember that when you use Case-sensitive searches to retrieve a document, you must specify the search criteria exactly as it was specified when the document was indexed for the first time, including upper and lower case.

- Enable LAN Cache: This is a new feature that allows users to cache an object from a remote object server on their local object server. Use LAN caching to improve performance time for frequently retrieved objects.

Here is the Query page of the library server configuration settings.

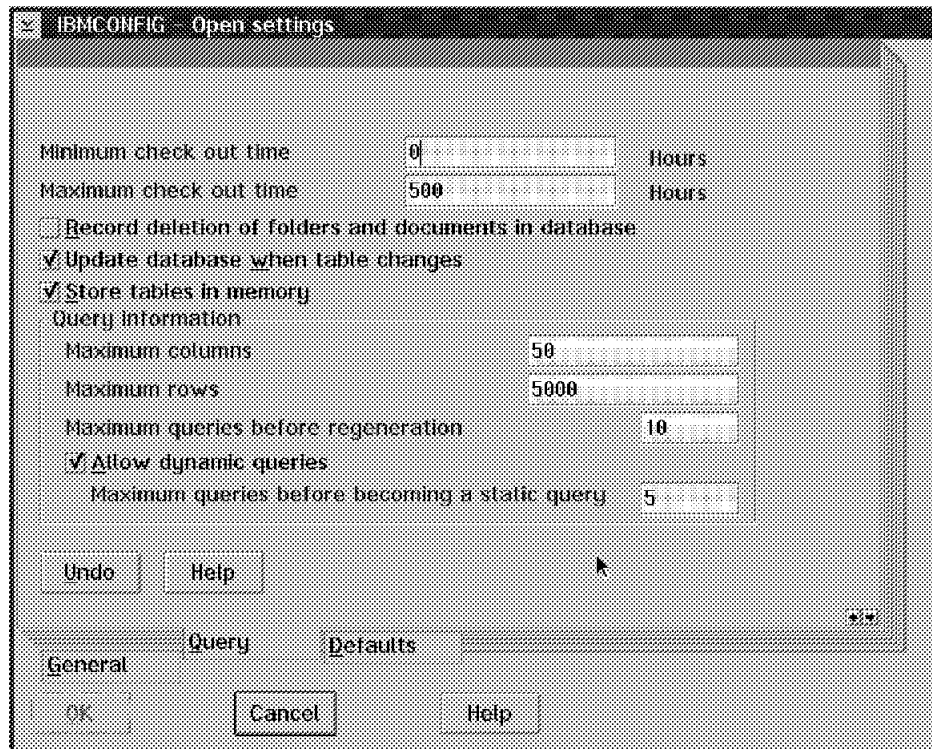


Figure 118. Library Server Configuration Settings

- Minimum check out time: Specify the minimum number of hours that a user can check out an item.
- Maximum check out time: Specify the maximum number of hours that a user can check out an item.
- Record deletion of folders and documents from the database: Specify whether you want the VisualInfo system to record when folders and documents are deleted from the database.
- Update database when table changes: Specify whether you want the VisualInfo system to update the database when any change or deletion are made in the database tables.
- Store tables in memory: Specify whether you want to store the database tables in memory. Using this parameter can improve system performance. Look at the PAGEBUFF parameter of DB2/2 to set up the amount of memory that is used to store tables.
- Query information: Specify the maximum number of columns and rows that VisualInfo returns for any static and dynamic queries.
- Maximum queries before regeneration: Specify the maximum number of times the Library Server must process a query for an index class subset before the server can regenerate a DLL. This field and the Maximum queries before becoming a static query field minimize the number of times the Library Server needs to regenerate a DLL. This saves system resources and can improve response time.
- Allow dynamic queries: Specify whether you want to allow users to perform dynamic queries. These use many system resources.

- Maximum queries before becoming static query: Specify the maximum number of times the Library Server must run a dynamic query before it can convert it to a static query.

Here is the Defaults page.

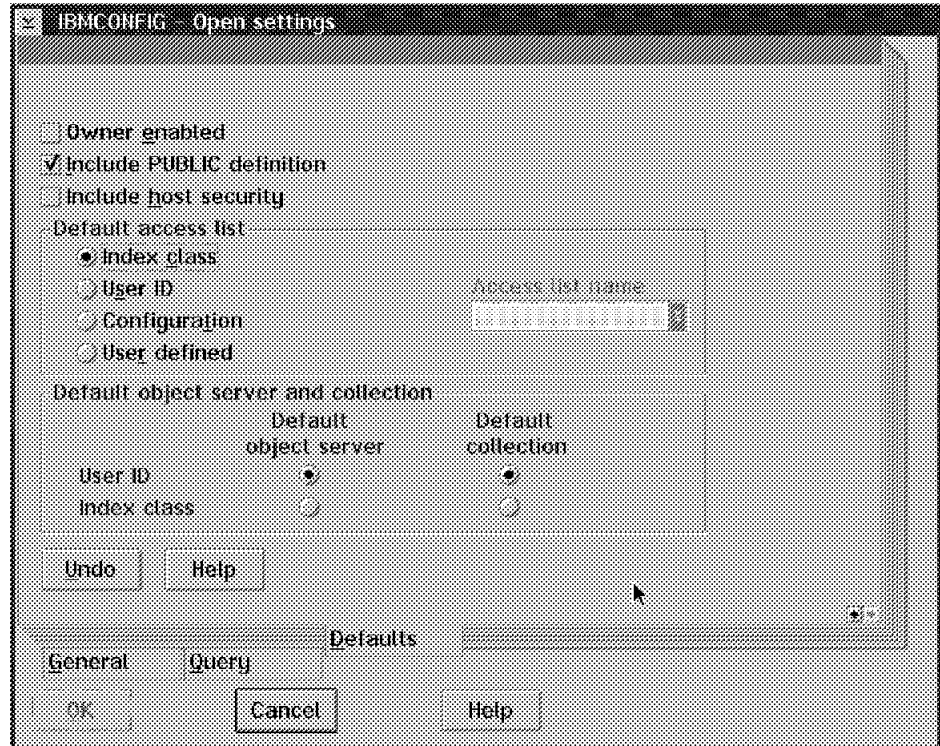


Figure 119. Library Server Configuration Settings

- Owner enabled: Specify whether the access control algorithm should process access lists to determine if users can perform an action.
- Include PUBLIC definition: Specify whether you want to assign the PUBLIC privilege set for access control.
- Include host security: Specify whether you want the system to use the logon user exit (FRNMHBUP) on your MVS/ESA system. See A.2, “Host Security Exit” on page 203.
- Default access control list: Specify the default access list within the index class that the VisualInfo system uses for objects in the library.
  - Index class: Use the access list the index class is associated with
  - User ID: Use the access list the user ID is associated with.
  - Configuration: Use the access list associated with the configuration for objects in the library.
  - Access list name (only if configuration is checked): Specify the access list that the VisualInfo system should use as the default.
  - User defined: Use the access list that the user specifies.
- Default Object Server: Specify which Object Server VisualInfo should use if it is not specified.
  - User ID: Use the Object Server defined for the user ID.

- Index class: Use the Object Server defined for the index class.
- Default Collection: Specify which Collection VisualInfo should use if it is not specified.
  - User ID: Use the Collection defined for the user ID.
  - Index class: Use the Collection defined for the index class.

After you create a new configuration for the Library Server for OS/2, you may want this configuration to take effect. For this, do the following:

1. Shut down the Library Server.
2. Open the Library Server Settings notebook and change the parameter of the setting to the new configuration file.
3. Restart the Library Server.



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## Part 2. Managing Your System

This part contains information about managing your system. It is for both new and experienced users and includes many hints and tips from actual client installations.

You may want to look through this part even before you install your system because it contains information that is good to know in advance.

It includes the following chapters:

- Chapter 4, "Installation Practices"
- Chapter 5, "Administration Practices"
- Chapter 6, "Migration"

and an appendix:

- Appendix A, "MVS/ESA Environment"



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## Chapter 4. Installation Practices

In Chapter 2, “Installing the System” on page 33, we gave you step-by-step installation procedures. In this chapter we use real world experiences to help you prevent problems or solve them quickly.

We recommend that you manage this installation just like any other project. For tips on project management methodology, see Appendix B, “A Project Management Methodology” on page 205.

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### 4.1 Recommended Environments

In this section, we see four scenarios of a VisuallInfo system. We have two LAN-based scenarios, one mixed scenario, and one host-based scenario.

These scenarios are just examples that we are providing. Since VisuallInfo is an open, scalable solution, you can start with a small environment and later migrate to a larger one (vertical growth). You can also add more users and more object servers as your data volume grows (horizontal growth).

#### 4.1.1 LAN Based System - Scenario 1

The first scenario shows a VisuallInfo system consisting of a LAN-based Library Server and a LAN-based Object Server coexisting in the same machine. It is a system designed to support desktop-based technology with a few users, yet accommodating changes and growth.

Figure 120 on page 142 shows two client workstations, one server workstation with both a Library and Object server on it, and an Optical storage device. Although you can put the Configuration Server on the same machine as the Library and Object servers, it is recommended that you put it on a separate machine for better performance and availability. Have a backup machine available, ready to plug in, if possible.

## Visualinfo - Recommended Environments Scenario 1 - Lan Based Solution

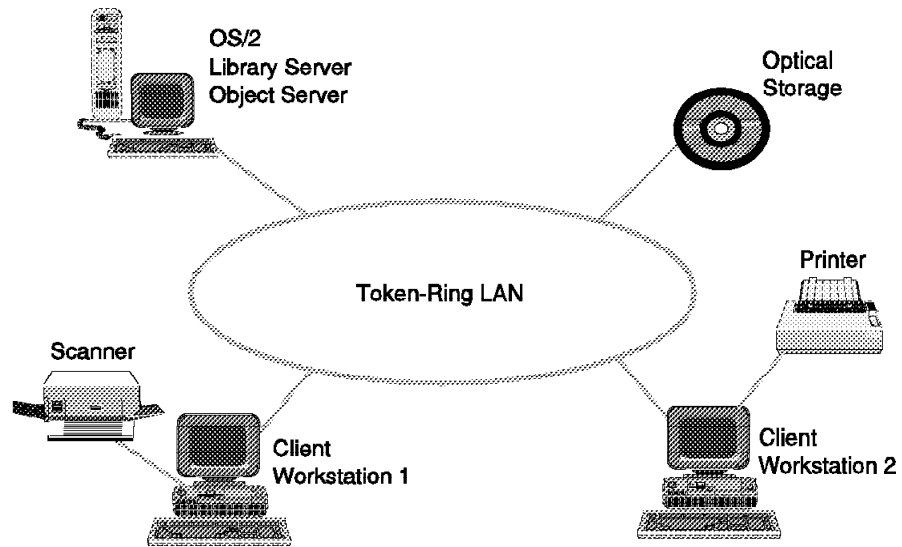


Figure 120. Scenario 1

Since the System Administration function can run on any OS/2 workstation, you can install it on one of the clients (OS/2 only) or on the server workstation. Remember that the Network Table of the workstation containing SysAdmin must contain a client definition (in addition to any other definitions).

### 4.1.2 LAN Based System - Scenario 2

The second scenario shows a VisualInfo system with a LAN-based Library Server and a LAN-based Object Server separated on two different machines. It is a system designed to support many users (depending on each user's workload). You can increase its capacity just by adding more local Object Servers as your data volume and distribution grows.

Figure 121 on page 143 shows two client workstations, one server workstation with a Library Server, one server workstation with an Object Server, and an Optical storage device. If you can, put the Configuration Server on a separate machine for a better performance.

The SysAdmin function can be installed on any OS/2 workstation that contains the client component in the Network Table.

## Visualinfo - Recommended Environments Scenario 2 - Lan Based Solution

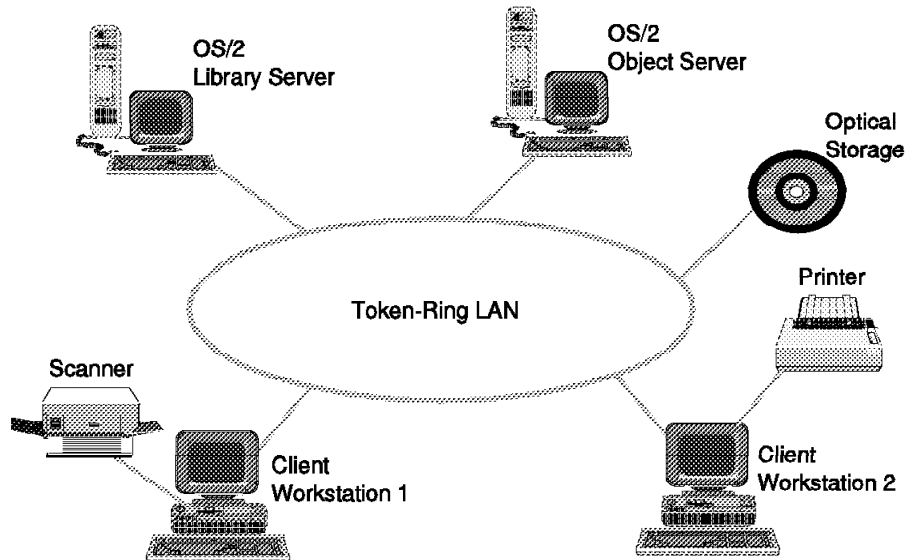


Figure 121. Scenario 2

### 4.1.3 Mixed System - Scenario 3

The third scenario shows VisualInfo system consisting of a LAN-based Library Server, a LAN-based Object Server (with LAN Cache), and a host-based Object Server.

In this configuration, all requests are routed to the LAN-based Library Server and from there to the Object Server where the document (object) is stored. Using LAN Cache, you can have better retrieval performance for documents that reside in the host but are frequently accessed by the client workstations.

Figure 122 on page 144 shows two client workstations, one LAN-based Library Server, one LAN-based Object Server (with LAN Cache), a host-based Object Server, and a host-based Optical storage device.

For better performance and availability, you may want to put the Configuration Server on a separate machine.

The SysAdmin function can be installed on any OS/2 workstation that contains the client component in the Network Table.

## VisualInfo - Recommended Environments Scenario 3 - Host Based System

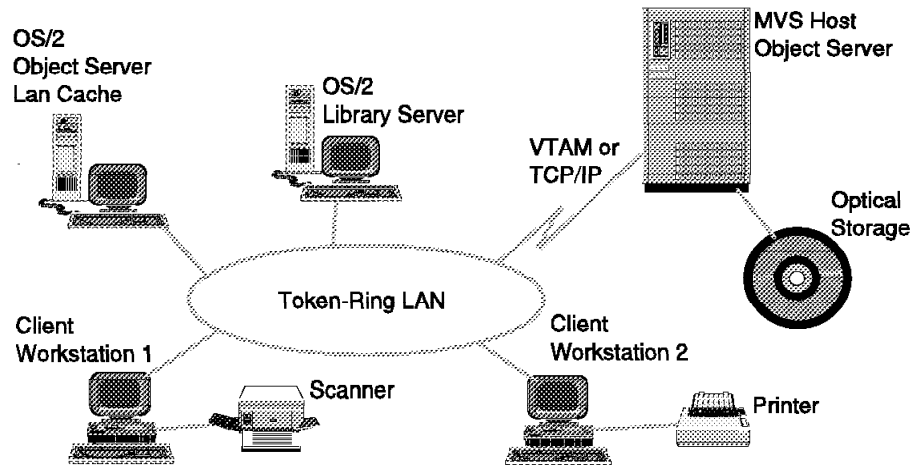


Figure 122. Scenario 3

### 4.1.4 Host-Based System - Scenario 4

The fourth scenario shows a VisualInfo system consisting of a host-based Library Server, a host-based Object Server, and a LAN-based Object Server (with LAN cache).

In this configuration, all requests are routed to the host-based Library Server and then to the Object Server where the document (object) is stored. Using LAN Cache, you can have better retrieval performance for those documents that reside on the host but are frequently accessed by the client workstations.

Figure 123 on page 145 shows two client workstations, one host-based Library Server, one host-based Object Server, a LAN-based Object Server (with LAN Cache) and a host-based Optical storage system.

In this scenario, it is strongly recommended that you have your Configuration Server on a separate machine.

As in the other scenarios, the SysAdmin function can be installed on any OS/2 workstation that contains the client component in the Network Table. This includes any server or client workstation.

## Visualinfo - Recommended Environments Scenario 4 - Host Based System

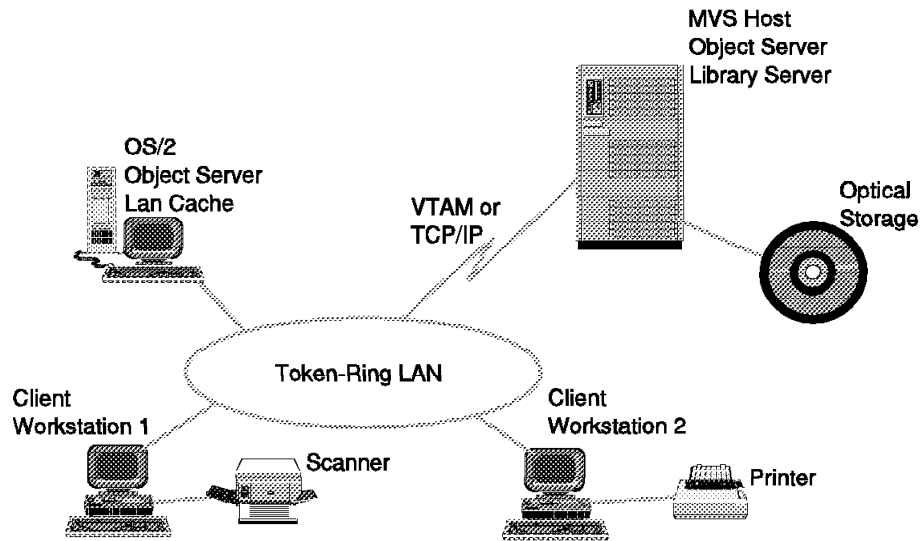


Figure 123. Scenario 4

### 4.1.5 Rollout Tip

For a way to copy your production code to multiple workstations on your network, see section 5.7.1, "Client Workstation Replication" on page 177.

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## 4.2 Windows Client Tips

The VisualInfo Client for Windows, like the OS/2 client, provides an interface that lets you bring documents onto the system, view and work with the documents, and store and retrieve them.

With the Client for Windows, the basic flow of documents and information is fairly simple. To store a document onto the system, you import it from a directory or capture it by scanning its pages. You then index the document with information that helps you identify it and retrieve it later. From that point, you can electronically route the document to other users who might do the following:

- Organize documents into electronic folders.
- Retrieve a group of related documents and folders.
- Start a document or folder in a workflow.
- Route a document to other users for additional processing.
- Add notes to a document.
- Print a document.

The VisualInfo system provides many opportunities to customize an environment to your customer's needs. The exact process depends on how the customer has chosen to implement and configure the system.

## 4.2.1 Client for Windows Concepts

The Client for Windows (like OS/2) uses the following VisualInfo elements:

- Documents
- Folders
- Fileroom
- Tables of Contents
- Workbaskets
- Workflows

**Documents** are items that can be stored, retrieved, and exchanged as a single unit among systems and users. A single document can contain many different types of base parts, including text, images, and objects (such as a spreadsheet file).

**Folders** are a way to group related documents and other folders together. Grouping items in folders makes them easier to retrieve. In addition, the Client for Windows uses a folder to display search results after you search the fileroom. Your system administrator can define other ways to use folders in your system.

**Fileroom** is the logical location where documents and folders are stored. Physically, the tables in the library server store information for the user about the objects, while the tables and data storage directories on the object server (or servers) store the actual objects. The fileroom can be accessed with different levels of access authority from the various workstations on which the Windows Client is running.

**Table of Contents** enables you to access documents and folders for processing. They are windows that list the contents of a workbasket or folder, or the results of a search.

**Workbasket** is a temporary holding place for documents and folders that are either in process or waiting to be processed. A user-selected workbasket enables you to select documents and folders from a Table of Contents. A system-assigned workbasket does not have a Table of Contents. It displays items for processing one at a time, based on their assigned priority.

**Workflow** is a predefined sequence of workbaskets through which a document or folder travels while it is being processed.

## 4.2.2 Hardware and Software Requirements for Windows

The following tables show the minimum hardware and software requirements for installing and running VisualInfo components on Windows. This is the same information shown in section 1.3, "Review System Requirements" on page 15.

Component	Processor	Memory	Storage	Display	Others
Client	80486	16MB	32MB	VGA	Network adapter, CD-ROM, Mouse
Development	80486	16MB	40MB	VGA	Network adapter, CD-ROM, Mouse

For Windows 95 and NT, we recommend that the machines have 24MB of RAM.



<i>Table 33. Required Software for Windows Clients</i>			
<b>Software</b>	<b>Windows 3.1</b>	<b>Windows 95</b>	<b>Windows NT</b>
TCP/IP support	<ul style="list-style-type: none"> <li>• IBM TCP/IP V2.1 or</li> <li>• MS TCP/IP V3.1 or</li> <li>• Attachment V3.3 or</li> <li>• Novell LanWorkGroup V5.0 *</li> <li>• Novell LanWorkPlace V5.0 *</li> </ul>	Bundled with the system	Bundled with the system
Win32s Support	Win32s V1.3	Not required	Not required
<p><b>Note:</b> * If you are using Novell TCP/IP, note that Novell's server product is LAN WorkGroup 5.0, while Novell's client product is LAN WorkPlace 5.0. This distinction is not made in the VisualInfo documentation; however, you should be sure to install the correct product on your server and clients.</p>			

If you are using IBM DOS TCP/IP, you should apply the latest CSD. At the time this redbook was written, the latest CSD is 2.1.1.4. Windows 3.1x requires that Microsoft Win32s Version 1.3 (or later) extensions are installed on your workstation in order to install and run VisualInfo Client for Windows.

These extensions are included on the VisualInfo CD-ROM and when you start the VisualInfo Windows Client installation program, it checks to see if your workstation has the Win32s 1.3 extension installed. If it does not, the installation program prompts you to install it.

After installing the Win32s code, you have to re-boot the workstation to allow it to take advantage of the Win32s extensions.

VisualInfo updates in the form of fixpaks (replacement files) or corrective service diskettes (disk images) are available from the IBM Personal Systems Support Family (PSSF) FTP site.

**Important**

You should apply the latest updates from this FTP site immediately after VisualInfo is installed and before actually using the product.

The PSSF FTP site is ftp.software.ibm.com. You can FTP into this site using **ANONYMOUS** as your user ID and your e-mail ID as your password. Then change directories to the desired product subdirectory. VisualInfo OS/2 updates are located in this subdirectory: PS/PRODUCTS/IMAGEPLUS/FIXES/VIOS2

VisualInfo WINDOWS updates are located in this subdirectory:  
PS/PRODUCTS/IMAGEPLUS/FIXES/VIWIN subdirectory

There is a README.TXT file in each subdirectory with further information about the updates available for you to download.

For example, to download the file FIXPAK1.ZIP for VisuallInfo on Windows, at a DOS command prompt, enter the following:

```
c:\> ftp ftp.software.ibm.com
Name (ftp.software.ibm.com): anonymous
Password: <Internet email id>
ftp> cd /ps/products/imageplus/fixes/viwin
ftp> binary
ftp> get fixpak1.zip c:\fixpak1.zip
ftp> quit
c:\>
```

---

## 4.3 Windows Client Restrictions

The README.WIN file on the VisuallInfo CD lists some restrictions for the Windows client (versus the OS/2 client). Refer to that file for the latest list and for more details. Here are some in effect at print time:

- You may experience client operating system differences on non-image pages. For example, annotations may appear in different logical positions from one platform to another.
- Form overlays are not supported.
- IOCA is not supported.
- Documents have page count limits. For example, 50-page MODCA2P black and white documents were successfully scanned and displayed at 100 dpi. 100-page TIFF6 black and white documents were successfully scanned and displayed at 100 dpi. Other content classes have limits, but we did not specifically test for their limits.
- DOC TOC privileges are required to view documents.
- Sticky note edit function works differently. Also, once created, you cannot edit the text again.
- Closing documents cannot be done directly from the Viewer Window.

### 4.3.1 Disk Space for Windows Client

In the VisuallInfo Windows client, you cannot use Workstation Local Cache to retrieve documents, but you should reserve local disk space for all Windows workstations that work as Scanning clients. This local disk space is necessary, because all of the documents or images that are scanned in a VisuallInfo Windows client are temporarily stored in local fixed disk until the SAVE option is performed.

When the SAVE option is done by the user, the document or image goes to the Staging area on the Object Server that the user points to. These temporary files are erased from the workstation's fixed disk as soon as they are successfully stored on the Object Server.

### 4.3.2 Scanning in Windows

We recommend that you scan at a 200 dpi resolution or lower (for scanning and storing documents). This provides better performance and may prevent an out-of-memory condition that can result if scanning is performed at higher resolutions.

If you are scanning large documents (greater than 50 pages), we recommend using either TIFF6 or MODCA2P data formats.

- In Windows 3.1 environment, the following data formats are supported:
  - DCX (Black and White)
  - GIF (Black and White, 16 and 256 grayscale, 24 bit color)
  - JPEG (16 and 256 grayscale, 24 bit color)
  - MODCA2P (Black and White, 16 and 256 grayscale, 24 bit color)
  - PCX (Black and White, 16 and 256 grayscale, 24 bit color)
  - TIFF6 (Black and White)
- In Windows NT environment, the following data formats are supported:
  - DCX (Black and White)
  - JPEG (16 and 256 grayscale, 24 bit color)
  - MODCA2P (Black and White, 16 and 256 grayscale, 24 bit color)
  - PCX (Black and White, 16 and 256 grayscale, 24 bit color)
  - TIFF6 (Black and White)
- In Windows 95 environment, the following data formats are supported:
  - DCX (Black and White)
  - GIF (Black and White, 16 and 256 grayscale, 24 bit color)
  - JPEG (16 and 256 grayscale, 24 bit color)
  - MODCA2P (Black and White, 16 and 256 grayscale, 24 bit color)
  - PCX (Black and White, 16 and 256 grayscale, 24 bit color)
  - TIFF6 (Black and White)

Before installing the VisualInfo Windows Client, do not forget to see the **README.WIN** file located on the FRNWIN directory on the VisualInfo CD-ROM.

### 4.3.3 Migrating Windows Components

The predecessor to the VisualInfo Windows client was VisualView. The following table contains the options that are available to you to migrate from earlier versions of VisualView Client Application 1.1 and the March 1995 VisualInfo Windows APIs.

<i>Table 34. Migrating To and From Windows Components</i>		
<b>If You Currently Have</b>	<b>and Want to Install</b>	<b>Choose</b>
VisualView 1.1	Windows Client Application	Standard Client
March 1995 VisualInfo Windows APIs	Library interfaces	Development Environment
March 1995 VisualInfo Windows APIs	Windows Client Application	Standard Client

You cannot add a VisualInfo Client for the Windows component after you have installed other VisualInfo Client for Windows components. You must delete your current component.

## 4.3.4 Techniques for Windows Components

Here are some additional tips and techniques that you may find useful in a Windows environment.

### 4.3.4.1 Problem Determination for Logon

If an error occurs at logon with VisualInfo Client for Windows, the log file, FRNWBERR.LOG, contains a sequence of return codes that can be used to identify and trouble-shoot problems. The FRNROOT\LOG sub-directory contains the log file. The log file contains a session's worth of logged errors.

It is an ASCII flat-text file that can be viewed using any ASCII editor. You can also type it out to your display to view it. FRNWBERR.LOG keeps one logon session sequence of errors. When a new session starts, the system renames the old FRNWBERR.LOG with the file extension .BAK and overwrites the old .BAK file if one exists.

The following table contains a subset of return codes that may be returned at logon when a problem is encountered. The table entries are specific to SimLibLogon.

<i>Table 35. SimLibLogon Problem Determination Return Code</i>		
<b>Major RC</b>	<b>Minor RC</b>	<b>Action</b>
RC=6288	ExtRC=9018	Verify that FRNOLINT.TBL exists and is in the FRNROOT path.
RC=6288	ExtRC=9005	<ul style="list-style-type: none"> <li>• Verify that the library server entry in FRNOLINT.TBL has the correct library server name, hostname, and port number.</li> <li>• Verify that FRNOLINT.TBL on the library server is set to LAN WIDE, not LOCAL ONLY.</li> <li>• Verify that the library server is "accepting requests".</li> <li>• Verify you can "ping" the library server.</li> </ul>
RC=6288	ExtRC=9007	<ul style="list-style-type: none"> <li>• This return code generally indicates a network table error (probably a typographical error).</li> <li>• Verify that the name of the library server is correct.</li> <li>• Verify that FILES= parameter in CONFIG.SYS is at least 60.</li> <li>• Verify that the port number is correct in your network table file and matches the port number in the library server network table file.</li> </ul>
RC=6288	ExtRC=9043	Verify that TCP/IP is running.
RC=6288	ExtRC=11004	Verify that \NET\TCP\HOSTS file contains an entry for the client itself.
RC=6351		You are running the 16-bit version of the Windows APIs. You need to use File/Run to start the DDE server manually. The program that you need to run is FRNWSRVR.EXE.
RC=8645		Verify that Microsoft Win32s V1.3 has been properly installed.

#### 4.3.4.2 Supporting Multiple Library Servers from a Windows Client

If you have both a production and test client system, you may want to have access to multiple library servers from the same Windows client.

If you are careful, it is possible to have multiple library servers accessed from a single Windows client by manually editing the Windows client Network Table file.

However, the Network Table Generation Utility only accepts one Library Server entry at a time. So you must never use the Network Table Generation Utility on the file that you edit after it is created; otherwise the new values are lost.

To create a file with multiple Library Servers, do the following:

1. Create a Network table for your Windows Workstation. See section 2.5.2, “Creating the Network Table (System Configuration Utility)” on page 67.
2. Copy the FRNOLINT.TBL file with a new name as a backup.
3. Edit the FRNOLINT.TBL file and copy all of the lines to the end of the file (duplicating all the items).
4. Find and change:
  - Library Server Database name
  - Port Number
  - TCP/IP hostname of the Library Server
5. Save the file.

#### 4.3.4.3 Using the IBM 2456 and Ricoh 410 Scanner under Windows

Here are three known problems to watch for if you have this hardware:

- If you are using either the IBM 2456 scanner or the Ricoh 410 scanner under Windows and you encounter problems, take a look at section 4.4, “Considerations about Peripherals” for additional information.
- If you have the WINASPI driver provided by ADAPTEC, it may crash when it tries to access virtual memory. Contact your IBM Representative to get the latest Pixel’s drivers to solve this problem.
- When using the IBM 2456 scanner and ADAPTEC 1542C, you may have a communication problem. If you experience this problem, request the IBM 2456 firmware version 1R0G that works correctly with the 154xC and CF cards. This problem does not occur with the Ricoh 410.

---

## 4.4 Considerations about Peripherals

The set of peripherals that are currently supported by VisualInfo are listed in Table 36 on page 152.

**Note:** This table is included for planning purposes only and is subject to change. See the VisualInfo announcement letter for an official list of devices supported at general availability time.

Table 36 (Page 1 of 3). Peripherals Supported at General Availability

Peripheral	Supported Types
<b>Auxiliary Storage</b>	<ul style="list-style-type: none"> <li>• IBM 3995 Optical Disk Library, WORM (SBCS and DBCS), Single and Double density <b>1</b></li> <li>• IBM 3995 Optical Disk Library, read/write (SBCS and DBCS), Single and Double density <b>1</b></li> <li>• 3431 Stand-alone, Single and Double density, WORM and Read/Write</li> <li>• Sony Stand-alone optical disk drive</li> <li>• HP Optical Disk Library</li> <li>• KODAK 560/IP Automated Disk Library</li> </ul>
<b>Scanners, Client OS/2</b>	<ul style="list-style-type: none"> <li>• IBM 2455</li> <li>• IBM 2456 Model 001 (with a IBM 16/32 bit SCSI Adapter card)</li> <li>• Bell &amp; Howell</li> <li>• Polaroid CS-500 (with a IBM 16/32 bit SCSI Adapter card)</li> <li>• KODAK IMAGELINK Scanner 900</li> <li>• KODAK IMAGELINK Scanner 923 D</li> <li>• KODAK IMAGELINK Scanner 990 S,D</li> <li>• KODAK IMAGELINK Scanner 500</li> <li>• TDC High Speed Scanner <b>2</b></li> <li>• Ricoh IS 50</li> <li>• Ricoh IS 410</li> <li>• Ricoh IS 510</li> <li>• Ricoh IS 520</li> <li>• Fujitsu 3099G</li> <li>• Howtek ScanMaster 3 Color Scanner</li> <li>• Sharp JX-450 Color Scanner</li> </ul>

Table 36 (Page 2 of 3). Peripherals Supported at General Availability

Peripheral	Supported Types
<b>Scanners, Client for Windows</b>	<ul style="list-style-type: none"> <li>• Abaton 300s, GS, Color, Transcribe <b>2</b></li> <li>• Agfa Scanners with Adaptec <b>2</b></li> <li>• StudioScan and StudioScan II <b>2</b></li> <li>• Apple One Scanner</li> <li>• Apple MardiGras scanner</li> <li>• AVR (HP Emulation)</li> <li>• Bell &amp; Howell 500F, RSC (SCSI)</li> <li>• Canon IX-12, IX30F, IX4015, Microfilm reader, DR-001, DR-3020 and GP55F</li> <li>• Canofile 510/520 SCSI <b>2</b></li> <li>• Chinon DS-3000 <b>2</b></li> <li>• Complete PC Scanner <b>2</b></li> <li>• Datacopy 730 and 730GS with ASPI <b>2</b></li> <li>• Docht 3000/4000 Scanner <b>2</b></li> <li>• Envision ENV 6100, 8100, 24 Pro</li> <li>• Epson GT-4000, Epson GT-6500</li> <li>• Fujitsu SP10, SPJr, M3096Gm, M3097Gm, and M3192B (ScanPartner) - Windows NT</li> <li>• HP SCANJet - Windows NT</li> <li>• Howtek Personal Color Scanner</li> <li>• IBM PageScanner, Adapter 3119/A</li> <li>• JetFax4 <b>2</b></li> <li>• KOFAX Kipp 2.0</li> <li>• Microtek SM-II hr, SM-III Scanners and Microtek ScanMaker II</li> <li>• Nikon SCANTOUCH</li> <li>• Panasonic FX-RS 505, 506, 307 and SCSI</li> <li>• Pentax IQ Scan (HP Emulation)</li> <li>• Relisys series scanners <b>2</b></li> <li>• Ricoh 5330, FS-2, -X IS-50, IS-60, IS-420, IS-510, IS-410, IS-520 and RS2200-EF - Windows NT</li> <li>• Seaport Scanners <b>2</b></li> <li>• Sharp JX-300, JX-320, JX-325, JX-330, JX-450, JX-610 and EF3000S</li> <li>• TDC 2610 through SCSI <b>2</b></li> <li>• UMAX Scanners <b>2</b></li> <li>• Xerox X3002</li> <li>• Xionics supported scanners (Simplex only) <b>2</b></li> <li>• ZSOFT DEST PCScan Plus 1000, 2000 and 3000 <b>2</b></li> </ul>
<b>Graphic Displays, Client for OS/2</b>	<ul style="list-style-type: none"> <li>• Cornerstone displays</li> <li>• Dual CRT</li> <li>• OS/2 supported graphic displays</li> </ul>
<b>Graphic Displays, Client for Windows</b>	<ul style="list-style-type: none"> <li>• Windows Supported displays: VGA, SVGA</li> </ul>

Table 36 (Page 3 of 3). Peripherals Supported at General Availability

Peripheral	Supported Types
Printers, Client for OS/2	<ul style="list-style-type: none"> <li>• OS/2 Presentation Manager supported APA printers (SBCS and DBCS)</li> <li>• Canon LPB-8 Mark II, III, III+</li> <li>• Fujitsu M3743 and VM2200</li> <li>• IBM LaserPrinter 4019, 4029 and 4039</li> <li>• Lexmark 4079 Color printer</li> <li>• PCL5 compatible printers</li> <li>• HP Laserjet</li> <li>• Polaroid C1700 photo printer</li> <li>• 4033 support (LAN attached)</li> <li>• QMS 1060, 1660, QMS magicolor cx <b>2</b></li> <li>• TI 6000 <b>1</b></li> </ul>
Printers, Client for Windows	<ul style="list-style-type: none"> <li>• Windows supported APA printers</li> </ul>
Facsimile, Client for OS/2	<ul style="list-style-type: none"> <li>• IBM Personal System/2 FaxConcentrator</li> <li>• Adapter/A card</li> </ul>
LAN Support	<ul style="list-style-type: none"> <li>• IBM Token-Ring, Ethernet</li> </ul>
<p><b>Note:</b></p> <p><b>1</b> LAN redirector is required (for example, LAN Server).</p> <p><b>2</b> Support for certain devices from the following companies is provided by other vendors: Bell &amp; Howell, Canon, Dual CRT, Fujitsu, Kodak, Ricoh and TDC.</p>	

**Important:** If you are using an IBM 3995 Optical disk library, there are two connection options: a SCSI attachment to the object server and an attachment of the 3995 to the LAN. If you have the LAN attachment, you need to install the LAN requester in all of your LAN-attached Object Servers because they need to perform the LAN Server command "NET USE" to access and use the optical disks.

#### 4.4.1 Specifying SCSI Device Drivers in the CONFIG.SYS File

If you use a scanner or printer that connects to your computer using an IBM SCSI or other adapter, you must specify the device driver in the CONFIG.SYS file. For the SCSI adapter, verify that the CONFIG.SYS file contains the following statements:

- For the PS/2 SCSI adapter and built-in SCSI:
 

```
BASEDEV=IBM2SCSI.ADD
```
- For the IBM 16-bit Fast SCSI:
 

```
BASEDEV=FD16-700.ADD
```
- For any SCSI adapter:
 

```
BASEDEV=OS2SCSI.DMD
```

If the necessary statements are not present, add them to the CONFIG.SYS file.

After that, you need to add the appropriate statements for the scanner and printer device driver to the CONFIG.SYS file. The following drivers are in the



FRNROOT\DLL subdirectory (since you have installed the IBM Image Services component in the workstation):

SCANNER	DEVICE DRIVER
IBM 2455 Scanner (Ricoh IS50)	exy50.sys
IBM 2456 Image Scanner	exy24.sys
Bell & Howell 2135 (S)	exybh.sys
Bell & Howell 3338 (S)	exybh.sys
Bell & Howell 6338 (S)	exybh.sys
Polaroid Digital Scanner CS-500	exyps.sys
Polaroid Digital PhotoPrinter CI-700	exypp.sys
HP ScanJet II Series Scanner	fcabhp.sys

Use the following format to specify device drivers in CONFIG.SYS:

*DEVICE=installpath\driver.sys*

where *installpath* is the drive and path where you installed the Image services files (default is \FRNROOT\DLL) and *driver.sys* is the name of the driver (for example, DEVICE=C:\FRNROOT\DLL\EXY24.SYS).

After you change the CONFIG.SYS, do not forget to shut down and restart the machine to test the device.

#### 4.4.2 Tips Using Ricoh 410 and IBM 2456 Scanners

When using Ricoh 410 and IBM 2456 with Pixel Translations ISIS drivers, you should ensure that the correct SCSI cards and ASPI system driver are loaded.

The following chart lists the supported cards and their drivers:

Card	Bus	Driver
1520,1522	ISA	ASPI2DOS.SYS (version 3.1 or greater)
1540,1542	ISA	ASPI4DOS.SYS (version 3.1 or greater)
1640	MicroChannel	ASPI4DOS.SYS (version 3.1 or greater)
1740,1742	EISA	ASPIEDOS.SYS (version 3.1 or greater)
2740,2742	EISA	ASPI7DOS.SYS (version 3.1 or greater)

To determine if the APSI driver and card have detected the scanner, add the following option switch (/D) in CONFIG.SYS (DEVICE= line). It should look the same as:

DEVICE=ASPI\*DOS.SYS /D

This makes the ASPI driver display the SCSI devices found on its bus. If the scanner is not detected, then the scanner is not on, the cable is bad, or the SCSI card or ASPI driver is not configured correctly.

Another important requirement is the scanner's ROM version. The Pixel Translations ISIS scanner driver requires that a Ricoh scanner has ROM version 1R0F or greater and an IBM 2456 has ROM version 1R0E or greater. Using the /D option previously shown, you see the ROM version information listed at the end of the line that lists the scanners found.

The Ricoh 410 and IBM 2456 scanners are very particular about termination and impedance. They work best if they are not terminated. If your system has multiple SCSI items on the SCSI chain, the scanner should always be the LAST device in the chain.

---

## 4.5 Installation Tips

- If you are going to install a VisualInfo stand-alone standard server or the object server component in a workstation, be sure that this workstation has at least one HPFS partition before you begin the installation.
- This is for a previous version (1.1.2) of VisualInfo

If you use the SHOWCASE installation program, be sure to have at least a small partition formatted with FAT or HPFS (without 386HPFS). You need this to save the SHOWCASE "Keys". Otherwise, you receive an error when you try to begin the VisualInfo installation.

386HPFS is installed when you install LAN Server Advanced or Warp Server Advanced.

VisualInfo Version 2.1 and beyond no longer uses SHOWCASE.

- **Attention:** At the time that this redbook was written, fixpak 17 for OS/2 was having some compatibility problems that can crash the VisualInfo code. If you need to install it (e.g. for Windows fixes), you should call the Support Center and get the relevant APARs (e.g. fixpack C). You may also need the latest PMMERGE.DLL from OS/2 support in Austin to address problems with Presentation Manager. Fixpak 10 works fine with VisualInfo and you can install it without problems. Fixpaks higher than 17 will probably work fine also.
- When installing servers, if you do not have DB2/2 installed, the installation program ends after copying some files when it tries to install DB2/2 databases.
- If you do not have C++ correctly installed, the installation program continues anyway and finishes without any error messages. This occurs because the VisualInfo installation program does not use the C++ during the installation.

However, If you have not installed VisualAge C++ successfully, you cannot create INDEX CLASSES. When you create one and then try to see it, VisualInfo says that it has not yet finished creating the DLLs.

- If you have any failures on the preceding steps, check the FRNxxxx.LOG and FRNxxxx.OUT files located on the FRNROOT\LOG directory. If, in these files, you find an error that says some of the files are not found but your workstation does have these files, check the environmental variable SET LIBPATH in the CONFIG.SYS file. Probably you have more than one SET LIBPATH, but the installation program always takes the first one.
- If you did not create a "good" Network Table, (for example, you forgot to include one Object Server), you are not able to start the element that you forgot because it cannot communicate with the Communication Isolator.
- If you have clients that "cannot get access to the server", always try to ping with the hostname of the server (from the client) and vice versa. This ensures that you have your TCP/IP configuration working and there is no communication problem.

- If you have to delete, reinstall, or restore the VisuallInfo product, you must first stop FFST (First Failure Support Technology). If you do not deactivate FFST, you receive a message saying that the VisuallInfo message files FIWSMSG.MSG and FRNOUTMS.MSG are in use.

To deactivate FFST, open the FFST folder and double-click the **STOP FFST/2** icon. To release the FRNOUTMS.MSG file, you may also need to close the Message Log Formatter and other FFST log windows.

In addition, if you try to restore a backup version of the VisuallInfo product without deactivating FFST, you receive the following message:

*EPFIE142: An error occurred while copying installation files.*

This message indicates that the FRNOUTMS.MSG file is in use. Deactivate FFST and try again to restore the backup.

- If you try to log on and you do not see the name of the Library Server in the logon box, you are not able to log onto the VisuallInfo Library Server. You must review the nodes that you have created in your System Configuration Utility and ensure that they contain the correct HostNames of the workstations. If you find an error, correct the information, and then generate a new Network Table.
- After this regeneration, do not forget to refresh your Configuration Server.

---

## 4.6 Deletion Procedures

We highly recommend that you use the installation program to delete your VisuallInfo system. There are options to delete the servers, the OS/2 client and the Windows client. If this automatic deletion is unsuccessful, then as a last resort you have a manual deletion procedure available (described in Figure 124 on page 158).

- Use the installation program from the CD.
- Type install.
- When the catalog appears, from the pull-down menu, select VIEW and then INSTALLED PRODUCTS.
- Select the component; then from the pull-down menu, select ACTION and then DELETE.

If you have tried the preceding process and it failed, you need to MANUALLY delete VisuallInfo. To do this, follow these instructions (given for an OS/2-based client):

1. Go to the \OS2\SYSTEM directory.
2. Delete the files: FRNOINCK.DAT and EPFICAT.PKG.
3. Edit the EPFIHCNF.CNF file and remove any mention of VisualInfo.
4. Remove the VisualInfo folder from the desktop by shredding it.  
**Attention:** If you are migrating from VisualInfo V1.x to VisualInfo V2.x, the following instructions delete your version 1.x databases. To keep your databases so that you can migrate them, skip to Step 8.
5. Delete all of the FRNROOT or FRNV1R0 directories (depending on the version that you have installed) and its subdirectories.
6. Delete all program files (FRN\*.DLL) from the OS2\DLL directory.
7. If you have an object server on this machine, remove the Staging directory and the LBOSDATA directory (and all subdirectories under it). To do this, you have to use the "ATTRIB -R \*.\*" command before you do the DELETE command.
8. Update the CONFIG.SYS, removing all references to the FRNV1R0 or FRNROOT directories.  
If you are not migrating your databases, remove all FRN\* environmental variables (for example, SET FRNDISP, FRNROOT).
9. Re-boot the system to reflect the CONFIG.SYS changes.

*Figure 124. Manual Deletion Procedure for VisualInfo*

**Note:** If you are migrating from version to version, SKIP the following steps.

If you are deleting a workstation that has an Object Server or the Library Server component (or both) and you want also to delete the databases (do not do this if you want to save the database information), you must delete the DB2/2 tables. From the DBM command line (found in the Database 2 folder), type these commands.

- Execute DROP DATABASE LIBSRVR2
- Execute DROP DATABASE OBJSRVR2

---

## Chapter 5. Administration Practices

After a VisualInfo system is installed, it is very important to manage it well in order to maximize performance and prevent problems. Adequate training for the administrator(s) and end users is a key task, to enable them to perform their duties, including tuning, capacity planning, and backup and recovery.

Most crises are not caused by hardware or software problems, but are the result of not administering the system correctly. The right skills must be available and the proper procedures in place. For those (hopefully few) times when a problem occurs, a good backup and recovery scheme will be highly appreciated. This chapter is the most important one in the book for ensuring a well-run system.

---

### 5.1 Skills and Roles

An administrator of a client/server system such as VisualInfo handles many tasks. The administrator plays a very important role, ensuring that the system continues to function and that problems are handled quickly and effectively.

#### 5.1.1 Administrator Role

This role can include the following, plus more:

- Set up the VisualInfo environment.
- Create/manage all the SMS definitions.
- Create/manage users, privileges, and security.
- Manage the Staging Area (PURGE, DESTAGE, and MIGRATE functions).
- Schedule frequent backups (at least once a week).
- Monitor performance.
- Re-boot the servers in OS/2 (cycling)
- Solve problems (Help Desk function).
- Apply corrections/fixpaks.
- Understand user role and needs.

We want to emphasize the importance of having a skilled database administrator involved in the planning and daily running of your VisualInfo system. They can avoid problems or solve them quickly. Show them the formats of the VisualInfo tables, as described in the IBM VisualInfo Application Programming Reference, and turn over the "care and feeding" of these tables to them.

#### 5.1.2 Administrator Skills

To handle this role, the administrator needs to acquire several skills:

- OS/2 and Windows platforms
- VisualInfo (operation and administration)
- DB2/2 (operation and administration) -- database management
- LAN concepts -- network management

- Hardware (adapter cards, scanners, printers, monitors) -- configuration management
- TCP/IP, CM/2
- VisualAge C++ (for development environment)
- Problem determination

### 5.1.3 Systems Management

The administrator must have a schedule for each night, planning what needs to be done. Here are some tasks that might be done regularly:

- Backup
- Database reorganizing
- Migration
- Destaging
- Purging
- Deleting expired files (manually or programatically)
- Deleting entries in Events table (manually or programatically)
- Code maintenance
- Run tools to check system (SystemView, SPM/2, etc.)
- Cycling (rebooting) the OS/2 machines -- this should be done nightly or at least weekly, before the system begins to slow down

Here are some tasks that might be done regularly:

- Setting up a help desk
- Training users

An example of why the nightly tasks must be scheduled and organized is: If your nightly backup did not work, you want to skip the database reorganization step, since you do not have a reliable backup from which to recover.

### 5.1.4 User Role

The end user needs to know how to use all of the VisualInfo features required for the job such as scan, display, import, and index. They need to know how to work with the operating system and with the VisualInfo client application. They also need to know how to operate any peripheral hardware on the workstation such as scanners and printers.

### 5.1.5 User Skills

- Basic functions of OS/2 or Windows
- Operation of VisualInfo applications
- Peripheral hardware

## 5.1.6 Problem Management Overview

Since problems (hardware and software) can occur with any system, you should designate a person or people to manage the problems. Decide who is responsible for:

- Opening and logging the problem.
- Fixing the problem.
- Escalating to next level of support.
- Tracking the progress.
- Applying and testing the fix.
- Closing the problem.

---

## 5.2 DB2/2 Tips and Tuning for Library/Object Server

This section provides important information about DB2/2 that can help you to customize the VisuallInfo system for better performance and also to make the administration role easier.

### 5.2.1 Reorganizing the Server Databases

Each time that a user inputs a document or a folder and VisuallInfo saves this object, much information is generated in the Library Server and Object Server databases.

Each document or folder in your system has:

- One row in the SBTITEMS table.
- One row in the SBTPARTS table for every part.
- One row in the SBTLINKS table for every folder it is in.
- One row in the SBTWIPITEMS table if item is in a workbasket
- One row in the AVT table of its index class.
- One row in OS/2 Object Server BASE\_OBJECTS table for every part.

The database utilities found in the VisuallInfo Utilities folder can be run manually or scheduled to run at a preset time. They should not be run when active users are on the system as this results in longer response times.

If many documents are being added or removed from the system, run the database reorganization utility often to help improve response time. If 1000 or more documents are being added and removed daily, then the reorganization utility should be scheduled to run nightly. Otherwise, running these utilities weekly should be sufficient.

More information on setting up and using the database utilities is found in the *VisuallInfo System Administration Guide, SC31-7774*.

Try to keep the DB2/2 log files, the Library Server database, and the OS/2 SWAPPER.DAT on separate physical drives. Do the same for the Object Server workstation.

## 5.2.2 Adding Database Indexes

As with any database system, the addition of database indexes results in improved search response times. The VisuallInfo system provides a facility to add one or more database indexes to an index class. These do take some space in your database, but the lower search time is generally worth the trade-off.

More information on setting up database indexes is found in the *VisuallInfo System Administration Guide, SC31-7774*.

The following procedure is used to add a database index to an index class:

- Double-click on the **Fileroom** icon in the VisuallInfo System Administration window. The Fileroom window appears.
- Double-click on the **Index Classes** icon in the Fileroom window. The Index Classes window appears.
- Click on the icon of the existing index class that you want to create a database index for.
- Click on **Selected** in the menu bar and then click on **Create database index**. The Create Database Index window appears.
- Complete the following information:
  - Database index name
  - Assign key fields - select only one!
- Select the **Unique** checkbox if it is appropriate.
- Click on the **OK** push button to save the database index.

Repeat the preceding steps to create additional indexes on other commonly-used search fields.

It is better to create multiple indexes than to create a single index with multiple key fields.

## 5.2.3 Index Classes and Case-Sensitive Searching

When you create an index class, you specify which fields have a database index on them. Remember that many database index fields can speed up searches, but they also slow down the inserts and reorganizations of the database.

Try to create the DB2 database indexes with attributes that are constantly searched on, and add the uniqueness if appropriate.

Be careful with searches using the CASE-SENSITIVE attribute. In most cases, it can provide better performance since the search is done directly in the indexes that are created, but do not forget that your search data must be entered in the system following the same criteria.

VisuallInfo uses case-insensitive searches as default, but if you can have your data formatted correctly, it is better to use case-sensitive searches. If needed, a user exit can be coded to format the search keys into the correct case.



## 5.2.4 Tuning DB2/2 Parameters

During the VisualInfo installation process, databases for the Library and Object Servers are created using default parameters.

There are two DB2/2 parameters that are very important: BUFFPAGE and SORTHEAP.

The BUFFPAGE parameter allocates pages in RAM to store the DB2/2 tables. The recommended value is 250 (about 1MB of RAM), but if you have a lot of RAM memory available, you can increase this value to 4000. Each unit of BUFFPAGE is one 4KB page in memory.

The SORTHEAP parameter allocates space in RAM to the sort operations that the VisualInfo Library Server may ask DB2/2 to perform. The recommended value is 36 (about 144KB of RAM), but this value can vary depending on how much sort activity your VisualInfo has.

Changes to these database parameters helps to improve the response times when retrieving objects in VisualInfo. These changes are made using the **Configuration Tool** in the Database 2 for OS/2 folder.

The following are suggested parameter settings for a Library Server with 64MB of memory.

- Database Manager Settings:
  - SQLENSG = 8192
  - SHEAPTHRES = 700
  
- Database (LIBSRVR2) Settings:
  - BUFFPAGE = 1500
  - LOCKLIST = 150
  - MAXLOCKS = 30
  - APPLHEAPSZ = 10
  - DBHEAP = 20
  - SORTHEAP = 20
  - LOG files (should be on a separate drive from the database)

The following are suggested parameter settings for an Object Server with 32MB of memory.

- Database Manager Settings:
  - SQLENSG = 8192
  - SHEAPTHRES = 400
  
- Database (OBJSRVR2) Settings:
  - BUFFPAGE = 700
  - LOCKLIST = 150
  - MAXLOCKS = 30
  - APPLHEAPSZ = 5
  - DBHEAP = 10
  - SORTHEAP = 10
  - LOG files (should be on a separate drive from the database)

If the amount of memory installed in your machine does not match the preceding specifications, the parameters must be scaled down appropriately. For example, the setting for a 32MB Library Server is the same as for the 32MB Object Server.

If you must make choice between adding more memory or installing a faster hard drive, choose the faster drive. VisuallInfo does a lot of I/O processing.

The preceding settings are suggestions only. Consult with a DB2 specialist if you require additional information on the parameter settings.

### 5.2.5 Database Names

If you re-create the database of the Library or Object Server after the installation and change their names, pay attention to the icon settings of the Library and Object Server.

VisuallInfo system uses the names of the databases created during installation to establish the parameter settings for these icons. If you re-create a database and change its name, you have to change the program settings manually by opening the program icon in the folder and setting the new database name.

---

## 5.3 Monitoring Performance

Monitoring performance is not a easy task for a system administrator, but there are some steps that can help you to improve response time on a workstation.

First, the machine's hardware configuration must be compatible with the workload that is planned for it. See section 1.4.2, "Measurement Methodology" on page 25 for planning information.

The performance of each workstation is directly related to the amount of memory, disk, and CPU that is being used by VisuallInfo.

You can look at the usage of these components if you have a performance monitor, such SPM/2. When you monitor these three items, you have to set the memory use as high as possible and the disk usage as low as possible. This helps minimize paging activity; too much paging slows down your machine. Specific parameters to monitor include BUFFPOOL and page sizes.

If you have OS/2 WARP Server installed in your network, you can use the SystemView component to monitor these items for each OS/2 Library Server, Object Server, or client workstation in your VisuallInfo system.

---

## 5.4 Backup and Restore

This section contains information and helpful hints about backup, restore, recovery, and synchronization. Though seldom used, a complete backup/recovery scheme is critical to the success of a production imaging system. From worldwide experience, we can say: "Do not put an system into production before you have documented and tested a rigorous backup and recovery procedure."

### 5.4.1 Ask Yourself These Questions

Here are some important questions you should ask about your system:

**Question 1: What portions of my system should I back up?**

If a problem occurs, how quickly you can get back into production depends on how completely you backed up your system/data, how frequently you take backups, and how well the contents of each backed up component are

synchronized with each other. See section 5.4.2, “Physical Structure of a VisuallInfo System” on page 165 for a list of components which should be backed up.

**Question 2: How often should I back up each portion?**

In addition to a backup system, the frequency of taking backups is important. With a good backup/recovery scheme, how long would it take you to recover one day’s worth of transactions? If it would take all day, then you should backup your system nightly. If just an hour or two, then you could consider backing up on a weekly basis. You will want to save your source documents at least until the backup has taken place.

**Question 3: What type of backup should I use: full or incremental?**

Some backup utilities will allow you to back up only the changed portion of the component, called an “incremental” backup. It speeds up the process, allowing you to get back into production more quickly. If you can spare the time during recovery to apply a “full” backup plus all of the incremental backups to-date, this may be a good method to choose. On the other hand, if a component must be in synch with another component, you are better off taking full backups of both components at the same time. This leads right into question 4.

**Question 4: What components need to be synchronized with each other?**

For the system portion, the library server database must match the database of each object server. It is highly recommended that you have a regular time to take your system out of production to back up these databases together. Then, when restored, they will match. Also, each object server database needs to match what its staging area contains. One recommendation during your backup window is to run a utility which will destage the files, that is, migrate all files off the staging area and into their first storage group. Then run your backups and you won’t need to back up the staging area.

**Question 5: What other tools and techniques should I use, besides having a good backup/recovery plan?**

This depends on the operating system platform you have and the amount of recoverability that you require. You should consider DB2 transaction logging, weighing performance against recoverability. You might also consider disk mirroring, where you have an instant backup (with initial cost considerations).

## **5.4.2 Physical Structure of a VisuallInfo System**

Now let’s discuss what goes on at the file and sub-directory levels in VisuallInfo. This makes it easier to see how the backup and recovery functions work, which you can then apply to your own VisuallInfo system.

VisuallInfo consists of the following physical components:

- VisuallInfo program files:

These are all of the files and sub-directories within the sub-directory that you specified during installation. By default, this is FRNROOT.

- List Manager files:

You can think of the List Manager as a very simple database management system. A program that provides a service using the List Manager is called

a List Manager server. Examples of a List Manager server are a cache server and a configuration server.

A List Manager server has its own sub-directory, called LSTMGR\MASTER, under the main VisuallInfo directory, where its files and indexes are stored. For the cache server, the sub-directory is FRNCACHE. For the configuration server, the sub-directory is FRNOCSVR.

**Note:** You see a FRNOCSVR sub-directory only on the workstation containing the configuration server.

- Library Server database in DB2/2:

This is a relational database stored in DB2/2 containing all of the VisuallInfo system tables. Physically, this is all of the files and sub-directories inside one of the SQL0000X (where X is an integer) sub-directories in the drive you specified for the library server during installation.

- Object Server database in DB2/2:

This is a relational database stored in DB2/2 containing all of the VisuallInfo object tables. Physically, this is all of the files and sub-directories inside one of the SQL0000X (where X is a number) sub-directories in the drive you specified for the object server during installation.

- Staging area of each Object Server:

This is the sub-directory you specified for the staging area during installation. It must reside on a partition formatted with HPFS. By default, the sub-directory name is STAGING.

- Volume data:

Each volume defined in SMS has an LBOSDATA sub-directory created within it. These "volumes" could be hard disk logical volumes or optical disk volumes. This is where BLOBs (binary large objects) such as scanned-in documents are stored. The object server database contains pointers to these files.

### 5.4.3 Considerations about Backup and Restore

Because everyone has different hardware, media, and policies for backing up data, VisuallInfo provides a prototype of backup and restore procedures rather than providing a solution that may not fit customer needs. When you understand the physical components making up a VisuallInfo System, backing up (and restoring) VisuallInfo, although requiring manual or programming effort, should not be too difficult.

### 5.4.4 Backing Up VisuallInfo

A proper backup scheme and schedule is essential for any production imaging system. VisuallInfo provides a basic utility which you can customize for this purpose, or you can use another backup utility. This section discusses both methods.

### 5.4.4.1 FRNOUTBG Utility

FRNOUTBG is a basic utility that comes as part of VisualInfo. You use it to generate an OS/2 command file (FRNOUTBK.CMD) containing commands you can use to back up VisualInfo using standard OS/2 and DB2/2 facilities.

However, FRNOUTBK.CMD (the output command file) is not very useful as is, and you should not run it without taking a look and modifying its content first. Its intent is to provide you with a framework on which to build your own backup procedure. You will need a knowledge of REXX to do this.

The following is a sample FRNOUTBK.CMD file from VisualInfo:

```
/* Check for REXX interpreter: if not loaded, next line will execute.
@GOTO NOREXX
* * * * *
/* FRNOUTBK.CMD:
/* REXX program to backup system
/* * * * * *
'@ECHO OFF'
io=Lineout('FRNOUTBK.LOG', Substr(Date('0') Time('N'), 1, 18) 'Backup started.')
/* Backup base system: * * * * *
'ECHO READY TO BACKUP BASE PROGRAMS AND DATA'
'PAUSE'
'BACKUP.EXE D:\FRNROOT\*. * C: /S' 1
/* Backup database: * * * * *
'ECHO READY TO BACKUP DATABASE OBJSRVR2'
'PAUSE'
'CALL DBM BACKUP DATABASE OBJSRVR2 ALL TO C' 2
/* Backup database: * * * * *
'ECHO READY TO BACKUP DATABASE LIBSRVR2'
'PAUSE'
'CALL DBM BACKUP DATABASE LIBSRVR2 ALL TO C' 3
/* Backup objects for database OBJSRVR2: * * * * *
/* Backup staging area: * * * * *
'ECHO READY TO BACKUP STAGING AREA'
'PAUSE'
'XCOPY D:\STAGING\*. * C:\ /S /E /R' 4
/* Backup volume: * * * * *
'ECHO READY TO BACKUP VOLUME VIDISK'
'PAUSE'
'XCOPY D:\LBOSDATA\*. * C:\ /S /E /R' 5
/* Backup volume: * * * * *
'ECHO READY TO BACKUP VOLUME OS2'
'PAUSE'
'XCOPY C:\LBOSDATA\*. * C:\ /S /E /R' 6
/* Backup volume: * * * * *
'ECHO READY TO BACKUP VOLUME OPTLIB'
'PAUSE'
'XCOPY Q:\OPTLIB\LBOSDATA\*. * C:\ /S /E /R'
/* Backup volume: * * * * *
'ECHO READY TO BACKUP VOLUME FLOPPY'
'PAUSE'
'XCOPY A:\LBOSDATA\*. * C:\ /S /E /R'
/* * * * * *
io=Lineout('FRNOUTBK.LOG', Substr(Date('0') Time('N'), 1, 18) 'Backup completed.')
/* * * * * *
/* End of FRNOUTBK.CMD
/* The following code is executed if the REXX interpreter is not loaded.
/* * * * * *
```

```

:NOREXX
CLS
@ECHO
@ECHO The REXX Interpreter is required for this program.
@ECHO Please use Selective Install to add it to your system.
@REM * * * * *

```

**Note:** **1** BACKUP.EXE D:\FRNROOT\\*. \* C: /S.

This backs up the entire FRNROOT sub-directory from drive D to the BACKUP sub-directory in drive C, using the OS/2 BACKUP.EXE command. Two files are created, BACKUP.001 and CONTROL.001.

This step takes care of both the VisuallInfo program files and List Manager files since the LSTMGR sub-directory of List Manager is under FRNROOT.

**2** CALL DBM BACKUP DATABASE OBJSRVR2 ALL TO C

This uses the DB2/2 backup utility to back up the OBJSRVR2 database to drive C. As in the last step, this also uses the OS/2 backup utility. It stores everything in two files, BACKUP.001 and CONTROL.001, which are created under the BACKUP sub-directory.

**3** CALL DBM BACKUP DATABASE LIBSRVR2 ALL TO C

This is the same as the previous command, except that instead of the object server OBJSRVR2, it backs up the library server LIBSRVR2.

**4** XCOPY D:\STAGING\\*. \* C:\ /S /E /R

This uses the OS/2 XCOPY command to copy all of the files inside the STAGING sub-directory to the root of drive C. The /S parameter includes all sub-directories, the /E parameter includes even empty sub-directories, and the /R parameter maintains the attributes of all files (for example, a read-only file has a read-only copy of itself in drive C).

**5** XCOPY D:\LBOSDATA\\*. \* C:\ /S /E /R

This uses the OS/2 XCOPY command to copy all of the files inside the LBOSDATA sub-directory of a volume to the root of drive C. Each hard disk and floppy disk volume defined in VisuallInfo has a similar command generated for it.

**6** XCOPY Q:\OPTLIB\LBOSDATA\\*. \* C:\ /S /E /R

This uses the OS/2 XCOPY command to copy all of the files inside the LBOSDATA sub-directory of an optical volume with the volume name OPTLIB to the root of drive C. Each optical volume has a similar command generated for it.

If you run FRNOUTBK.CMD unmodified, you receive a C:\BACKUP sub-directory containing only the backup files for LIBSRVR2, the library server. This is because of the limitations of the OS/2 BACKUP.EXE command, which allows you to specify only the target backup drive, then creates the BACKUP sub-directory on that drive, and stores the backup files there. If the BACKUP sub-directory exists, it deletes everything in it first before doing the backup. This means that only the last backup made is there.



```

'ECHO READY TO BACKUP VOLUME OS2'
'PAUSE'
.* Next Line added ++++++ */
'MD C:\FRNOMSCL.BAK\OS2'
.* Next Line modified ++++++ */
'XCOPY C:\LBOSDATA\*. * C:\FRNOMSCL.BAK\OS2 /S /E /R'
/* Backup volume: * * * * * */
'ECHO READY TO BACKUP VOLUME OPTLIB'
'PAUSE'
.* Next Line added ++++++ */
'MD C:\FRNOMSCL.BAK\OPTLIB'
.* Next Line modified ++++++ */
'XCOPY Q:\OPTLIB\LBOSDATA\*. * C:\FRNOMSCL.BAK\OPTLIB /S /E /R'
/* Backup volume: * * * * * */
'ECHO READY TO BACKUP VOLUME FLOPPY'
'PAUSE'
.* Next Line added ++++++ */
'MD C:\FRNOMSCL.BAK\FLOPPY'
.* Next Line modified ++++++ */
'XCOPY A:\LBOSDATA\*. * C:\FRNOMSCL.BAK\FLOPPY /S /E /R'
/* * * * * * */
io=Lineout('FRNOUTBK.LOG', Substr(Date('0') Time('N'), 1, 18) 'Backup completed.')
/* * * * * * */
/* End of FRNOUTBK.CMD */
/* The following code is executed if the REXX interpreter is not loaded. */
/* * * * * * */
:NOREXX
CLS
@ECHO
@ECHO The REXX Interpreter is required for this program.
@ECHO Please use Selective Install to add it to your system.
@REM * * * * * */

```

#### 5.4.4.2 Using Your Own Backup Utility

As you can see from the previous section, there is nothing special about FRNOUTBK.CMD. In fact, it might be easier and faster to use your own backup utility (for example, Sytos, Fastback Plus, or PCTools) to do most of the job. Just remember that for VisuallInfo program files, List Manager files, staging area and volumes, you should copy or make a backup of the entire sub-directory contents, including empty files and empty sub-directories. File attributes (such as read-only) should also be maintained.

If you have OS/2 WARP Server installed in your VisuallInfo server machine, you can use the PSnS Safe n' Sound tool to backup your files.

You still have to use the DBM BACKUP DATABASE command to create backups of the DB2/2 library and object server databases.

#### 5.4.5 Restoring VisuallInfo

As with backing up, you have the option to customize the basic utility provided with VisuallInfo, or to use your own restore utility. This decision will of course be based on your backup method (see previous section).



### 5.4.5.1 FRNOUTRG Utility

FRNOUTRG is similar to FRNOUTBG in that it is also a basic utility that comes with VisualInfo. It generates a batch file containing commands to restore a VisualInfo from a backup, using available OS/2 and DB2/2 facilities. By default, the batch file name is FRNOUTRC.CMD.

The following is a sample from VisualInfo setup:

```
/* Check for REXX interpreter: if not loaded, next line will execute.
@GOTO NOREXX
* * * * *
/* FRNOUTRC.CMD:
/* REXX program to restore system
/* * * * * *
'ECHO OFF'
io=Lineout('FRNOUTRC.LOG', Substr(Date('0') Time('N'), 1, 18) 'Restore started.')
/* Restore base system: * * * * *
'ECHO READY TO RESTORE BASE PROGRAMS AND DATA'
'PAUSE'
'RESTORE.EXE C: D:\FRNROOT\*. * /S'
/* Restore database: * * * * *
'ECHO READY TO RESTORE DATABASE OBJSRVR2'
'PAUSE'
'CALL DBM RESTORE DATABASE OBJSRVR2 FROM C WITHOUT ROLLING FORWARD'
/* Restore database: * * * * *
'ECHO READY TO RESTORE DATABASE LIBSRVR2'
'PAUSE'
'CALL DBM RESTORE DATABASE LIBSRVR2 FROM C WITHOUT ROLLING FORWARD'
/* Restore objects for database OBJSRVR2: * * * * *
/* Restore staging area: * * * * *
'ECHO READY TO RESTORE STAGING AREA'
'PAUSE'
'XCOPY C:\*. * D:\STAGING\ /S /E /R'
/* Restore volume: * * * * *
'ECHO READY TO RESTORE VOLUME VIDISK'
'PAUSE'
'XCOPY C:\*. * D:\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * *
'ECHO READY TO RESTORE VOLUME OS2'
'PAUSE'
'XCOPY C:\*. * C:\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * *
'ECHO READY TO RESTORE VOLUME OPTLIB'
'PAUSE'
'XCOPY C:\*. * Q:\OPTLIB\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * *
'ECHO READY TO RESTORE VOLUME FLOPPY'
'PAUSE'
'XCOPY C:\*. * ?:\LBOSDATA\ /S /E /R'
/* * * * * *
io=Lineout('FRNOUTRC.LOG', Substr(Date('0') Time('N'), 1, 18) 'Restore completed.')
/* * * * * *
/* End of FRNOUTRC.CMD
/* The following code is executed if the REXX interpreter is not loaded.
/* * * * * *
:NOREXX
:iref refid=RX83802.
.* Index text: REXX
CLS
```

```

@ECHO
@ECHO The REXX Interpreter is required for this program.
@ECHO Please use Selective Install to add it to your system.
@REM * * * * *

```

Just as with FRNOUTBK.CMD, you should not run FRNOUTRC.CMD as is. The contents of FRNOUTRC.CMD largely depend on FRNOUTBK.CMD or the commands you used to back up VisualInfo.

The following is a modified version of FRNOUTRC.CMD, which matches the FRNOUTBK.CMD discussed previously:

```

/* Check for REXX interpreter: if not loaded, next line will execute.
@GOTO NOREXX
* * * * * */
/* FRNOUTRC.CMD: */
/* REXX program to restore system */
/* * * * * * */
'ECHO OFF'
io=Lineout('FRNOUTRC.LOG', Substr(Date('O') Time('N'), 1, 18) 'Restore started.')
/* Restore base system: * * * * * */
'ECHO READY TO RESTORE BASE PROGRAMS AND DATA'
'PAUSE'
/* Next line added ++++++ */
'REN C:\FRNROOT.BAK BACKUP'
'RESTORE.EXE C: D:\FRNROOT\*. * /S'
/* Next line added ++++++ */
'REN C:\BACKUP FRNROOT.BAK'
/* Restore database: * * * * * */
/* Next line added ++++++ */
'REN C:\OBJSRVR.BAK BACKUP'
'ECHO READY TO RESTORE DATABASE OBJSRVR2'
'PAUSE'
'CALL DBM RESTORE DATABASE OBJSRVR2 FROM C WITHOUT ROLLING FORWARD'
/* Next line added ++++++ */
'REN C:\BACKUP OBJSRVR.BAK'
/* Restore database: * * * * * */
/* Next line added ++++++ */
'REN C:\LIBSRVR.BAK BACKUP'
'ECHO READY TO RESTORE DATABASE LIBSRVR2'
'PAUSE'
'CALL DBM RESTORE DATABASE LIBSRVR2 FROM C WITHOUT ROLLING FORWARD'
/* Next line added ++++++ */
'REN C:\BACKUP LIBSRVR.BAK'
/* Restore objects for database OBJSRVR2: * * * * * */
/* Restore staging area: * * * * * */
'ECHO READY TO RESTORE STAGING AREA'
'PAUSE'
'XCOPY C:\FRNOMSCL.BAK\STAGING\*. * D:\STAGING\ /S /E /R'
/* Restore volume: * * * * * */
'ECHO READY TO RESTORE VOLUME VIDISK'
'PAUSE'
'XCOPY C:\FRNOMSCL.BAK\VIDISK\*. * D:\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * * */
'ECHO READY TO RESTORE VOLUME OS2'
'PAUSE'
'XCOPY C:\FRNOMSCL.BAK\OS2\*. * C:\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * * */
'ECHO READY TO RESTORE VOLUME OPTLIB'

```

```

' PAUSE'
' XCOPY C:\FRNOMSCL.BAK\OPTLIB\*.* Q:\OPTLIB\LBOSDATA\ /S /E /R'
/* Restore volume: * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
'ECHO READY TO RESTORE VOLUME FLOPPY'
' PAUSE'
' XCOPY C:\FRNOMSCL.BAK\FLOPPY\*.* A:\LBOSDATA\ /S /E /R'
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
io=Lineout('FRNOUTRC.LOG', Substr(Date('0') Time('N'), 1, 18) 'Restore completed.')
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/* End of FRNOUTRC.COMD */
/* The following code is executed if the REXX interpreter is not loaded. */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
:NOREXX
CLS
@ECHO
@ECHO The REXX Interpreter is required for this program.
@ECHO Please use Selective Install to add it to your system.
@REM * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */

```

### 5.4.5.2 Using Your Own Restore Utility

If you used your own utility to back up VisuallInfo, then you have to use the same utility to restore the files.

## 5.4.6 Tips and Recommendations on Backup/Restore

Here are some tips that you might find useful:

- Put your backup on a network drive:

Backing up to a network drive helps separate your production system on your local disk from the backup. Furthermore, on a good network, periodical backups are done. Thus your backup is backed up for extra security.

If you use FRNOUTBK and FRNOUTRC, then you have to put the backup in the ROOT of a network drive. You can do this by network commands such as MAP ROOT if you are using NetWare. For LAN Server, you need to create an alias. Ask your LAN administrator for help.

- Use FRNOUTBG/FRNOUTBK and FRNOUTRG/FRNOUTRC only as guides:

If you have a backup utility better than OS/2's, you should use that. OS/2's BACKUP.EXE restricts the choice of target drive, and does not do much compression. Take a look at the PSnS Safe n' Sound component of OS/2 WARP Server. It is a good tool, and it contains a disaster recovery feature that can be quite useful.

Just use FRNOUTBK and FRNOUTRC to find out what you need to back up (such as library and object server names, various volumes being used in your VisuallInfo setup, and so on). Then create your own backup procedures using commands or even menu interfaces of your backup utility.

Remember that the DB2/2 databases still need to use the DBM commands discussed previously to create the backup files first, unless you have a backup utility for DB2/2 databases as well. After the backup files are created, use your backup utility to back it up just as you do with an ordinary file.

- Restore only to the same VisuallInfo system:

When a database is created in DB2/2, it is given a sequential number. This number is n if the database being created is the nth database on that drive.

All of its files are then stored in SQL0000n. When you back up this database, the sub-directory information is also backed up. When you restore the database, you have to match both the database server name and its sequential number.

This makes restoring a backup to a different system difficult. The names are easily matched, but the sequential number is not.

Besides, the object server apparently checks for the serial number of your volumes. This means that even if you have a backup of all the files of all the volumes, the serial numbers surely do not match, and the object server does not come up. To avoid this, remember to update the object server table with the new volume serial number.

- If the Staging area is large, do not back it up. Before backup, run the DESTAGER function a few times. Or get a utility from the IMAGE tools disk that does the destage work before you perform the backup.

#### **5.4.6.1 Optical Drives**

If you have optical drives other than the IBM 3995, some of these utilities may not work properly. For the 3995, the optical drive looks the same as sub-directories in this root directory. Other optical drives may work in a different way.

To back up and restore data on a different optical drive, please use the software that comes with it.

---

## **5.5 Recovery**

Two VisuallInfo components, the object server and the list manager, may tend to need recovery more often than the others, because their information can more easily become corrupted by errors. Here are some tips for easy recovery.

### **5.5.1 Object Server Recovery**

Unlike the library server, the object server has to verify definitions, pointers, and so on every time it is brought up. If the object server is not properly shut down, then the next time it is started, it does not come up. When this happens, run the recovery utility FRNOLBRC. You can do this from the Object Server Recovery icon in VisuallInfo utilities or from the command line.

### **5.5.2 List Manager Recovery**

When a computer that has been working fine suddenly cannot be connected to VisuallInfo for no apparent reason, chances are that its List Manager files are corrupted.

You can usually correct this problem by running the List Manager Recovery utility, which is in the VisuallInfo Utility folder. If this does not work, you can go into the List Manager sub-directory, FRNROOT\LSTMGR\MASTER. In this sub-directory, you find FRNCACHE and others. Deleting everything in FRNCACHE should solve the problem. If not, restart the client or shut down and re-boot the workstation.

---

## 5.6 Synchronization

The FRNOLBRC utility also functions as a synchronization utility if you run it with the /S parameter. This utility synchronizes the LBOSDATA volumes with the Object Server database.

Unfortunately, there is no utility available to synchronize the library server with the object server. This can be a potential problem if you have not backed them up at the same point in time.

To get around this, you should always back up and restore your library server and its related object servers together. This can be a bit tedious if you have many object servers for one library server, but it is better to be safe than sorry.

---

## 5.7 Client Tips

This section contains miscellaneous tuning tips for different kinds of client applications.

- Scanning:
  - Unless needed, do not display the speedbar, property bar, or information line in the view window.
  - Do not overlap the View window and the Basic/Advance Scan windows.
  - Press the **Pause** button in the Basic or Advance Scan windows when you are not actively scanning.
  - Use the **Bypass Save Window** feature if possible.
- Workbaskets:
  - If the Workbasket contains many items, consider making it a system-assigned Workbasket (see section 3.6.1, “Creating Workbaskets” on page 129.)
  - Keep the item count interval for Workbaskets set high or turn it off entirely.
- Communications Isolator:

In the file FRNOLINT.TBL created when you generate the Network table for the workstation, set the SESSION\_TIMEOUT parameter to the value of “10000” (milliseconds) for high activity users and set it to “0” to all other users.

The SESSION\_TIMEOUT value is used to determine how long the conversation with the server remains open after the server responds to the client request. Set the SESSION\_TIMEOUT value using the system Performance Management function located in the System Configuration Utility folder.
- Searching criteria:
  - Structure searches to return only the items actually needed.
  - Structure your index classes with obvious key fields and set up database indexes for those fields.
  - Use case-sensitive searches where possible for better performance.
- Adding a page on an existing document:

These are the steps for adding a new page to an existing document:

- Scan in the new page (or pages) as a new document.
- When viewing the new page (you probably want to fit-to-window), use the select area function to select the entire page, then cut or copy.
- View the document you want to add the page to and use the paste function to place the new page into the document. The new page becomes the page after the page number you were looking at. For example, if viewing page 1, the new page becomes page 2.

You can also use this cut/paste method to modify the order of pages. The person performing this work must have update authority.

- OS/2 file system:

Another important tip: If you are not using the HPFS file system, then delete the reference from the CONFIG.SYS file. Even if you have set up your workstation to use the FAT file system, OS/2 loads the HPFS code in the first line of the CONFIG.SYS through the line command:

```
IFS=C:\OS2\HPFS.IFS /CACHE:2048 /CRECL:4 /AUTOCHECK :CD
```

The parameters of this command may vary from machine to machine, but if you are not using the HPFS file system, you can remove this line of the CONFIG.SYS and save about 0.5MB of RAM.

- CONFIG.SYS settings:

The following example contains recommended settings for certain statements in the CONFIG.SYS file. The parameters being changed are highlighted.

IFS Statement Cache Setting:

```
IFS=C:\OS2\HPFS.IFS /CACHE:768 /CRECL:4 /AUTOCHECK:CD
```

DISKCACHE Statement:

```
DISKCACHE=64,LW
```

BUFFERS Statement:

```
BUFFERS=100
```

MAXWAIT Statement:

```
MAXWAIT=1
```

PRIORITY\_DISK\_IO Statement:

```
PRIORITY_DISK_IO=YES *NO for servers
```

SWAPPATH Statement:

```
SWAPPATH=C:\OS2\SYSTEM 8192 16384
```

LIBPATH Statement:

Move the .; parameter to the beginning of the LIBPATH statement.

During workstation configuration of older model PS/2s, it was possible to select **Run Automatic Configuration** after making hardware changes. Running this also reset other parameters such as the network adapter cards. The Auto Config reverts some of the settings for the adapters back to the defaults.

If it is necessary to Run Automatic Configuration, check all of your adapter settings afterwards. For example, check the Token-Ring adapter speed to ensure that it matches the LAN speed.

### 5.7.1 Client Workstation Replication

The procedure below is designed to assist you with the task of installing and setting up multiple client workstations containing the identical system and application software. It supports a variety of network adapters for the duplication process. The system is copied in 32K blocks and transmits over 500MB in less than 30 minutes.

Using this procedure, you can quickly set up many identical client workstations.

This procedure uses some IBM internal use utilities originally designed for setting up a classroom of identical workstations. The PACKCPYL utility is used to duplicate workstations with identical hard drives and LANXCOPY is used for copying the **C** partition of workstations with different hard drive sizes.

**Note:** For a more complete discussion on ways to replicate and maintain software, see *VisualInfo Systems Management: CID Installation, GG24-4415*.

The procedure is as follows:

- Install all of the required software on one of the workstations. This is the **master** machine.
- Follow the instructions in the **READ.ME** file on the diskette to set up the diskette for the type of network adapter you are using.
- Boot each of the **target** machines (up to 20 at one time) with the diskette and then enter the appropriate PACKCPY or LANXCOPY command as described in the **READ.ME** file. If you are using a production network, enter a valid value for the **n** parameter to ensure there are no NetBIOS name conflicts. The same value is used on all workstations.
- After all of the **target** machines have been started, boot the **master** machine using the same diskette. Enter the appropriate PACKCPYL or LANXCOPY command as described in the **READ.ME** file for the master source machine.
- The replication process now starts and machines are duplicated starting with #1 until no other target machines are found.

Once the duplication process is completed, the machine automatically restarts. You can now make any workstation-specific changes required for specific products such as Communications Manager/2 or TCP/IP. For example, if you are using TCP/IP, you have to change the HOSTNAME parameter in the CONFIG.SYS, and also the IP Address (or Addresses) in the TCP/IP Configuration.

**Note:** At times, you may want to avoid the workstation automatically restarting. For example, with AS/400 Connectivity, once a connection is made, an entry is added to the connectivity table. This entry must be unique for each workstation. To avoid this problem, either modify the setup of the master workstation so AS/400 Connectivity is not started automatically or leave the replication diskette in the target workstation so when it re-boots it simply goes to a DOS prompt.

This enables you to make the required changes before the workstation is started for the first time.

## 5.7.2 OS/2 Workstation Local Cache

- Use the Workstation Local Cache feature in OS/2 clients that are going to view or display the same document multiple times.
- If you are using Workstation Local Cache, try to keep the documents (objects) and the SWAPPER.DAT in separate physical drives. To control the size of the Workstation Local Cache, you must use the FRNCACHE.CTL control file located on the FRNROOT\LSTMGR\CTL directory.

If you edit this file, you find the following parameters and default values:

- LOGGING: 0
- Maximum Consumable Disk Space: 10,000,000
- Storage Reclamation Termination Percentage: 80
- Alternate Path: <blank>

The first parameter defines what kind of log you have in the Workstation (0 - No logging, 1 - Trace Requests, 2 - Debug).

The second one defines the maximum disk space that VisuallInfo uses for the Workstation Local Cache. The default value is 10MB, but it can be increased up to 4GB.

When a new object needs to be placed in the cache, and its size makes the total cache larger than the maximum disk space, storage is reclaimed on a least-recently used algorithm until the value specified in the third parameter ("Storage Reclamation Termination Percentage") is achieved. The default value for this parameter is 80, but you can define any value between 1 and 99.

The last parameter specifies an alternate path for VisuallInfo to store the objects if the primary space is not available. You must specify in this parameter, the full path of the alternate directory that receives the objects.

---

## 5.8 CM/2 Tips

It is a common practice during most VisuallInfo installations using APPN and Communications Manager/2 to define the Library Server as the Network Node also. This practice adds extra overhead to an already busy server. The reason for this is that all communications between clients and VisuallInfo Servers goes through the Network Node Server. This means that instead of the Object Server returning an image directly to a client, the image is first sent to the Library Server (acting as the Network Node Server) who then forwards it on to the client.

There are several ways to avoid adding this additional overhead on to the Library Server. One way is to use a separate machine as the Network Node Server and let it handle all of the communications tasks. Another method is to define what is called a Connection Network.

A Connection Network is a virtual network that exists between several workstations where connections can be made directly between workstations instead of always through the network node.



Use the following instructions for defining a Connection Network in Communications Manager/2.

1. Open the **Communications Manager/2** folder.
2. Double-click on **Communications Manager Setup**.
3. Click on **Setup**.
4. Choose your VisualInfo configuration file from the Open Configuration window.
5. Choose **Token-ring or other LAN types** under Workstation Connection Type and **APPC APIs** under Feature or Application.
6. Click on **Configure...**
7. Choose **Advanced**.
8. Choose **DLC - Token-ring or other LAN types** in the Profile List window and then click on **Configure...**
9. The last field in the displayed window is the Connection Network name. The first parameter is your network name from the Local Node Characteristics window and the second is a unique name for your connection network such as VILAN. Enter values for these two fields.
10. Click on **OK**.
11. Exit from Communications Manager/2 Setup by clicking on the **Close** buttons.

Install the same connection network definitions on all of the VisualInfo servers and client workstations.

When Communications Manager/2 is restarted on all of the workstations, you now have a Connection Network in which the VisualInfo communication model works as described in the documentation.

---

## 5.9 Adding Object Servers

This topic explains how to manage a VisualInfo system with more than one Object Server.

When do you need to add another Object Server?

The first case is when you are out of space on the first server. Remember that the Object Server has databases, and also needs space for the staging area and the Local Cache.

For each document that you add to VisualInfo, you add six DB2/2 rows in the system. This new document is kept in the staging area at first, so if you have too many documents entering in your VisualInfo system in a short time, you have to plan for more destaging activity than in a normal system. See section 5.10, "Administering the Staging Area" on page 193 for additional information. In this case, it is good strategy to add an Object Server.

Another case for adding an Object Server is when your response time is bad. Adding a new Object Server can divide the workload among the Object Servers and improve the overall system performance.

If you migrate some documents to the new Object Server, both old and new servers have smaller DB2/2 tables, so it takes less time for the Object Servers to perform the necessary queries for the searches.

## 5.9.1 Adding a Local Object Server

When you add an Object Server (or any component) to your VisualInfo system, you need to change your network table, regenerate it, and refresh the Configuration Server to put the new network table in effect. Also, you have to add information to your TCP/IP configuration to get the communication links.

First, we are going to see how to modify your network table to let the VisualInfo system know of this new Object Server. Follow these steps:

1. Go to the system configuration utility:

Look inside the VisualInfo utilities folder.

2. Open your Configuration file:

From the pull-down menu of the System Configuration Utility, select File->Open and then select your configuration file.

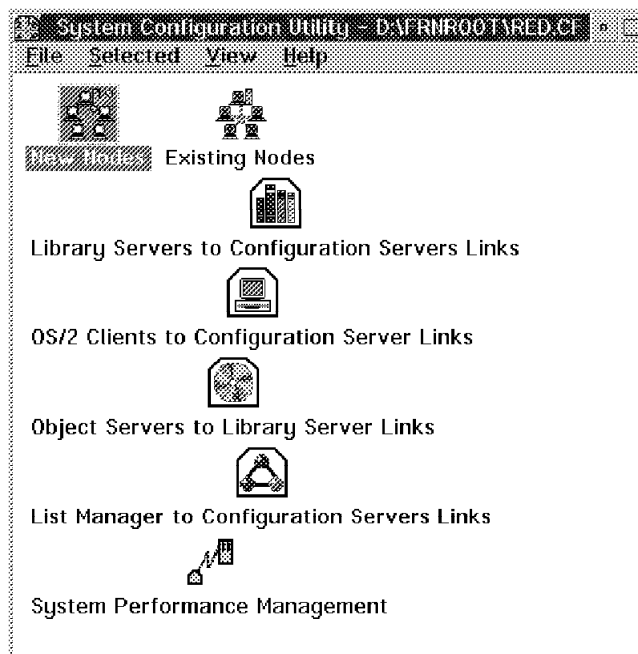


Figure 125. System Configuration Utility with Our RED.CFG Configuration File

This is the sample configuration we did in Chapter 2, "Installing the System" on page 33. It has three nodes:

- The first node contains the Library Server, the first Object Server, the Configuration Server, and a client (all on OS/2).
- The second node contains a client for OS/2.
- The third node contains a client for Windows.

Now we are going to add an Object Server to this system. Double-click on the New Nodes icon and enter the required information:

- Nickname: Can be equal to the hostname of the new node.
- Components: Here we are adding an Object Server, so we have to check the Object Server check box and fill in the Database Field. Remember that the Database name of the new Object server must be different from the Database name of the first Object Server. The

Database name of our first Object Server is OBJSRVR2, and we chose OBJSRVR3 for the Database name of the additional Object Server.

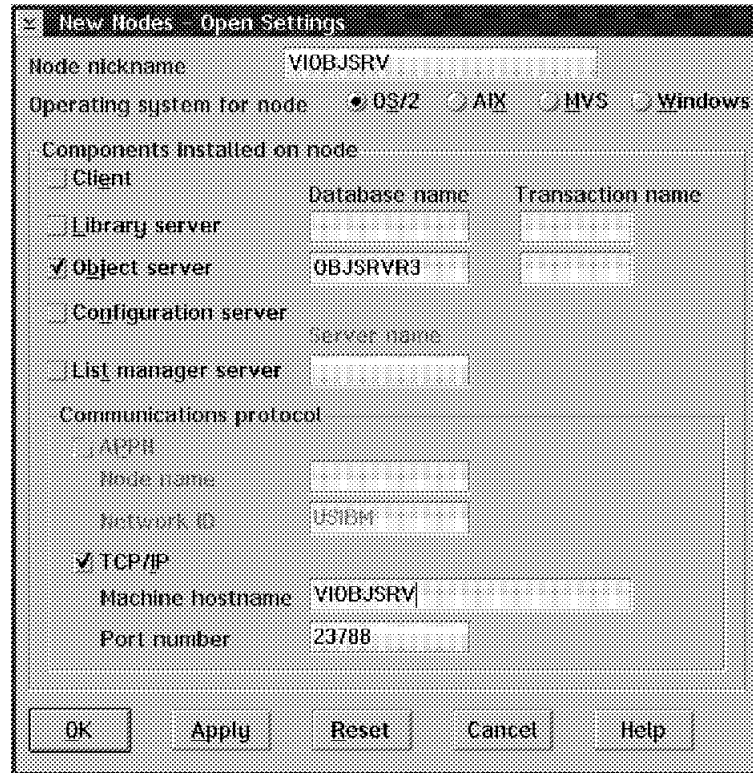


Figure 126. Adding the Node for the Additional Object Server

3. Link the Object Server to the appropriate Library Server:

Double-click on the Object Server to Library Server links icon. Then "Add" the new Object Server to your existing Library Server.

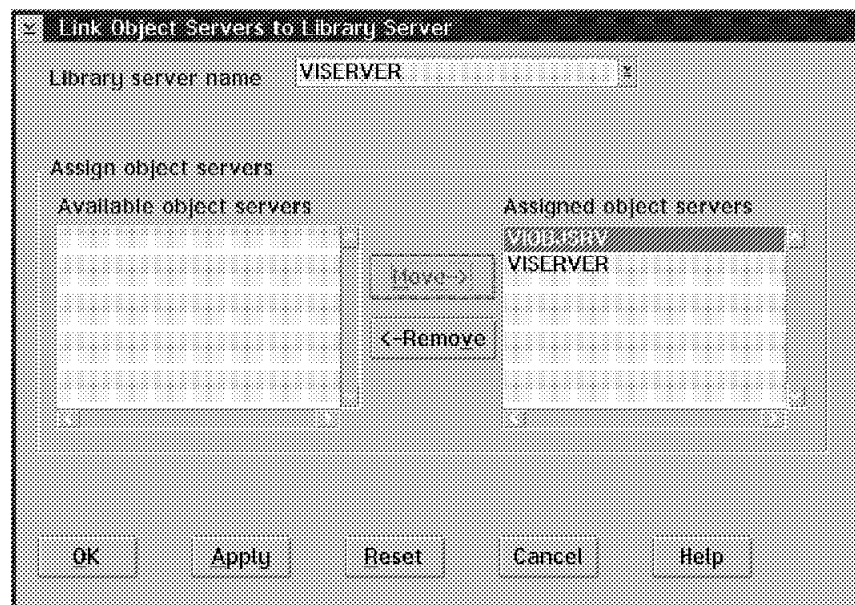


Figure 127. Adding the Link for the Additional Object Server

4. Verify and save your configuration:

From the pull-down menu, select File->Verify. When the verification is successful, save your configuration file (File->Save).

Generate the new Network Table in the workstation with the Library Server, the workstation with the first Object Server (usually all Object Servers associated with the Library Server), and the work station with Configuration Server (usually all configuration servers associated with the Library Server).

In each machine, double-click on the Generate Network Table icon inside the VisualInfo utilities folder, and enter the name of your configuration file (RED.CFG in our sample) and the respective Hostname of each machine.

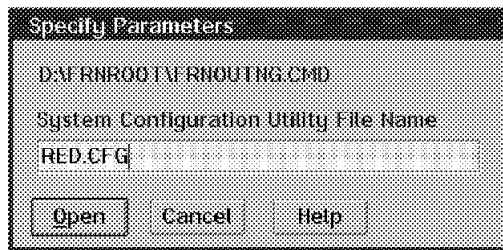


Figure 128. New Network Table Generation

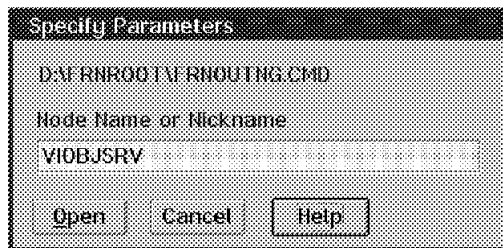


Figure 129. New Network Table Generation

Refresh the Configuration Server. Double-click on the Configuration Server Refresh icon on each workstation with a Configuration Server.

Now that the VisualInfo configuration is done, we have to add the necessary information to the TCP/IP configuration to get communication.

5. Open the TCP/IP configuration:

- If you were using HOST Lists:
  - a. Add the IP address and Hostname of the new additional Object Server to the HOST List in the workstation with the Library Server.
  - b. Add the IP address and the HostName of the Library Server to the HOST list in the workstation with the additional Object Server.

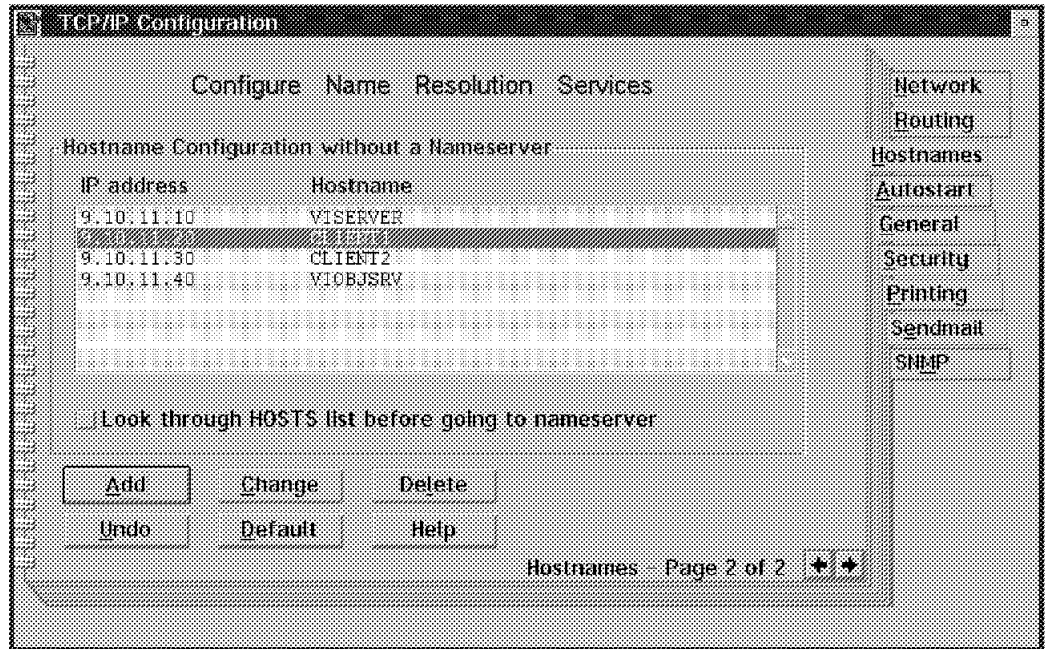


Figure 130. Changing the Host List

- If you were using a Name Server, add the IP address and the HostName of the new additional Object Server to the list in the Name Server.

Now the TCP/IP configuration is done. Try the communication by PINGing "Additional Object Server HostName" from the Library Server workstation, and PING "Library Server HostName" from the additional Object Server workstation.

6. Start your Servers, including the New Object Server.
7. Now define your New Remote Object Server in System Administration:

Log on to the System Administration. Double-click on the Library Server Configuration icon.

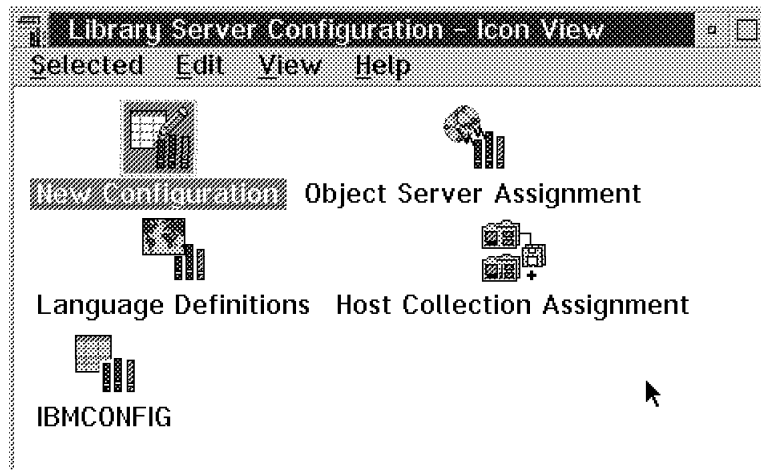


Figure 131. Library Server Configuration

Double-click on *Object Server Assignment* icon.

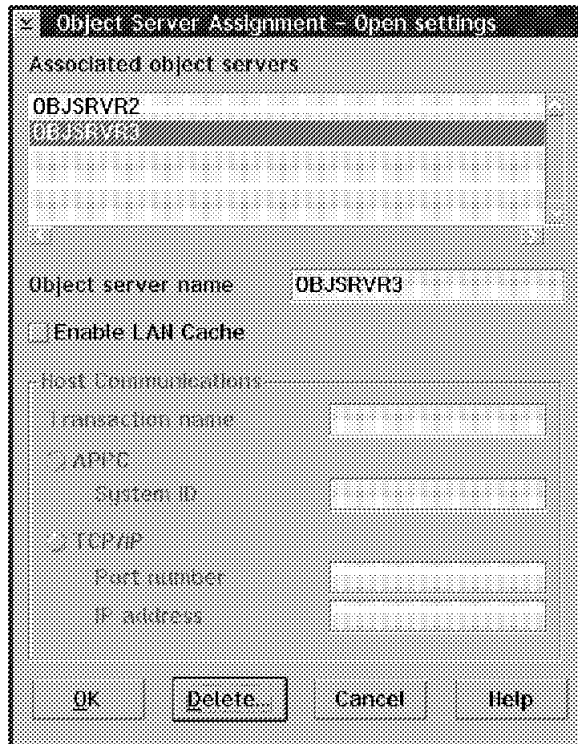


Figure 132. Object Server Assignment

Assign the New Object Server, type the name of its database in the "Object Server Name" Field, and press OK.

The next time you open this Object Server Assignment, you see both Object Servers. Here you can also enable a LAN cache for any of the Object Servers. Select the OBJSRVR3 and check "Enable LAN Cache" if you want it.

8. Test the communication with the new Object Server:

- Stop and start again your Library Server. Also start your SMS servers.
- Double-click on the SMS icon (in the Sys Admin folder).
- Double-click on the Remote Object Server icon.
- Select the Database name of the additional Object Server OBJSRVR3 (if you did not perform the previous step, the name of this database does not appear). Now you should be able to enter the system managed storage of the additional Object Server. If you desire, you can define the SMS for this Object Server now.
- Close the SMS folder.
- Create a new User, assigning as default Object Server OBJSRVR3 (the additional Object server).
- Logon with this user ID and import a document. If you have not changed IBMCONFIG as your Library Server configuration, the VisuallInfo system stores the documents in the Object Server and collection associated with the user who imports a document. So this imported document should be stored in the additional Object Server (OBJSRVR3).
- Look at the OBJSRVR3 Object Server window. You should see a colored pie indicating that it has a request.

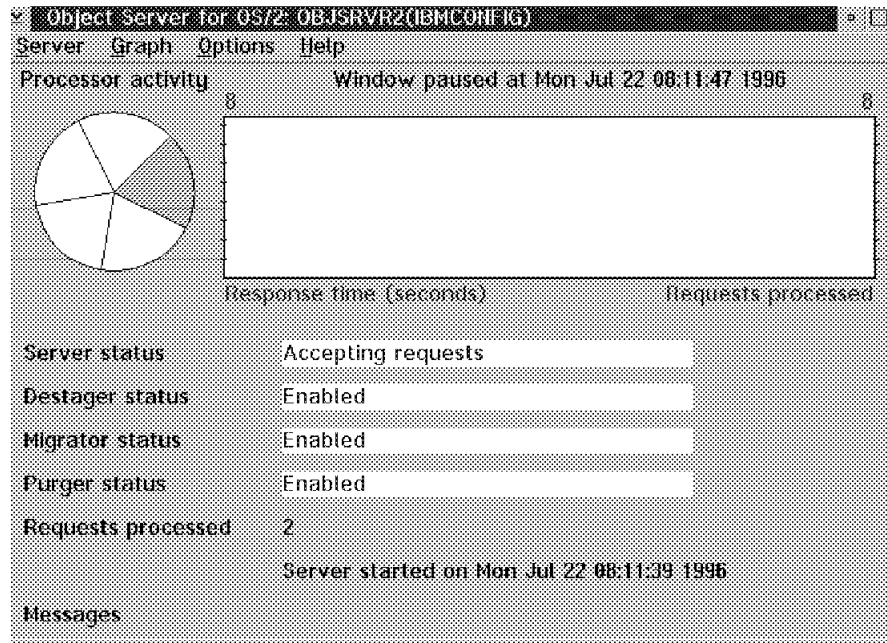


Figure 133. Object Server

If this is OK, you have successfully installed and connected your new additional Object Server.

### 5.9.1.1 Adding a Remote Object Server

If your system includes remote access to documents for searching, displaying, or scanning, these users are called remote clients.

When good response time is needed for these remote clients, include a remote Object Server, which becomes a local Object Server for your remote clients. This also gives you a LAN cache for your remote clients, improving performance. It minimizes possible performance variations due to errors and spikes on your wide-area network (WAN) leased line.

When you add a remote component to VI system, (remote client, remote Object Server) you need to modify your network table, regenerate it, and refresh the configuration server. Repeat the steps in the previous part and change the configuration of your network table exactly as you did for local nodes. See section 5.9, "Adding Object Servers" on page 179.

The remote configuration uses TCP/IP.

To reach a remote workstation with TCP/IP, you need to configure the **Network Dialer**. If you only have the base TCP/IP, you need to install this additional component.

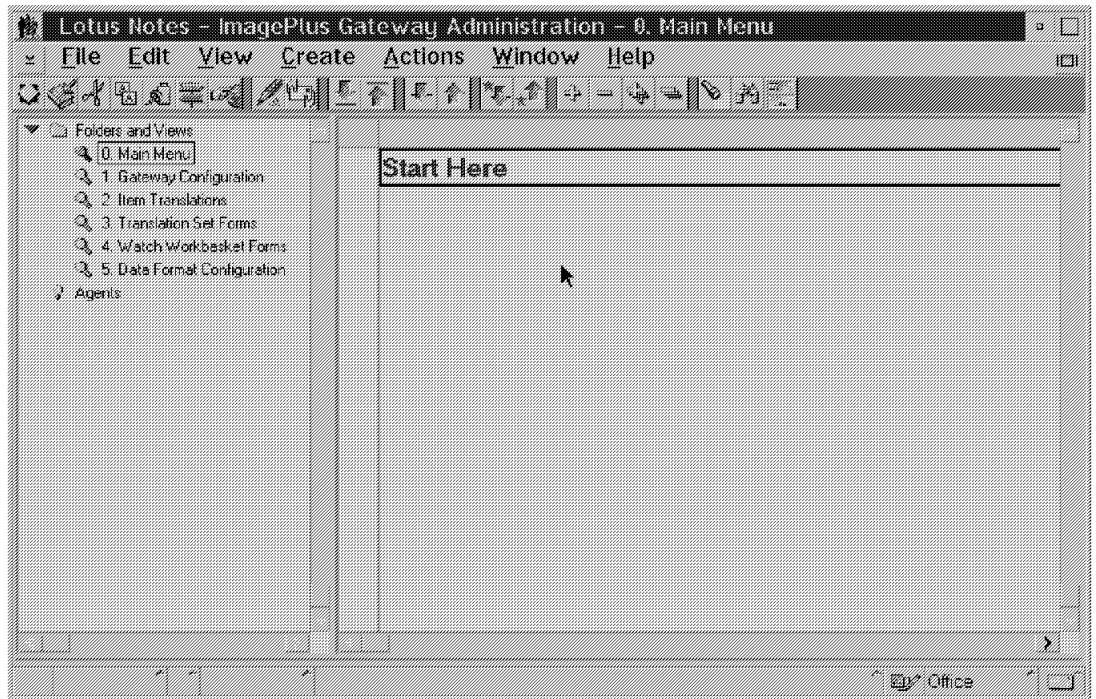


Figure 134. Network Dialer

First, connect your modem to your workstation (the Network Dialer sets it up or you can do it manually). Now configure the Network Dialer.

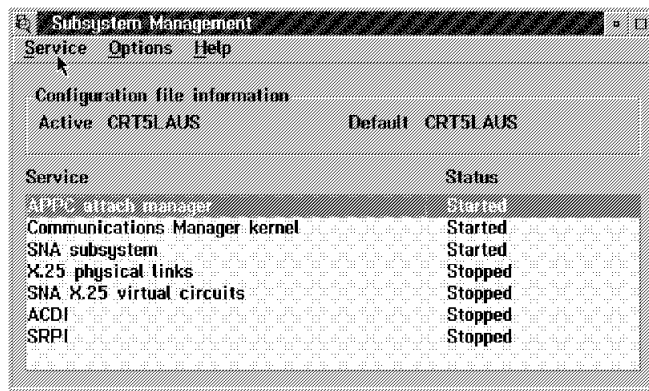


Figure 135. Network Dialer

**Configuring TCP/IP Network Dialer:** To communicate between two remote workstations, you need to configure an entry. One station is the Caller; it dials to the Answerer station. Once this station answers and communications is established, you are able to run any application that uses TCP/IP for communications. Since VisualInfo is such an application, TCP/IP takes care of the remote access and VisualInfo uses the hostnames of the nodes to communicate to them, no matter where they are.

Go to the pull-down menu and select "Configure", then "Add Entry". See Figure 136 on page 187.



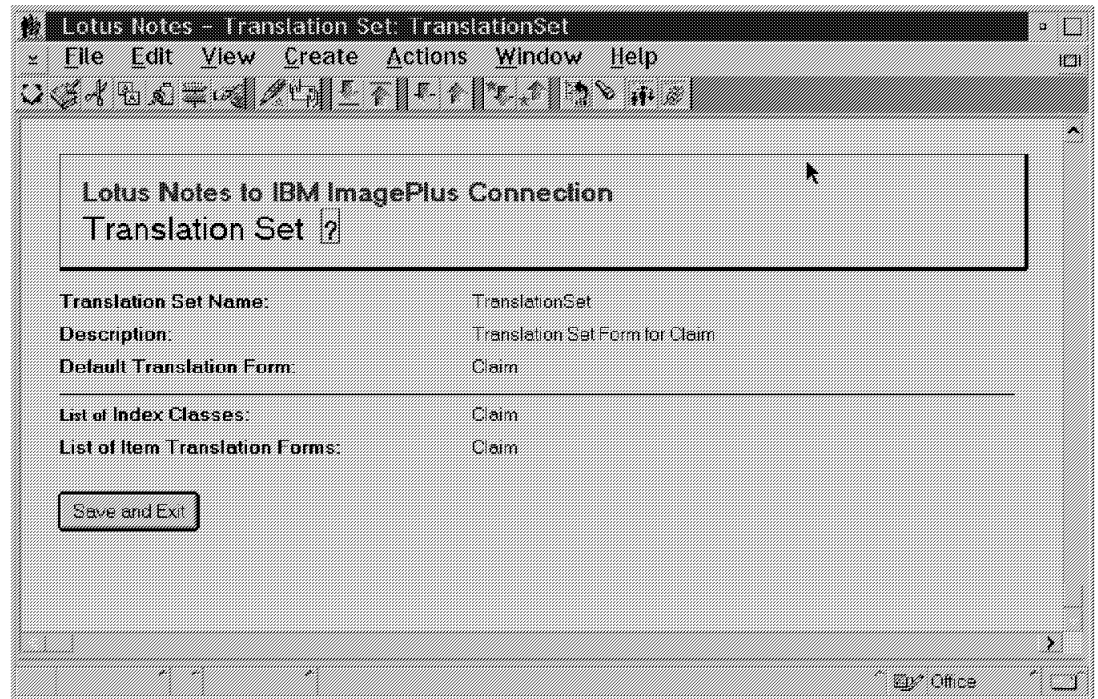


Figure 136. Adding an Entry

Enter the following information:

**Note:** This is a configuration for the use of VisualInfo remote components. For any other application, it may be different.

- Name: This is just an identifier of the connection but is required. Up to eight characters.
- Description of the connection: Up to 11 characters.
- LoginID and Password if your application needs one: Leave these fields blank for VisualInfo.
- Phone Number of the host you want to connect to.
- Connection type: SLIP
- Inactivity timeout: The amount of idle time in minutes to be allowed before IBM Dial-Up for TCP/IP closes the connection. To disable the timeout, specify OFF.

Here you are going to configure the same entry in two different machines:

- The Library Server
- The remote Object Server (or remote client)

This is a sample configuration.

In the Library Server:

- Name: VComms
- Description: VI Entry
- Phone Number: 301-5642. Phone Number of the remote Object Server (or client)

- Connection type: SLIP
- Timeout: 10 minutes

In the Remote Object Server (or client):

- Name: VComms
- Description: VI Entry
- Phone Number: 301-5541. Phone number of the Library Server.
- Connection type: SLIP
- Timeout: 10 minutes

Go to the *Connect* Info Tab, as shown in Figure 137 on page 189.

Specify the IP address of the machine you are configuring and the IP address of the remote machine to which you are going to connect. Specify the subnet mask.

MTU Size: Maximum transmission unit

HostName

Domain Name Server

For the Library Server, see Figure 137 on page 189.

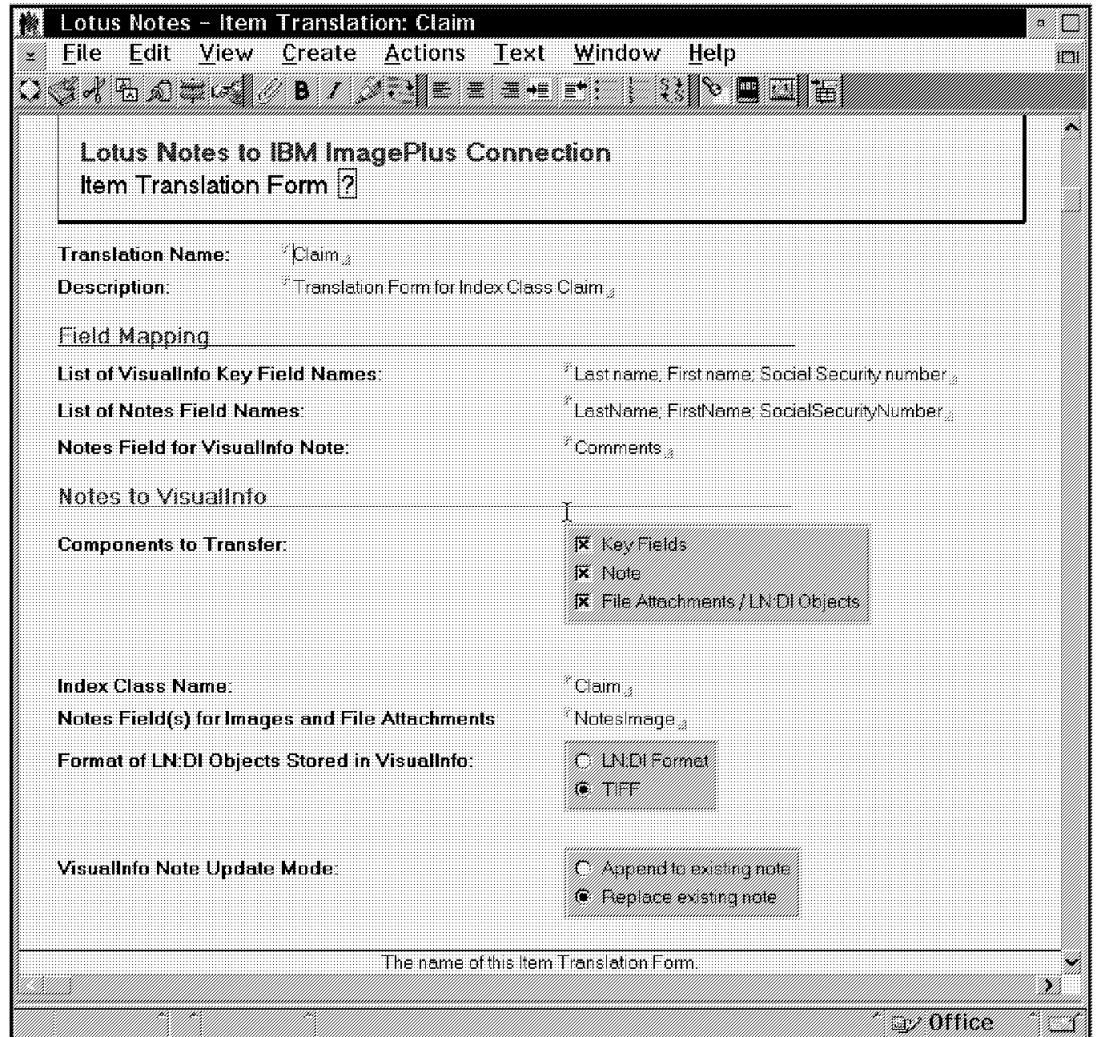


Figure 137. Configuring Network Dialer

For the Remote Object Server, see Figure 138 on page 190.

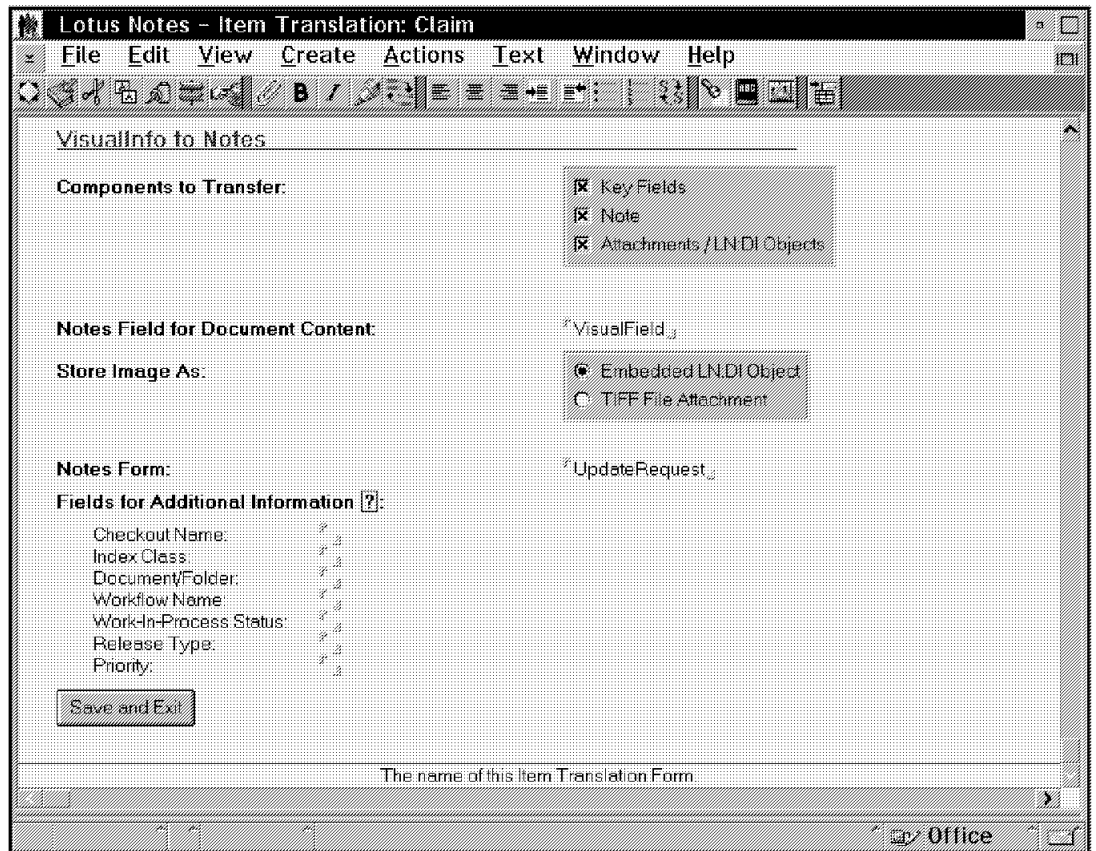


Figure 138. Configuring Network Dialer

Go to the tab labelled Modem Info, as shown in Figure 139 on page 191.

Fill in the Modem type, port of communication, speed of communication, databits, and parity. You can leave the defaults for this case.

Mode: Your Remote Object Server or Client is the Dialer and the Library Server answers.

For the Library Server, see Figure 139 on page 191.

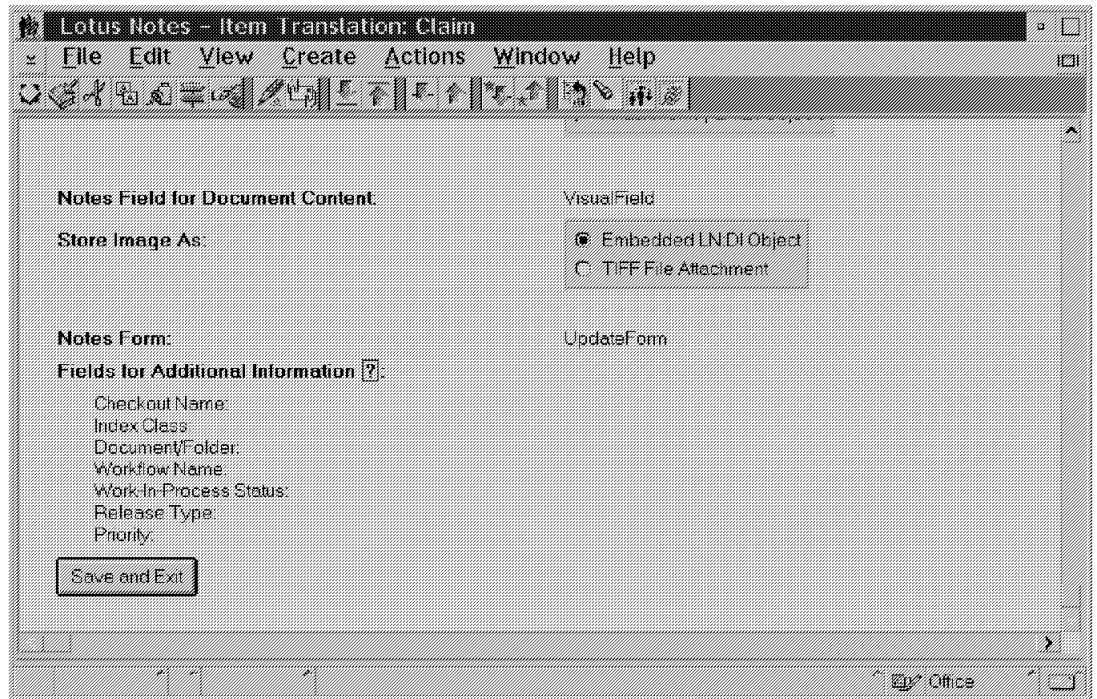


Figure 139. Configuring Network Dialer

For the Object Server, see Figure 140.

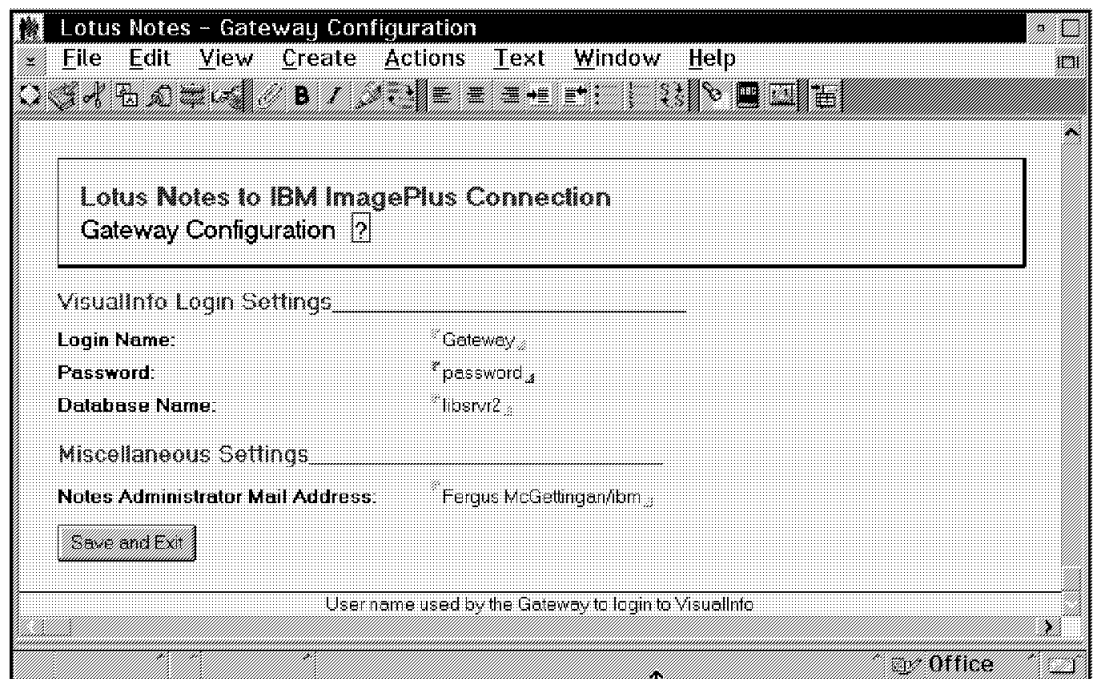


Figure 140. Configuring Network Dialer

Continue the sample configuration.

**Testing the Remote Connection:** On the Library Server Workstation, in the IBM Dial-Up for TCP/IP, select Connection->Dial.

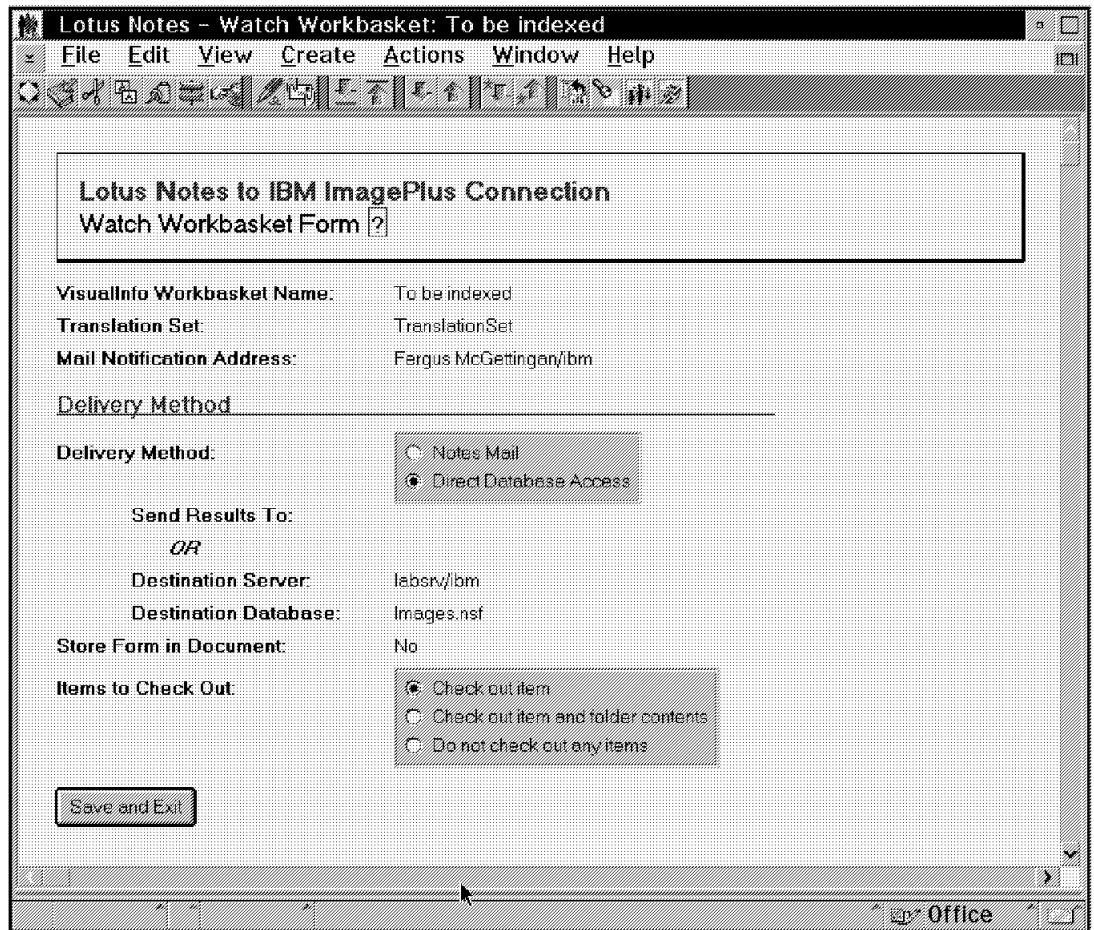


Figure 141. Configuring Network Dialer

This sets up your modem. Since it is in "answer" mode, it waits for an incoming call.

On the Remote Object Server Workstation in the IBM Dial-Up for TCP/IP, select Connection->Dial.

For the Library Server, see Figure 142 on page 193.

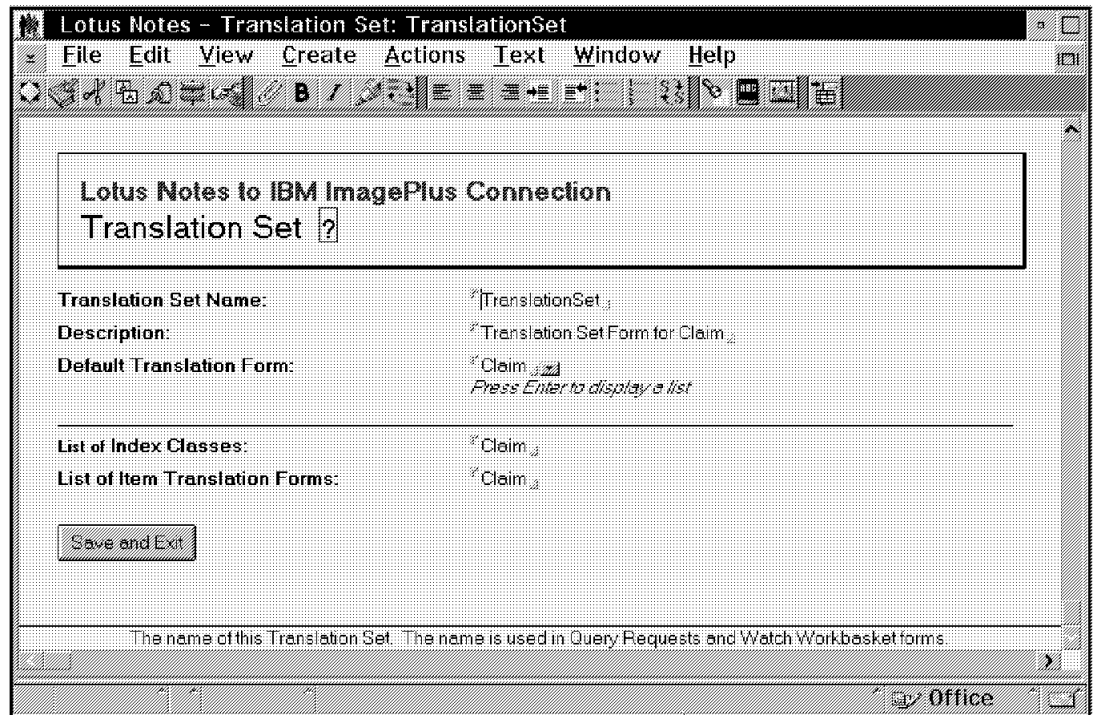


Figure 142. Configuring Network Dialer

This sets up your modem. Since it is in "Dial" mode, it begins to call to your Library Server. When the communication is established, you see Box "... " in the status list. Now PING the remote object server IP address from the library server. PING the library server from the remote workstation. Then PING the object server Hostname and the library server hostname. If there is a failure, review your Name Servers, and be sure you added the new node. Actually you have two Name servers, one in each LAN: the Library Server LAN and the remote LAN.

If this works, you are ready to configure your object server exactly as in previous steps.

## 5.10 Administering the Staging Area

Documents (or objects) are placed in the Staging area when they first are entered into the system and when they are retrieved by a user. The management of the staging area is done by the DESTAGE and PURGE processes.

**Destaging** is the process that moves the objects from the server's staging area to the object's actual (or first) storage class. When this happens, the object in the Staging area is marked as purgeable.

**Purging** is the process that deletes destaged objects from the Staging area. This process is done by deleting the directories of the least recently used objects until the lower Purger Rate Stop percentage is achieved.

Destaging a large number of objects takes time and puts a stress on the system and I/O, since it involves actually copying the objects to a different location.

Purging, by contrast, is relatively fast because it involves simply deleting directory entries.

If the input and retrieve volume is low, you can safely destage during the day with little impact on overall system performance. As the daily volume grows, other strategies need to be considered:

- It may be practical to add more Object Server machines to the system. This keeps the work performed by each one to an acceptable level, although you are still limited to the work that can be performed by a single Library Server.
- Should you elect to disable the destager during prime shift to improve response time on document retrieval, you need a Staging area large enough to hold a day's work of new and modified objects, plus additional room for a time span of retrieved documents. Destaging 1000 documents to a DASD takes approximately 40 minutes off-shift. Migrating 1000 documents from DASD to Optical takes approximately two hours.

With high speed scanning, it is possible to exceed the maximum size parameter. The Object Server continues to accept objects until all free space on the drive is used. Then the Object server quiesces and the destager and purger work concurrently until the lower percentage is achieved. The object server then accepts new work.

Destaging straight to optical takes longer, requiring more system and I/O time.

### 5.10.1 Planning Staging Area Size

Let's compare the pros and cons of several strategies in setting the size of your staging area.

#### 1. *Destage to DASD Prime Shift, Migrate Off Shift:*

A good strategy for a light volume LBOS (1000 documents per day). Requires the least amount of staging area, but enough space to hold documents temporarily before destaging and extra space for retrieve activity.

As volumes increase on the object server, however, I/O contention between destaging and object retrieval increases, resulting in longer retrieval time for objects during prime shift.

#### 2. *Destage to Optical Prime Shift:*

Similar to the first strategy, but because the rate of moving objects to optical is significantly slower, the destager is active longer, often resulting in I/O contention.

If documents do not reside on DASD at all, implying limited retrieval, this strategy is used. You can conceptually extend the prime shift hours to 16 or more, since there is no document migration to do.

#### 3. *Destage to DASD and Migrate Off Shift:*

A good strategy if retrieval time is most important. Also very good if documents are retrieved often on the same day they are inputted. The staging disk must be large enough to hold an entire day's worth of input, with extra space to hold retrieved documents that can be purged during the day.

However, there is a lot of work to be done during off-shift. The destaging and migrator can run at the same time, although there is I/O contention if they involve the same physical drives.



#### 4. *Destage to Optical Off Shift:*

A good strategy for backroom file conversion where documents new to the system do not need to reside on DASD at all. Similar to the third strategy, it requires a staging disk large enough to hold an entire day's worth of input, plus extra to hold retrieved documents that are purged during the day. I/O contention among processes during prime shift does not exist. Unlike strategy two, the off-shift has to have enough hours to do the destaging.

---

### 5.11 Collecting Data for Problem Determination

- If you need to perform any kind of problem determination in a workstation (client or server), a useful tool is the FRNODBEV.CMD command file, located in the \FRNROOT directory.

This command collects all of the workstation's configuration information (such as CONFIG.SYS, network table, DB2/2 parameters, and so on), and puts together a TXT file called FRNDBENV.TXT located in the \FRNROOT\LOG directory.

- If you need to trace the client application, use the FRNODBIM.CMD command file located in the \FRNROOT directory.

When you run this command, the Client application is started and can be used normally. But while you work with the Client application, a trace file called DATRACE.LOG is generated in the \FRNROOT\LOG sub-directory. At the same location, a dump file called FMDUMP.LOG is also created.



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## Chapter 6. Migration

Now we want to give you some information on migration. We cover a version-to-version migration followed by some tips on an OS/2-to-MVS migration. If both types of migration are desired, the version-to-version steps must be done first, before an upgrade migration is permitted.

---

### 6.1 Migrating from Version-to-Version

This section describes the migration of VisualInfo Version 1.1.2 for OS/2 to VisualInfo Version 2.2. Before starting, take a look in the README.OS2 file that comes with VisualInfo Version 2.2 CD.

Here is a sequence of steps that you must follow for a successful migration:

1. Back up VisualInfo Object and Library Servers databases.
2. Object Server Database Migration includes: (the details are in section 6.1.1, "Migrate the Object Server Database").
  - Update DB2/2 Configuration parameters.
  - Migrate the Object Server database.
  - Reset DB2/2 Configuration parameters.
3. Upgrade DB2/2 V2.1.1 and migrate Databases (the details are in section 6.1.2, "Upgrading to DB2/2 2.1.1 and Migrating Databases" on page 199).
4. Install VisualAge V3.0 and Warp Toolkit (if necessary).
5. Delete VisualInfo V1.1.2 program files (the details are in section 6.1.3, "Deleting VisualInfo V1.1.2 Files" on page 199).
6. Install VisualInfo V2.1 **without database installation**.
7. Migrate Library Server database
8. Bind the database for Object Server (the details are in section 6.1.5, "Bind Object Server Database" on page 200).
9. Complete Migration (the details are in section 6.1.6, "Completing the Migration" on page 200).

**Note:** Client Application customized setting data may get lost.
10. Update Library Server and Object Server icon settings if server names are other than defaults.

#### 6.1.1 Migrate the Object Server Database

In this section, we list the steps to migrate the Object Server database.

- Do not forget to back up the existing database (step 1 of the previous roadmap).
- Update DB2/2 parameters (configuration).
  - Open the DB2/2 folder and click on CONFIGURATION TOOL.
  - Select Object Server database and change the Database option.
  - Change the following parameters:

Primary log file	from	5 (default)	to	5 (no change)
Secondary log files	from	5 (default)	to	58
Log file size	from	100 (default)	to	4095

The buffer pool size is an important tuning parameter for database performance. The default for this field (BUFFPAGE) is 250 (about 1MB of RAM, or 250 4K pages of memory). But you may want to increase this value, because the more RAM available for the database update, the faster it completes the migration. Do not, however, specify more RAM than you have available. If you do, you lose performance because memory swapping occurs. A value of 2000 is desirable if you have enough RAM to support it.

**Note:** After the migration, change the four parameters above back to their original values, which will support a normal workload without tying up resources. These values may be equal to or greater than the defaults.

- De-select the COPY PROTECTION field.
- Select CHANGE pushbutton.
- Close the configuration tool.
- At an OS/2 command prompt, type STOP DBM and press Enter.
- Copy the following files from CD to VI 1.1.2 directory:
  - FRNOINFX.EXE from \FRNOS2 CD directory into the VisualInfo root directory (FRNV1R0).
  - FRNOINFX.HLP from \FRNOS2\HELP CD directory into the VisualInfo help directory (FRNV1R0\HELP).
  - FRNOINFX.BND from \FRNOS2\BIND CD directory into the VisualInfo bind directory (FRNV1R0\BIND).
- Go to the FRNV1R0 directory and type FRNOINFX.EXE at OS/2 window. You are prompted to enter the database name. After providing this information, click on MIGRATE.

During the migration, the STAGEID column is added in the BASE\_STAGING table. The tables BASE\_OBJECTS and BASE\_VOLUME have their size changed.

When you finish the Object Server database migration, change the parameters back to your original values.

If you want to go back to VisualInfo Version 1.1.2, you can use the backward migration function to revert the VisualInfo Version 2.2 Object Server for OS/2 database to Version 1.1.2 or restore your backup copy of the database.

If you have chosen to migrate back, go to an OS/2 window and type FRNINFX.EXE. The migration utility prompts you for the name of the database you want to migrate back. Type the name of the database and click on REVERSE.

## 6.1.2 Upgrading to DB2/2 2.1.1 and Migrating Databases

These are the steps to upgrade your DB2/2 and migrate the databases:

- Run 'db2ckmig' from DB2/2 diskette or CD.
- Install DB2/2 2.1.1.
- Install DB2/2 2.1.1 latest CSD (at this writing, the latest was 8110).
- Check the README.OS2 file on VisualInfo CD for any other fixes that might be required.
- After the DB2/2 2.1.1 installation, double-click on the DB2/2 icon. Open a DB2/2 command line.
- At the DB2/2 command line, type START DBM.
- Type your user ID and password to do a UPM local logon for DB2/2 access.
- Migrate the Object Server database by typing: *Migrate database OBJSRVR2*, where *OBJSRVR2* is your Object Server database name.
- Migrate the Library Server database, by typing: *Migrate database LIBSRVR2*, where *LIBSRVR2* is your Library Server database name.
- If the migration is successful, you receive a message. If the migration was not successful, follow the instructions in the message.
- Close the DB2/2 windows.

## 6.1.3 Deleting VisualInfo V1.1.2 Files

Before starting this step, be sure you have a full backup of your current VisualInfo system and data.

- From VisualInfo V 2.1 CD-ROM, run the INSTALL command located on \FRNOS2 sub-directory.
- Select INSTALLED PRODUCTS from the "View" menu. A list of previously installed products is displayed.
- Select the VisualInfo product you previously installed.
- From the "Action" menu, select DELETE.
- From "View" menu, select CURRENT CATALOG. You are returned to the list of current products.
- After the delete process, remove the VisualInfo icons and re-boot the machine.

If the delete procedure was not successful, follow the instructions in section 4.6, "Deletion Procedures" on page 157.

After the deletion, you can verify that the database files still exist by checking the following directories: \FRNV1R0\LIBSRVR2\DLL (for index class information), \FRNV1R0\BIND\LIBSRVR2.BSP (for Library Server bind information), and \SQL00001, \SQL00002, SQLDBDIR (for database directories).

Now that you have removed the previous version of VisualInfo, follow the instructions in chapter 2 to install VisualInfo Version 2.1.

## 6.1.4 Library Server Database Migration

After you have successfully installed VisualInfo Version 2.1, do the following:

- Double-click the LIBRARY SERVER DATABASE MIGRATION icon in the VISUALINFO UTILITIES folder.
- When the migration utility prompts you, enter with the Library Server database name that you want to migrate.
- The following columns are added to SBTOBJECTSERVER table:
  - CONNTYPE
  - INETADDR
  - PORT
- After this, the migration utility binds the database.

If the migration was not successfully completed, follow the instructions to correct the problem and try again.

After the migration utility has successfully migrated your Library Server database, it cannot be run on the same database again. If you try to, the utility fails but the database is not damaged.

If you want to migrate back to VisualInfo 1.1.2 you can use the backward migration utilities. For this, do the following:

1. Use the VisualInfo install program to remove Version 2.1 of VisualInfo.
2. Reinstall VisualInfo Version 1.1.2.
3. Copy the file FRNOLLBD.CMD from the CD of the VisualInfo Version 2.1 to the FRNV1R0 directory.
4. Run the \FRNV1R0\FRNOLLBD.CMD command. The utility prompts you for the name of the Library Server you want to migrate back.

## 6.1.5 Bind Object Server Database

- Double-click on the VISUALINFO UTILITIES icon.
- Double-click on the OBJECT SERVER DATABASE BIND icon.
- Type the name of the Object Server database you want to bind.

## 6.1.6 Completing the Migration

To finish the migration process, you should follow these steps:

1. Restore your system configuration and the network tables.
  - Copy your .CFG file from the \FRNV1R0 directory or from a backup to the new \FRNROOT directory.
  - Run the Network Table Generation Utility for all of the node nicknames that you have in your system and store the FRNOLINT.TBL and FRNOSTOP.CMD files.
  - Run the configuration Server Refresh.
2. Restart the Library Server. If you have many index classes, this process takes more than an hour.

3. Remove all references to FRNV1R0 and EPFIFILEDIR% from your CONFIG.SYS file.
4. Erase the remaining files in the FRNV1R0 directory.

### 6.1.7 Problem Determination in Migration

If any problem occurred during the migration, check:

- FFST
- VisualInfo Log files
  - FRNOLLBN.LOG: Library Server
  - FRNOLBDB.LOG: Object Server

---

## 6.2 Migration from OS/2 to MVS/ESA

Generally, when you need to migrate from OS/2 to MVS/ESA, you just migrate the LAN-based Library Server to a Host-based Library Server and add (not migrate) a new Host-based Object Server.

Afterwards, the LAN-based Object Server continues to store the images that it always had; these do not migrate to the HBOS. The LBOS also takes on the LAN-CACHE function, which speeds up the retrieval of the documents (objects) after they are retrieved from the Host-based Object Server.

When you migrate the Library Server from OS/2 to MVS, you should consider:

- Before the Migration:
  - Install the MVS Library Server without any data in its database because the data migrated from the Library server on OS/2 replaces everything on the MVS Library Server.
  - Create all of the index class tables, views, and indexes on MVS before migrating index class tables from OS/2.
  - The migration package is available to your IBM representative on the IMAGE TOOLS disk.
- You can migrate only one Library Server for OS/2 to one Library Server for MVS/ESA.
- You need to install DB2 Distributed Data Facilities (DDF) on MVS and the IBM Distributed Database Connection Services/2 (DDCS/2) on the OS/2 Library Server Workstation.
- Because the migration utility exports the OS/2 Library Server databases to disks on your workstation, you must have free space equal to the amount of data stored in the OS/2 Library Server. For example, if you have 100MB of data in the OS/2 Library Server, you need another 100MB of free space for the export files.
- After the migration:
  - You have to move, compile, and link edit your user exits onto the host.
  - You must generate index class access programs.
  - Generate a new Network Table on every client workstation that accesses the MVS Library Server (HBLs).

- Modify the FRNTCNTL table to use FRNI and FRII transactions in the ConfigID column and use the value of 850 in the LibCodepage column.
- Modify the FRNOBJECTSERVER table to use the correct SYSID for the Object Server utilization.

For more detailed information, take a look at the *MVS/ESA Migration Planning and Utility Guide*, SC31-7737.



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## Appendix A. MVS/ESA Environment

This section contains tips on performance and problem determination that may be helpful for your MVS VisualInfo environment. For additional details, refer to the MVS publications listed in Appendix D, "Related Publications" on page 213.

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### A.1 MVS Performance Tips

These tips can help you increase the performance of your VisualInfo host-based system:

- When choosing between TCP/IP or SNA communications, SNA generally provides better performance. In an MVS environment, VisualInfo with CICS and TCP/IP has a known performance problem.

- Create a separate Library Server for each major application.

If you begin with a single Library Server and later try to split it into two or more, you may have "dead" index class information.

- Use FRNMHBCS to "seed" the FRNCHECKEDOUT table.

- Spend time arranging your DB2 table/index placement.

Concentrate on high-update, high-read DB2 objects. (For those tables that are cached, you can generally ignore high requests).

- Be careful how many index classes you create because each one :12.how many to create generates additional DB2 tables and rows. If possible, try to stay under 50.

**Tip:** If you have many document types, do not create an index class for each one. Instead, create an index class based on retention type or collection. Add an attribute (index) field called Document Type. This data can be typed in during a user exit.

- If an index class is large, you should provide a separate tablespace for it.
- When creating an index class, create the JCL into a dataset. Verify it first, then submit it manually.
- Fine-tune the Session\_Timeout parameter to reduce session creation.
  - Longer for "heads-down" users.
  - Too long a value may hold too many resources.
  - Too short may not allow for session rates.

---

### A.2 Host Security Exit

Version 2.1 and above of the VisualInfo client contains a host security exit, external to VisualInfo. It is called at logon. It returns what you received with no encryption, so you will need to code an encryption routine. The logon information will get routed to the host security package of your choice, such as RACF.

---

### A.3 MVS Problem Determination Tips

These are some common things to check for in an MVS environment:

- Incorrect release levels of the prerequisite software.
- There have been problems in some systems in getting the environment to work when the AD/Cycle LE/370 library is used. Use of the C/370 library is highly recommended. See Table 6 on page 20.
- APPC definitions, LU definitions, and MODE definitions in the NDF file (or TCP/IP parameters) do not match with the VisuallInfo network table.
- For APPC, the connection name for the Library Server to the Object Server should match the Object Server SYSID. For TCP/IP, the IP address and the port number must match.
- Database name for the Library Server should match the creator ID.
- Database name for the Object Server can be any name.
- Incorrect overrides in the FRNICTCR file.
- High-level qualifiers (HLQ) of collection names are not defined as aliases in the MVS master catalog.
- OAM installation should be verified before the Object Server stores the first object.

Here is a list of problem determination tools that can be helpful:

- SDSF: browses the COUT file of the Library Server and the Object Server.
- GTF trace
- CICS auxiliary trace
- CICS CEDF trace
- FFST message log (on OS/2 workstations)
- For SNA communication: CM/2 Problem Determination Aids - Trace Service.

As an important problem determination tool, we also have APAR PN64441 that describes all of the return codes and reason codes posted by the VisuallInfo Host-based Communications Isolator. These codes are posted with error message FRN7752. VisuallInfo V2 contains the documentation for this.

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## Appendix B. A Project Management Methodology

The methodology described here is based on the experience of thousands of professionals leading projects for over 20 years. All projects require Startup, Manage and Close tasks for the solution to ensure quality deliverables produced in a timely fashion.

---

### B.1 Startup

The first set of tasks are called Startup.

#### B.1.1 Purpose

To ensure that the project is started in an orderly fashion and the necessary infrastructure, assets, and resources are in place. The project plan is developed to a detailed level, reviewed, and approved before work begins.

#### B.1.2 Description

"Solution Startup" begins with the transfer of responsibility for implementation of the solution from the proposal team leader to the project manager. The project manager then activates the rest of the delivery team. Once the team is assembled, the project manager provides the information necessary to implement the solution. The project manager develops the detailed project/services and support plan and reviews it (with the participation of the opportunity owner) with the customer and any vendors or sub-contractors to ensure all participants are working to the same schedules. The project manager releases the orders hardware, software, and services needed to complete the project. The design team ensures that all of the necessary components are received to carry out the solution by validating them against the order (or orders).

#### B.1.3 Activities

- Transfer Project Responsibility
- Launch Delivery Project
- Develop Project Plan
- Conduct Initial Project Review
- Review Project Plan
- Order Products, Services and Obtain Commitment
- Validate Products and Services

---

### B.2 Manage

The second set of tasks are called Manage.

## B.2.1 Purpose

To ensure that the project is under control and it delivers the correct solution on time, within budget, and to the agreed level of quality.

## B.2.2 Description

"Manage the Solution" is a sub-process that runs in parallel with the other sub-processes in the solution delivery phase. It can start as soon as the solution delivery phase begins and ends with the completion of the project. Its activities and tasks are focused on managing work that is carried out by the delivery team. Manage the solution is an iterative process and has many tasks that are repetitive such as "progress tracking" some of the tasks are, however, triggered by events that occur once the project has started. For example:

- Change request initiated by the customer, IBM, or the supplier.
- Early closure request (AS).
- Critical situation identified by the customer.
- Customer payment/adjustment.
- Deliverable status/deliverable status feedback/completion information.
- Supplier invoice.
- Discrepancy between actual progress and planned progress.
- New risk identified.

As previously stated, this sub-process runs in parallel with the "Implement the Solution Process" from "Solution Start" to "Close the Solution". There are two distinct aspects to managing the solution. The first is to manage the activities defined in the project/services and support plan-tracking progress and ensuring all commitments are met, reporting back to IBM management and the customer, and interfacing with quality assurance. The most critical activity is the management of exceptions (that is, changes, issues, problems, and risks). These, wherever initiated, have an impact on the customer's conditions of satisfaction. Another important aspect of "Managing the Solution" is focused on contract management. Contract files must be maintained to ensure that all contractual obligations are met. The invoice (or invoices) are prepared and provided to the customer per the terms of the accepted contract and moneys collected per the terms and conditions on the invoice (or voices). Supplier invoices must also be approved and paid. Above all else, the vital aspect of "Managing The Solution" is good communications within the delivery team and to the customer and to IBM opportunity management.

## B.2.3 Activities

- Manage Project Plan
- Conduct Project Management Review
- Manage Contract

---

## **B.3 Close**

The third set of tasks are called Close.

### **B.3.1 Purpose**

To end the project, learn from the experiences and ensure there are no residual problems or outstanding commitments.

### **B.3.2 Description**

"Close the Solution" begins with:

- Notification that the contract (accepted proposal) is complete.
- Early contract closure request (AS) initiated by either the customer or IBM.

### **B.3.3 Included**

The project is closed and contracts are closed and filed. The opportunity owner coordinates an assessment of the solution and process when all components of the solution have been delivered, invoiced and collected or, on completion of a major milestone. The customer is requested to provide assessment and satisfaction feedback. Task performance feedback is provided to "human resource" and supplier management. The project manager conducts a project completion workshop and develops a report describing the learning points gained from the project.

### **B.3.4 Activities**

- Close Solution Delivery
- Request Customer Feedback
- Begin Solution Support



---

## Appendix C. Special Notices

This publication is intended to help those involved in planning, installing or administering VisuallInfo. The information in this publication is not intended as the specification of any programming interfaces that are provided by VisuallInfo product. See the PUBLICATIONS section of the IBM Programming Announcement for VisuallInfo for more information about what publications are considered to be product documentation.

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GT	GT Interactive Software Corporation
Howtek	Howtek, Incorporated
HP	Hewlett-Packard Company
Intel	Intel Corporation
JX	Sharp Electronics Corporation
KODAK IMAGELINK	Eastman Kodak Company
LAN WorkPlace	Novell, Incorporated
Lexmark	Lexmark International, Incorporated
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Lotus 1-2-3	Lotus Development Corporation
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## Appendix D. Related Publications

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

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### D.1 International Technical Support Organization Publications

For information on ordering these ITSO publications see "How To Get ITSO Redbooks" on page 215.

- *A Simple Approach to VisualInfo*, GG24-4444-00
- *VisualInfo Systems Management: CID Installation*, GG24-4415-00
- ImagePlus Visualinfo Client/Server Solution: Sample Code for Client, GG24-4369
- ImagePlus Visualinfo Library and Object Servers for MVS/ESA Planning Guide, GG24-4452
- ImagePlus Visualinfo MVS/ESA Installation Guide, GG24-4488

The publications below contain much information on VisualInfo, as well as describing how to organize a workflow project which utilizes VisualInfo as well as FlowMark

- FlowMark Installation and Administration, SG24-4614
- FlowMark and VisualInfo with Windows, SG24-4712

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### D.2 Redbooks on CD-ROMs

Redbooks are also available on CD-ROMs. **Order a subscription** and receive updates 2-4 times a year at significant savings.

CD-ROM Title	Subscription Number	Collection Kit Number
System/390 Redbooks Collection	SBOF-7201	SK2T-2177
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Application Development Redbooks Collection	SBOF-7290	SK2T-8037
Personal Systems Redbooks Collection	SBOF-7250	SK2T-8042

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### D.3 Other Publications

These publications are also relevant as further information sources:

- ImagePlus Visualinfo Getting Started, GC31-9051
- ImagePlus Visualinfo Planning and Installation Guide, GC31-7772
- ImagePlus Visualinfo System Administration Guide, SC31-7774
- ImagePlus Visualinfo Client for OS/2 User's Guide, SC31-7775
- ImagePlus Visualinfo Client for Windows User's Guide, SC31-9052

- ImagePlus Visualinfo Messages and Codes, SC31-9065 (softcopy only)
- MVS/ESA Migration Planning and Utility Guide, SC26-8657 (softcopy only)
- VisualInfoApplication Programming Guide for OS/2, SC31-9059
- VisualInfoApplication Programming Guide for Windows, SC31-9055
- VisualInfoApplication Programming Guide for MVS, SC31-9060
- VisualInfoApplication Programming Reference, Volume 1, SC31-9063
- VisualInfoApplication Programming Reference, Volume 2, SC31-9061
- VisualInfoApplication Programming Reference, Volume 3, SC31-9062

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## How To Get ITSO Redbooks

This section explains how both customers and IBM employees can find out about ITSO redbooks, CD-ROMs, workshops, and residencies. A form for ordering books and CD-ROMs is also provided.

This information was current at the time of publication, but is continually subject to change. The latest information may be found at URL <http://www.redbooks.ibm.com>.

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- **Redbooks Home Page on the World Wide Web**

<http://w3.itso.ibm.com/redbooks>

- **IBM Direct Publications Catalog on the World Wide Web**

<http://www.elink.ibm.link.ibm.com/pb1/pb1>

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## List of Terms and Abbreviations

**Note:** For more information about terms, refer to the product publications found in Appendix D, "Related Publications" on page 213.

### A

**API.** See *application program interface*.

**APPC.** Advanced program-to-program communication. A commonly used protocol for various network environments, such as Internet, Host communications, and LANs. FlowMark uses either APPC or TCP/IP. See also *TCP/IP*.

**application development models.** Process and data models required for application systems development.

**application program interface (API).** An interface provided by the workflow manager that enables programs to be started, processes to be controlled, and operators to work with data containers.

**attribute.** The characteristic or property that defines an entity, such as the attribute of a unit of information. See also *representative attribute*.

**audit trail.** A facility for recording events that occur when process instances are run.

### B

**base product.** The product that provides the functionality required for the operation, for example, VisuallInfo, Lotus Notes. This is the product called via the Service Broker Manager.

**business.** An entity that engages in commerce. A business produces or sells goods and services, has goals, processes, and personnel.

### C

**CAPI.** The VisuallInfo primary programming interfaces are called Common Application Programming Interface.

**CIF.** Common Interchange File; The CIF file specifies attribute names needed to import documents and folders to the VisuallInfo system from other platforms.

**CIU file.** Common Interchange Unit File

**client.** Clients access shared network resources or functionality provided by a server.

**COLD.** Computer Output to Laser Disc

**CUA.** Common User Access

**customer.** A person or business that acquires products or services from an enterprise.

**customer activity.** In physical models or blueprints, it depicts the activities performed by customers. A customer activity can start or end a chain of activities.

**customer expectation.** A description of what a customer needs or wants. This can be in terms of products, services, or the performance of an activity or a system.

**customer-oriented process path.** A process path that is oriented towards customer satisfaction.

**customer process.** On logical models or blueprints, it depicts the actions or processes carried out by customers.

**customer satisfaction.** The goal of a customer-oriented business. Customer satisfaction occurs when a customer receives as much as, or more than, expected from a product or service. It is usually measured as the number of satisfied customers as a percentage of the total number of customers.

### D

**DASD.** Direct Access Storage Device; A device in which access time is effectively independent of the location of the data

**DB2/2.** IBM Database 2 for OS/2, a relation database manager.

**DDE.** Dynamic data exchange. A OS/2 or MS Windows feature that enables data exchange between applications.

**DLL.** Dynamic link library. A module containing a routine that is linked at load time or runtime. FlowMark uses the \*.DLL filetype under OS/2 as well as under MS Windows.

**document.** A transmission medium for, or depository of, information, such as a report or an invoice. A VisuallInfo document consists of a base part and the item information, notes with content class, annotation with content class, history and MGDS data (used with OCR). It is indexed by system-defined and user-defined attributes. A document can be contained in one or more folders.

**document flow.** The flow of documents through an organizations. This can be through a document

management system in digitized form or in hardcopy form.

**document storage.** A physical data store where hard-copy documents are stored.

## E

**EDI.** See *electronic data interchange*.

**EDM.** electronic document management.

**electronic data interchange (EDI).** A computer-to-computer connection between two companies. The transaction flow for EDI transaction is regulated through international protocol.

**empower.** To provide employees with the authority to make decisions.

## F

**FAT.** OS/2 or DOS file allocation table.

**FaxRouter/2.** FaxRouter/2 is a local area network (LAN) based solution that provides the capability to send, receive, archive, display, distribute, print, and delete faxes from a user's Windows or OS/2 workstation.

**FlowMark.** An IBM program product that manages and controls the execution of a process path or workflow.

**folder.** An item that can contain other folders or documents. In the VisualInfo system, a folder can be indexed by system-defined and user-defined attributes.

## G

**goal.** The statement of an enterprise's medium or long-range objectives or direction. A business target that is to be met within a given time. Goals can be qualitative, such as *to become the best-of-breed*, or quantitative, such as *to increase revenue by 20% over the next 12 months*. Goals exist at the following organizational levels:

- The enterprise
- An organizational unit, such as a business area, department, or job
- Individuals, such as managers or employees.

**GUI.** Graphical User Interface

## H

**HLLAPI.** High-level language application program interface. HLLAPI is used by application programs for host communication, such as 3270 or 5250 screen formats. FlowMark makes use of the HLLAPI building block under OS/2 or MS Windows.

**HPFS.** OS/2 high performance file system

## I

**IBM.** International Business Machines Corporation

**icon.** A picture that represents the actual image of information flow media or means of transportation, such as a telephone, truck, or computer terminal.

**ICPF.** IBM ImagePlus Capture Facility. A high-volume document capture subsystem which includes barcode recognition.

**IPFO.** IBM Intelligent Forms Facility. A product which supplements ICPF and supports OCR.

**IWPM/2.** IBM ImagePlus Workstation Program/2.

**index class.** A user-defined group of information used to store and retrieve an item or set of items. An index class identifies the type of key fields, automatic processing requirements, and storage requirement for a document or folder.

**information.** Facts or objects that have meaning to human beings; as opposed to *data*, which requires context and interpretation in order to become *information*. Information is formatted data. Business objects that are produced by or moved between activities and systems using information flows.

**in-process server.** A OLE server that is implemented as a dynamic link library is called in-process server, it runs in the client's address space.

**IOCA.** Image Object Content Architecture; A collection of constructs used to interchange and present images.

**issue.** A controversial matter that needs to be discussed and resolved.

**IT.** Information Technology. The hardware, software, services and facilities which a company uses to store, process and retrieve data and information.

**ITSO.** International Technical Support Organization.

## J

**job.** The physical implementation of business processes, as expressed through manual activities and interfaces with customers, systems, and internal or external organizations. Examples of a job: marketing representative or customer service representative.

## K

## L

**line of business (LOB).** A family of either, or both, products and services, having common characteristics.

**LN:DI.** Lotus Notes: Document Imaging support.

**LOB.** See *line of business*.

**LSFR.** Library Server Function Request. A request block sent by the client to the library server to perform a piece of work.

## M

**market-driven quality.** The quality factors that are derived from customer satisfaction surveys, feedback, or other market research studies.

**measurement.** The extent, quality, or size of an object. For example, the measurements of the object *box* can be expressed by *volume, height, weight*, and the measurement of the object *process* can be expressed by *effectiveness, cost, duration, or maturity*.

**methodology.** A collection of related techniques and notations based on a common philosophy to solve a series of major tasks.

**metrics.** The definition and description of a procedure for taking measurements. Metrics can be assigned to activities as *actual, target, or ultimate* values.

**MGDS.** Machine Generated Data Stream

**mission.** A general statement of the purpose and nature of an enterprise.

**MO:DCA.** Mixed Object Document Content Architecture. An IBM architecture developed to allow the interchange of object data among applications within the interchange environment and among environments.

**moment of truth.** Your customer's perception resulting from any contact that your company has

with that customer either in person or through a document, product, or system. See also *service encounter*.

**MQSeries.** Message Queue Series: a communications layer, which establishes connection between two systems. With MQSeries, messages can be sent and received through queues.

## N

## O

**OCR.** Optical Character Recognition

**OLE.** Object Linking and Embedding

**opportunity area (OA).** A point in a process or process path where possibilities, advantages, or other positive factors can help an enterprise to meet its goals.

**out-of-process server.** An OLE server running in its own process space is called out-of-process server. This kind of OLE server is implemented as an executable file.

**outsource.** To buy services under contract from another company; for example, a company could buy all data processing services from a data processing company on an ongoing basis.

## P

**patch code.** Industry standard pattern of horizontal lines; You can use patch codes to indicate the beginning of a new folder or document.

**platform.** The operating system environment in which a program runs. FlowMark is a distributed, cross-platform application, which can run on OS/2, AIX, and Windows.

**PPDS.** Page Printer Data Stream

**procedure.** A series of steps or activities required to perform a process.

**PROFS.** Professional Office System. Predecessor to IBM OfficeVision.

**program.** A computer-based application that supports the work to be done in an activity. Program activities reference executable programs using the logical names associated with the programs.

**program activity.** An activity to which a registered program is assigned. Starting this activity invokes the program.

## Q

**quantum leap.** A radical change in direction and results. For example, radical changes to your company should mean quantum leap improvements in your business results.

## R

**report.** Formatted text and graphics, usually generated by a system.

**report layout.** The design and specifications for the format of a printed report. See also *screen layout*.

**repository.** An organized, shared collection of data or information that supports business process re-engineering, application development, or business or systems management. It is usually automated and is implemented as a database.

**representative attribute.** An attribute that defines a data or information flow. For example, representative attributes for the data flow *customer data* could be customer name, customer address, or customer number.

**representative attributes list (RAL).** A list of representative attributes that define a data or information flow.

**REXX.** Restructured extended executor language. A procedures language.

**RPC.** Remote Procedure Call. Using RPC, an application is able to call routines belonging to an application hosted on another computer that is connected via a network.

## S

**SB.** service broker

**SBM.** Service Broker Manager

**screen layout.** The design and specifications of the image that the user sees on the screen of a system. See also *report layout*.

**server.** A server is a system that is designed to share data with client applications. Servers and clients are often connected via a network or may be simply located on the same computer.

**service.** A collection of related features that respond to requests for specific activities or yield information, is called service. The services are accessed through a consistent and published interface of the service that encapsulates its implementation.

In the Service Broker Architecture, a service DLL contains service functions which interface with the

base product. A service function receives the user data from the Service Broker Manager and calls the appropriate product APIs to perform the work. The results are returned via the Service Broker Manager to the service requester and then back to the user application.

**Service Broker Architecture.** The Service Broker Architecture is designed to allow users of workflow systems or other applications to work with multiple tools in multiple interactions without the need to reload the tool each time or perform multiple logons to server sessions. The aim is to allow all required sessions and tools to be available during the work session without the users needing to be aware of the application execution or logic.

**Service Broker Manager.** A FlowMark component that controls the operation of service broker sessions. This includes the interaction between service requester and services, between service broker and services, and also the initialization of the service brokers and services.

**service encounter.** Any point of contact with your customer. See also *moment of truth*.

**services marketing principles.** Guiding principles for any services-oriented company that wants to delight customers with reliability, responsiveness, courtesy, caring, competence, credibility, and knowledge of your customers.

**service requester.** A service requester is the interface to the user application. The user application calls the service requester APIs to request the base product to perform some work. The service requester formats the user data and issues a request to the service broker which invokes the appropriate service function via service threads.

**service thread.** One or more service threads are started for each service. Each thread receives information from the service requester to call the respective service function. When the function has been called, the thread returns information to the service requester.

**shredder.** A machine for the destruction of documents.

**skill.** An ability, proficiency, expertness of a person that comes from training, practice, and experience.

**strategy.** A pattern of goals, policies, and plans that specify how an enterprise is to function over a given period of time. A strategy can specify areas for product development and marketing as well as techniques for responding to competition.

**subject expert.** A specialist in a particular area of expertise, such as workflow or document management.

**substitute.** In FlowMark: the person to whom an activity is automatically transferred if the person to whom the activity is assigned is flagged as absent.

**symbol.** A graphical representation of an object or thing, which may be abstract in nature; for example, a line with an arrow is the symbol for a data or information flow.

**system.** A set of processes with a common aim that act on data or information using input and producing output. Usually used in the context of *information system* or *data processing system*.

**system development.** The design, code, test, implementation, and maintenance of an information system. Can also denote a business function, which performs systems development.

## T

**TCP/IP.** Transmission control protocol / Internet protocol. A commonly used protocol for various network environments, such as Internet, Host communications, and LANs. FlowMark uses either TCP/IP or APPC. See also *APPC*.

**technique.** A procedure for doing anything in an orderly way; a method.

**TIFF.** Tag Image File Format

**time duration details.** The break-down of the time characteristics of a process into individual time components.

**TOC.** Table Of Contents

**top-down.** Modeling or designing business processes from their most abstract level down to their most concrete and constrained levels of detail. See also *bottom-up*.

**top-level process.** In FlowMark: a process that is started from a user's process list or from an application program.

**total job profile.** All design aspects of a job. It can include the job blueprint, skills requirements, systems and tools requirements, job level, and ergonomics.

**trigger.** An event or condition that start or ends an activity, a process, or process path.

## U

**unit of measure.** A standard dimension, extent, or quantity, such as days, hours, or minutes, dollars of cents, or meters or centimeters. A unit of measure is used for measurement purposes.

## V

**VHLPI.** VisualInfo high-level programming interface. The service broker for VisualInfo. It can be used to integrate FlowMark with VisualInfo for document management connectivity and services.

**VisualBasic.** A programming language under MS Windows.

**VisualInfo.** An IBM product for document management.

## W

**WF.** workflow

**workflow.** A sequence of activities (units of work). A movement of units of work through a process. In process-based applications, it can be part of a control flow. See also *control flow*, *task flow*, and *event flow*.

**workflow management.** The art of controlling or administering a sequence of activities.

**WFMC.** Workflow Management Coalition.

## X

## Y

## Z



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