

VisualAge Smalltalk



# Installation Guide

*Version 5.0*

**Note**

Before using this document, read the general information under “Notices” on page v.

**First Edition (July 1999)**

This edition applies to Version 5.0 of the VisualAge Smalltalk products, and to all subsequent releases and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product. The term “VisualAge”, as used in this publication, refers to the VisualAge Smalltalk product set.

Portions of this book describe materials developed by Object Technology International Inc. of Ottawa, Ontario, Canada. Object Technology International Inc. is a subsidiary of the IBM Corporation.

Order publications by phone or fax. IBM Software Manufacturing Solutions takes publication orders between 8:30 a.m. and 7:00 p.m. eastern standard time (EST). The phone number is (800) 879-2755. The fax number is (800) 284-4721.

You can also order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address below.

If you have comments about this document, address them to: IBM Corporation, Attn: Information Development, Department T71B Building 062, P.O. Box 12195, Research Triangle Park, NC 27709-2195. You can fax comments to (919) 254-0206.

If you have comments about the product, address them to: IBM Corporation, Attn: Department TJ5B Building 062, P.O. Box 12195, Research Triangle Park, NC 27709-2195. You can fax comments to (919) 254-4862.

When you send information to IBM, you grant IBM a non-exclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1999. All rights reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

---

# Contents

<b>Notices . . . . .</b>	<b>v</b>	Using EMADMIN . . . . .	21
Trademarks . . . . .	v	Performing a bench test (bench command)	22
<b>About this book. . . . .</b>	<b>vii</b>	Copying files (copy command) . . . . .	23
Who this book is for . . . . .	vii	Listing current connections (list command)	24
Conventions used in this book . . . . .	vii	Displaying EMSRV options (opts command)	25
Tell us what you think . . . . .	viii	Displaying current EMSRV statistics (stat command) . . . . .	26
<b>Chapter 1. Installing VisualAge Smalltalk . . . . .</b>	<b>1</b>	Shutting down EMSRV stopping connections (stop command) . . . . .	27
Installing VisualAge on Windows and OS/2 . . . . .	1	The EMDEVNUM utility for UNIX. . . . .	28
Overview of installation . . . . .	1	<b>Chapter 4. EMSRV for Windows NT . . . . .</b>	<b>29</b>
Installing the library . . . . .	2	Setting up EMSRV for Windows NT . . . . .	29
Installing a client. . . . .	4	Starting EMSRV for Windows NT from the command line. . . . .	29
Installing Server runtime . . . . .	6	Authorizing the EMSRV User on Windows NT . . . . .	30
Unlocking development products . . . . .	7	Starting EMSRV for Windows NT as an NT service . . . . .	30
Uninstalling VisualAge on Windows . . . . .	9	Guidelines for running EMRSV as an NT service . . . . .	31
Uninstalling VisualAge on OS/2 . . . . .	9	Troubleshooting EMSRV as a Windows NT service . . . . .	32
Installing VisualAge on UNIX . . . . .	10	<b>Chapter 5. EMSRV for OS/2. . . . .</b>	<b>33</b>
Starting installation . . . . .	10	Setting up EMSRV for OS/2 . . . . .	33
Installing the library . . . . .	10	Starting EMSRV for OS/2 . . . . .	33
Installing a client. . . . .	11	<b>Chapter 6. EMSRV for NetWare . . . . .</b>	<b>35</b>
Installing Server runtime . . . . .	12	Setting up EMSRV for NetWare . . . . .	35
Unlocking development products . . . . .	12	User authentication using EMSRV for NetWare (NDS) . . . . .	36
Configuration and startup. . . . .	13	Starting EMSRV for NetWare. . . . .	37
Uninstalling VisualAge on AIX . . . . .	14	Operating EMSRV for NetWare . . . . .	37
<b>Chapter 2. Setting up team programming with EMSRV . . . . .</b>	<b>17</b>	Console screens . . . . .	37
Server Considerations in Team Development . . . . .	17	Menu choices . . . . .	38
Server capacity and availability . . . . .	17	EMSRV for NetWare messages and reporting . . . . .	39
Library size . . . . .	17	Shutting down EMSRV on NetWare . . . . .	40
Version of EMSRV . . . . .	17	<b>Chapter 7. EMSRV for UNIX operating systems . . . . .</b>	<b>41</b>
Threads and performance . . . . .	18	Setting up EMSRV for UNIX operating systems . . . . .	41
TCP/IP connections. . . . .	18		
Server files . . . . .	18		
Installation. . . . .	18		
File access rights . . . . .	19		
Planning for library growth . . . . .	19		
Password validation. . . . .	19		
Library path names . . . . .	20		
File access rights . . . . .	20		
File creation and ownership . . . . .	20		
<b>Chapter 3. The EMADMIN utility . . . . .</b>	<b>21</b>		

Starting EMSRV for UNIX operating systems . . . . . 41

**EMSRV Startup options . . . . . 43**

**EMSRV messages and reporting . . . . 47**

**Index . . . . . 49**

---

## Notices

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any of the intellectual property rights of IBM may be used instead of the IBM product, program, or service. The evaluation and verification of operation in conjunction with other products, except those expressly designated by IBM, are the responsibility of the user.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Licensing, IBM Corporation, 500 Columbus Avenue, Thornwood, NY, USA 10594.

IBM may change this publication, the product described herein, or both.

---

## Trademarks

The following terms are trademarks of the IBM Corporation in the United States, other countries, or both:

AIX  
IBM  
OS/2  
VisualAge

The following terms are trademarks of other companies:

Windows	Microsoft Corporation
UNIX	X/Open Company Limited

Windows is a trademark of Microsoft Corporation.

UNIX is a registered trademark in the United States and other countries licensed exclusively through X/Open Company Limited.



---

## About this book

This book guides you through installing the VisualAge Smalltalk and its associated features.

This book also covers setting up a team development environment, including information on setting up and using EMSRV, the library management server.

---

## Who this book is for

This book is written for anybody who needs to install VisualAge Smalltalk. It is also intended for administrators, or anyone who might be maintaining the library server for a team development group.

---

## Conventions used in this book

This book uses several conventions that you might not have seen in other product manuals.

Tips and environment-specific information are flagged with icons:



Shortcut techniques and other tips



VisualAge for OS/2



VisualAge for Windows



VisualAge for UNIX platforms

These highlighting conventions are used in the text:

Highlight style	Used for	Example
<b>Boldface</b>	New terms the first time they are used	VisualAge uses <b>construction from parts</b> to develop software by assembling and connecting reusable components called <b>parts</b> .
	Items you can select, such as push buttons and menu choices	Select <b>Add Part</b> from the <b>Options</b> pull-down. Type the part's class and select <b>OK</b> .
<i>Italics</i>	Special emphasis	Do <i>not</i> save the image.
	Titles of publications	Refer to the <i>VisualAge Smalltalk User's Guide</i> .
	Text that the product displays	The status area displays <i>Category: Data Entry</i> .
	VisualAge programming objects, such as <i>attributes, actions, events, composite parts, and script names</i>	Connect the window's <i>aboutToOpenWidget</i> event to the <i>initializeWhereClause</i> script.
Monospace font	VisualAge scripts and other examples of Smalltalk code	<pre>doSomething   aNumber aString   aNumber := 5 * 10. aString := 'abc'.</pre>
	Text you can enter	For the customer name, type John Doe

---

## Tell us what you think

Please take a few moments to tell us what you think about this book. The only way for us to know if you are satisfied with our books or if we can improve their quality is through feedback from customers like you. A readers comment form is available on our Web site.

---

## Chapter 1. Installing VisualAge Smalltalk

This chapter guides you through installing VisualAge Smalltalk on Windows, OS/2, and UNIX platforms. If you are migrating from a previous version of VisualAge Smalltalk, please refer to the *VisualAge Smalltalk Migration Guide* before starting the installation.

---

### Installing VisualAge on Windows and OS/2

To start the installation utility, insert the Windows and OS/2 CD in your CD-ROM drive and do the following:

**Note:** On Windows NT, Windows 95, and Windows 98, the install program will start automatically if you have autoplay.

1. Change the directory on the product CD-ROM to `INSTALL` then the subdirectory representing the operating system base on which you want to install VisualAge. For example, `install\windows`.
2. On Windows, run **setup.exe**. On OS/2, run **install.exe**.
3. For late-breaking information, select **View readme**.
4. Follow the instructions for installing the different products.

### Overview of installation

There are two pieces to the installation of VisualAge Smalltalk: the manager library and the client. The manager library is the repository that holds all of your Smalltalk code. The client consists of visual programming tools and communication links to the server.

To install VisualAge Smalltalk in a team development environment, a system administrator should install the manager library on a network attached server computer. The individual developers can then install the client code locally on their machine and connect to the manager library using EMSRV. When you install VisualAge Smalltalk this way you will be asked during installation to specify the name of the server and the location where the manager library is installed on the server.

If you are working independently of other developers you can install both the manager library and the client code on one machine, and connect from the client to the manager using file I/O access. This is also referred to as a standalone installation.

It is recommended that you install the manager library before installing the client.

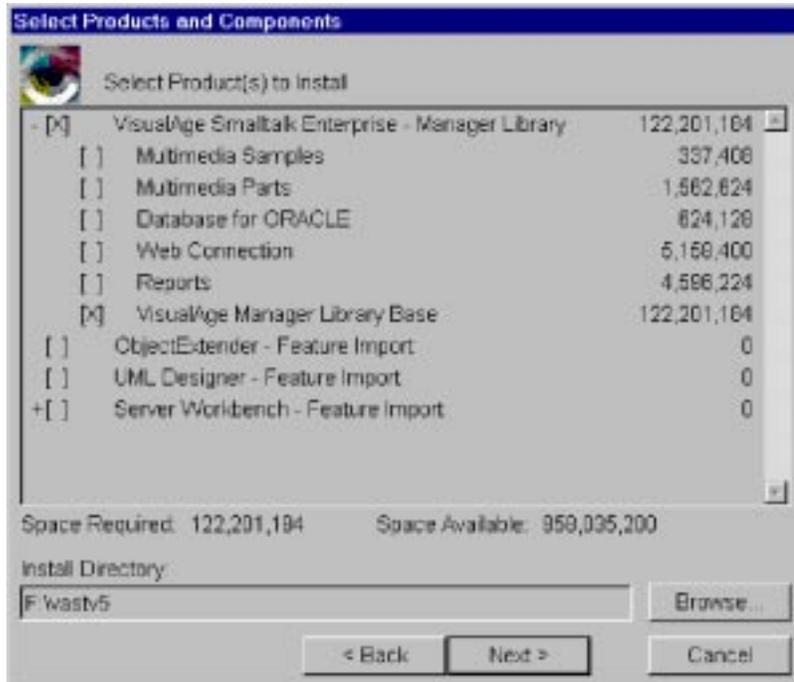
## Installing the library

The manager library holds your VisualAge Smalltalk source code. The VisualAge Smalltalk Enterprise - Manager Library should be installed before installing VisualAge Smalltalk Client. You can either install the library on a network server and connect using EMSRV for team programming, or you can install the library on your local machine and connect to the repository using File I/O access or EMSRV if it is supported on your operating system.

When you install the manager, it is also important to install the .dat files for any features or base components. These .dat files provide the additional code for the VisualAge Smalltalk features.

To install the VisualAge Smalltalk Enterprise - Manager Library, do the following:

1. In the Installation utility, select **Install Manager Library**.
2. Read the License Agreement. If you agree to the terms and conditions, select **Yes**. Otherwise, exit the installation.
3. On the Select Products and Components window, select the + (plus sign) next to VisualAge Smalltalk Enterprise - Library. This lists the .dat files for all of the features.
4. Select **VisualAge Client Base** and any other features that clients connected to this manager will install.



- Specify the base directory where the library and feature files will be installed, then select **Next**.

**Note:** Record the path where the manager is installed. Each person installing a VisualAge Smalltalk Client will need to know the path where the manager is installed and the IP address or alias of the server where the manager is installed. For example, if you specify `f:\vastv5\`, then the manager will be installed in `f:\vastv5\manager` and the feature files will be installed in `f:\vastv5\import`.

- Verify the information, then select **Install** to finish installing the library.

If you are using EMSRV, you must set up and start EMSRV after you install the library.

### Windows NT

- Setting up EMSRV on Windows NT
- Starting EMSRV for Windows NT from the command line
- Authorizing the EMSRV User on Windows NT
- Starting EMSRV for Windows NT as an NT service
- Troubleshooting EMSRV as a Windows NT service

## OS/2

- Setting up EMSRV for OS/2
- Starting EMSRV for OS/2

## NetWare

- Setting up EMSRV for NetWare
- Starting EMSRV for NetWare
- Operating EMSRV for NetWare
- Shutting down EMSRV on NetWare
- Setting up EMSRV for NetWare
- Starting EMSRV for NetWare
- Operating EMSRV for NetWare
- Shutting down EMSRV on NetWare

## Installing a client

Before installing a VisualAge Smalltalk Client, you need to know some information about where the library is installed. The manager is either installed on your local machine for standalone development or on a network server for team development.

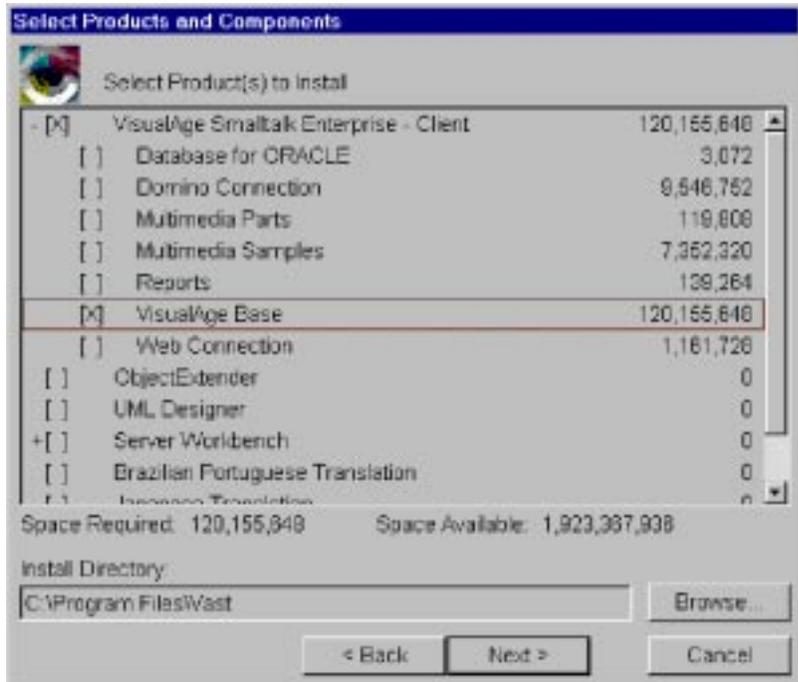
If the library is installed on a network server for team development, you must use EMSRV to connect to the manager. The EMSRV environment is set up during the client install. The library administrator should provide the following information about the VisualAge library:

- The TCP\IP hostname or the IP address (dotted decimal address) of the server where the library is installed
- The absolute path for the manager library on the server machine. The drive letter must be the drive letter **on** the server machine, not the mapped drive letter for the server machine.

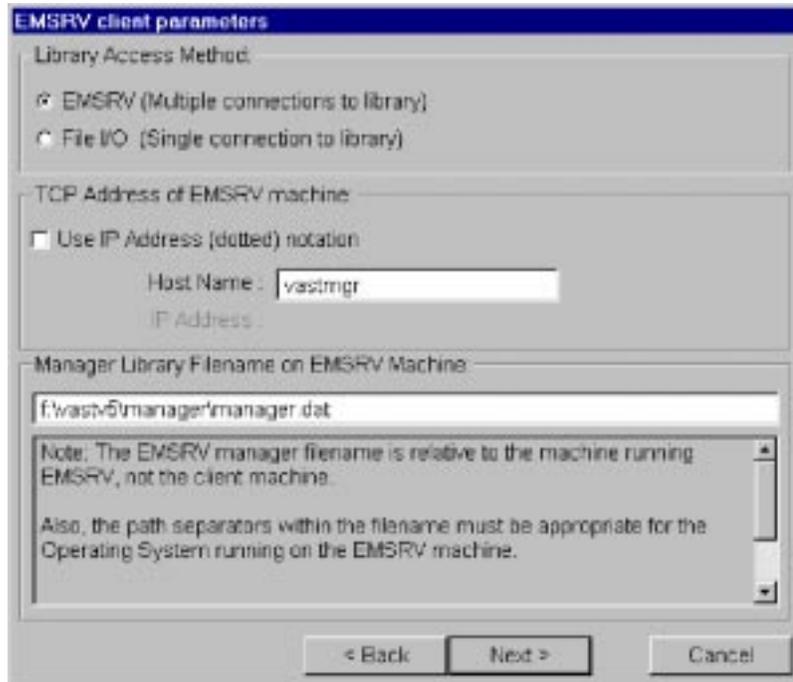
To install a VisualAge Smalltalk client, do the following:

1. In the Installation utility, select **Install Client**.
2. Read the License Agreement. If you agree to the terms and conditions, select **Yes**. Otherwise, exit the installation.
3. On the Select Products and Components window, select all of the products and components you want to install.

**Note:** Select the + (plus sign) next to a product to expand the list of components you can install. Select the components you want to install. Be sure to select **VisualAge Client Base**.



4. Select any features you want to install.
5. Specify the directory where you want to install VisualAge Smalltalk, then select **Next**.
6. On the EMSRV client parameters window, specify the location of the server where the library is installed, either by specifying the hostname or IP address for the server.



7. Specify the path **on the server** where the library is installed.

For example, if the manager is installed on a machine named `vastmgr` in the directory `f:\vastv5\manager\manager.dat`. Even if you have `vastmgr` mapped as `M:`, you would specify `f:\vastv5\manager\manager.dat` as the path on the server where the library is installed.

**Note:** If you are using a shared library that resides on a network server, this path should be provided to you by your library administrator.

8. Verify the information, then select **Install** to finish installing VisualAge Smalltalk.

## Installing Server runtime

To install VisualAge Smalltalk Server Runtime, do the following:

1. On the Installation window, select **Install Server Runtime**, then select **Install**.
2. On the License Agreement window, read the license agreement. If you accept the terms, select **Yes**.

**Note:** If you do not agree with the terms and conditions listed in the License Agreement, select **No** and exit the Unlock Program.

3. On the Select Products and Components window, select **Server Runtime**.
4. Specify the directory where you want to install VisualAge Smalltalk, then select **Next**.
5. Verify the information, then select **Install** to finish installing VisualAge Smalltalk.

## Unlocking development products

If you have purchased VisualAge Smalltalk Enterprise, you must unlock the product after you install. If you do not unlock the product, you will be using an evaluation version of the product, which will not let you save your image after 30 days.

You must unlock the Server runtime product after you install. There is no evaluation version of the Server runtime product.

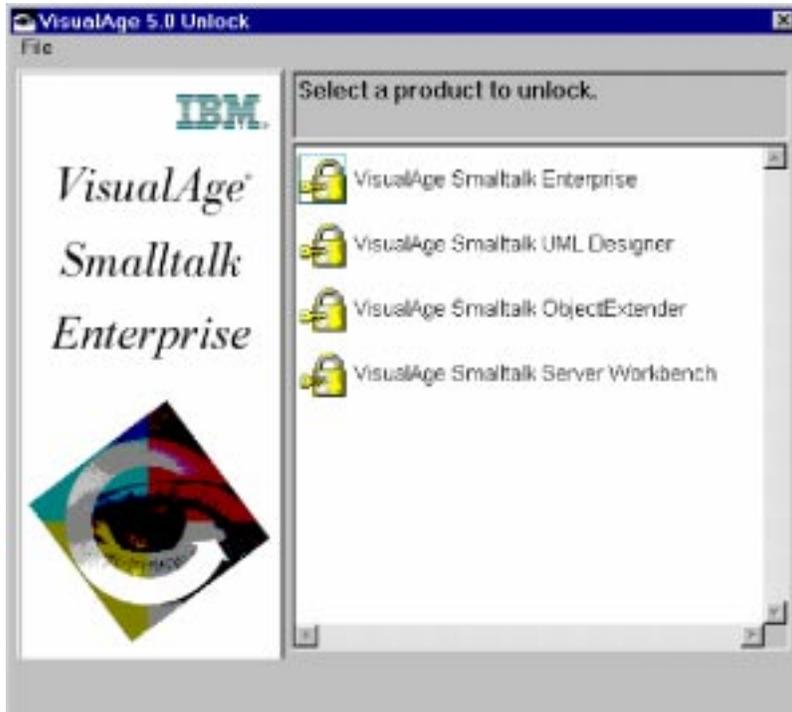
To unlock VisualAge Smalltalk Enterprise, or any of the purchased features, first start the Unlock utility. In your VisualAge Smalltalk Enterprise program folder, select **Unlock Product**. Then do the following:

1. Select the ini file that supports the products you want to unlock.
2. Select the **File** pull down.
3. Select **Select Ini File To Unlock**.
4. In the Choose ini file to unlock window, locate the ini files you need to unlock.

VisualAge Smalltalk ships two ini files. ABT.INI is for all client development, and is in the image subdirectory. ESVIO.INI is for Server Workbench simulation testing and for Server Runtime and is also in the image subdirectory.

5. Select **Open**.

The Unlock utility now lists all of the VisualAge products you can unlock.



6. Select the product you want to unlock.

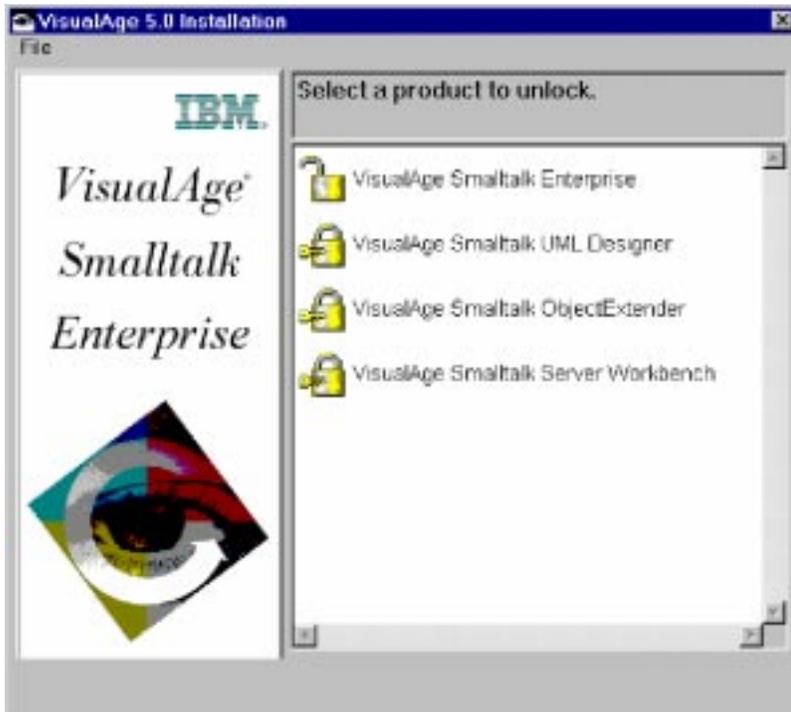
7. In the License Agreement window, select your country, then read the license. If you agree with the terms and conditions, select **Yes**.

**Note:** If you do not agree with the terms and conditions listed in the License Agreement, select **No** and exit the Unlock Program.

8. In the Unlock Product window, enter your Customer number and the Key that you received when you purchased the product.

9. Select **Unlock**.

The Unlock utility now shows that the product is unlocked.



You must unlock each product you have purchased. Evaluation features are marked with \*\* in the Load/Unload Features window in VisualAge. If you load an evaluation feature into your image, even if you have unlocked VisualAge, your image will become an evaluation image. When you unload the evaluation feature, your image will still be an evaluation image. For this reason, be sure to unlock all features you have purchased before you load them into your image.

## Uninstalling VisualAge on Windows

To uninstall VisualAge on Windows, from the **Start Menu**, select **Control Panel** → **Add/Remove Programs**. Select the VisualAge Smalltalk product you installed, then select **Remove**.

## Uninstalling VisualAge on OS/2

To uninstall VisualAge on OS/2, do the following:

1. Double-click on the **Uninstall VisualAge Smalltalk Enterprise** icon in the VisualAge folder.
2. Double-click on the uninstall icon for the product you want to uninstall.

3. In the Delete window, select the components you want to uninstall, then select **Delete**.
4. Reboot your computer.

---

## Installing VisualAge on UNIX

This section guides you through installing VisualAge on UNIX.

### Starting installation

To start the installation utility, do the following:

1. Login under the 'root' userid.
2. Mount your CD-ROM drive.
3. Change your current working directory to a platform-appropriate subdirectory of the CD-ROM root directory:
  - aix/install
  - hpux/install
  - solaris/install
4. Run **Install**.
  - From the shell command line, run `xterm -sb -e ./install.&`  
or
  - From your CDE FileManager, double-click on the **install** icon.
5. On the Welcome window, select **View Readme** to view the readme file for any late-breaking information on the UNIX version of VisualAge.
6. On the VisualAge Installation window, select **Install**.
7. Follow the steps for installing the individual products.

**Note:** The installer writes installation status messages to its 'stdout' stream. These messages will appear within the dtterm or xterm where the installer was started. When the installation is finished, this window will show a **Finished** message.

### Installing the library

The manager library holds your VisualAge Smalltalk source code. The VisualAge Smalltalk Enterprise - Manager Library should be installed before installing VisualAge Smalltalk Client. The Manager should be installed first, on a server accessible by those application programmers who will be using VisualAge. The Manager can be installed just once, by a system administrator. The client should be installed by the system administrator on each workstation.

When you install the manager, it is also important to install the .dat files for any features or base components. These .dat files provide the additional source code for the features.

To install the VisualAge Smalltalk Enterprise - Manager Library, do the following:

1. In the Installation utility, select **VisualAge Smalltalk Enterprise - Manager Library**.
2. On the License Agreement window, read the license agreement. If you agree to the terms and conditions, select **Yes**. Otherwise, exit the installation.

The files are installed to /opt/IBMvast directory.

The size of the library will grow considerably as optional features are loaded and as source code accumulates during the course of a development effort. It is possible to install the library on a filesystem other than /opt, and to run the EMSRV daemon with the library on the alternate filesystem. This may be a convenient configuration for managing the growth of the library and for maintenance backups.

To install the library on an alternate filesystem you must complete a couple of steps manually. Before performing the install, create a /opt/IBMvast/manager filesystem which is mounted on a logical volume other than the volume on which /opt is mounted, or define /opt/IBMvast/manager as a symbolic link to a directory on such an alternate filesystem.

**Note:** The filesystem on which the library resides must be mounted on a local drive. The EMSRV daemon will not operate properly if the library file is on a remote NFS filesystem.

If you are using EMSRV, you must set up and start EMSRV after you install the library.

- Setting up EMSRV for UNIX operating systems
- Starting EMSRV for UNIX operating systems

## Installing a client

Before installing a VisualAge Smalltalk Client, you need to know some information about where the library is installed.

You must use EMSRV to connect to the manager. The EMSRV environment is set up during the client install. The library administrator should provide the following information about the VisualAge library:

- The TCP hostname or the IP address (dotted decimal address) of the server where the library is installed

- The path on the server where the library is installed

To install a VisualAge Smalltalk client, do the following:

1. In the Installation utility, select **VisualAge Smalltalk Enterprise - Client**.
2. Read the License Agreement. If you agree to the terms and conditions, select **Yes**. Otherwise, exit the installation.

The files are installed to /opt/IBMvast directory.

## Installing Server runtime

To install VisualAge Smalltalk Server Runtime, do the following:

1. On the Installation window, select Install Server Runtime, then select **Install**.
2. On the License Agreement window, read the license agreement. If you accept the terms, select **Yes**.

**Note:** If you do not agree with the terms and conditions listed in the License Agreement, select **No** and exit the Unlock Program.

The files are installed to /opt/IBMvast/server.

## Unlocking development products

If you have purchased VisualAge Smalltalk Enterprise - Client or any of its associated features, a system administrator must unlock the product after install. If the product is not unlocked, you will be using a evaluation version of the product, which will not let you save your image after 30 days.

A system administrator must unlock VisualAge Smalltalk Server Runtime after you install. There is no evaluation version of the Server runtime product.

To unlock VisualAge, or any of the purchased features, in your CDE FileManager, change to the /opt/IBMvast/bin directory. Double-click on **vaunlock**, then do the following:

1. Select the ini file that supports the products you want to unlock.
2. Select the **File** pull down.
3. Select **Select Ini File To Unlock**.
4. In the Choose ini file to unlock window, locate the ini files you need to unlock.

VisualAge Smalltalk ships two ini files. ABT.INI is for all client development, and is in the image subdirectory. ABTNX.INI is for Server Workbench simulation testing and for Server Runtime and is also in the image subdirectory.

5. Select **Open**.

The Unlock utility now lists all of the VisualAge products you can unlock.

6. Select the product you want to unlock.
7. In the License Agreement window, select your country, then read the license. If you agree with the terms and conditions, select **Yes**.

**Note:** If you do not agree with the terms and conditions listed in the License Agreement, select **No** and exit the Unlock Program.

8. In the Unlock Product window, enter your Customer number and the Key that you received when you purchased the product.
9. Select **Unlock**.

The Unlock utility now shows that the product is unlocked.

## Configuration and startup

Before you can start VisualAge you must configure your installation.

### VisualAge Smalltalk Enterprise - Client

The Smalltalk image start-up configuration file includes statements which may need to be tailored to your network configuration. The file, `abt.ini`, is located in the `/opt/IBMvast/va` directory.

The following IP host specifications must be verified or modified in your `/opt/IBMvast/va/abt.ini` file according to your configuration.

```
ServerAddress=  
importServerAddress=
```

They are expected to contain the host name or dotted-decimal IP address of the host where the server component of the product was installed.

**Note:** By default, this is the system's loopback address — `localhost`. This will only work if you are using a client that is installed on the same computer as the manager.

### VisualAge Smalltalk Enterprise - Manager

The VisualAge manager component uses a daemon to manage concurrent access to library and import files. This program is named `EMSRV`.

To start the `EMSRV` process, do the following:

1. `su -`
2. `cd /opt/IBMvast/manager`
3. `/opt/IBMvast/bin/emdevnum /opt/IBMvast/manager/mgr50.dat`

This shows you the device number of the mgr50.dat file. The message might read The device number of /opt/IBMvast/manager/mgr50.dat is 64.

4. /opt/IBMvast/bin/emsrv -xd<device\_number>

For example, using the device number returned in the previous step, type /opt/IBMvast/bin/emsrv -xd64

For more options on starting EMSRV, type `emsrv -h` at a command prompt.

**Note:** Before you shut down your system or uninstall VisualAge, you should stop the EMSRV process by issuing the command: /opt/IBMvast/bin/emadmin stop.

### VisualAge developer setup

Each VisualAge developer requires certain files in their own working directory. A copy of the appropriate files may be obtained by running the program /opt/IBMvast/bin/vasetup.

When you run vasetup VisualAge copies the master abt.ini file to your working directory. If the system administrator makes any additional changes to the master abt.ini file, for example unlocking the Client Base or any features, the copy of abt.ini that is in your working directory will not match the master abt.ini in /opt/IBMvast/va. If the administrator unlocks components in the master abt.ini file, but those components are not unlocked in your abt.ini you can do one of two things:

- If you have not made any changes to your copy of abt.ini, you can copy the updated master abt.ini from /opt/IBMvast/va to your working directory. This will overwrite the abt.ini that is in your working directory with a new copy of the master abt.ini containing the keys for the unlocked products.
- If you have made changes to your copy of abt.ini, you can run the unlock utility against your copy of abt.ini. In the unlock utility, make sure that you specify the location for your personal copy of abt.ini.

### Server runtime setup

To run your Server applications, you will need certain files in your working directory. This should not be the same directory. This should not be the same directory used to hold VisualAge developer files since some of the files have the same name but different content. A copy of the appropriate files may be obtained by running the program /opt/IBMvast/server/bin/vasetup.

## Uninstalling VisualAge on AIX

Before you can install VisualAge on AIX, you have to uninstall any previous releases of VisualAge.

**Note:** Back up the previous version's manager and any other library files you intend to import into the Version 4.5 manager before you uninstall.

Before you uninstall a previous version of VisualAge on AIX, do the following:

1. Export any applications or configuration maps from your existing library that you intend to use with the upgraded product.
2. Archive your library files, exports, and any other files that you may have added or customized for your site.

To uninstall a previous version of VisualAge on AIX, do the following:

1. Login as root user.
2. Start the System Management Interface Tool (SMIT). Enter `smit install_remove&` on the command line of the `aixterm` where you are logged in as root.
3. Select the **List** button for the **SOFTWARE name** option and select the products you want to remove.
4. Change the **PREVIEW only?** option to NO.
5. Leave the default for the rest of the options.
6. Select **OK**.

A window appears, showing the actual AIX command being executed and a log of execution status. The command text is also written to the file `smit.script`, and the log text is written to the file `smit.log`.

7. Select **Exit Smit** from the **Exit** pull-down menu.
8. Remove the directories remaining under `/usr` and `/usr/lpp` by doing the following:

```
rm -rf /usr/visualage /usr/lpp/visualage
```



---

## Chapter 2. Setting up team programming with EMSRV

EMSRV is the program that manages concurrent access to shared repositories on the server. It uses native locking calls to manage file input/output requests against the library files on the server. The administrator must start the library server, using the `emsrv` command, before clients can connect to the shared library. The administrator then uses the `EMADMIN` utility to manage the library server.

**Note:** VisualAge Smalltalk supports EMSRV 6.23 or later. These releases require that library files reside on a local file system.

---

### Server Considerations in Team Development

To enable team programming with VisualAge Smalltalk, the library server (EMSRV) must be installed on any computer where one or more shared repositories will reside. You may have one or more library servers in your team development environment. Below are some issues to consider when planning where to install shared repositories and the library server.

The EMSRV client process runs automatically on VisualAge Smalltalk Enterprise clients.

#### Server capacity and availability

Run EMSRV on server-class computers. For optimal availability and performance, servers should be dedicated; that is, shared repositories should not reside on a developer's workstation.

#### Library size

EMSRV supports repositories of up to 16 GB. The actual size limit may be smaller depending on the capabilities of the file system or operating system where EMSRV is running. Refer to the VisualAge Smalltalk web page for more information.

#### Version of EMSRV

VisualAge Smalltalk Version 5.0 supports EMSRV Version 6.23 or higher. If you have a server that is running EMSRV code prior to EMSRV Version 6.0, the new EMSRV utilities will not work. For example, if your server is running EMSRV Version 5.0, you cannot use `EMADMIN` Version 6.23 with that server. We recommend that you upgrade to the latest versions of EMSRV and `EMADMIN`.

## Threads and performance

EMSRV for Windows NT and NetWare use one thread per client connection. This means that EMSRV readily scales to support more connections on these platforms. EMSRV automatically spawns threads to handle client connections.

EMSRV for OS/2 or UNIX only use one process per client connection. This means that EMSRV performance degrades slightly as the number of connections increases.

## TCP/IP connections

EMSRV uses TCP/IP for its client/server network connections. The default limit for client connections to a server is 256. The default limit for client connections can be changed by using the `-M` command line option when starting EMSRV. Theoretically, the number is bounded primarily by memory, but testing has shown that some TCP/IP stacks will run out of stream sockets before this limit of memory is reached. Typically, this number is greater than one hundred but it varies with each stack.

The default port number for the EMSRV server and client connections is 4800. This can be changed by using a command line parameter on the `EMADMIN` command.

## Server files

The team development server requires the following files:

- The executable program for the library server
- The library server log file
- One or more shared repositories

The server repositories must reside on the same computer as EMSRV. EMSRV does not support accessing a library on a remote file system.

## Installation

EMSRV code is installed when you install the VisualAge Smalltalk Enterprise manager library or client. For information starting EMSRV, see the appropriate section for your operating system:

- EMSRV for Windows NT
- EMSRV for OS/2
- EMSRV for NetWare
- EMSRV for UNIX operating systems

## File access rights

All files created by the library server are owned by the EMSRV user. The library server has the file access rights of the EMSRV user. To ensure the integrity of shared repositories, you may wish to restrict rights for library files to the EMSRV user.

## Planning for library growth

In the team development environment it is quite common for the shared library to grow very large, over several hundred megabytes. You should ensure that the library is stored on a computer that can handle this type of load.

## Password validation

**Note:** Although VisualAge Smalltalk supports password checking through EMSRV, it should not be considered a highly secure system. The password checking is provided mainly as a convenience to maintain an audit trail of changes to library content.

VisualAge Smalltalk supports three levels of user validation. These levels consist of the following:

- No validation. This is the default. It allows users to switch to other users within the VisualAge Smalltalk environment at will.
- Specify VisualAge Smalltalk user IDs and passwords for all users of VisualAge Smalltalk. This option requires the maintenance of a `passwd.dat` file, plus the use of the `-rp` option when starting EMSRV.
- Use the native operating system user names and passwords for all users of VisualAge Smalltalk. This option requires the use of the `-rn` option when loading EMSRV and no maintenance of a `passwd.dat` file.

Native passwords can be used on all platforms except OS/2.

## Using a `passwd.dat` file

If you intend to maintain VisualAge Smalltalk user IDs on your site, you must create and maintain a `passwd.dat` file in the working directory.

This file contains the logon user IDs of all users and their respective passwords for VisualAge Smalltalk. The VisualAge Smalltalk passwords should not be the users' actual logon passwords. The format of the file is one user ID and password per line, with the user ID first, followed by a single space and the password.

**Note:** The `passwd.dat` file should have its access rights restricted so it cannot be read or written by regular VisualAge Smalltalk users.

The following shows an example of a `passwd.dat` file:

```
fred mypassword  
barney secret  
wilma hello  
betty ZXF6
```

### **Shadow passwords on UNIX platforms**

On supported UNIX operating systems, the system may be configured to use shadow passwords. The implementation of shadow passwords requires EMSRV to use different system calls for native password verification. Two different executables, `emsrv` and `emsrv.shadow`, are supplied for UNIX operating systems that support shadow passwords.

The UNIX system administrator must run `emsrv.shadow` if the system uses shadow passwords. If this executable is not run, password verification for clients or remote shutdown will always fail.

### **Library path names**

Install your VisualAge Smalltalk Manager Library on a file systems local to the computer that is running EMSRV.

On Windows and OS/2, **do not** use a mapped network drive.

On UNIX, **do not** use a remote NFS file system.

### **File access rights**

EMSRV has the file access rights of the EMSRV account for PC platforms or the account that starts EMSRV under UNIX. This means that the EMSRV account must have access rights to all directories and files that VisualAge users require. To ensure the integrity of the library file `manager.dat`, the access rights for this file may be restricted to the EMSRV account.

### **File creation and ownership**

All files created by EMSRV are owned by the EMSRV account.

---

## Chapter 3. The EMADMIN utility

The EMADMIN command-line utility helps you manage and communicate with a repository server (EMSRV) from any network attached workstation where emadmin.exe is installed.

The EMADMIN utility consists of the following commands:

<b>Command</b>	<b>Description</b>
bench	Runs bench tests between the client TCP stack and the server TCP stack. The tests can help determine any performance problems.
copy	Copies a VisualAge library on the server.
help	Displays the valid commands and options.
list	Displays the current EMSRV connection list or information about a specific connection.
opts	Displays the current EMSRV options.
stat	Displays EMSRV statistics.
stop	Shuts down EMSRV remotely or kills an active connection.

---

### Using EMADMIN

EMADMIN uses the following syntax:

EMADMIN [command] [command modifier] [option]

<b>Syntax</b>	<b>Description</b>
[command]	The EMADMIN command you are issuing.
[command modifier]	The specific modifiers for that command. These are described in the documentation of each command.
[option]	EMADMIN has one option, the port number, -P<port number>. This parameter specifies the port that EMSRV is using instead of the default. The default port number is 4800. This option is available for all EMSRV commands.

Statistics gathered by EMADMIN can either be displayed on the screen or redirected to a file.

For example, to send the list of current connections to EMSRV running on an IP address 137.65.2.11 to the screen, enter:

```
EMADMIN list 137.65.2.11
```

To send the list of current connections to EMSRV running on the local machine to the file `clist.txt`, enter:

```
EMADMIN list > clist.txt
```

---

## Performing a bench test (bench command)

The **bench** test is used to help determine if there are performance problems between the client TCP stack and the server TCP stack. This command is normally run at the request of IBM's technical support organization so that they can use the log files to analyze the problem.

The bench command runs a series of read tests on a temporary library to determine the performance for different client buffer sizes.

The source file is a temporary library, and you should delete it after the test has been completed. The test takes approximately 1 to 5 minutes, depending on the machine. Use the bench test if you suspect you are having performance problems. Submit the log files to your product vendor's technical support for analysis.

The syntax for the bench command is:

```
emadmin bench [ -t <test repository> -l <logfile> -s <size> -c <chunk size> ] [ <host> ]
```

The bench test operation has the following command modifiers:

Modifier	Description
-t	Specifies the name of the library file to create. By default, a test library <code>testlib.dat</code> is created.
-l	Specifies the name of the log file to create. If the file exists, it is overwritten. By default, a log file <code>embench.log</code> is created.
-s	Specifies the size of the benchmark sweep.
-c	Specifies the maximum chunk size to test.

For example:

```
emadmin bench emsrv.ibm.com -t test1.dat
```

This example creates the test library `test1.dat` and runs the bench test, logging to the default log file `embench.log`.

---

## Copying files (copy command)

The copy command allows you to copy one repository, the source, to another repository, the target. The target repository can be on the same EMSRV server as the source, or on a different EMSRV server that is on the same network.

The copy command locks the library to ensure that the library cannot be changed while it is being copied.

To use the copy command, the following conditions must exist:

- The specified source file must be a valid VisualAge library file.
- The EMADMIN user must know the EMSRV account password.
- The password characters are not displayed on the screen.
- The library file can be copied only if the correct password has been entered.
- To run the copy command in a batch file, the password may be specified as part of the command line. This, in conjunction with the `-q` (quiet) option, ensures that no prompting occurs during the batch process.

The syntax for the copy command is:

```
EMADMIN copy [-o -p<password> -q ] <source> <dest>
```

### Parameter

<source>

<dest>

### Description

A valid VisualAge library file; the source file will be locked.

File specification must be accessible to the EMSRV user account. A VisualAge file specification has the following format:

```
<ip_address>:<file name>
```

<ip\_address> is optional and specifies the host that EMSRV is running on. It can be either the file server IP host name or its Internet address. If a host name is not provided, `localhost` is used.

<file name> is required and is the file specification.

### Modifier

`-o`

### Description

The copy command default behavior does not overwrite an existing file. Normally, you are prompted for overwrite permission. The `-o` option specifies that the destination file may be overwritten without prompting.

<b>Modifier</b>	<b>Description</b>
-p	This specifies the password to use when the copy command is validating access to the source database. The password cannot contain spaces.
-q	By default, the copy command prints the number of bytes transferred during the copy operation. The -q option indicates "quiet operation" and the transfer count is not printed. When this option is enabled, you will not be prompted about potential problems from low disk space.

For example, to copy a library file to a backup file, enter the following command:

```
emadmin copy -o -p secret -q 15.1.33.20:manager.dat 15.1.33.20:test.dat
```

This example copies (in quiet mode) `manager.dat` to `test.dat` in the working directory, overwriting `test.dat` if it exists and using the password "secret" to access the source library.

## Listing current connections (list command)

The `list` command lists current connections for to a repository server. This command sends a message to the host running EMSRV and requests the list of connections. Information about connection statistics and active locks can be obtained using the `list` command modifiers.

**Note:** To verify that all clients are disconnected, use the `list` operation before stopping EMSRV.

The syntax for the `list` command is:

```
EMADMIN list [command modifiers] [<host>]
```

The `list` command has the following modifiers:

<b>Modifier</b>	<b>Description</b>
-s[<connection number>]	Displays the statistics for the connection specified by <connection number>.
-l[<connection number>]	Displays the active locks for the connection specified by <connection number>.

For example:

```
emadmin list emsrv.ibm.com
```

Running this command produces output such as the following:

EMADMIN 6.23

Copyright (C) IBM Corporation 1989-1998

Server Type : EMSRV

Server Version : EMSRV 6.23 for Windows NT Aug 24 1998 20:24:28 (AEST)

EMSRV Connection list for: emsrv.ibm.com

ID	IP Address	Active Locks	Last Request	Repository
0	9.37.192.142	0	18:15:48	e:\emsrv\vast\mgr50.dat
1	9.37.199.122	0	17:37:03	e:\emsrv\vast\mgr50.dat
2	9.37.195.34	0	18:22:08	e:\emsrv\vajava\ivj20.dat
3	9.37.200.45	0	18:15:21	e:\emsrv\vast\mgr50.dat
4	9.37.193.137	0	18:15:40	e:\emsrv\vajava\ivj20.dat
5	9.37.193.82	0	13:55:34	e:\emsrv\vast\mgr45.dat
6	9.37.200.25	0	16:10:09	e:\emsrv\vast\mgr45.dat
7	9.37.198.67	0	16:31:12	e:\emsrv\vast\mgr50.dat
8	9.37.199.153	0	17:01:44	e:\emsrv\vajava\ivj20.dat
9	9.37.194.68	0	15:36:19	e:\emsrv\vast\mgr50.dat

---

## Displaying EMSRV options (opts command)

The opts command enables you to display the current options for a repository server and change the logging level for the repository server.

The syntax for the opts command is:

```
emadmin opts <host> [-s<level>]
```

### Parameter

<host>

### Description

Specifies the host name or IP address of the server where EMSRV is running. If you don't specify a host, the default is the name of the host from which you are issuing the emadmin command.

**Parameter**`-s<level>`**Description**

Specifies a new logging level for EMSRV. This command allows you to change the current logging level without having to access the machine where EMSRV is running. You can specify the following logging levels:

- 0** Logs all operations and messages to the log file.
- 1** Logs warnings and errors to the log file.
- 2** Logs only errors to the log file (default).

For example:

```
emadmin opts emsrv.ibm.com
```

Running this command produces output such as the following:

```
EMADMIN 6.23
Copyright (C) IBM Corporation 1989-1998

Server Type : EMSRV
Server Version : EMSRV 6.23 for Windows NT Aug 24 1998 20:24:28 (AEST)

EMSRV Options for: emsrv.ibm.com
-----
EMSRV 6.23 for Windows NT Aug 24 1998 20:24:28 (AEST) Options
Maximum number of concurrent connections = [256]
Working directory = [e:\emsrv\working]
Password checking = [Disabled]

Logging level = [Error]
Log file name = [emsrv.log]

Allow connection to truncate repositories = [false]
Track EMSRV statistics = [true]
Track process file locking statistics = [false]
Process activity timeout value = [360] sec.
Sleep on lock value = [1000] msec.
Free disk space warning threshold = [10000] KBytes
Restrict repositories to local filesystems = [false]
-----
```

---

## Displaying current EMSRV statistics (stat command)

The stat command displays the statistics for operations completed since the repository server was started. This command also tells you what the current EMSRV working directory is.

The stat command sends a message to a host running EMSRV and requests a copy of the latest statistics. This command provides information such as numbers of file opens, closes, and writes.

The syntax for the stat command is:

```
EMADMIN stat [ <host> ]
```

<b>Parameter</b>	<b>Description</b>
<host>	Specifies the host name or IP address of the server where EMSRV is running. If you don't specify a host, the default is the name of the host from which you are issuing the emadmin command.

For example:

```
EMADMIN stat emsrv.ibm.com
```

Running this command produces output such as the following:

```
EMADMIN 6.23
Copyright (C) IBM Corporation 1989-1998

Server Type : EMSRV
Server Version : EMSRV 6.23 for Windows NT Aug 24 1998 20:24:28 (AEST)
EMSRV Statistics for: emsrv.ibm.com
-----
EMSRV 6.23 for Windows NT Aug 24 1998 20:24:28 (AEST)

Total Connects:                932  Total Disconnects:                881
Total Opens:                   1375 Total Closes:                       1278
Active Locks                   0    Unexpected Connection Closes:     40
Total Locks:                   210057 Total Unlocks:                     210057
Total Reads:                   4308231 Total Writes:                       148506
Total Reads Failed On Lock:    0    Total Locks Failed On Lock:       2
Times Lock Limit Hit:         0
Total Requests Serviced:      5049431 Requests in last interval:         0
Largest Packet Sent:         32780  Largest Packet Received:          32784

Server Has Been Alive For: 3 Days 5 Hours 14 Minutes 17 Seconds
Server Working Directory : e:\emsrv\working
-----
```

---

## Shutting down EMSRV stopping connections (stop command)

The stop command shuts down EMSRV remotely or closes a client connection to EMSRV. When you use this operation to shut down EMSRV, you are prompted for the EMSRV account password. The password characters are not displayed on the screen. EMSRV can be shut down only if you have entered the correct password. The stop command can also be used to terminate a

connection that can no longer communicate with the client. Use the `list` command to obtain the list of connections and their respective connection numbers that can be closed.

The `stop -k <connection number>` command is used to close a client connection to EMSRV.

The syntax for the `stop` command is:

```
emadmin stop <server_address> [ -k <connection_number> ] [ <host> ]
```

<b>Parameter</b>	<b>Description</b>
<code>&lt;server_address&gt;</code>	This optional parameter specifies the host that EMSRV is running on. The parameter can be either the server host name or its Internet address. If a host name is not provided, <code>localhost</code> is used.
<code>-k &lt;connection_number&gt;</code>	This required parameter is the unique connection number of the connection to be terminated.
<code>&lt;host&gt;</code>	Specifies the host name or IP address of the server where EMSRV is running. If you don't specify a host, the default is the name of the host from which you are issuing the <code>emadmin</code> command.

---

## The EMDEVNUM utility for UNIX

The EMDEVNUM utility for UNIX platforms retrieves the major device ID for the device on which the specified file resides. The device number reported can then be used with the `emsrv -xd` startup option. Use of the EMDEVNUM utility does not require EMSRV to be running.

The `-xd` option of EMSRV effectively bypasses EMSRV's NFS checking. Ensure that the file path specified is local to the machine that is running EMSRV. NFS mounted libraries can become corrupted easily.

The syntax of EMDEVNUM is:

```
emdevnum <file name>
```

Given that you use EMDEVNUM as follows:

```
emdevnum /opt/ibmvast/manager/mgr.dat
```

You might get the following response:

```
The device number is 7
```

---

## Chapter 4. EMSRV for Windows NT

---

### Setting up EMSRV for Windows NT

If you are going to use VisualAge Smalltalk for team development, linking several application programmers to one central code repository, the Manager Library, you will need to use EMSRV. The EMSRV code is installed when you install the Manager Library.

Before you start EMSRV for Windows NT, perform the following steps:

1. Verify that TCP is installed and correctly bound to a network adapter. You can verify the binding by using the ping utility to communicate with the Windows NT machine from a workstation on the LAN.
2. Verify that your library files reside on a local file system. Using EMSRV with library files on a remote file system is not supported.

---

### Starting EMSRV for Windows NT from the command line

Perform the following steps to start EMSRV for Windows NT from the command line:

1. Change directory to the directory containing the EMSRV executable (as specified previously in “Setting up EMSRV for Windows NT”).
2. At the command line, enter `emsrv` with the desired parameters (see “EMSRV Startup options” on page 43).

For example, at the NT command line enter:

```
emsrv -u EMSRVUSER -p swordfish -W d:\path -w
```

This command does the following:

- Loads EMSRV with EMSRV account name EMSRVUSER and password swordfish
- Sets the working directory to `d:\path`, The working directory is where EMSRV writes a log file.
- Turns on lock tracking

---

## Authorizing the EMSRV User on Windows NT

EMSRV for Windows NT uses an existing Windows NT account to provide file access restrictions. The NT account name used by EMSRV is referred to as the **EMSRV account name**, and the password for that account is referred to as the **EMSRV account password**. Both the NT account from which EMSRV is started (that is, if EMSRV is not started as a service) and the EMSRV account must be granted the advanced user right **Act as part of the operating system** and be a member of the Administrators group.

The following steps cover how to set and activate this right:

1. Log on as Administrator.
2. Run the User Manager utility by selecting **Administrative Tools (Common) → User Manager** from the **Start** menu.
3. Select the EMSRV user and then select **Policies → User Rights**. The User Manager window opens.
4. From the **Policies** menu, select **User Rights**. The User Rights Policy window opens.
5. Select the check box **Show Advanced User Rights**.
6. From the **Right** drop-down box, select **Act as part of the operating system**.
7. Select the **Add** push button and add the EMSRV user to the list.
8. Select **OK** to save your choices and close the open windows.
9. Log off from the Administrator account and log on again as the EMSRV user.

---

## Starting EMSRV for Windows NT as an NT service

The following steps cover how to install EMSRV as an NT service. See “Troubleshooting EMSRV as a Windows NT service” on page 32 for a listing of common problems and solutions when running EMSRV as an NT service.

1. Enter `emsrv -install <parameters>`. The optional `<parameters>` are EMSRV parameters such as `-u <user name>`, `-p <password>`, and so on. (For a list of available parameters, see “EMSRV Startup options” on page 43.) These parameters are fixed and will be used every time EMSRV is started as a service.  
  
Ensure that `-install` is the first parameter. This installs EMSRV as a service in the registry and copies the necessary DLLs to the system directory. If there is an older version of EMSRV already installed, it removes the older version and installs the new (EMSRV 6.23) version.
2. Start EMSRV as a service by using one of the following methods:
  - a. Starting EMSRV as a service using the Service control panel

- 1) Open the Control Panel and double-click the **Services** control panel.
  - 2) Select the EMSRV Service in the **Services** control panel.
  - 3)
    - Select **HW Profiles** and verify that a configuration is enabled.  
Enable one if necessary.
  - 4) Select **Start** and EMSRV will start as a service. (Selecting **Stop** will stop the service and close all connections.)
- b. Starting EMSRV as a service using the Service Controller utility sc.exe
- 1) Enter `sc start EMSRV -u <user name> -p <password>` at a DOS command prompt.
  - 2) Query the service status by entering `sc query EMSRV`.

To stop the service, enter `sc stop EMSRV`.

**Note:** `sc.exe` is available with the Windows NT 4.0 Resource Kit.

- c. Starting EMSRV automatically at NT startup:
- 1) Go to the **Services** control panel.
  - 2) Select EMSRV and press the **Startup** button.
  - 3) Select **Automatic** for the startup type.

To remove the EMSRV Service from the registry, enter `EMSRV -remove` at a DOS command prompt. Alternatively, you can remove it by entering `sc delete EMSRV`.

The `-remove` option will stop the service if it is running as well as delete it from the registry.

### Guidelines for running EMSRV as an NT service

Following are some guidelines for running EMSRV as an NT service:

- Run EMSRV from the directory of the executable.
- The EMSRV service does not need to interact with the Desktop.
- Error messages about startup and low disk space are written to the Windows NT Event Log.
- The stop command will stop the service, closing all active connections without warning.
- Parameters entered at the **Services** control panel are ignored. Enter all parameters when installing with the `-install` option.

---

## Troubleshooting EMSRV as a Windows NT service

This section describes common problems when running EMSRV as an NT service and their solutions.

### Problem

The error message An internal Windows NT error has occurred appears at startup

Normal EMSRV (not a service) hangs on startup

The error message The specific service is disabled and cannot be started appears at startup

The start button is disabled

The error message The service did not start due to a logon failure appears at startup

The error message The process terminated unexpectedly appears at startup

### Solution

Open the **Services** control panel. Verify that the startup parameters are entered correctly and the user name is a valid user on the server. The `-u` option is always needed to start the server.

EMSRV for Windows NT must be run in the directory of the executable. It will pause for about 1 minute if it is run with no arguments from a different directory.

From the Control Panel, select **Services** and then the **HW Profiles** button. Select the **Original Configuration**. If its status is disabled, enable it by selecting the **Enable** button.

The service could already be running on the local machine. Otherwise the service could be disabled. Select **EMSRV Service** in the **Services** control panel. Select **Startup** to open the Service window. Select **Automatic** or **Manual** for **Startup Type**.

An invalid password was entered in the Service window of the **Services** control panel, which you access by selecting **Startup**. Open the Service window and change the password or log on as the System Account.

EMSRV could already be running in normal mode (that is, not as a service) on the local machine. This instance must be stopped for EMSRV to run as a service.

---

## Chapter 5. EMSRV for OS/2

---

### Setting up EMSRV for OS/2

Before you start EMSRV for OS/2, perform the following steps:

1. Verify that you are running either OS/2 version 3.0 or 4.0.
2. Verify that TCP is installed and correctly bound to a network adapter. You can verify the binding by using the ping utility to communicate with the OS/2 EMSRV computer from a workstation on the LAN.
3. Verify that your library files reside on a local file system. Using EMSRV with library files on a remote file system is not supported.

---

### Starting EMSRV for OS/2

EMSRV for OS/2 does not require a logon account to start. A password may be provided to protect against unauthorized shutdown.

Perform the following steps to start EMSRV for OS/2:

1. Change directory to the directory containing the EMSRV executable (as specified previously in “Setting up EMSRV for OS/2”).
2. At the OS/2 command line, enter `emsrv` with the desired parameters (see “EMSRV Startup options” on page 43).

For example, at the OS/2 command line enter the following:

```
emsrv -p swordfish -W c:\manager -lc
```

This command starts EMSRV with the working directory `c:\manager` and logs messages to the console.



---

## Chapter 6. EMSRV for NetWare

This section describes how to set up, start, and use EMSRV for NetWare.

EMSRV for NetWare uses one thread per client connection and therefore scales more readily to support a greater number of connections than EMSRV for OS/2 or any of the EMSRV UNIX implementations, which use one process per client connection.

EMSRV for NetWare is shipped two ways: EMSRV for NetWare (Bindery) and EMSRV for NetWare (NDS). These are both on the product CD in the \netware subdirectory. The EMSRV for NetWare (Bindery) code is in emsrvtw.zip, The EMSRV for NetWare (NDS) is in emsrvnds.zip.

EMSRV for NetWare (Bindery) supports password checking using both a PASSWD.DAT file and using NetWare user accounts.

Paths to libraries accessed via EMSRV for NetWare must be specified as a NetWare path, relative to the EMSRV working directory (specified at the command line) and may include a NetWare volume name such as SYS. It is not possible to access a library residing on a remote server. Each NetWare server that has volumes containing libraries to be accessed must be running a copy of EMSRV for NetWare.

EMSRV for NetWare supports long file names only on NetWare 4.x or higher.

EMSRV for NetWare requires the NetWare TCP/IP stack (TCPIP.NLS) loaded and configured on the server. The TCP/IP NLS will be automatically loaded if it is not loaded when EMSRV for NetWare is started. EMSRV for NetWare will also automatically load the NWSNUT.NLM which is required by the EMSRV for NetWare user interface.

**Note:** If you are running EMSRV 6.22 or later on NetWare 4.1, you must obtain the 4.10 patch files from Novell. The patch files fix problems in NetWare and provide prerequisite NLMs which were not included in NetWare until after the 4.1 release.

---

### Setting up EMSRV for NetWare

Before you load the EMSRV NLM, perform the following steps:

1. Verify that your file server is running NetWare 4.1, 3.12, or a later version. EMSRV requires one of these versions of the NetWare operating system NLMs.

**Note:** Do not load EMSRV for NetWare on servers running NetWare SMP, or the server may stop responding.

2. Copy the following program files from the VisualAge Smalltalk CD to the `sys:\system` directory on your NetWare file server: `emsrv.nlm`, `emsrv.msg`, and `emsrv.hlp`.
3. Verify that the NetWare TCPIP NLM is loaded and correctly bound to a network adapter. You can verify the binding by using the `ping` utility to communicate with the NetWare file server from a workstation on the LAN.

---

## User authentication using EMSRV for NetWare (NDS)

EMSRV for NetWare (NDS) has extra functionality to use a NDS login when authenticating to a NetWare 4.x server and when using native password checking for client verification. This allows EMSRV to run on a NetWare 4.x server when bindery emulation mode is disabled.

On NetWare 4.x we recommend using EMSRV for NetWare (NDS) rather than EMSRV for NetWare (Bindery), even though the latter may be used when bindery emulation is enabled.

When setting up EMSRV for NetWare NDS, the network administrator should be familiar with NDS and in particular NDS names that can be found in the NetWare 4.x documentation.

NetWare user object names may either be distinguished (they give the path from the leaf object to the root object) or relative distinguished to some point in the NDS tree, usually referred to as a context. User object names that are used by EMSRV for NetWare (NDS) for verification should be typeless names either relative to the root context or some other NDS context specified by the `set context (-sc)` option.

If the EMSRV for NetWare users are found in a container other than root, we advise the network administrator to use the `set context (-sc)` option to set the context to the container object containing the users.

---

## Starting EMSRV for NetWare

The EMSRV NLM logs on to the NetWare file server using an existing NetWare account and password to provide file access restrictions. The NetWare account name used by EMSRV is referred to as the **EMSRV account name**, and the password for that account is referred to as the **EMSRV account password**.

When you load the EMSRV NLM, you must supply it with the EMSRV account name, the EMSRV account password, and a working directory. You can supply this information using command-line parameters. If you do not supply this information, the NLM prompts you as it loads.

Perform the following steps to start EMSRV NLM:

1. Bring the NetWare server up for multiple users.
2. Ensure that TCP/IP has been started and that you can ping the server.
3. Change directory to the directory containing the EMSRV executable, `sys:\system` (as specified previously).
4. Start EMSRV. At the file server console, enter `load emsrv` with the desired parameters (see “EMSRV Startup options” on page 43).

For example, at the file server console enter:

```
load emsrv -u EMSRVUSER -p swordfish -W volname:\path -sc context
```

This command does the following:

- Loads the NLM with the EMSRV account name `EMSRVUSER` and password `swordfish`.
- Sets the working directory to `volname:\path`.

**Note:** You can add an appropriate command line to the file server `autoexec.ncf` file to automatically load NLM when the NetWare file server is rebooted.

---

## Operating EMSRV for NetWare

This section describes ways to operate EMSRV for NetWare.

### Console screens

EMSRV creates two console screens:

#### Menu Screen

Used to observe and change EMSRV settings.

#### Message Screen

Displays log messages according to the specified reporting level.

Context-sensitive help may be viewed at any time by pressing F1.

## Menu choices

Through the Menu Screen you can perform the following operations:

- Change settings.
- View connections.
- View the message screen.
- View EMSRV statistics.
- Shut down EMSRV.

## Changing settings

When you select **Change Settings**, a form is displayed that you can view and edit. To exit the form and save the changes (which implements them), press **Esc**.

The following table describes each form field and lists the corresponding startup option, if one exists, and the default value.

Field	Description	Startup option (default)
<b>Maximum Number of Connections</b>	Displays the maximum number of connections allowed by EMSRV.	-w (default: 256)
<b>Logging Level</b>	Displays the current reporting level. To change the reporting level, press <b>Enter</b> to access a pop-up menu.	-s0 (logs all operations) -s1(logs warning and error messages) -s2 (default: logs only error messages)
<b>Log to a File</b>	Specifies whether EMSRV logs to a file.	-lf <file name>
<b>Log File Name</b>	Specifies the log file to which EMSRV writes.	-lf <file name>
<b>Allow Libraries to be Truncated</b>	Specifies whether users are allowed to truncate existing libraries.	-t (default: yes)
<b>Client Password Verification</b>	Specifies whether client password verification is disabled, whether native NetWare passwords are used, and whether the passwd.dat file is used. To change the style of password verification, press <b>Enter</b> to access a pop-up menu.	-rn (rejects users who do not supply a valid NetWare user name and password) -rd (default: disables password checking for clients) -rp (rejects users who are not in the passwd.dat file)

<b>Statistics Recorded per Screen Update</b>	Specifies the number of statistics that must change before EMSRV updates its statistics screen. The higher you set this number, the better EMSRV performance you will get.	<i>(default: 1000)</i>
--	--	------------------------

### Viewing connections

Select **View Connections** to display a list of client connections. You can scroll through the list to select a specific connection. After selecting a connection:

- Press **Enter** to display its statistics.
- Press **Delete** to terminate the connection.
- Press **Esc** to return to the menu.

To display EMSRV statistics, select **EMSRV Statistics** from the Menu Screen.

### Viewing the message screen

Select **View Message Screen** from the Menu Screen to display the Message Screen. To return to the Menu Screen, press **Esc**.

### Viewing EMSRV statistics

Select **EMSRV Statistics** from the Menu Screen to display EMSRV statistics that have been accumulated since the EMSRV NLM was started.

You typically display EMSRV statistics after displaying connection statistics using **View Connection List**.

To force a screen update, select **EMSRV Statistics** if the EMSRV statistics are currently displayed.

## EMSRV for NetWare messages and reporting

To change the reporting level from the NetWare console while EMSRV is running:

1. Select **Change Settings** from the Menu Screen.
2. Select **Reporting Level**.
3. Press **Enter**.

When debugging an EMSRV problem, it is often useful to watch the write operations to the Message Screen as they occur. To do this, switch to the Message Screen after setting the reporting level.

## Shutting down EMSRV on NetWare

You cannot unload EMSRV for NetWare using the unload command at the file server console. You can unload it only from the Menu Screen or by running EMADMIN. (For information on using EMADMIN, see “Chapter 3. The EMADMIN utility” on page 21.)

Do not unload EMSRV for NetWare if library transactions are in progress. If you do, the library may be left in an inconsistent state.

The following steps describe how to safely unload EMSRV:

1. Verify that all VisualAge users that were connected to EMSRV have disconnected. To verify this, select **View Connection List** from the Menu Screen or use EMADMIN.
2. If there are connections, terminate them by selecting **View Connection List** from the Menu Screen and pressing **Esc**.
3. Unload the EMSRV NLM by using EMADMIN or the Menu Screen. From the Menu Screen, select **Shutdown EMSRV** to shut down and unload the EMSRV NLM. You must enter the EMSRV account password before EMSRV will unload.

---

## Chapter 7. EMSRV for UNIX operating systems

---

### Setting up EMSRV for UNIX operating systems

Before you start EMSRV for UNIX, perform the following steps:

1. Verify that you are running one of the supported UNIX operating systems.
2. Ensure that TCP is installed and correctly bound to a network adapter.  
You can verify the binding by using the ping utility to communicate with the UNIX machine from a workstation on the LAN.

---

### Starting EMSRV for UNIX operating systems

On UNIX platforms, the EMSRV process will have the file access permissions of the UNIX account that starts EMSRV. The UNIX account name that is used to start EMSRV is referred to as the **EMSRV account name**, and the password for that account is referred to as the **EMSRV account password**.

Perform the following steps to start EMSRV for UNIX:

1. Change directory to the directory containing the EMSRV executable (as specified previously in “Setting up EMSRV for UNIX operating systems”).
2. Verify that:
  - The EMSRV user account has appropriate file access rights to the library files.
  - The library files reside on a local file system.
3. Determine whether your UNIX system is using shadow passwords and choose the correct binary (see “Shadow passwords on UNIX platforms” on page 20). If the UNIX system is using shadow passwords, use `emsrv.shadow`. If the UNIX system is not using shadow passwords, use `emsrv`.
4. At the command line, enter either `emsrv.shadow` or `emsrv` as appropriate with the desired parameters (see “EMSRV Startup options” on page 43).

For example, at a command line, enter either: `emsrv.shadow -w -lc -lf logfile` or `emsrv -w -lc -lf logfile`.

The command does the following:

- Starts EMSRV with lock tracking turned on
- Logs messages to the system console and the log file specified in the command line

**Note:** The UNIX account password is needed when shutting down EMSRV remotely using EMADMIN.

## EMSRV Startup options

The following table lists and describes EMSRV startup parameters.

Parameter	Platform	Description
-A<0,1>	All platforms	The file system requires read locks. The default setting is 0, which indicates the file system does not need read locks.
-a<seconds>	UNIX	Sets the number of seconds before a connection is deemed inactive. The default is 360 seconds.
-b<Kilobytes>	All platforms	Sets the low-volume threshold warning in kilobytes. The default is 10,000 kilobytes. If the available disk space is less than the low-volume threshold, EMSRV will log warning messages to the log file.
-f	UNIX	Sets EMSRV to run in the foreground.
-h	All platforms	Displays the help text that lists the valid options.
-i<q,t>	UNIX	Ignores signals. <q> = ignore SIGQUIT; <t> = ignore SIGTERM. By default, either of these signals cause EMSRV to terminate.
-install	Win NT	Installs EMSRV as a service.
-lc	All platforms	Logs messages to the console. By default, messages are not written to the console.
-lf<name>	OS/2, Win NT, NetWare	Writes the log to file <name>. By default, the log is written to emsrv.log. The file <name> must specify a valid path for which the EMSRV account has sufficient access rights.
-lp<seconds>	UNIX	Sets the maximum number of seconds to wait for a lock. The default is 15 seconds.
-ls	UNIX	Logs messages to stdout instead of a log file. EMSRV must be run in the foreground using the -f option if -ls is used.
-lt<seconds>	UNIX	Sets the maximum number of seconds to hold a lock.
-M<number of connections>	All platforms	Specifies the maximum number of connections that can be established with EMSRV. The default is 256.  To start EMSRV with a maximum of 80 client connections, use the following parameter: load EMSRV -M80
-n	UNIX	Turns off statistics gathering.

-P<port number>	All platforms	Specifies the port number that the EMSRV process uses. The default is 4800.  To start EMSRV using port number 4899, use the following parameter: load EMSRV -P4899  If you need to change the port number on the client and do not know how, contact customer support.
-p <password>	OS/2, Win NT, NetWare	Specifies the password for the EMSRV user account and restricts library file access. This password is used for EMADMIN functions, such as shutting down EMSRV remotely. Refer to the section "The EMADMIN utility" for information on EMADMIN functions.  For Windows NT and NetWare, you must specify -p without the password parameter if the EMSRV account has no password.
-R<0, 1>	All platforms	The file system releases locks on file close. The default setting is 1, which indicates the file system releases locks when files close.
-r	UNIX	Rejects users who are not in the passwd.dat file.
-rd	OS/2, Win NT	Disables password checking for clients. This is the default setting.
-remove	Win NT	Removes the EMSRV service from the Registry.
-rn	Win NT, NetWare	Rejects users who do not supply a valid EMSRV user name and password. The default grants access to users without an EMSRV user name and password.
-rp	OS/2, Win NT, NetWare	Rejects users who are not in the passwd.dat file. The default grants access to users who are not in the password file.
-s<0, 1, 2>	All platforms	Sets the reporting level to the specified severity level (0, 1, or 2). See the section following, "EMSRV messages and reporting," for a description of severity levels. The default is 2 (log error messages only) on PC platforms and 1 (log warning messages) on UNIX platforms.
-t	All platforms	Protects existing files from truncation. By default, files are created over existing ones; that is, the existing file is truncated to 0 length.
-u <user name>	Win NT, NetWare	Specifies the EMSRV account name to be used.
-v	UNIX	Verifies password using system authorization.

-W <path>	OS/2, Win NT, NetWare	Specifies the EMSRV working directory. The directory <path> must be a valid path for which the EMSRV account has sufficient access rights to read, write, or both.
-w	All platforms	Specifies that EMSRV should track locks for each connection.
-xd <devnum>	UNIX	Specifies valid devices for the database. For information on obtaining a device number, see "The EMDEVNUM utility for UNIX."
-xn	UNIX	Allows databases to be opened on non-local file systems.



---

## EMSRV messages and reporting

EMSRV contains comprehensive diagnostics. Based on the specified reporting severity level and whether file logging is enabled, statistics and diagnostic information are logged to the `emsrv.log` file and displayed on the console (or on the EMSRV for NetWare Message Screen). All messages with a severity level lower than the current level are suppressed. You can set the level when you start EMSRV, and you can change it dynamically, using the EMADMIN utility. The reporting levels are as follows:

### Reporting level

	Description
0	Logs all operations
1	Logs warning and error messages
2	Logs only error messages (default)

**Note:** When debugging an EMSRV problem, it is often useful to watch the write operations to the console or Message Screen as they occur. To do this, choose the EMSRV startup options to log to the console and set the appropriate reporting level. Or, switch to the Message Screen after setting the reporting level.

There are three categories of EMSRV messages:

- Information
- Warnings
- Errors

During normal operation, you should set the reporting level to “Errors” (reporting-level 2), because performance is affected when large amounts of information are written to the screen or log file. Set the reporting level to “Information” only when you are trying to diagnose a problem.



---

# Index

## A

AIX  
uninstalling 14

## B

bench command 22

## C

client  
  configuring on UNIX 13  
  installing  
    OS/2 4  
    UNIX 11  
    Windows 4  
copy command 23

## D

diagnosing errors 32, 47

## E

EMADMIN utility 21  
  bench command 22  
  copy command 23  
  list command 24  
  opts command 25  
  stats command 26  
  stop command 27  
EMDEVNUM utility 28

## I

installing  
  client  
    OS/2 4  
    UNIX 11  
    Windows 4  
  configuring the client on  
    UNIX 13  
  configuring the library on  
    UNIX 13  
  developer setup 14  
  library  
    OS/2 2  
    UNIX 10  
    Windows 2  
  Server runtime  
    OS/2 6  
    UNIX 12  
    Windows 6  
  Server runtime setup 14  
  starting  
    OS/2 1

installing (*continued*)  
  starting (*continued*)  
    UNIX 10  
    Windows 1  
  uninstalling  
    AIX 14  
    OS/2 9  
    Windows 9  
  unlocking  
    development products 7, 12  
    Server runtime 6  
  VisualAge 1  
installing EMSRV  
  NetWare 35  
  OS/2 33  
  UNIX 41  
  Windows NT 29

## L

library  
  configuring on UNIX 13  
  installing  
    OS/2 2  
    UNIX 10  
    Windows 2  
list command 24

## M

manager  
  installing  
    OS/2 2  
    Windows 2  
messages 47

## N

NetWare  
  installing EMSRV 35  
  starting EMSRV 37

## O

opts command 25  
OS/2  
  installing  
    client 4  
    library 2  
    Server runtime 6  
    unlocking development  
      products 7  
    unlocking Server runtime 6  
  installing EMSRV 33  
  starting EMSRV 33

OS/2 (*continued*)  
  starting installation 1  
  uninstalling 9

## R

reporting 47

## S

Server runtime  
  installing  
    OS/2 6  
    UNIX 12  
    Windows 6  
  starting EMSRV 43  
  stats command 26  
  stop command 27

## U

uninstalling  
  AIX 14  
  OS/2 9  
  Windows 9  
UNIX

  configuring the client 13  
  configuring the library 13  
  developer setup 14  
  installing  
    client 11  
    library 10  
    Server runtime 12  
    unlocking development  
      products 12  
  installing EMSRV 41  
  Server runtime setup 14  
  starting EMSRV 41  
  starting installation 10  
  uninstalling on AIX 14

  unlocking  
    development products 7, 12  
    Server runtime 6

## W

Windows  
  installing  
    client 4  
    library 2  
    Server runtime 6  
    unlocking development  
      products 7  
    unlocking Server runtime 6  
  starting installation 1

Windows *(continued)*  
  uninstalling 9  
Windows NT  
  installing EMSRV 29

Windows NT *(continued)*  
  starting EMSRV 29, 30