



Data General Corporation, Westboro, Massachusetts 01580

---

Customer Documentation

**NetWare<sup>®</sup> for AViiON<sup>®</sup>  
Systems: System  
Administration**

069-000487-06

**A V I I O N<sup>®</sup>**  
P R O D U C T L I N E



# NetWare<sup>®</sup> for AViiON<sup>®</sup> Systems: System Administration

069-000487-06

*For the latest enhancements, cautions, documentation changes, and other information on this product, please see the Release Notice (085-series) and / or Update Notice (078-series) supplied with the software.*

Copyright ©Data General Corporation, 1990, 1991, 1992, 1993, 1994  
Copyright ©Novell Corporation, 1991  
All Rights Reserved  
Printed in the United States of America  
Rev. 06, June 1994  
Licensed Material – Property of the copyright holders.  
Ordering No. 069-000487

# Notice

DATA GENERAL CORPORATION (DGC) HAS PREPARED AND/OR HAS DISTRIBUTED THIS DOCUMENT FOR USE BY DGC PERSONNEL, LICENSEES, PROSPECTIVE CUSTOMERS, AND CUSTOMERS. THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF THE COPYRIGHT HOLDER(S); AND THE CONTENTS OF THIS MANUAL SHALL NOT BE REPRODUCED IN WHOLE OR IN PART NOR USED OTHER THAN AS ALLOWED IN THE APPLICABLE LICENSE AGREEMENT.

The copyright holders reserve the right to make changes in specifications and other information contained in this document without prior notice, and the reader should in all cases determine whether any such changes have been made.

THE TERMS AND CONDITIONS GOVERNING THE SALE OF DGC HARDWARE PRODUCTS AND THE LICENSING OF DGC SOFTWARE CONSIST SOLELY OF THOSE SET FORTH IN THE WRITTEN CONTRACTS BETWEEN DGC AND ITS CUSTOMERS, AND THE TERMS AND CONDITIONS GOVERNING THE LICENSING OF THIRD PARTY SOFTWARE CONSIST SOLELY OF THOSE SET FORTH IN THE APPLICABLE LICENSE AGREEMENT. NO REPRESENTATION OR OTHER AFFIRMATION OF FACT CONTAINED IN THIS DOCUMENT INCLUDING BUT NOT LIMITED TO STATEMENTS REGARDING CAPACITY, RESPONSE-TIME PERFORMANCE, SUITABILITY FOR USE OR PERFORMANCE OF PRODUCTS DESCRIBED HEREIN SHALL BE DEEMED TO BE A WARRANTY BY DGC FOR ANY PURPOSE, OR GIVE RISE TO ANY LIABILITY OF DGC WHATSOEVER.

IN NO EVENT SHALL DGC BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING BUT NOT LIMITED TO LOST PROFITS) ARISING OUT OF OR RELATED TO THIS DOCUMENT OR THE INFORMATION CONTAINED IN IT, EVEN IF DGC HAS BEEN ADVISED, KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES.

All software is made available solely pursuant to the terms and conditions of the applicable license agreement which governs its use.

Restricted Rights Legend: Use, duplication, or disclosure by the U. S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at [DFARS] 252.227-7013 (October 1988).

Data General Corporation  
4400 Computer Drive  
Westboro, MA 01580

## NetWare® for AViiON® Systems: System Administration

069-000487-06

Revision History:

Effective with:

Original Release - May 1990  
First Revision - November 1990  
Second Revision - October 1991  
Third Revision - May 1992  
Fourth Revision - October 1992  
Fifth Revision - May 1993  
Sixth Revision - June 1994

DG/UX 5.4R3.00 and 5.4R3.00T  
NetWare® 3.11 for AViiON®  
Systems, Rev. 3.00

A vertical bar in the margin of a page indicates substantive technical change from the previous revision.

AViiON is a U.S. registered trademark and DG/UX is a trademark of Data General Corporation. LAN WorkPlace, NetWare, and Novell are U.S. registered trademarks of Novell, Inc. Macintosh is a U.S. registered trademark of Apple Computer, Inc. MS-DOS is a U.S. registered trademark of Microsoft Corporation. UNIX is a U.S. registered trademark of Unix System Laboratories, Inc.

Certain portions of this document were prepared by Data General Corporation and the remaining portions were prepared by Novell Corporation.

# About this manual

---

This manual describes how to work with the NetWare® for AViiON® file system and how to control the NetWare network environment using either the SCONSOLE utility or configuration files. It also gives performance tuning procedures for making the NetWare network work faster and more efficiently.

NetWare is a network of computers that lets users exchange information with other users on the network, and use the filing and printing resources available on the network.

A NetWare network can incorporate mainframe computers, backup devices and different types of servers (such as print servers and archive servers).

This manual is for NetWare network system administrators, or anyone who must modify and manage a NetWare network. To use this manual, you should be experienced with PC hardware and software, and be familiar with NetWare terminology and concepts. We assume that you are familiar with both the UNIX® and MS-DOS® operating systems. You should also be acquainted with the AViiON server and DG/UX™ operating system, which will run the host software. We assume that you have your AViiON and PC or Macintosh® workstations installed and running correctly.

## How this manual is organized

This manual gives an overview of what you will find in the chapters and appendices of this manual:

- Chapter 1     **System Administration Task List** Helps you determine which SCONSOLE utility options you should use to perform network tasks. We group tasks according to major categories. Following each task are utility options you must choose to perform the task.
  
- Chapter 2     **SCONSOLE Utility** Explains how to use the SCONSOLE utility. SCONSOLE is a menu-driven utility on the AViiON server that lets you set up and administer NetWare for AViiON systems. The chapter explains the purpose of each menu option and describes how to access each option.
  
- Chapter 3     **Configuration Files** Explains an alternate method of performing the same tasks of setting up and administering NetWare for AViiON systems that are explained in Chapter 2. In this chapter, you perform these same tasks using the NWConfig, NPConfig, RPConfig, and PRTConfig utilities.
  
- Appendix A    **Improving the Performance of NetWare for AViiON Systems** Gives suggestions to help your NetWare server run faster and more efficiently. We include suggestions on setting engine counts, setting connections, splitting large volumes, allocating shared memory for inodes caching, tuning the inodes cache, reducing the number of files in a directory, enabling burst mode and limiting trustee assignments.

## Related Data General manuals

For information about Novell Netware products, see

*NetWare® for AViiON® Series Systems: Concepts* (069-000483)

For all levels of NetWare users, this manual provides an alphabetically arranged glossary of NetWare terminology. It will be particularly useful to supervisors who are performing their first installation of the NetWare for AViiON Systems product.

*NetWare® for AViiON® Series Systems: System Administration* (069-000487) For network supervisors who will use SCONSOLE to administer the AViiON file server.

*NetWare® for AViiON® Series Systems: Utilities* (069-000484)

For all levels of network users, this manual provides an alphabetically arranged reference for NetWare command line and menu utilities.

*NetWare® for AViiON® Series Systems: User Book*

(069-000486) For first-time users who are unfamiliar with networks, this manual provides a general overview of NetWare.

*NetWare® for AViiON® Series Systems: System Messages*

(069-000485) For all levels of Network users, this manual contains solutions to common network problems and advice on preventing problems. It lists NetWare system messages alphabetically, citing a cause and recommended action for each.

*NetWare® for AViiON® Series Systems: Print Server*

(069-000706) For the network supervisor, this manual describes how NetWare printing works, how to install and run a print server, and how to use printing utilities.

This manual uses abbreviated titles (shown in italics) when referring to other manuals in the NetWare for AViiON Systems document set, as follows:

<b>Abbreviated title</b>	<b>Full title or Description</b>
<i>System Administration</i>	<i>NetWare® for AViiON® Systems: System Administration</i>
<i>DOS Client</i>	DOS workstation documentation
<i>Installation</i>	<i>NetWare® for AViiON® Systems: Installation</i>
<i>Macintosh® Client</i>	Macintosh workstation documentation
<i>Messages</i>	<i>NetWare® for AViiON® Systems: Troubleshooting and System Messages</i>
<i>OS/2® Client</i>	OS/2 workstation documentation
<i>Print Server</i>	<i>NetWare® for AViiON® Systems: Print Server</i>
<i>Utilities</i>	<i>NetWare® for AViiON® Systems: Utilities</i>



If you are unfamiliar with any DG/UX procedure described in this manual, you can find explanations in the manuals:

*Installing the DG/UX™ System (093–701087)*

*Customizing the DG/UX™ System (093–701101)*

For information about managing the DG/UX system, see

*Managing the DG/UX™ System (093–701088)*

For information related to Trusted NetWare for AViiON Systems and DG/UX Trusted features and processes, see

*Trusted Facility Manual for the B1 Trusted DG/UX™ System (093–701114)*

*Trusted Facility Manual for the C2 Trusted DG/UX™ System (093–701110)*

*Audit System Administrators Guide for the B1 Trusted DG/UX™ System (093–701115)*

*Audit System Administrators Guide for the C2 Trusted DG/UX™ System (093–701111)*

If you are unfamiliar with networks, you may want to read “Introduction to NetWare” in *NetWare® for AViiON® Systems: User Basics (069–000486)* before reading this manual.

## **Reader, please note:**

Data General manuals use certain symbols and styles of type to indicate different meanings. The Data General symbol and typeface conventions used in this manual are defined in the following list. You should familiarize yourself with these conventions before reading the manual.

This manual also presumes the following meanings for the terms “command line,” “format line,” and “syntax line.” A command line is an example of a command string that you should type verbatim; it is preceded by a system prompt and is followed by a delimiter such as the curved arrow symbol for the New Line key. A format line shows how to structure a command; it shows the variables that must be supplied and the available options. A syntax line is a fragment of program code that shows how to use a particular routine; some syntax lines contain variables.

---

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	<p>In command lines and format lines: Indicates text (including punctuation) that you type verbatim from your keyboard.</p> <p>All DG/UX commands, pathnames, and names of files, directories, and manual pages also use this typeface.</p>
Typewriter	Represents a system response on your screen. Syntax lines also use this font.
<i>italic</i>	In format lines: Represents variables for which you supply values; for example, the names of your directories and files, your username and password, and possible arguments to commands.
[ ]	In format lines: These brackets surround an optional argument. Don't type the brackets; they only set off what is optional. The brackets are in regular type and should not be confused with the boldface brackets shown below.
[ ]	In format lines: Indicates literal brackets that you should type. These brackets are in boldface type and should not be confused with the regular type brackets shown above.
...	In format lines and syntax lines: Means you can repeat the preceding argument as many times as desired.

---

**\$ and %**

In command lines and other examples: Represent the system command prompt symbols used for the Bourne and C shells, respectively. Note that your system might use different symbols for the command prompts.

**↵**

In command lines and other examples: Represents the New Line key, which is the name of the key used to generate a new line. (Note that on some keyboards this key might be called Enter or Return instead of New Line.) Throughout this manual, a space precedes the New Line symbol; this space is used only to improve readability—you can ignore it.

**< >**

In command lines and other examples: Angle brackets distinguish a command sequence or a keystroke (such as **<Ctrl-D>**, **<Esc>**, and **<3dw>**) from surrounding text. Note that these angle brackets are in regular type and that you do not type them; there are, however, boldface versions of these symbols that you do type.

Some chapters give instructions that require you to use **SCONSOLE**. We use a special convention to show a generic path that you follow through the menus. Consider the following example:

2. Configuration → 2. Services Configuration

You would follow the sample menu path to install a software package. Each text item (Software, Package, and Install) is a unique menu item. The arrow ( → ) symbolizes the traversal

through the menus. Menu paths always begin from the **sysadm** Main Menu.

Finally, in examples we use:

**This typeface to show your entry.**

This typeface to show file contents.

## Contacting Data General

Data General wants to assist you in any way it can to help you use its products. Please feel free to contact the company as outlined below.

### Manuals

If you require additional manuals, please contact your local Data General sales representative.

### Telephone assistance

If you are unable to solve a problem using any manual you received with your system, free telephone assistance is available with your hardware warranty and with most Data General software service options. If you are within the United States or Canada, contact the Data General Customer Support Center (CSC) by calling 1-800-DG-HELPS. Lines are open from 8:00 a.m. to 5:00 p.m., your time, Monday through Friday. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

## Joining our users group

Please consider joining the largest independent organization of Data General users, the North American Data General Users Group (NADGUG). In addition to making valuable contacts, members receive *FOCUS* monthly magazine, a conference discount, access to the Software Library and Electronic Bulletin Board, an annual Member Directory, Regional and Special Interest Groups, and much more. For more information about membership in the North American Data General Users Group, call 1-800-253-3902 or 1-508-443-3330.

End of Preface

# Contents

---

## Chapter 1 System Administration Tasks List

Work with the file system .....	1-2
View file system information .....	1-2
Add to, delete from, and manage the file system .....	1-2
Add, change, delete, or list volumes .....	1-3
Set server caching and capture flags .....	1-4
Control the network environment .....	1-5
View network information .....	1-5
Control and configure the file server .....	1-6
Modify configuration .....	1-8
Set system flags .....	1-9
Manage network users and groups .....	1-10

## Chapter 2 SCONSOLE Utility

Why use SCONSOLE .....	2-1
How to access SCONSOLE .....	2-2
How to use SCONSOLE .....	2-3
Administration Menu .....	2-4
Startup/Shutdown Menu .....	2-5
Error Log Menu .....	2-9
Configuration Menu .....	2-11
Transport Configuration Menu .....	2-12
Transport Parameters .....	2-13
Error Log Menu .....	2-16
List network assignments .....	2-17
Add a network .....	2-20
Modify a network .....	2-22
Delete a network .....	2-23
NVT parameters .....	2-24

Services Configuration Menu .....	2-27
File Services Configuration Menu .....	2-28
File services parameters .....	2-29
List volumes .....	2-35
Add a volume .....	2-37
Change a volume name and name space .....	2-39
Change volume paths and cache .....	2-40
Delete a volume .....	2-42
Remote Printer Configuration Menu .....	2-43
Host Printer Configuration Menu .....	2-44
List host printers on system .....	2-45
Add a host printer to system .....	2-47
Delete a host printer from system .....	2-48
Remote Printer Control Menu .....	2-49
List remote printer assignments .....	2-50
Add a remote printer .....	2-51
Delete a remote printer .....	2-52
Remote printer configuration .....	2-53
Hybrid user configuration .....	2-55
List hybrid users .....	2-56
Add hybrid user .....	2-58
Delete hybrid user .....	2-59
Default hybrid binding .....	2-60
Security Configuration Menu .....	2-62
View alert notification user list .....	2-63
Add a user for alert notification .....	2-64
Delete a user from the list .....	2-65
Edit security parameters .....	2-66
Edit system parameters .....	2-71



---

Statistics Menu .....	2-74
Change sample interval .....	2-75
File server information .....	2-76
File server statistics .....	2-80
File server internal statistics .....	2-85
Lock manager statistics .....	2-87
Volume statistics .....	2-91
Connection statistics .....	2-94
Save all statistics to a file .....	2-95
Utilities Menu .....	2-97
Transport utilities .....	2-98
Tracking Menu .....	2-101
Services Utilities Menu .....	2-103

### **Chapter 3 Configuration Files**

NWConfig .....	3-1
NWConfig file example .....	3-16
NPSCConfig .....	3-17
NPSCConfig file example .....	3-23
PRTConfig .....	3-24
PRTConfig file example .....	3-25
RPCControl .....	3-26
RPCControl file example .....	3-26
RPCConfig .....	3-27
RPCConfig file example .....	3-29

## **Appendix A    Improving the Performance of NetWare for AViiON Systems**

Setting engine counts .....	3-2
Setting connections .....	3-3
Splitting large volumes .....	3-4
Splitting inodes files .....	3-5
Allocating shared memory for inodes caching .....	3-9
Tuning the inodes cache .....	3-11
Other cache tuning suggestions .....	3-15
Reducing the number of files in a directory .....	3-16
Enabling burst mode .....	3-16
Limiting trustee assignments .....	3-17

# 1 System Administration Tasks List

---

This chapter lists the system administration tasks for the NetWare for AViiON Systems. Tasks are arranged according to major categories.

Following each task is the menu path you choose (after executing the SCONSOLE utility) to locate the SCONSOLE menu needed to perform the task. If the utility required to perform the task is not described in this manual, we refer you to the manual where the utility is described.

The categories in the task list are as follows.

## Work with the file system

- View file system information
- Add to, delete from, and manage the file system
- Add, list, change, or delete volumes
- Set server caching and capture flags

## Control the network environment

- View network information
- Control and configure the file system
- Modify configuration
- Set system flags
- Manage network users and groups

For other procedures, see *Utilities*. For printing procedures, see *Print Server*.

## **Work with the file system**

### **View file system information**

#### **Display file and directory caching information**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration →
- 1. File Service Parameters

#### **Display maximum number of volumes supported**

Follow the SCONSOLE main menu path:

- 3. Statistics → 2. File Server Information

#### **View NetWare volumes and server paths mapped to them**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration → 2. List Volumes

### **Add to, delete from, and manage the file system**

#### **Change the maximum number of volumes allowed**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration →
- 1. File Service Parameters

### **Create a volume**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration → 3. Add A Volume

### **Delete a volume**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
6. Delete A Volume

## **Add, change, delete, or list volumes**

### **Add a volume**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration → 3. Add A Volume

### **Change a volume name or name space**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
4. Change a volume name and name space

### **Change volume paths**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
5. Change volume paths

### **Delete a volume**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration →
- 6. Delete a volume

### **List volumes**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration → 2. List Volumes

## **Set server caching and capture flags**

### **Activate/deactivate the file cache flag**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration →
- 1. File Service Parameters

### **Change the cache block size**

Follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration →
- 1. File Service Parameters

## Control the network environment

### View network information

#### **Display active connections to the file server**

Follow the SCONSOLE main menu path:

3. Statistics → 7. Connection Statistics

#### **Display peak connections used**

Follow the SCONSOLE main menu path:

3. Statistics → 2. File Server Information

#### **Display software version and revision date**

Follow the SCONSOLE main menu path:

3. Statistics → 2. File Server Information

#### **Display the file server network number**

Follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →  
1. Transport Parameters

#### **Display the file server error log file**

Follow the SCONSOLE main menu path:

1. Administration → 2. Error Log Menu →  
1. View Error Log

#### **Display the file server name**

Follow the SCONSOLE main menu path:

3. Statistics → 2. File Server Information

**Display the maximum number of connections supported**

Follow the SCONSOLE main menu path:

3. Statistics → 2. File Server Information

**Display the number of packets generated**

Follow the SCONSOLE main menu path:

3. Statistics → 2. File Server Statistics

**Display the number of physical and logical locks**

Follow the SCONSOLE main menu path:

3. Statistics → 5. Lock Manager Statistics

**Save statistics to a file**

Follow the SCONSOLE main menu path:

3. Statistics → 8. Save All Statistics to A File

**Control and configure the file server**

**Change how often statistics are updated**

Follow the SCONSOLE main menu path:

3. Statistics → 1. Change Sample Interval

**Change NetWare Virtual Terminal parameters**

Follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →  
7. NVT Parameters



### **Change the file server name**

Follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

### **Change the maximum number of connections allowed**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
1. File Service Parameters

### **Change the maximum number of processes allowed**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
1. File Service Parameters

### **Start the file server**

Follow the SCONSOLE main menu path:

1. Administration →
1. Startup/Shutdown NetWare →
1. Start NetWare Transport →
2. Start NetWare Server

### **Stop (down) the file server**

Follow the SCONSOLE main menu path:

1. Administration →
1. Startup/Shutdown NetWare →
5. Shutdown Netware Server →
6. Shutdown Netware Transport

## **Modify configuration**

### **Change printer configuration on the server**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
1. Host Printer Configuration

### **Change Hybrid configuration**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
3. Hybrid User Configuration →
4. Default Hybrid Binding

### **Change remote printer control**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
2. Remote Printer Control

### **Change remote printer configuration**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
3. Remote Printer Configuration

### **Change security configuration**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration

### **Change the network server number (address)**

Follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →
1. Transport Parameters

### **Clear the error log file**

Follow the SCONSOLE main menu path:

1. Administration → 2. Error Log Menu →
2. Clear Error Log

## **Set system flags**

### **Change the network priority**

Follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

### **Change the shared memory key**

Follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

### **Change the shared memory size restriction**

Follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

### **Change the status of the console flag**

Follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

### **Change the status of the login flag**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
1. File Service Parameters

### **Change the status of the password encryption flag**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration →
4. Edit Security Parameters

### **Display memory statistics**

Follow the SCONSOLE main menu path:

3. Statistics →
4. File Server Internal Statistics

## **Manage network users and groups**

### **Bind NetWare user accounts to UNIX user accounts**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
3. Hybrid User Configuration → 2. Add Hybrid User

See also **HYBRID** in *Utilities*.

### **Create users and groups**

See “**Syscon**” in *Utilities*.

### **Display current connections to the file server**

Follow the SCONSOLE main menu path:

3. Statistics → 7. Connection Statistics

### **Unbind (delete) NetWare user accounts from UNIX user accounts**

Follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →

3. Hybrid User Configuration

3. Delete Hybrid User

See also **HYBRID** in *Utilities*.

### **View additional user information**

See “**Syscon**” in *Utilities*.

End of Chapter



## 2 **SCONSOLE Utility**

---

This chapter explains how to use the SCONSOLE utility. SCONSOLE is a menu-driven utility used to set up and administer NetWare for AViiON systems software.

You can perform the same tasks for setting up and administering NetWare for AViiON Systems either by using SCONSOLE as described here or by editing the configuration files as described in Chapter 3. Use SCONSOLE to perform these tasks if you prefer working with a menu-driven format.

### **Why use SCONSOLE**

SCONSOLE is the system manager's primary interface between the AViiON system and the NetWare file server. Use the SCONSOLE menus to complete the following tasks.

- **Administration:** Start up and shut down NetWare services, transport, print server, and RPRINTER; view and clear error logs.
- **Configuration:** Configure transport parameters, NVT parameters, file services, remote print services, hybrid users, security, and system parameters.
- **Statistics:** Change sample intervals; view file server and volume information and statistics.
- **Utilities:** Perform transport and service utilities.

Unlike native NetWare, where the file server is an operating system running on a dedicated computer, a NetWare for AViiON Systems file server consists of a set of processes running on the DG/UX operating system.

SCONSOLE lets you set parameters that control the NetWare transport and services. SCONSOLE uses the DG/UX function call library, streams (paths into the transport), and scripts to access and modify attributes of both transport and services. If NetWare Services for AViiON Systems is not installed on DG/UX, SCONSOLE can only access the transport attributes and parameters.

## How to access SCONSOLE

1. Log in to the AViiON server system as user *root*.
2. Change to the DG/UX directory `/usr/bin/netware`, which contains the SCONSOLE executable file by typing

```
cd /usr/bin/netware ↵
```

3. At the system prompt, type

```
./sconsole ↵
```

The SCONSOLE main menu appears.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:51:46 1994  
User ROOT on NetWare Server AVIIION (UP)  
-----  
                                MAIN MENU  
1. Administration  
2. Configuration  
3. Statistics  
4. Utilities  
e. Exit from SCONSOLE  
?. Help  
  
Request:  
  
-----
```



## How to use SCONSOLE

Because SCONSOLE is running on the AViiON system, its menus work differently from most NetWare menu utility screens. Use the following guidelines to navigate through the SCONSOLE menus.

- Type the menu option number and press **<Enter>** to access or activate an option.
- Type **r** and press **<Enter>**, or press **<Escape>**, to return to the previous menu screen.
- Type **e** and press **<Enter>** to exit SCONSOLE.
- Type **?** and press **<Enter>** to access help screens.

Various parameters set by SCONSOLE are stored in the files NWConfig, NPSCConfig, PRTConfig, RPCConfig, and RPControl located in the `/etc/netware` directory. You can change these parameters either with SCONSOLE or by editing the respective file with any text editor.

On SCONSOLE screens that let you enter information, type parameters and flags at the keyboard. Toggle flags that are set to ACTIVE or INACTIVE by pressing the space bar. Move from one field to the next by pressing **<Enter>**.

Some SCONSOLE screens are display-only and show information about the server or another part of the network. You cannot change information on these screens. The screen will prompt you to "Press any key to continue" to display more information or to exit the screen after the information has all been displayed. Press **<Esc>** to exit the screen before all the information has been displayed.

## Administration Menu

Use options on this menu to

- Access the Start/Shutdown Menu, where you can start up and shut down NetWare services and transport;
- Access the Error Log Menu, where you can view and clear error logs.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:52:05 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                ADMINISTRATION MENU  
                                1. Startup/Shutdown NetWare  
                                2. Error Log Menu  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
Request:  
  
-----
```

To access this menu, choose the SCONSOLE main menu option:

1. Administration

Each menu option is described below.

## Startup/Shutdown Menu

Use the options on this menu to

- Start up and shut down the NetWare transport and services;
- Start up and shut down print services.

```

-----
SCONSOLE v3.11                               Sat Dec  4 11:52:13 1994
User ROOT on NetWare Server AVIION (UP)
-----
                                START/SHUTDOWN MENU
                                1. Start NetWare Transport
                                2. Start NetWare Server
                                3. Start Print Server
                                4. Start Remote Printer
                                5. Shutdown NetWare Server
                                6. Shutdown NetWare Transport
                                7. Shutdown Print Server
                                8. Shutdown Remote Printer
                                r. Return to Previous Menu
                                e. Exit from SCONSOLE
                                ?. Help
Request:
-----

```

To access this menu, follow the SCONSOLE Main menu path:

1. Administration → 1. Start/Shutdown Menu

Each menu option is described below.

### Start NetWare Transport

This option starts the execution of the architecture (**npsd**) daemon. It sets up the necessary protocol stack for the NetWare file server to execute. You must have **root** privileges to perform this procedure.

### Start NetWare Server

This option starts the local NetWare file server. The NetWare Transport (**npsd**) must be running before you can start the server. You must have **root** privileges to perform this procedure.

### **Start Print Server**

This option starts the print server daemon. You must specify the name of the print server and the name of the file server.

### **Start Remote Printer**

This option starts the remote printer daemon. You must specify the name of the remote printer. You must have **root** privileges.

Although NetWare supports multiple print servers, SCONSOLE can start and stop only one print server. Edit the script `/usr/opt/netware/bin/psinit` to start print services. Edit the script `/usr/opt/netware/bin/stopps` to stop all print servers and **rprinter**.

### **Shutdown NetWare Server**

This option shuts down the NetWare file server. A server down message is given after the server shuts down. The server must be shut down before the Transport (**npsd**) is shut down. You must have **root** privileges to perform this procedure.

### **Shutdown NetWare Transport**

This option kills the architecture daemon (**npsd**) and destroys the environment necessary for the NetWare file server to operate. You must have **root** privileges to perform this procedure.

### **Shutdown Print Server**

This option kills the print server daemon. You must specify the name of the print server.

### **Shutdown Remote Printer**

This option shuts down the remote printer. You must be logged in as **root** or have **root** privileges to perform this function.

## **Procedure for starting and stopping NetWare Transport and Services**

The NetWare Transport must always be started before and stopped after the NetWare server.

To start NetWare Transport, you must log in as **root** on the AViiON server, start SCONSOLE, and follow the SCONSOLE Administration Menu path:

1. Startup/Shutdown NetWare →
2. Start NetWare Transport

To shut down NetWare, follow these steps:

**1. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
5. Shutdown NetWare Server

**2. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
6. Shutdown NetWare Transport

To start the print server and remote printing, follow these steps:

**1. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
3. Start Print Server

**2. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
4. Start Remote Printer

To shut down the print server and remote printing, follow these steps:

**1. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
7. Shutdown Print Server

**2. Follow the SCONSOLE Administration Menu path:**

1. Startup/Shutdown NetWare →
8. Shutdown Remote Printer

You can also perform these procedures at the command line. Log in as **root**, then change to the **/usr/bin/netware** directory. Run the specific daemon as desired. For example, to start the NetWare Transport daemon (**npsd**), type

**./startnps }**

To shut down the NetWare Transport, type

**./stopnps }**

To start Netware Services, type

**./startnw }**

To stop Netware Services, type

**./stopnw }**

To start printing, type

**./psinit }**

To stop printing, type

**./stopps }**

## Error Log Menu

Use the options on this menu to

- View the file server error log;
- Clear the file server error log.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:52:32 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                ERROR LOG MENU  
                                1. View/Print  
                                2. Clear Error Log  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
Request :  
  
-----
```

To access this menu, follow the SCONSOLE main menu path:

1. Administration → 2. Error Log Menu

Each menu option is described below.

### View Error Log

This option allows you to examine the SYS\$LOG.ERR error log file located in /usr/netware/sys/system. File server and network error messages are recorded here. Error messages are saved in the log file until they are cleared using the Clear Error Log menu option. (This file can also be accessed with SYSCON.)

You can view the error log file by choosing this option then pressing <Enter> to scroll through the file. To exit before reaching the end of the log file, type q.

The SYS\$LOG.ERR file contains system errors such as improper logons, file creation errors (due to lack of space), address collisions, and memory allocation problems.

Critical error messages are sent to the AViiON system console or to the network supervisor's console as well as to the error log if the console flag is set to ACTIVE.

Repeated errors point out a problem that you could correct before the situation becomes critical. For example, a repeated "Shared Memory Failure" can be fixed by modifying the shared memory size in the NWConfig file. If a critical error brings down the file server, viewing the error log might show you the events that led to the failure.

#### **Clear Error Log**

This option erases the contents of the SYS\$LOG.ERR error log file. Once cleared, this information cannot be recovered.



## Configuration Menu

Use the options on this menu to

- Access the Transport Configuration Menu, where you can configure transport parameters and NVT parameters;
- Access the Services Configuration Menu, where you can configure file services, print services, hybrid users, and security;
- Edit system parameters.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:52:46 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                CONFIGURATION MENU  
                                1. Transport Configuration  
                                2. Services Configuration  
                                3. Edit System Parameters  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
Request :  
  
-----
```

To access this menu, choose the SCONSOLE main menu option:

2. Configuration

After you choose the option for the Configuration menu, the system pauses for a few seconds while the configuration files are read. The system will also pause to write the configuration files upon exiting the Configuration menu.

Each menu option is described in the following pages.

## Transport Configuration Menu

Use the options on this menu to

- Set transport parameters and flags;
- View or clear the error log;
- List network assignments;
- Add, modify, or delete a network;
- Set NVT parameters and flags.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:53:04 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                TRANSPORT CONFIGURATION MENU  
                                1. Transport Parameters  
                                2. Error Log  
                                3. List Network Assignments  
                                4. Add A Network  
                                5. Delete A Network  
                                6. Modify A Network  
                                7. NVT Parameters  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
Request:  
-----
```

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration

Each menu option is described in the following pages.

## Transport Parameters

Use this option to

- Set flags used to activate/deactivate the Service Advertising Protocol (SAP), SPX, and NetBIOS services.

```

                                Transport Parameters
Internal Network Number          80ddefe6
SAP Flag                         ACTIVE
SAP Standard Output              /dev/console
SAP Error File/Device            /etc/netware/sap.error
SPX Flag                         ACTIVE
NetBIOS Flag                    ACTIVE
NetBIOS Shim                    nbix
SPX Max Connections              256
SPX Max Sockets                  256

The return key will advance the cursor to the next field.
The escape key will abort the edit.
The space bar will toggle the ACTIVE/INACTIVE fields

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →
1. Transport Parameters

Each flag is described below.

### Internal Network Number

This parameter specifies the unique network number for the internal network. Enter a string representing a hexadecimal number in the range of 0x0 – 0xF, *non-inclusive* (00000001 – FFFFFFFE).

This specifies a unique number designating the address for the network. This is a hexadecimal number different from any others assigned to known servers.

### **SAP Flag**

This flag specifies whether the architecture daemon (**npsd**) should activate the service advertising protocol (SAP) when **npsd** starts. SAP queries are packets that ask about specific server types on the network. The choices are **ACTIVE** and **INACTIVE**. You should set this parameter to **ACTIVE**.

### **SAP Standard Output**

This parameter specifies the device or file that all standard output messages are sent to, including tracking messages.

### **SAP Error File/Device**

This parameter specifies the device or file that all standard error messages are sent to.

### **SPX Flag**

This flag indicates if the connection-oriented services will be started by the architecture daemon when it is started. The choices are **ACTIVE** and **INACTIVE**.

SPX is a NetWare protocol that guarantees successful delivery of data packets through the network. The SPX protocol is used by the Print Server and some network-ready applications. You should set this parameter to **ACTIVE**.

### **NetBIOS Flag**

This flag indicates if the NetBIOS services will be started by the architecture daemon when it starts. The choices are **ACTIVE** and **INACTIVE**. If you plan to run NetBIOS applications, set this flag to **ACTIVE**.

### **NetBIOS Shim**

This is the name of the module used to convert NetBIOS packets to IPX packets. Currently this name must be **nbix**.

### **SPX Max Connections**

This is the maximum number of simultaneous connections that are supported. The following items use an SPX connection:

- Each NVT user
- Each print server
- Each **rprinter** (UNIX)
- Each **rprinter** (PC)
- Each SPX-based application

Ranges are 5 to 1024. The default is 256.

### **SPX Max Sockets**

This is the maximum number of SPX sockets that will be supported.

Ranges are 5 to 1024. The default is 256.

## Error Log Menu

Use this option to

- View, print, or clear the SAP error log.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:53:34 1994  
User ROOT on NetWare Server AVIIION (UP)  
-----  
                                TRANSPORT ERROR LOG MENU  
                                1. View/Print SAP Error Log  
                                2. Clear SAP Error Log  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
                                Request :  
  
-----
```

To access this screen, follow the SCONSOLE main menu path:

- 2. Configuration → 1. Transport Configuration →
- 2. Error Log

Each parameter is described below.

### View/Print SAP Error Log

View the log that records errors associated with the SAP. When you are finished viewing the log, press <Enter> and a prompt appears, asking if you want to print the log.

### Clear SAP Error Log

Delete entries in the SAP error log.

## List network assignments

Use this option to

- View network adapters, network numbers, adapter type, and network module.

List Network Assignments					
LAN Number	Network Number	Device	Adapter Type/ Frame Type	PPA/ Interface	Module
1	89415800	/dev/dgen0	ETHERNET_DLPI ETHERNET_II	0	PAD
2	89415811	/dev/udp	IP_TPI IP_UDP	0	IP
IP Address: 80DDEFF5					
IP Hosts: 80DDEF25 80DDEF2D					
Press RETURN to continue...					

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →
3. List Network Assignments

Each parameter is described below.

### LAN

This specifies the number of the LAN to which the following configuration information applies. For example, LAN 1 will use a different configuration than LAN 2.

### **Network Number**

Network numbers are used by the NetWare operating system to set apart networks (cabling systems). This network number is also assigned to all stations on the file server's network.

If you have multiple network boards and network cables attached to your file server, each board and cable is considered a separate network and should be assigned its own network number.

### **Device**

This is the adapter device name which specifies the path of the device driver file in the AViiON system's device directory.

### **Adapter Type/Frame Type**

The Adapter Type is the type of adapter used in the network. This should match the type of adapter for the given device. Choices are ETHERNET\_DLPI, TOKENRING\_DLPI, and IP\_TPI.

The Frame Type specifies the type of packet header that the Ethernet, Token Ring, or IP Tunneling driver should use. The default for Ethernet is ETHERNET\_II, the default for Token Ring is TOKEN-RING, and the default for IP Tunneling is IP\_UDP. The choices for this token are as follows:

- |               |  |
|---------------|--|
| Ethernet:     | ETHERNET_802.3, ETHERNET_II, or ETHERNET_802.2 |
| Token Ring:   | TOKEN-RING.                                    |
| IP Tunneling: | IP_UDP.  |

Each LAN uses *both* the Adapter Type and the Frame Type.

### **PPA/Interface**

PPA is the Physical Point of Attachment for the driver. NetWare for AViiON Systems does not use this parameter.



## Module

This lists any special data parsing requirements for this adapter and adapter type combination, such as padding and unpadding the Ethernet packets. Possible values are as follows.

Packet Type	Module
ETHERNET_II	PAD
ETHERNET_802.2	ALIGN
ETHERNET_802.3	PAD
TOKEN_RING	MAP_TOKEN_RING_ADDRESS or MAP_TOKEN_NO_SR
IP_UDP	IP

**NOTE:** NetWare for AViiON systems adds source routing information to the packet headers by default. To turn off source routing information, use the MAP\_TOKEN\_NO\_SR module when configuring token ring networks.

### IP Address (for IP Tunneling only)

The IP Address is the 8–digit hexadecimal IP address of this server. If you want to install multiple IP tunnel reports on this server, you must use a different IP Address for each IP Tunneled network.

### IP Hosts (for IP Tunneling only)

These are the intermediate IPX servers/routers that the server communicates with. IP hosts are also known as peers. You can specify up to 16 servers/routers per IP Tunneled network. Each server/router entry is the hexadecimal equivalent of the IP Address of the servers/routers.

## Add a network

Use this option to

- Add a network to the NPSConfig file network table to run the network.

```

                                     Add A Network

New Network Number:                  89415800
Adapter Device Name:                 /dev/dgen0
Adapter Type:                        ETHERNET_DLPI
Physical Point of Attachment:        0
Interface Name:                      0
Frame Type:                          ETHERNET_II
Module Name:                         PAD

Added IPX Network 89415800
Press RETURN to continue...
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →
4. Add a Network

### Procedures for adding a network

To add a network, access the Add a Network screen and then enter a network number, an adapter device name, and an adapter type. Press **<Enter>** at the prompts for physical point of attachment and interface name. Enter the frame type and a module name.

For IP Tunneling, enter the additional IP Address and IP Hosts parameters, and the device name `/dev/udp`. For a description of these fields, see the description of the List Network Assignments screen.

The network is added to the NPSConfig file network table.

## **Procedures for adding an IP Tunneled network**

You can set up an IP Tunneled network between servers or between a server and LAN WorkPlace® for DOS clients. You can also set up multiple IP Tunneled networks on a server. We explain each IP Tunneled network setup below.

**IMPORTANT:** When you add an IP Tunneled network, you must notify the internetwork IPX routers to which you intend to transmit. (These internetwork IPX routers are also known as peers or IP Hosts.) Whenever IPX broadcasts a packet, the IP Tunnel duplicates the packet and sends a duplicate copy directly to each peer or IP Host.

### **IP Tunneled Network between Servers**

Follow procedures in the section “Procedures for Adding a Network” to configure each server. Be sure to specify the peers in the IP Hosts parameters.

### **IP Tunneled Network between Server and LAN Workplace Clients**

Follow procedures in the section “Procedures for Adding a Network” to configure the server. Since IP Tunneling tunnels IPX traffic only between the server and LAN WorkPlace® for DOS clients, you do not need to specify IP Hosts parameters.

### **IP Multiple Tunneled Network**

On each network, install an IP Tunneled network and assign a unique IP Address at the IP Address parameter prompt.

## Modify a network

Use this option to

- Modify an existing network.

```
Modify A Network

New Network Number:      89415811
Adapter Device Name:     /dev/udp
Adapter Type:            IP_TPI
Physical Point of Attachment:  0
Interface Name:
Frame Type:              IP_UDP
Module Name:              IP

IP Address:  80DDEFF5
IP Hosts:    80DDEF25  80DDEF2D

Added IPX Network 89415800
Press RETURN to continue...
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration →
6. Modify a Network

Enter the LAN number of the network you want to modify.

### Procedures for modifying a network

To modify a network, access the Modify a Network screen and then enter changes to the existing parameters. Press **<Enter>** at the prompts for physical point of attachment and interface name. For IP Tunneling, enter the additional IP Address and IP Hosts parameters. For a description of these fields, see the description of the List Network Assignments screen.

The network is modified in the NPSCONFIG file network table.

---

## Delete a network

Use this option to

- Remove a network from the NPSCConfig file network table.

```
Delete A Network

IPX Network Number of Network to Delete: 89415800

Removed IPX Network 89415800
Press RETURN to continue...
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration → 5. Delete a Network

### Procedure for deleting a network

To delete a network, access this screen then enter the number of the network to delete. If you do not know the network number, use the List Network Assignments screen.

The network is deleted from the NPSCConfig file network table.

## NVT parameters

Use this option to

- Set NVT (Network Virtual Terminal) activation/deactivation values and NVT session variables.

```

                                NVT Parameters
NVT Flag                          ACTIVE
NVT Service Name                   AVIION
NVT Gettydefs Entry                9600
NVT Init Level                     23
NVT Line Discipline
NVT Maximum Keep Alive Retries    15
NVT Interval between Keep Alives 7200
NVT Pty Name                       ATT

The return key will advance the cursor to the next field.
The escape key will abort the edit.
The space bar will toggle the ACTIVE/INACTIVE fields.
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 1. Transport Configuration → 6. NVT Parameters

**NOTE:** The maximum number of NVT connections is limited by the following:

- DG/UX system parameters PTYCOUNT and NQUEUE
- NetWare Transport configuration parameters SPX Max Connections and SPX Max Sockets

### NVT Flag

This flag specifies whether NetWare stations can run terminal emulation software and connect to the AViON system via NetWare as if they were terminals. Choices for this flag are ACTIVE and INACTIVE.

Setting the NVT flag to **ACTIVE** opens a communication link between the AViiON system and network users by connecting an AViiON system device driver (NVT) to the file server's IPX/SPX driver. When the NVT flag is set to **INACTIVE**, network users cannot send and receive NVT data from the AViiON system.

#### **NVT Service Name**

This is the name by which the computer will be known on the network. This is different from the file server name, but can be the same.

#### **NVT Gettydefs Entry**

This entry defines the terminal settings for the pseudo-tty used by NetWare clients running the terminal emulation software. This is not used by NetWare for AViiON Systems.

#### **NVT Init Levels**

This entry determines the run level at which the pseudo-tty process is spawned by init. This value should be 23.

#### **NVT Line Discipline**

This entry is the line discipline driver to be pushed on top of the pseudo-tty driver. Do not change this entry.

#### **NVT Maximum Keep Alive Retries**

To change the time interval that an NVT connection stays connected, you must change this parameter and the NVT Interval between Keep Alives parameter. Use the following formula to determine the time interval to enter for these parameters.

Keep Alive Retries  $\times$  Interval between Keep Alive  $\div$  60 = interval (in seconds) before the connection closes

#### **NVT Interval between Keep Alives**

See the above description of the NVT Maximum Keep Alives parameter.

### **NVT Pty Name**

This parameter specifies the pseudo-tty device names. To use the **/dev/ttypN** name, enter **berkeley**. To use the **/dev/pts/N** device names, enter the default, **att**.



## Services Configuration Menu

Use the options on this menu to

- Access the File Services Configuration menu, where you can set file service parameters and display volume assignments;
- Access the Remote Printer Configuration menu, where you can configure remote printers and printers on the AViiON system;
- Access the Hybrid User Configuration menu, where you can set parameters for hybrid users;
- Access the Security Configuration menu, where you can modify the Alert Notification list and set security parameters.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:54:12 1994  
User ROOT on NetWare Server AVIIION (UP)  
-----  
SERVICES CONFIGURATION MENU  
1. File Services Configuration  
2. Remote Printer Configuration  
3. Hybrid User Configuration  
4. Security Configuration  
r. Return to Previous Menu  
e. Exit from SCONSOLE  
?. Help  
  
Request:  
-----
```

To access this menu, follow the SCONSOLE main menu path

2. Configuration → 2. Services Configuration

Each menu option is described on the following pages.

## File Services Configuration Menu

Use the options on this menu to

- Access the File Services Parameters screen, where you can modify file service parameters;
- List, add, change, or delete volume assignments.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:54:19 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                FILE SERVICES CONFIGURATION MENU  
1. File Services Parameters  
2. List Volumes  
3. Add A Volume  
4. Change A Volume Name and Name Space  
5. Change Volume Paths and Cache  
6. Delete A Volume  
r. Return to Previous Menu  
e. Exit from SCONSOLE  
?. Help  
  
Request:  
-----
```

To access this menu, follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 1. File Services Configuration

Each menu option is described on the following pages.

## File services parameters

Use this option to

- Set values and flags to determine the functionality and performance of NetWare services.

General Parameters	
Maximum Processes	5
Maximum Connections	50
Maximum Volumes	5
Read Ahead Cache Flag	ACTIVE
Write Behind Flag	ACTIVE
Read Ahead Cache Block Size	1024
Login Flag	ACTIVE
Directory Mask	700
File Mask	600
File Size Limit	16777216
Native Locks Flag	INACTIVE

The return key will advance the cursor to the next field.  
 The escape key will abort the edit.  
 The space bar will toggle the ACTIVE/INACTIVE fields.

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
1. File Services Parameters

Each parameter is described below.

### Maximum Processes

This parameter limits the number of processes that can be spawned to handle NetWare clients. This maximum number is spawned when NetWare is initialized. As NetWare clients log in, a client is assigned to each process until all processes have one client. Thereafter, each additional NetWare client is added to the load of a current process, balancing the load at login time so that each process has the same number of clients.

Using the formula described in “Maximum Connections,” change this value to adjust the number of system resources

available on the file server. Increase this value to make more engines available. This improves system performance as clients are more likely to have sole use of a single process.

Lower this value to reduce resource usage. (NetWare service can slow down, because each process must service multiple clients.)

The default is 5; the range is 1 to 25.

### **Maximum Connections**

This parameter limits the total number of clients who can log in to use NetWare files and services.

We recommend that you configure your server with about five NetWare clients per Service Engine. Use the following formula.

$$\frac{\text{Maximum Connections} + 5}{\text{Maximum Processes}} = \text{number of NetWare clients per Engine}$$

where:

**Maximum Connections** is the maximum number of connections allowed by your license

**+ 5** is the 5 connection slots reserved for pserver

**Maximum Processes** is the number of Engines defined on your NetWare system

To adjust the clients per Engine ratio, modify Maximum Processes and Maximum Connections by using SCONSOLE. For example, if you want NetWare to run with five clients per Engine, change the Maximum Connections to 45 and change the Maximum Processes to 10.

If you have configured your system to use the Packet Burst protocol, we recommend that you configure your system so that no more than 10 clients can be assigned to a single process.

Decrease this parameter to limit the number of clients using NetWare. As you decrease this parameter, you may also want to decrease the Maximum Processes parameter.

Increase this parameter to allow more clients to use NetWare. As you increase this parameter, you may also want to increase the Maximum Processes parameter.

The default is 50; the range is 1 to 250.

### **Maximum Volumes**

This parameter limits the number of NetWare volumes that can be mounted on the DG/UX file system on the server.

Change this parameter to change the number of volumes or to limit the number of volumes that can be created.

The default is 64; the range is 1 to 64.

### **Read-Ahead Cache Flag**

This flag activates a spot cache function that improves file server performance for file reading. Although this function is not a general-purpose cache, it does read ahead on executable and read-only files and, therefore, adds efficiency to the true cache function performed by the AViiON system. We recommend that you use the default of ACTIVE.

This parameter should be set to ACTIVE if the AViiON system has shared memory, which should always be the case. You might also want to change this parameter temporarily to INACTIVE to check for efficiency gain or loss with the caching function.

**NOTE:** You can increase cache performance by turning off the Read-Ahead Cache.

### **Write-Behind Flag**

This flag specifies whether a response to a write request is sent before the write is actually completed. The choices for this flag are **ACTIVE** and **INACTIVE**.

If write behind is **ACTIVE**, performance is improved. Reliability may be reduced, however, because the success of the write is not validated until after the response is sent.

### **Read-Ahead Cache Block Size**

This parameter determines the size of the read-ahead buffer for the read-ahead file caching performed by the file server. The optimal size of this value depends on the available memory in the AViiON system and on the total load on that memory.

- The default is 4096 bytes; the range is 512 to 16384.

### **Login Flag**

This flag specifies who can log in to the file server. When it is set to **ACTIVE**, all users can log in to the server. When it is set to **INACTIVE**, only the Supervisor can log in. Choices are **ACTIVE** and **INACTIVE**.

### **Directory Mask**

- This parameter declares the default UNIX permissions (octal) for all directories created in the NetWare file system. This mask is used to restrict AViiON system users from accessing NetWare directories. Choices are any valid UNIX permission. NetWare rights apply only to NetWare users within NetWare.

The default mask value of 0770 allows the members of the **netware** group (the default owner of NetWare) to read, write, and execute NetWare files.

The default owner of NetWare files is user **netware**; processes run as **root**.

If you have hybrid users on your network, you must change directory mask permissions to allow hybrid users to move to the NetWare files they own. You can manually change permissions for each directory leading to hybrid user files, or change the default for all NetWare directories with this parameter.

You can keep the NetWare file system secure by changing only the directory mask to a restrictive value such as 0711. The 0711 value does not allow hybrid users to see NetWare directories and files until they move to an area that they own. Using 0711 requires hybrid users to specify the exact path to a file in order to move to that area.

**NOTE:** UNIX system **umask** is applied to **dir\_mask**. If the system **umask** is 022 and the **dir\_mask** is 077, the effective **dir\_mask** will be 055. For details on **umask**, see *Managing the DG/UX System*.

### **File Mask**

This mask declares the default permissions (octal) that are assigned to all files created by NetWare users.

This mask restricts non-hybrid AViiON system users from accessing NetWare files. Choices are any valid UNIX permission. NetWare security rights apply only to NetWare users within NetWare.

The default mask value of 0660 allows the members of the **netware** group (the default owner of NetWare) to read and write NetWare files.

**NOTE:** UNIX system **umask** is applied to **dir\_mask**. If the system **umask** is 022 and the **dir\_mask** is 066, the effective **dir\_mask** will be 044. For details on **umask**, see *Managing the DG/UX System*.

### **File Size Limit**

This parameter specifies the maximum file size that is supported by NetWare on this system. This is the same as the UNIX command **ulimit**.

The default is 16 megabytes; the minimum is also 16 megabytes.

### **Native Locks Flag**

This parameter specifies whether NetWare file locks also apply to the DG/UX operating system on the AViiON server. Choices are **ACTIVE** and **INACTIVE**. If this is set to **INACTIVE**, file locks apply only to NetWare.

We strongly recommend that this parameter be set to **INACTIVE**, since not all NetWare locks map correctly to DG/UX locks.



## List volumes

Use this option to

- List mappings between logical NetWare volumes and a directory path in the DG/UX file system.

```

List Volumes
-----
First Volume|Name Space      Other Volume(s)|Name Space(s)
-----
SYS|DOS
Host Path:      /usr/netware/sys
NWinode File:   /usr/netware/NWControl/sys/inodes
Cache Size:    0

VOL2|DOS
Host Path:      /usr/netware/vol2
NWinode File:   /usr/netware/NWControl/vol2/inodes
Cache Size:    24000

VOL3|DOS
Host Path:      /usr/netware/vol3
NWinode File:   /usr/netware/NWControl/vol3/inodes
Cache Size:    48000

Press RETURN to continue...

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration → 2. List Volumes

### First Volume|Name Space

The first volume name is the name of the volume. The name space can be DOS, OS2, UNIX, or AFP and specifies the type of file structure used by the volume to store files. The first volume name is separated from the name space associated with the volume by a vertical bar.

### Other Volume(s)|Name Space(s)

Other volumes can be associated with the first volume. Other volumes have the same volume number, DG/UX directory path, and NWinode file as the first volume, and can have the same volume name. The other volumes cannot share the same name space.

### **Host Path**

This parameter shows the path of the DG/UX directory on the AViiON system that serves as the root directory for each logical volume.

### **NWnode File**

This parameter shows the filename and path of the **NWnode** file for the volume. The **NWnode** file stores the directory structure, file sizes and locations, and disk utilization information for the volume.

## Add a volume

Use this option to

- Add a NetWare volume to the AViiON system.

```

                                Add A Volume

New Volume Name:   vol3
New Name Space:   os2
New Host Path:    /usr/netware/vol3
Cache Size:       200000

Would you like to create the directory for the NWinodes file
                  /usr/netware/vol3 (y or n)?
Volume vol3 will be mounted when NetWare server is restarted.
Press RETURN to continue...

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration → 3. Add a Volume

We recommend that you view the List Volumes screen to see what volumes exist before adding new volumes; this will help you avoid using existing volume names.

### Procedure for adding a volume

You must be logged in as **root** or have **root** privileges to perform this function.

Access this screen, then enter a new volume name and a name space (valid entries are DOS, OS2, UNIX, and AFP) for the volume that you want to add. You are asked if you want to add other volumes; enter **Y** or **N**. For example, if you have a client needing to share MACintosh and DOS files, use DOS and AFP name spaces.

If you specified **Y** to add other volumes, then enter up to three additional volume names and name spaces; the volume names can be the same as the first volume name, but the name spaces for all volumes must be different.

After entering volume names and name spaces, enter a directory path on the AViiON system that defines the root of the new volume's directory structure; if this directory path does not exist you are asked to confirm its creation. NetWare creates the **NWinode** file with the pathname **/usr/netware/NWControl/newvol/inodes**. Note that the inodes files can grow large.

You must stop and restart NetWare services to mount the new volume.

## Change a volume name and name space

Use this option to

- Change the name of the volume or the name space for the volume.

```

Change A Volume Name and Name Space
-----
First Volume|Name Space      Other Volume(s)|Name Space(s)
-----
SYS|DOS
VOLUME2|AFP                  EVAN|OS2
VOL3|OS2                     VOL4|AFP, VOL4|OS2
VOL4|UNIX

Which of the First Volume|Name Space above would you like to change ?
Enter a First Volume Name and Name Space below when prompted.

Volume Name: vol3
Name Space: os2

Do you wish to change the first volume|name space (y or n)?

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
4. Change a Volume Name and Name Space

### Procedure for changing a volume name and name space

You must be logged in as **root** or have **root** privileges to perform this function.

Access this screen, then enter the first volume name of the volume and the name space associated with that volume. If you want to change the name of the volume, enter **Y**; otherwise enter **N** to change the other volumes and name spaces.

If you specified **Y** enter a new name and the name space. Then specify if you want to add other volumes to this first volume. (See the Add a Volume screen description above for this procedure.)

## Change volume paths and cache

Use this option to

- Change the DG/UX path associated with the volume.
- Change the cache size

```

Change Volume Paths and Cache
-----
Volume      Volume Names      Volume Host Path /
              Volume NWinode (Control) File Path
              Volume Cache Size
-----
0           DOS: SYS          /usr/netware/sys
              /usr/netware/NWControl/sys/inodes
              1000000

Change this volume's information?
Change host path of volume?
New Volume Path:
Change host path of NWinode (control) file?
New NWinode Path:
Change cache size of volume?
New Cache Size:
    
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
5. Change Volume Paths and Cache

### Procedure for changing volume paths and cache

You must be logged in as **root** or have **root** privileges to perform this function.

Access this screen, and the first volume (0) is displayed. If you want to change either the path of this volume, the path of its NWinode file, or the cache size, enter **Y**; otherwise enter **N**. The next volume is displayed with the same prompt. You must cycle through the volumes answering yes or no at the first prompt until you get the volume you want to change.

If you specify **Y** at the first prompt, you are prompted to change the path of the volume, the path of the **NWnode** file, or cache size. Answer **Y** to change the paths or cache size, and enter a new **DG/UX** directory path when prompted. If the new **DG/UX** directory path does not exist, you must confirm the creation of it.

```
Change Volume Paths and Cache
Volume      Volume Names      Volume Host Path /
              Volume NWnode (Control) File Path
              Volume Cache Size
-----
0           DOS: SYS      /usr/netware/sys
              /usr/netware/NWControl/sys/inodes
              480000

Change this volume's information?
Change host path of volume?
New Volume Path:
Change host path of NWnode (control) file?
New NWnode Path:
Change the cache size of volume?
New Cache Size: 2000000
```

## Delete a volume

Use this option to

- Delete a NetWare volume from the AViiON system's disk.

```

                                Delete A Volume
-----
First Volume|Name Space      Other Volume(s)|Name Space(s)
-----
SYS|DOS
VOLUME2|AFP                  EVAN|OS2
VOL3|OS2
VOL4|UNIX                    VOL4|AFP,VOL4|OS2

Which First Volume|Name Space above would you like to delete ?
Enter a First Volume Name and Name Space below when prompted.

Volume Name: vol3
Name Space: os2

Volume VOL3 with name space OS2 has now been deleted.
Press RETURN to continue...
-----
```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
1. File Services Configuration →
6. Delete a Volume

### Procedure for deleting a volume

You must be logged in as **root** or have **root** privileges to perform this function.

Access this screen, then enter the name of the volume that you want to delete and the name space associated with the volume. The volume is deleted.



## Remote Printer Configuration Menu

Use the options on this menu to

- Access the Host Printer Configuration menu, where you can list, add, or delete local host printers;
- Access the Remote Printer Control menu, where you can list, add, or delete remote printers;
- Access the Remote Printer Configuration screen, where you can set parameters for remote printers.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:55:03 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                REMOTE PRINTER CONFIGURATION MENU  
                1. Host Printer Configuration  
                2. Remote Printer Control  
                3. Remote Printer Configuration  
                r. Return to Previous Menu  
                e. Exit from SCONSOLE  
                ?. Help  
Request:  
-----
```

To access this menu, follow the SCONSOLE main menu path:

- 2. Configuration → 2. Service Configuration →
- 2. Remote Printer Configuration

Each menu option is described on the following pages.

## Host Printer Configuration Menu

Use this option to

- List host printers on the system;
- Add a host printer to the system;
- Delete a host printer from the system.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:55:08 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
HOST PRINTER CONFIGURATION MENU  
1. List Host Printer(s) on System  
2. Add A Host Printer to System  
3. Delete A Host Printer from System  
r. Return to Previous Menu  
e. Exit from SCONSOLE  
?. Help  
  
Request:  
  
-----
```

To access this screen, follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 2. Remote Printer Configuration →
- 1. Host Printer Configuration

Each procedure is described on following pages.

## List host printers on system

Use this option to

- List the printers that have been added to the system.

List Host Printer(s) on System			
Host Printer Name	Host ID	Priority	Form Name
North_Office	mtx80_1	1	Landscape
South_Office	mtx80_2	1	
Lab	mtx80_3	23	Purple

Press RETURN to continue...

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
1. Host Printer Configuration →
1. List Host Printers on a System

### Host Printer Name

This phrase uniquely describes the host printer or queue. The name can be up to 20 characters long.

### Host ID

This parameter is the identifier that the AViON system has assigned to the queue or printer. RPRINTER uses this identifier to find and open the host printer or queue.

### **Priority**

This parameter allows you to assign a priority level to the printer. The highest priority is 1; the range is 1 to 40.

### **Form Name**

This parameter identifies the form that the queue or printer is configured for. This field can be left blank.

## Add a host printer to system

Use this option to

- Add a host system printer to the NetWare system.

```

Add A Host Printer to System
Host Printer Name:
Host Print Queue Name:
Host Print Queue Priority:
Host Print Queue Form Name:

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
1. Host Printer Configuration →
2. Add a Host Printer to a System

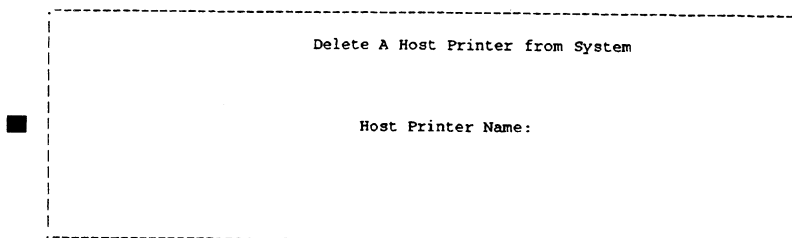
### Procedure for adding a host printer

To add a host printer, access this screen then enter a name for the host printer, the host ID, the priority level, and a form name. For a description of each of these fields, see the description of the List Host Printers on System screen.

## Delete a host printer from system

Use this option to

- Delete a host printer from the NetWare system.



```

Delete A Host Printer from System

Host Printer Name:

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
1. Host Printer Configuration →
3. Delete a Host Printer from a System

### Procedure for deleting a host printer

To delete a host printer, access this screen, then enter the name of the printer. If you do not know the host printer name, use the List Host Printers on System screen.

## Remote Printer Control Menu

Use this option to

- List remote printer assignments;
- Add or delete remote printers.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:55:43 1994  
                                             User ROOT on NetWare Server AVIION (UF)  
-----  
                                REMOTE PRINTER CONTROL MENU  
                                1. List Remote Printer Assignments  
                                2. Add A Remote Printer  
                                3. Delete A Remote Printer  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
                                Request:  
  
-----
```

To access this screen, follow the SCONSOLE main menu path:

- 2. Configuration → 2. Services Configuration →
- 2. Remote Printer Configuration →
- 2. Remote Printer Control

Each procedure is described on following pages.

## List remote printer assignments

Use this option to

- View all remote printer assignments.

List Remote Printer Assignments		
PServer Name	Printer Slot Number	Host Printer Name
CHRIS	0	Provo_Office
LINDA	15	Lab
LOGAN	0	Lab
Press any key to continue...		

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
2. Remote Printer Control →
1. List Remote Printer Assignments

### **PServer Name**

This parameter specifies the print server to which RPRINTER will attach the printer defined in this file. RPRINTER validates the print server name when it tries to initialize the printer.

### **Printer Slot Number**

This parameter specifies the printer server slot number that the printer will use. The slot number must be between 0 and 15, and the slot must be configured as a remote printer by PCONSOLE.

### **Host Printer Name**

This parameter specifies the host printer queue that RPRINTER will use for this printer. This name must be the same name as was specified as the “host printer name” in the PRTConfig file. SCONSOLE checks that the names match.



## Add a remote printer

Use this option to

- Add a remote printer to the network.

Add A Remote Printer

Print Server Name:

Printer Slot Number:

Host Printer Name:

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
2. Remote Printer Control →
2. Add a Remote Printer

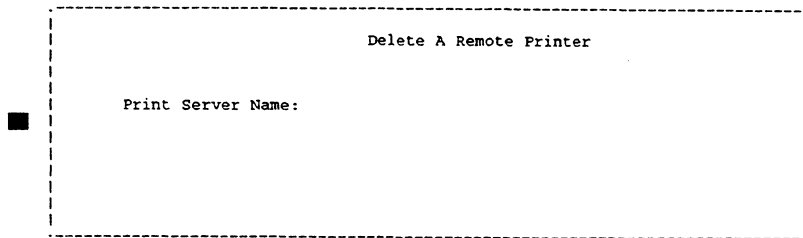
### Procedure for adding a remote printer

To add a remote printer, access this screen, then enter a name for the remote printer, the printer slot number, and the host printer name. For a description of each of these fields, see the description of the List Remote Printer Assignments screen.

## Delete a remote printer

Use this option to

- Delete a remote printer from the server.



```

Delete A Remote Printer

Print Server Name:

```

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
2. Remote Printer Control →
3. Delete a Remote Printer

### Procedure for deleting a remote printer

To delete a remote printer, access this screen, then enter the name of the printer. If you do not know the host printer name, use the List Remote Printer Assignments screen.

## Remote printer configuration

Use this option to

- View or edit parameters associated with remote printer configurations.

Remote Printer Configuration	
Max Wait Packet Time	2500
Status Check Time Interval	5
Idle Count Before Job End	2
Idle Count Before Printer Status	20
Error Count Before Inform	5
Warn Count Before Inform	5

The return key will advance the cursor to the next field.  
The escape key will abort the edit.  
The space bar will toggle the ACTIVE/INACTIVE fields.

To access this screen, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
2. Remote Printer Configuration →
3. Remote Printer Configuration

### Max Wait Packet Time

This parameter specifies the maximum time in milliseconds that RPRINTER waits to receive packets before going on to other processes. The default is 2500 milliseconds; the range is 100 to 3200.

### Status Check Time Interval

This parameter specifies the time in seconds that RPRINTER will be idle when checking status. The default is 5 seconds; the range is 1 to 3600.

### Idle Count Before Job End

This parameter specifies the number of status counts that RPRINTER awaits after packets have stopped coming before

deciding that the print job has ended. Increase this count if RPRINTER is incorrectly assuming that print jobs have ended.

This count is multiplied by the “Status Check Interval” to determine the actual amount of time to wait; for example, if the “Status Check Interval” is 5 seconds and this count is 2, then the printer waits 10 seconds. The default is 2; the range is 1 to 60.

### **Idle Count Before Printer Status**

This parameter specifies the maximum number of status counts that RPRINTER will skip doing a status check on an idle printer.

This count is multiplied by the “Status Check Interval” to determine the actual amount of time to wait; for example, if the “Status Check Interval” is 5 seconds and this count is 20, then RPRINTER waits 100 seconds. The default is 20; the range is 1 to 32000.

### **Error Count Before Inform**

This parameter specifies the maximum number of times that RPRINTER should skip displaying a second or subsequent identical error message. This is used to prevent the scrolling of error messages that occur in rapid succession. The default is 5; the range is 1 to 32000.

### **Warn Count Before Inform**

This parameter specifies the maximum number of times that RPRINTER should skip displaying a second or subsequent identical warning message. This is used to prevent the scrolling of warning messages that occur in rapid succession. The default is 5; the range is 1 to 32000.

## Hybrid user configuration

Use this option to

- List, add, or delete hybrid users to the system (users who have both a DG/UX system account and a NetWare system account on the server);
- Set default parameters for hybrid system users.

```
-----  
SCONSOLE v3.11                               Sat Dec 4 11:57:47 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
HYBRID USER MENU  
1. List Hybrid Users  
2. Add Hybrid User  
3. Delete Hybrid User  
4. Default Hybrid Binding  
r. Return to Previous Menu  
e. Exit from SCONSOLE  
?. Help  
  
Request :  
  
-----
```

To access this screen,

1. Follow the SCONSOLE main menu path:
  2. Configuration →
  2. Services Configuration →
  3. Hybrid User Configuration
2. Enter the supervisor's password to log in to the NetWare server if prompted.

Each procedure is described on the pages that follow.

## List hybrid users

Use this option to

- List all hybrid users on the system.

List of Current Hybrid User Bindings		
NetWare User Name	Host User Name	Group Name
SUPERVISOR	novl	accts
Press RETURN to continue...		

To access this screen,

1. Follow the SCONSOLE main menu path:
  2. Configuration →
  2. Services Configuration →
  3. Hybrid User Configuration
2. Enter the supervisor's password to log in to the NetWare server.
3. Choose the Hybrid User menu option:
  1. List Hybrid Users

### NetWare User Name

This is the name of the NetWare user used to define the hybrid user.

### Host User Name

This is the name of the user on the AViiON system.

**Group Name**

This is the name of the group that the user is assigned to on the AViiON system.

## Add hybrid user

Use this option to

- Add a new hybrid user to the system.

Adding Hybrid User

NetWare User Name:

Host Hybrid User Name:

To access this screen,

1. Follow the SCONSOLE main menu path:
  2. Configuration → 2. Services Configuration
  - 3. Hybrid User Configuration
2. Enter the supervisor's password to log in to the NetWare server.
3. Choose the Hybrid User menu option:
  2. Add a Hybrid User

### Procedure for adding a hybrid user

To add a hybrid user, access this screen, enter the NetWare username, then enter the DG/UX username. The NetWare username should already exist in NetWare, and the DG/UX username should already exist on the AViiON system.



## Delete hybrid user

Use this option to

- Delete a hybrid user.

Delete Hybrid User

NetWare User Name:

To access this screen,

1. Follow the SCONSOLE main menu path:
  - 2 Configuration → 2. Services Configuration  
→ 3. Hybrid User Configuration
2. Enter the supervisor's password to log in to the NetWare server.
3. Choose the Hybrid User menu option:
  3. Delete a Hybrid User

### Procedure for deleting a hybrid user

To delete a hybrid user, access this screen, then enter the name of the hybrid user. If you do not know the hybrid username, use the List Hybrid Users screen.

## Default hybrid binding

Use this option to

- Set default hybrid characteristics of users. (Note that all users have a hybrid binding; only the default is specified here.)

```
                                DEFAULT HYBRID BINDING
Hybrid User Group Id           690
Hybrid User Id                 690

The return key will advance the cursor to the next field.
The escape key will abort the edit.
The space bar will toggle the ACTIVE/INACTIVE fields.
```

To access this screen,

1. Follow the SCONSOLE main menu path:
  2. Configuration →
  2. Services Configuration →
  3. Hybrid User Configuration
2. Enter the supervisor's password to log in to the NetWare server.
3. Choose the Hybrid User menu option:
  4. Default Hybrid Binding

### Hybrid User Group ID

This is the default DG/UX group ID for NetWare users. Newly created NetWare users use this DG/UX group ID.

This parameter determines the DG/UX group ID number that is assigned to all files created by nonhybrid NetWare users; files created by hybrid users already have that user's group ID number assigned. Use the HYBRID utility to assign users' individual user and group ID numbers to files they create in NetWare.

All files created by NetWare users are assigned DG/UX owner IDs and DG/UX group owner IDs. The default ID numbers are declared in the Hybrid Group ID and Hybrid User ID parameters.

### **Hybrid User ID**

This is the default DG/UX user ID for NetWare users.

This parameter determines the DG/UX user ID number that is assigned to all files created by NetWare users, unless those users are hybrid users. Use the HYBRID utility to assign users' individual user and group ID numbers to the files they create.

All files created by NetWare users are assigned DG/UX owner IDs and DG/UX group owner IDs. The default ID numbers are declared in the Hybrid Group ID and Hybrid User ID parameters.

## Security Configuration Menu

Use the options on this menu to

- View the Alert Notification User list;
- Add or delete users from the Alert Notification User list;
- Set security parameters.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 11:58:27 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                SECURITY MENU  
                                1. View Alert Notification User List  
                                2. Add A User for Alert Notification  
                                3. Delete A User from the List  
                                4. Edit Security Parameters  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
Request:  
  
-----
```

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration

Each menu option is described on the following pages.

## View alert notification user list

Use this option to

- View the list of users that will receive alert messages.

```
View Alert Notification User List
User Name
-----
SUPERVISOR
Press RETURN to continue...
```

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration →
1. View Alert Notification User List

### User Name

The names of users that will receive alert messages are listed.

## Add a user for alert notification

Use this option to

- Add a user to the list of users that will receive alert messages.

Add A User for Alert Notification

NetWare User Name:

To access this menu,

1. Follow the SCONSOLE main menu path:
  2. Configuration →
  2. Services Configuration →
  4. Security Configuration →
  2. Add a User for Alert Notification
2. Enter the supervisor's password to log in to the NetWare server if prompted.

### Procedure for adding user for alert notification

You must be logged in as **root** or have **root** privileges to perform this function. Enter the name of the NetWare user to be added to the list.

## Delete a user from the list

Use this option to

- Delete a user from the list of users that will receive alert messages.

Delete A User from the List

NetWare User Name:

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration →
3. Delete a User from the List

### Procedure for deleting a user from the list

You must be logged in as **root** or have **root** privileges to perform this function. Enter the name of the NetWare user to delete from the list. If you do not know the names of users on the list, use the View Alert Notification User List screen.

## Edit security parameters

Use this option to

- Modify system security parameters
- ● Set NCP packet signature level

```

                                SECURITY MENU
Forced Logout Logging           ACTIVE
Forced Logout Display          ACTIVE
NCP Packet Signature Level     2
Password Encryption Flag       INACTIVE

The return key will advance the cursor to the next field.
The escape key will abort the edit.
The space bar will toggle the ACTIVE/INACTIVE fields.
```

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 2. Services Configuration →
4. Security Configuration → 4. Edit Security Parameters

Each flag is described below.

### Forced Logout Logging

This flag specifies if an entry is made in the error log file whenever a client is logged out by the watchdog. When this is set to **ACTIVE**, a message is displayed. Choices are **ACTIVE** and **INACTIVE**.

### Forced Logout Display

This flag determines whether a message is displayed on the system console device whenever a client is logged out by the watchdog. When this is set to **ACTIVE**, a message is displayed. Choices are **ACTIVE** and **INACTIVE**.



### **NCP Packet Signature Option**

*NCP packet signature* is an enhanced security feature that protects servers and clients using the NetWare core protocol by preventing packet forgery. NCP packet signature prevents packet forgery by requiring the server and the client to “sign” each NCP packet. The packet signature changes with every packet.

Because the packet signature process consumes CPU resources and slows performance (both for the client and the NetWare server) NCP packet signature is optional.

Four signature levels are available for both NetWare servers and network clients. These signature levels (shown in the following tables) range from never signing NCP packets to always signing NCP packets. The signature options for servers and clients combine to determine the level of NCP packet signature on the network.

The default for the server is 0. Before you reset the server default, ODI clients will probably need to set their signature level to at least 1 and update their shell files (v 3.32 Revision A or later of NETX.EXE or BNETX.EXE)

Choose a value for the server from the following table.

Server Level	Explanation
0	Server does not sign packets (regardless of the client level). Level 0 is the default.
1	Server signs packets only if the client requests a signature. (Client level is 1 or higher.)
2	Server signs packets if the client is capable of signing. (Client level is 1 or higher.)
3	Server signs packets and requires all clients to sign packets. (Otherwise logging on will fail.)

The default for a client is 1. Note the following restrictions on signature setting before you reset the client default:

For DOS, OS/2 and Windows clients, add the following parameter to the NET.CFG file:

signature level = *n*

where *n* is 0, 1, 2 or 3

Choose a value for the client from the following table. The client level is set in the NET.CFG file for clients using VLMs of ODI. The following values can be set in the NET.CFG file.

Client Level	Explanation
0	Client does not sign packets. (Logging on fails if the server is set to level 3.)
1	Client signs packets only if the server requests a signature. (Server level is 2 or higher.)
2	Client signs packets if the server is capable of signing. (Server level is 1 or higher.)
3	Client signs packets and requires all servers to sign packets. (Otherwise logging on will fail.)

Signing occurs unless the defaults are changed, since defaults for both the server and client levels are compatible with signing, the packet signature levels for the server and the client interact to create an “effective packet signature” for the network.

Some combinations of server and client levels do not allow logging on. The decision table below shows the interactive relationship between the server packet signature levels and the client signature levels.

if	Server = 0	Server = 1	Server = 2	Server = 3
Client = 0	○	○	○	⊘
Client = 1	○	○	●	●
Client = 2	○	●	●	●
Client = 3	⊘	●	●	●

- packet signature
- no packet signature
- ⊘ no logging on

### **Password Encryption Flag**

This flag specifies whether passwords for NetWare users are encrypted or cleartext. An **ACTIVE** flag causes passwords to be encrypted. An **INACTIVE** flag causes passwords to be cleartext. Choices are **ACTIVE** and **INACTIVE**.

## Edit system parameters

Use this option to

- Set system parameters.

```

System Parameters

Shared Memory Size      524288
Shared Memory Key      101861
Priority                 15
Server Name             AVIION
Console Flag            ACTIVE
Console Device          /dev/console

The return key will advance the cursor to the next field.
The escape key will abort the edit.
The space bar will toggle the ACTIVE/INACTIVE fields.

```

To access this menu, follow the SCONSOLE main menu path:

2. Configuration → 3. Edit System Parameters

Each parameter is described below.

### Shared Memory Size

This parameter specifies the amount of memory that is set aside by the DG/UX system for inter-process communication (IPC) between the NetWare processes.

Change this parameter according to the available memory and the performance needs of your network. Increasing your shared memory size increases your network performance.

See Appendix A for steps on allocating enough shared memory to hold the caching information of inodes files.

### Shared Memory Key

When NetWare creates a shared memory segment this parameter is assigned as an access key to the shared memory

segment. The number (or key) is given to the DG/UX system by NetWare to ensure that no other process will use that specific area of shared memory.

Change this parameter if another process is using the same number for a shared memory key.

### **Priority**

This parameter sets the priority of NetWare processes within the DG/UX environment. This determines how much CPU time is given to NetWare processes. The range for this number is 0 to 40; however, we recommend that you do not set this number below 15, as lower settings can cause priority conflicts with other DG/UX processes.

### **Server Name**

This parameter specifies the NetWare process that is known as a file server to network users. This is the name used in all configuration and address references to the NetWare file server process.

Change this parameter whenever you want to change the name of the file server. Each reference to the file server in the network setup also has to be changed when you change this parameter.

### **Console Flag**

This flag specifies whether file server error messages are displayed on the file server console (which is the device you designate with the Console Device parameter). Regardless of the setting of this flag, file server error messages are saved in the SYS\$LOG.ERR file, which you can access through the View Error Log menu option or with SYSCON.

Set the console flag to ACTIVE to send file server error messages to the console device. Set this flag to INACTIVE if you do not want error messages sent to the console device.

### **Console Device**

This parameter specifies which AViiON system device is designated as the file server console and, therefore, which device displays the file server error messages.

You send file server error messages to the console device by activating the Console Flag parameter. Regardless of the setting of this flag, all file server error messages are saved in the SYS\$LOG.ERR file, which you can access through the View Error Log menu option or with SYSCON.

## Statistics Menu

Use the options on this menu to

- Change how often the file server updates its statistics;
- View file server, volume, and connection information and statistics;
- Save statistics to a file.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 12:06:32 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
                                STATISTICS MENU  
                                1. Change Sample Interval  
                                2. File Server Information  
                                3. File Server Statistics  
                                4. File Server Internal Statistics  
                                5. Lock Manager Statistics  
                                6. Volume Statistics  
                                7. Connection Statistics  
                                8. Save All Statistics to A File  
                                r. Return to Previous Menu  
                                e. Exit from SCONSOLE  
                                ?. Help  
  
                                Request:  
-----
```

To access this menu, choose the SCONSOLE main menu option:

3. Statistics

Each menu option is described on the following pages.



## Change sample interval

Use this option to

- Set the statistics update time.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 12:06:32 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
  
Current Sample Interval is 5  
Please enter the new sample interval in seconds:  
  
-----
```

To access this screen, follow the SCONSOLE main menu path:

3. Statistics → 1. Change Sample Interval

This parameter sets how often (in seconds) the operating system updates the information contained in the Statistics options. Enter the value (in seconds) that you want to assign. The range for this parameter is 2 to 9999 seconds.

## File server information

Use this option to

- View the file server name, NetWare version, and revision date;
- View the maximum connections supported, connections in use, and peak connections used;
- View the maximum volumes supported.

```
File Server Information
Server Name           AViION
Version              NetWare for AViION Systems 3.11
Revision Date        08/21/94
Maximum Connections Supported 10
Connections In Use   3
Peak Connections Used 3
Maximum Volumes Supported 64
Revision Level       0
SFT Level            0
TTS Level            0
Press RETURN to continue...
```

To access this screen,

1. Follow the SCONSOLE main menu path:  
3. Statistics → 2. File Server Information
2. Enter the supervisor password to log into the NetWare server.

The information on this screen is display-only and cannot be changed.

Each parameter is described on the following pages.

### Server Name

This parameter displays the name assigned to the NetWare process functioning as a file server. This name is independent

of the actual DG/UX filename for the process and is seen from the network side as the file server name.

You assign the file server name by accessing the System Parameters menu option. All network entities use the file server name when referring to the AViiON system process acting as a file server.

Network users must refer to the file server by name to open communications and access its capabilities and resources. This includes logging in, accessing the file structure, and printing to AViiON system printers.

### **Version**

This parameter displays the current NetWare for AViiON Systems version running on your file server. Use it to ensure that workstation shells and the file server are compatible.

### **Revision Date**

This parameter displays the current revision date of the software you are running on your file server. The revision date helps maintain software and documentation compatibility.

### **Maximum Connections Supported**

This parameter displays the maximum number of clients that can log onto and use the NetWare file server. The system assigns a connection number to each client that attaches to the file server.

You determine the maximum number of connections supported when you assign a value to the Maximum Connections parameter in the File Service Parameters screen.

If clients cannot log onto a file server, compare the Maximum Connections parameter value to the Connections in Use statistic. If these numbers are the same, your system may not have enough connections supported to allow additional logons.

### **Connections in Use**

This parameter allows you to monitor the number of clients using the file server. If the current number is close to the Maximum Connections you have set, you may want to increase the values of the following parameters (from the File Service Parameters screen):

- Maximum Processes
- Maximum Connections

### **Peak Connections Used**

This parameter displays the maximum number of connections that have been in use at one time since the file server was last started.

If the peak number of connections in use is equal to or approaching the Maximum Connections Supported value, you might consider modifying the File Service Parameter screen to allow more connections.

### **Maximum Volumes Supported**

This parameter displays the highest number of volumes allowed in the NetWare file system. A volume is the highest level of the NetWare directory structure, and the number of volumes you can create is limited by the value you assign to the Maximum Volumes parameter on the File Service Parameter screen.

If you want to add a volume to your file system, first check the number of volumes supported. For example, if you are trying to add a sixth volume and only five are supported, you will not be able to add the volume until you change parameter values on the File Service Parameter screen.

**Revision Level**

This parameter displays the revision level of NetWare file server software.

**SFT Level**

This parameter is not supported.

**TTS Level**

This parameter is not supported.

## File server statistics

Use this option to:

- View information and statistics about your file server
- Monitor the load on your file server in regards to operating system requests for files, connections, caches, semaphores, and NetWare processes (also called engines)
- View the number of NetWare processes, the number and type of network packets and requests, and the current and maximum number of open files

```

                                File Server Statistics
NetWare Processes                2
Total Packets                    0
Create Connection Requests       18
Create File Requests             0
File Open Requests               3
File Read Requests              156
File Write Requests              0
Number of Open Files             0
Maximum Simultaneous Open Files  1
Lost Packet Resends             0
Cache Hits                       108
Cache Misses                     2
Print Requests                   0
Message Requests                 0
Directory Requests               22
Bindery and Miscellaneous Requests 45
Unknown Requests                 0

Press RETURN to continue...
    
```

To access this screen, follow the SCONSOLE main menu path:

3. Statistics → 3. File Server Statistics

The information on this screen is display-only and cannot be changed.

Each parameter is described on the following pages.

### NetWare Processes

This parameter displays the number of NetWare processes spawned on the host system. Each NetWare process handles

NCP (NetWare Core Protocol) requests for its assigned network clients.

The Maximum Processes parameter on the File Service Parameter screen controls the number of NetWare processes spawned.

Use this information, along with the information on the Connection Statistics screen, to determine whether the maximum number of NetWare processes currently allowed is enough to handle the load.

If the number of currently logged in connections is greater than the maximum number of processes, then the NetWare processes are servicing more than one client. For most systems, increase the number of NetWare processes when they are required to service more than 5 to 10 clients.

### **Total Packets**

This parameter displays the number of communication packets that have entered the file server since the file server was last started. Packets are used by network devices to package and send units of information (such as a request for service, information on how to handle the request, and the data to be serviced) across the network cable.

### **Create Connection Requests**

This parameter displays the number of attach and login requests received by the file server since the file server was last started.

### **Create File Requests**

This parameter displays the number of files created by clients since the file server was last started.

You can monitor this value over a period of time to determine the number of new files being created. This entry does not account for the number of files deleted during the same time.

### **File Open Requests**

This parameter displays the number of files opened by clients since the file server was last started.

You can monitor this value over a period of time to determine the number of files being opened.

### **File Read Requests**

This parameter displays the number of files read by clients on the file server since the file server was last started.

You can monitor this value over a period of time to determine the frequency of disk reads.

### **File Write Requests**

This parameter displays the number of write operations performed by clients since the file server was last started.

You can monitor this value over a period of time to determine the frequency of disk writes.

### **Number of Open Files**

This parameter displays the current number of files open on the file server.

The DG/UX system can limit the number of open files allowed and, thus, this entry can tell you if that limit is lower than necessary.

### **Maximum Simultaneous Open Files**

This parameter displays the peak number of open files on the file server since the file server was last started.

The DG/UX system can define a limit on the number of open files allowed and, thus, this entry can tell you if that limit is lower than necessary.



### **Lost Packets Resends**

This parameter displays the number of communication packets assumed to be lost in transmission from the file server to network clients. The number is continually updated from the moment the file server was last started.

A communication packet is considered lost if the file server answers a client request and then receives an immediate request for the same packet or if the file server receives no response from a client when that response was expected.

If a large number of packets are getting lost, a problem could exist with the network cabling or a client connection (either hardware or software).

### **Cache Hits**

This parameter displays the number of times a cache request was serviced from a cache.

The Cache Hits parameter displays the values for the internal cache that improves directory enumeration.

### **Cache Misses**

This parameter displays the number of times that a cache request could not be serviced from a cache.

The Cache Misses parameter displays the values for the internal cache that improves directory enumeration.

### **Print Requests**

This parameter displays the number of client requests for file server printing services. This number is calculated from the moment the file server was last started.

You can use this number to calculate the average number of print requests the file server receives, and then determine

whether you want to create another print queue or add a high-speed printer. If the printer is working without significant delays, this number should not affect your planned printing setup.

### **Message Requests**

This parameter displays the number of send message requests that were processed by the server.

### **Directory Requests**

This parameter displays the number of directory requests that were processed by the server.

### **Bindery and Miscellaneous Requests**

This parameter displays the number of bindery or other requests that were processed by the server.

### **Unknown Requests**

This parameter displays the number of requests from client software that are not recognized by the file server; requests come in the form of NetWare Core Protocols (NCPs). The NCPs are numbered within a certain range. Some numbers within that range are not currently in use. If a client request comes in to the file server and asks for an NCP number not in use or out of the NCP range, the request is categorized as unknown.

The number of unknown requests is calculated from the time the file server was last started.

---

## File server internal statistics

Use this option to

- View information and statistics about the shared memory;
- Monitor the load on your file server in regards to shared memory.

```
File Server Internal Statistics
Shared Memory Size           524288
Current Shared Memory Usage  284100
Maximum Shared Memory Usage  284100
Press RETURN to continue...
```

To access this screen, follow the SCONSOLE main menu path:

```
3. Statistics 4. → File Server Internal
Statistics
```

The information on this screen is display-only and cannot be changed.

Each parameter is described on the following pages.

### Shared Memory Size

This parameter displays the size of the shared memory segment set aside by the DG/UX system for communication between NetWare processes.

### Current Shared Memory Usage

This parameter displays the amount of shared memory currently being used. If this value is equal to the setting for

**Shared Memory Size**, you can increase the amount of shared memory on the File Service Parameter screen.

**Maximum Shared Memory Usage**

This parameter displays the peak shared memory usage. Use this information to determine if you have allocated sufficient shared memory.

## Lock manager statistics

Use this option to

- Monitor the file locks and semaphores used by the file server's operating system.

Lock Manager Statistics	
Logical Lock Requests	6
Number of Logical Locks	0
Maximum Simultaneous Logical Locks	1
File Lock Requests	4
Number of File Locks	0
Maximum Simultaneous File Locks	1
Physical Lock Requests	6
Number of Physical Locks	0
Maximum Simultaneous Physical Locks	1
Semaphore Requests	9
Number of Semaphores	1
Maximum Simultaneous Semaphores	1
Press RETURN to continue...	

To access this screen, follow the SCONSOLE main menu path:

3. Statistics → 5. Lock Manager Statistics

The information on this screen is display-only, and cannot be changed.

Each parameter is described on the following pages.

### Logical Lock Requests

This parameter displays the total number of requests for shareable locks since the file server was last started. If a program uses logical locking, it locks shareable files while a user holds those files open. Locking files prevents other NetWare users from accessing the shareable file at the same time, thus preventing data corruption.

### Number of Logical Locks

This parameter displays the current number of files locked because of user access.

When a user accesses a shareable file, logical locks prevent other NetWare users from accessing the file at the same time, thus preventing data corruption.

### **Maximum Simultaneous Logical Locks**

This parameter displays the peak number of file locks placed on shareable files at any one time since the file server was last started.

### **File Lock Requests**

This parameter displays the total number of file locks requested since the file server was last started. File locks can be tied to a file or its filename, preventing other NetWare users from accessing that file until the lock is removed.

### **Number of File Locks**

This parameter displays the current number of file locks in use by the operating system. File locks can be tied to a file or its filename, preventing other NetWare users from accessing that file until the lock is removed.

### **Maximum Simultaneous File Locks**

This parameter displays the peak number of file locks requested at any one time since the file server was last started. File locks can be tied to a file or its filename, preventing other NetWare users from accessing that file until the lock is removed.

### **Physical Lock Requests**

This parameter displays the total number of physical locks requested since the file server was last started. Physical locks are byte range locks that allow a program to lock a portion of a shared data file rather than the entire file; all other portions of the shared data file are left free for other client access.

Locking a portion of a data file prevents other clients from accessing that portion while you are working on it, preventing possible data corruption.

### **Number of Physical Locks**

This parameter displays the current number of physical locks in use on the file server operating system. Physical locks are byte range locks that allow a program to lock a portion of a shared data file rather than the entire file; all other portions of the shared data file are left free for other client access.

### **Maximum Simultaneous Physical Locks**

This parameter displays the peak number of physical locks in use at any one time since the file server was last started. Physical locks are byte range locks that allow a program to lock a portion of a shared data file rather than the entire file; all other portions of the shared data file are left free for other client access.

### **Semaphore Requests**

This parameter displays the total number of client requests for NetWare's semaphore increment table since the file server was last started. Clients accessing locked files or using certain applications that use semaphores send a request to the file server's semaphore table.

This parameter gives you an idea of the user-imposed load on NetWare's semaphore table.

### **Number of Semaphores**

This parameter displays the current number of semaphores in use on the file server's semaphore table. Semaphores are useful to some applications and are used by NetWare to implement record and file locking.

**Maximum Simultaneous Semaphores**

This parameter displays the peak usage of semaphores at one time by clients since the file server was started.



## Volume statistics

Use this option to

- View each NetWare volume number and name;
- View the total number of directories and kilobytes in each NetWare volume;
- View the total number of free directories and kilobytes in each NetWare volume.

Volume Number	Volume	Total Kilobytes	Volume Statistics Free Kilobytes	Total Directories	Free Directories
0	SYS	64944	6160	65535	65504
1	VOL1	64944	6160	65535	65534

Press RETURN to continue...

To access this screen, follow the SCONSOLE main menu path:

3. Statistics → 6. Volume Statistics

The information on this screen is display-only and cannot be changed.

Each parameter is described on the following pages.

### Volume Number

This parameter displays an arbitrary number assigned by NetWare when each volume is created.

This number is useful if you want to create a table listing volumes by number rather than by name.

### **Volume**

This parameter displays the volume name you assigned to each volume on the File Service Parameter screen. The volume name is used as a part of the directory path for network users. A NetWare volume is the highest level of the directory structure in both DOS and NetWare.

### **Total Kilobytes**

This parameter displays the total size of the NetWare volume. This size depends on the DG/UX file system and mappings.

This entry also shows the amount of storage space available within the volumes you create. Because you can map more than one volume to the same DG/UX file system, this entry might be misleading since the parameter is actually the amount of space on the DG/UX file system.

### **Free Kilobytes**

This parameter displays the size of data storage available to your NetWare volume. This size depends on the size of the DG/UX file system and its mappings.

This entry also informs you of the amount of storage space available within the volumes you create. Because you can map more than one volume to the same DG/UX file system, this entry might be misleading since the parameter is actually the amount of space on the DG/UX file system.

### **Total Directories**

This parameter displays the current number of directories in the NetWare volume. The number of directories contained in a volume gives you a rough idea of the amount of data contained in that volume. If you have a large number of directories, you might want to add a new volume to your file system.

### **Free Directories**

This parameter displays the number of directories you can create in the NetWare volume. This number is calculated by

subtracting the number of existing directories from the number of directories allowed by the AViiON system.

The AViiON system can limit the number of directories allowed within a certain area of the file system. Although the number is usually quite large, this entry tells you if you are approaching the limit.

## Connection statistics

Use this option to

- Display user login information.

Connection Statistics				
Connection	User Name	Login Time		
1	GUEST	9-9-1994	11:56:44	Fri
2	SUPERVISOR	9-9-1994	12:06:59	Fri
3	SUPERVISOR	9-9-1994	11:57:45	Fri

Press RETURN to continue...

To access this screen, follow the SCONSOLE main menu path:

3. Statistics → 7. Connection Statistics

The screen lists users that are logged in to the server, their connection number, and their login time and date.

The information on this screen is display-only and cannot be changed.

---

## Save all statistics to a file

Use this option to

- Print all current statistics to a file.

Save All Statistics to A File

Please enter the file name  
for the statistics:

To access this screen,

1. Follow the SCONSOLE main menu path:

3. Statistics →

8. Save All Statistics to a File

2. Enter the Supervisor password to access the file server.

Enter the name of the file to print statistics to. A text file is created containing the statistics. The file can then be sent to a printer.

The statistics that are printed on the report are all described in this section of the manual. The printout will be similar to the following.

## Statistics Menu

---

NetWare Statistics Sat Sep 24 15:06:04 1994

\*\*\* File Server Information \*\*\*

Server Name: AViON  
 Version: NetWare for AViON Systems 3.11  
 Revision Date: 05/16/94  
 Maximum Connections Supported: 32  
 Connections in Use: 4  
 Peak Connections Used: 4  
 Maximum Volumes Supported: 64  
 Revision Level: 0  
 SFT Level: 0  
 TTS Level: 0

\*\*\* File Server Statistics \*\*\*

NetWare Processes: 5  
 Total Packets: 20956  
 Create Connection Requests: 185  
 Create File Requests: 5  
 File Open Requests: 238  
 File Read Requests: 6662  
 File Write Requests: 5133  
 Number of Open Files: 0  
 Maximum Simultaneous Open Files: 1  
 Lost Packet Resends: 0  
 Cache Hits: 3741  
 Cache Misses: 2869  
 Print Requests: 0  
 Message Requests: 0  
 Directory Requests: 4219  
 Bindery and Miscellaneous Requests: 1536  
 Unknown Requests: 0

\*\*\* File Server Internal Statistics \*\*\*

Shared Memory Size: 524288  
 Current Shared Memory Usage: 283260  
 Maximum Shared Memory Usage: 284400

\*\*\* Lock Manager Statistics \*\*\*

Logical Lock Requests: 156  
 Number of Logical Locks: 0  
 Maximum Simultaneous Logical Locks: 0  
 File Lock Requests: 165  
 Number of File Locks: 1  
 Maximum Simultaneous File Locks: 1  
 Physical Lock Requests: 166  
 Number of Physical Locks: 0  
 Maximum Simultaneous Physical Locks: 2  
 Semaphore Requests: 0  
 Number of Semaphores: 0  
 Maximum Simultaneous Semaphores: 0

\*\*\* Volume Statistics \*\*\*

Volume	Total	Free	Total	Free
Number	Volume	Kilobytes	Kilobytes	Directories
0	SYS	92487680	7634944	65535
1	USER	92487680	7634944	65534
2	APPS	92487680	7634944	65534

\*\*\* Connection Statistics \*\*\*

Connection	User Name	Login Time	Service Requests	Open Files
1	SUPERVISOR	9-25-1994 12:27:04 Sun	180	0
2	SUPERVISOR	9-25-1994 12:27:06 Sun	99	0
3	SUPERVISOR	9-25-1994 13:27:20 Sun	325	0
4	SUPERVISOR	9-25-1994 13:28:19 Sun	1223	0

## Utilities Menu

Use the options on this menu to

- Access the Transport Utilities Menu to perform transport utilities such as viewing or resetting the router table or network status.
- Access the Services Utilities Menu to perform services utilities such as repairing the bindery; viewing the server, print server, and user lists; or monitoring the print server.

```
-----  
SCONSOLE v3.11                               Sat Dec  4 12:08:02 1994  
User ROOT on NetWare Server AVIION (UP)  
-----  
UTILITIES MENU  
1. Transport Utilities  
2. Service Utilities  
r. Return to Previous Menu  
e. Exit from SCONSOLE  
?. Help  
  
Request:  
  
-----
```

To access this menu, choose the SCONSOLE main menu option:

4. Utilities

Each menu option is described on the following pages.

## Transport utilities

Use this option to

- View or reset the router table;
- View network status;
- Select the Track menu.

```
SCONSOLE v3.11                               Sat Dec  4 12:08:07 1994
                                           User ROOT on NetWare Server AVIIION (UP)
-----
                                TRANSPORT UTILITIES MENU
                                1. View Router Table
                                2. Reset Router Table
                                3. View Network Status
                                4. Track
                                r. Return to Previous Menu
                                e. Exit from SCONSOLE
                                ?. Help
Request :
-----
```

To access this screen, follow the SCONSOLE main menu path:

4. Utilities → 1. Transport Utilities

Each menu option is described on the following pages.



## View Router Table

Use this option to view the routing information table.  
Information similar to the following appears.

NET	HOPS	TIME	NODE
19860000	0006	0007	00001B02335B
19862000	0006	0007	00001B02335B
FADE2200	0004	0005	00001B02335B
FADE2300	0004	0005	00001B02335B
FADE2400	0004	0005	00001B02335B
FDDE2400	0005	0006	00001B02335B
00D0C200	0004	0005	00001B02335B
00FEEF00	0003	0004	00001B02335B
19860001	0006	0007	00001B02335B
BBBB0101	0005	0006	00001B02335B
BBBB0301	0005	0006	00001B02335B
FADE1101	0004	0005	00001B02335B
19862001	0006	0007	00001B02335B
FADE2201	0004	0005	00001B02335B
FADE2401	0004	0005	00001B02335B
FED3C01	0005	0006	00001B02335B
00000002	000D	000E	00001B021CD2
BBBB0302	0005	0006	00001B02335B
FADE2402	0004	0005	00001B02335B
00000003	000D	000E	00001B021CD2
FADE2203	0005	0006	00001B02335B
--More--			

At the More prompt, press the space bar until you get to the end of the table, or type **q** and press **<Enter>** to return to the menu.

## Reset Router Table

Use this option to clear the router table. You would do this after adding a new network on another bridge or on a server other than the NetWare server.

### View Network Status

Use this option to view the mapping of logical networks to physical networks. A screen similar to the following appears.

```
Maximum Connected Lans: 16
-----
Lan  Network  Node           Mux ID  State  Stream
-----
0    80DDEF66  000000000001  00000000  UNBOUND  OK
1    80DDEF00  08001B181E2B  00000018  IDLE     OK
-----
Lan  SDU_max  SDU_min  ADDR_length
-----
1    1500    46      8
-----
IP tunneling - no peer servers/routers
```

At the colon prompt you can either press **<Enter>** to view more of the file, or type **q** and press **<Enter>** to return to the menu.

## Tracking Menu

Use the options on this menu to

- View or clear the tracking log.

```
-----
SCONSOLE v3.11                               Sat Dec 4 12:45:45 1994
                                           User root on NetWare Server AVIION (DOWN)
-----
                                TRANSPORT UTILITIES MENU
                                1. View/Print Tracking Log
                                2. Clear Tracking Log
                                r. Return to Previous Menu
                                e. Exit from SCONSOLE
                                ?. Help
Request:
-----
```

To access this screen, follow the SCONSOLE main menu path:

4. Utilities → 1. Transport Utilities → 4. Track

Each menu option is described below.

### View/Print Tracking Log

This option lets you view and print any tracking errors printed by the **sapd** to the file specified in the Transport Configuration menu. Error messages are saved in the log file until they are cleared using the Clear Tracking Log option.

You can scroll through the tracking log file, and when you are finished, a prompt asks if you want to print the log file.

Critical error messages are sent to the AViON system console or to the network supervisor's console as well as to the tracking log if the console flag is set to **ACTIVE**.

Repeated errors point out a problem that you could correct before the situation becomes critical. If a critical error brings

down the file server, viewing the tracking log might show you the events that led to the failure.

### **Clear Tracking Log**

This option erases the contents of the tracking log file. Once cleared, this information cannot be recovered, so you should print the log first to keep a permanent record.

---

## Services Utilities Menu

Use the options on this menu to

- Repair the bindery;
- View server, user, and print server lists.

```
-----
SCONSOLE v3.11                               Sat Dec  4 12:08:15 1994
                                           User ROOT on NetWare Server AVIIION (UP)
-----
                                           SERVICES UTILITIES MENU
                                           1. Repair Bindery (Bindfix)
                                           2. View Server List
                                           3. View User List
                                           4. View Print Server List
                                           5. Monitor Print Server
                                           r. Return to Previous Menu
                                           e. Exit from SCONSOLE
                                           7. Help
Request :
-----
```

To access this screen, follow the SCONSOLE main menu path:

4. Utilities → 2. Services Utilities

Each menu option is described below.

### Repair Bindery (Bindfix)

Use this option if you expect that data in the bindery has become corrupted.

NetWare services must be down to perform this function.

This utility is not supported in NetWare for AViiON Systems.

### View Server List

Use this option to view a list of all NetWare servers that are currently accessible. Information similar to the following appears.

Known NetWare File Server	Network	Node Address
AA	[00001EEE]	[00001B022C45]
ABYSS	[AB0DE007]	[000000000001]
ACE	[CDEDBD1E]	[00001B021AE3]
ADAM	[000004AB]	[00001B0259A2]
AIR	[00D0C200]	[00001B027579]
ALFALFA	[54290753]	[000000000001]
ALICE	[000001AB]	[00001B023349]
ANIMAL	[0001AB54]	[000000000001]
APATCHE	[FADEF2F2]	[00001B022FD2]
APIC	[00003443]	[000000000001]
APPLETEST	[0001AB62]	[000000000001]
ARCANA	[FADE2300]	[00001B021172]
ARES	[00DD1EEE]	[000000000001]
ASF	[FADE2403]	[00001B0211A7]
ASYLUM	[FADE2305]	[000000000001]
ATHENA	[FADE2226]	[000000000001]
ATLANTIS	[FADE2201]	[000000000001]
ATS	[0EEE1AB5]	[000000000001]
AVALON	[20004010]	[000000000001]
BRAD	[0FEDFACE]	[000000000001]

Press any key to continue ... ('C' for continuous)

Press any key to view another screen of the file, or type C for continuous display.

See *NetWare® for AViiON® Systems: Utilities* under SLIST for more information.

### View User List

Use this option to view a list of all user accounts on the current server. Enter the SUPERVISOR password when prompted.

User Information for Server AViiON

Connection	User Name	Login Time
1	SUPERVISOR	1994 9/25 15:2:17
2	SUPERVISOR	1994 9/25 15:4:00
3	SUPERVISOR	1994 9/25 16:5:43

Press any key to return ...

You can press any key to view another screen of the file, or type C for continuous display.

## View Print Server List

Use this option to view a list of all print servers on the current server.

Print Server Name	Network	Node	Sock	Hops
API_PRINT	01010101	0000D80006E6	8060	4
ARES	00DD1EEE	000000000001	8060	3
CANON	00003070	000000000001	8060	4
ENG-PRINT	FADEF2F2	00001B020566	8060	4
GEORGE	FADE2405	000000000001	8060	4
JILL	FADE2200	00001B045E16	8060	4
MKTG_PSERVER	00100554	000000000001	8060	5
MODEL50	FADE2300	00001B040246	8060	4
NCS_PSERVER	FEED0035	00001B0A4C3F	8060	4
PRISCILLA	00003122	000000000001	8060	4
PS0	01010101	00001E30BA62	8060	4
PSERVER_ONE	01016237	000000000001	8060	5
PSERVER_TWO	0003128C	000000000001	8060	5
PS_JONES	FADE22B0	0000D800FF85	8060	4
SAM	FADE1101	00001B0244F7	8060	4
SUPERSET	FADE1313	000000000001	8060	5
ACME	FADEBACC	00001B026FFD	8060	4

Total of 17 print servers found.

Press <RETURN> to continue.

You can either press <Enter> to view another screen of the file, or type C for continuous display.

## Monitor Print Server

Use this option to display information relating to the print server. Enter the name of the print server you want to monitor. Information similar to the following appears.

```
Novell NetWare Print Monitor V1.00
Server ENG-PRINT Running

0: Laser Jet III (LASER3)
   Waiting For Job
1: Laser Jet II (LASER2)
   Waiting For Job
2: Citoh Line Printer (CITOH)
   Waiting For Job
3: Laser Jet II (DOCS)
   Waiting For Job
4: Laser Jet IIP (LETTERHEAD)
   Waiting For Job
5: Not Installed
6: Not Installed
7: Not Installed
```

If there are more than eight printers installed, you can view additional printers by pressing **<Enter>**. Press **<Esc>** and **<Enter>** to exit the screen.

End of Chapter



# 3 Configuration Files

---

This chapter describes how to edit the NWConfig, NPSConfig, PRTConfig, RPControl, and RPConfig configuration files to set up and administer NetWare for AViiON Systems software. These files store configuration parameters for a NetWare system running on an AViiON system. The files are located in the `/usr/opt/netware/etc` directory.

You perform the same tasks for setting up and administering NetWare for AViiON Systems either by editing the configuration files as described here, or by using SCONSOLE as described in Chapter 2. Use SCONSOLE to perform these tasks if you prefer working with a menu-driven format.

## NWConfig

NWConfig is the NetWare configuration/tunables file, used to set parameters used by the AViiON server. Tokens in the file are set by entering a number (decimal or hex), text string, or the words ACTIVE or INACTIVE after the token and an equal sign (=).

The syntax of each token is shown below. The letter *n* specifies that a decimal number must be entered in its place. Quotation marks with a space (" ") specify that a text string must be entered in quotation marks. The words ACTIVE or INACTIVE specify that either of these words must be entered (without quotation marks).

Only the `file_server_name` and `volume` tokens must be set in the configuration file; all others are set to the default value by the system if they do not appear in a configuration file.

The tokens in the configuration file can also be set using the parameters in the SCONSOLE utility.

A sample configuration/tunables file follows the token descriptions. See this sample file for examples of actual token entries.

**config\_file\_version = *n***

This token specifies the version number of the configuration file. This value must be 1.

**max\_procs = *n***

This token specifies the maximum number of NCP engines. Modifying this value is the same as modifying the Maximum Processes parameter in SCONSOLE from the General Parameters screen.

This token determines the number of processes that are spawned by NetWare when NetWare is initialized. As NetWare clients log in, a client is assigned to each process until all processes have one client. Thereafter, each additional NetWare client is added to the load of a current process, balancing the load at login time so that each process has the same number of clients.

Change this token's value to change the number of host resources available to the NetWare file server.

Increase the maximum number of processes available to make NetWare service more efficient. You gain efficiency as clients are more likely to have sole use of a single process.

Decrease the maximum processes available to require fewer resources from the host. However, because each process needs to service multiple clients, NetWare services may slow down.

We recommend that you set this token (and the `max_connections` token) in the NWConfig file to give a ratio of about five NetWare clients per Service Engine. Use the following formula.

$$\frac{\text{max\_connections} + 5}{\text{max\_procs}} = \text{number of NetWare clients per Engine}$$

where:

`max_connections` is the maximum number of connections allowed by your license

+ 5 is the 5 connection slots reserved for pserver

`max_procs` is the number of Engines defined on your NetWare system

Modify `max_procs` and `max_connections` to adjust the clients per Engine ratio. For example, if you want NetWare to run with five clients per Engine, change the `max_connections` to 45 and change the `max_procs` to 10.

Processes are assigned to clients in the order requested. In the above example, the processes are assigned to new clients in order from 1 to 10. After process number 10 is assigned, additional clients stack up on existing processes beginning with number 1 and moving up until the maximum number of connections (45) is reached.

The default is 5; the minimum value is 1.

**shm\_size = n**

This token specifies the size of the system shared memory segment. The system shared memory segment is used to store data such as connection information, bindery structures, statistics, server information and print queue information.

Increase this value as the number of connections and/or servers on the network increases. Also increase this value if you have more than 64 print queues defined or the client PCs are using Packet Burst Mode.

The default is 512K; the minimum value is 384K. The number entered must be in bytes.

**max\_connections = n**

This token specifies the maximum number of connections to be supported which limits the total number of clients using NetWare processes. Modifying this value is the same as modifying the Maximum Connections parameter in SCONSOLE from the General Parameters screen.

We recommend that you set this token (and the max\_procs token) in the NWConfig file to give a ratio of about five NetWare clients per Service Engine. Use the following formula.

$$\frac{\text{max\_connections} + 5}{\text{max\_procs}} = \text{number of NetWare clients per Engine}$$

where:

max\_connections is the maximum number of connections allowed by your license

+ 5 is the 5 connection slots reserved for pserver

max\_procs is the number of Engines defined on your NetWare system

Modify `max_procs` and `max_connections` to adjust the clients per Engine ratio. For example, if you want NetWare to run with five clients per Engine, change the `max_connections` to 45 and change the `max_procs` to 10.

Processes are assigned to clients in the order they are requested. In the above example, the processes are assigned to new clients in order from 1 to 10. After process number 10 is assigned, additional clients stack up on existing processes beginning with number 1 and moving up until the maximum number of connections (45) is reached.

The default is 50; the range is 1 to 255.

**`max_volumes = n`**

This token specifies the maximum number of logical volumes to be supported. This limits the number of volumes that can be mounted on the host file system.

Change this token if you want to add more volumes than allowed by the default value, or if you want to limit the number of volumes that can be created.

If you want to monitor (or limit) the amount of space being used by the NetWare process, limiting the amount of volumes can simplify your calculations of disk space in use.

The default is 64; the range is 1 to 64.

**`file_server_name = " "`**

This token sets the file server name. This names the NetWare process that is known as a file server to network users. This is the name used in all configuration and address references to the NetWare file server process.

Change this token whenever you want to change the name of the file server. Each reference to the file server in the network setup must also be changed when you change this token.

This token *must* be present in the configuration file; it cannot be replaced by system defaults.

**binaries = “ ”**

This token sets the location of the binaries. This location is used by SCONSOLE to determine where the binaries are located when it starts NetWare. This parameter should not be changed once NetWare is installed and running.

**volume = “ ”**

This token is used to make volume assignments. You can specify volume names and name spaces volumes associated with the first volume.

The syntax for this parameter is

```
NameSpace | SpaceVolName [ , ... ] : VolNumber :  
HostSysDir : NWinodeFileName  
: inode cache size
```

`NameSpace` is the type of name space used for that portion of the volume. This can be DOS, OS2, UNIX, or AFP.

`SpaceVolName` is the name assigned the volume within the specified name space. For example, when using the OS2 name space portion of the volume, the volume could be called OS2\_SYS, while in the DOS name space the volume could be called DOS\_SYS; this is the same volume but has a different name depending upon which name space is being used. These names need not be unique, and can be changed.

`VolNumber` is the volume number. This must be unique, and cannot be changed.

`HostSysDir` is the point in the host directory structure where the NetWare volume is to be mounted. Additional NetWare

volumes cannot be mounted beneath this point; each must be mounted in a different branch of the host directory structure.

NWinodeFileName is the path and file name of the NWinode file for the volume.

For example, if you specify

```
DOS|SYS:0:/usr/netware/sys:  
/usr/netware/NWControl/sys/inodes
```

the NetWare volume SYS is created with a DOS name space, assigned the volume number of 0, set to host directory path /usr/netware/sys, and given the NWinode file of /usr/netware/NWControl/sys/inodes. Note that these parameters are separated by a colon.

(The SYS volume must contain the standard MAIL, LOGIN, SYSTEM, and PUBLIC directories.)

The name spaces DOS, OS2, UNIX, and AFP are valid for volumes.

Another name space for the same volume could be set up as

```
OS2|OS2_VOL2,UNIX|UNIX_VOL2:1:/usr/netware/vol2:  
/usr/netware/NWControl/vol2/inodes
```

The volume has two name spaces, OS2 and UNIX. The name spaces use the names OS2\_VOL2 and UNIX\_VOL2, respectively, for the volume. The entire volume uses the host directory path /usr/netware/vol2, and the NWinode file /usr/netware/NWControl/vol2/inodes.

Up to four name spaces can be associated with the volume; each name space must use a different name space type.

The volume pathname of the SYS volume must be entered in the configuration file; it cannot be replaced by system defaults.

---

**console\_device = “ ”**  
**console\_flag = ACTIVE**

These tokens specify the device where NetWare messages are printed and whether messages are displayed.

The **console\_device** token specifies which host device is designated as the file server console and, therefore, which device displays the file server error messages. The default for this token is the /dev/console device.

The **console\_flag** token specifies whether file server error messages are displayed on the file server console. Set this token to **ACTIVE** to send file server error messages to the console device. Set this token to **INACTIVE** if error messages should not be sent to the console device. Regardless of the setting of this token, all file server error messages are saved in the NET\$SYS.ERR file, which can be accessed through NetWare's SYSCON utility.

**log\_watchdog\_logouts = ACTIVE**  
**display\_watchdog\_logouts = ACTIVE**

These tokens are used to specify whether watchdog logouts are logged or displayed. A log entry is made in the NET\$SYS.ERR error log file whenever a client is logged out by the watchdog if **log\_watchdog\_logouts** is set to **ACTIVE**. A message is displayed on the console device whenever a client is logged out by the watchdog if **display\_watchdog\_logouts** is set to **ACTIVE**.

The default for both of these tokens is **ACTIVE**.



**login = ACTIVE**

This token is used to specify whether logins are allowed on a startup flag. When this token is set to ACTIVE, users can log in as soon as the NetWare file server is started. When this token is set to INACTIVE, only the supervisor can log in.

The default is ACTIVE.

**req\_password\_encryption = ACTIVE**

This token specifies whether passwords for NetWare users are encrypted or cleartext. An ACTIVE flag causes passwords to be encrypted. An INACTIVE flag causes passwords to be cleartext.

The default is ACTIVE.

**shm\_key = *n***

This token indicates the unique number that is the NetWare shared memory segment key. This is the access number of the shared memory block created each time the NetWare file server is started. The number (or key) is given to the host system by NetWare to ensure that no other process use that specific area of shared memory. Change this token if another process is using the same number for a shared memory key.

The default for this token is 101861.

**max\_file\_size = *n***

This token specifies the maximum size in bytes for files created by NetWare clients. This token is equivalent to the UNIX command **ulimit**.

**language = english**

This token specifies the language that is used for system messages. The language specified must directly correspond to a messages file. Only the first three letters of the value are actually used.

**hu\_group\_owner = n****u\_user\_owner = n****file\_mask = n****dir\_mask = n**

These tokens are used as the default host user identity values for NetWare users. Use the HYBRID or SCONSOLE utility to assign a user's individual user and group ID number to files they create in NetWare. All files created by NetWare users are assigned host owner IDs and host group owner IDs. The default ID numbers are declared in the **hu\_user** and **hu\_group\_owner** tokens.

The **hu\_group\_owner** token specifies the host group ID number that is assigned to all files created by NetWare users, unless those users are hybrid users.

The **hu\_user** token specifies the host user ID number that is assigned to all files created by NetWare users, unless those users are hybrid users.

The **file\_mask** token is used to restrict nonhybrid host users from accessing NetWare files. NetWare security rights apply only to NetWare users within NetWare. This token declares the default permissions (octal) that are assigned to all files created by NetWare users. The default NetWare file owner is the *netware* user as declared in the **hu\_user** token, but the HYBRID utility can be used to assign an individual's host usernames to files.

The **dir\_mask** token is used to restrict host users from accessing NetWare directories. NetWare rights apply only to NetWare users within NetWare. This token declares the default permissions (octal) for all directories created in the NetWare file system. The default mask value of 0700 allows only the *netware* user (the default owner of NetWare) to read, write, and execute NetWare files.

If you have hybrid users on your network, you must change directory mask permissions to allow hybrid users to move to the NetWare files they own. You can manually change permissions for each directory leading to hybrid user files, or change the default for all NetWare directories with the **dir\_mask** token. You can keep the NetWare file system secure by changing only the directory mask to a restrictive value such as 0711. The 0711 value does not allow hybrid users to see NetWare directories and files until they move to an area that they own. Using 0711 requires hybrid users to specify the exact path to a file in order to move to that area.

**NOTE:** UNIX system **umask** is applied to **dir\_mask**. If the system **umask** is 022 and the **dir\_mask** is 066, the effective **dir\_mask** will be 044. For details on **umask**, see *Managing the DG/UX System*.

### **native\_locks = INACTIVE**

This token specifies whether NetWare file locks also apply on the DG/UX operating system. If this is set to INACTIVE, file locks apply only to NetWare.

If this token is set to ACTIVE, the network must be configured to 1 engine using the **max\_procs** token (above). Setting this token to ACTIVE can decrease performance.

**read\_ahead\_cache = ACTIVE**  
**read\_ahead\_cache\_block\_size = n**

These tokens are used to configure a spot cache function that improves file server performance for file reading. Although this spot cache function is not a general-purpose cache, it does read ahead on executable and read-only files and, therefore, adds efficiency to the cache function performed by the AViiON system.

The **read\_ahead\_cache** token is used to activate the cache. This token should be set to **ACTIVE** only if the host system allows shared memory. This token can be set to **ACTIVE** to check for efficiency gain or loss with the caching function. If this token is set to **ACTIVE**, the block size of the cache can be tuned to match the DG/UX file system block size using the **read\_ahead\_cache\_block\_size** token.

The **read\_ahead\_cache\_block\_size** token is used to set the block size of the cache. The optimal size of this value depends on the available memory in the host and on the total load on that memory. The cache block size token must be tuned to the DG/UX file system block size that NetWare is using (that is, 1K file systems, 4K file systems).

The default for this token is 1024; the range is 512 to 16K.

**write\_behind\_flag = ACTIVE**

This token is used to activate the write-behind cache. This generally increases the speed of disk writes.

**alert\_notify\_list = "username;"**

This token is used to specify a list of users to receive alert messages in addition to the SUPERVISOR and all OPERATORS. Enter a list of usernames in a string within quotation marks, with the usernames separated by semicolons. The last username in the list must also be followed by a semicolon, even if there is only one name.

**packet\_burst = ACTIVE**

This flag specifies whether multi-packet burst is used on this server. The workstation must be using a multi-packet burst-compatible network shell to take advantage of this feature. Workstations using other versions of the DOS shell will function, but cannot use multi-packet burst.

There is no menu option in SCONSOLE for specifying this flag; this flag must be changed in the configuration file using a text editor.

**license\_key = " "**

This flag specifies the license key you received with the NetWare for AViiON Systems software. The license key is case-sensitive, so make sure you enter it exactly as it is written on the license key sheet.

**ncp\_packet\_signature\_level = n**

This flag specifies the NCP packet signature level on the server. NCP packet signature prevents packet forgery by requiring the server and client to “sign” each NCP packet.

Because the packet signature process consumes CPU resources and slows performance, NCP packet signature is optional for both the client and the NetWare server.

The default is 0.

The following table lists and explains the supported values.

Level	Explanation
0	Server does not sign packets (regardless of the client level). Level 0 is the default.
1	Server signs packets only if the client requests a signature. (Client level is 2 or higher.)
2	Server signs packets if the client is capable of signing. (Client level is 1 or higher.)
3	Server signs packets and requires all clients to sign packets. (Otherwise logging on will fail.)

**fs\_shm\_size**

This token specifies the file system shared memory segment size. The file system shared memory segment is used to store data such as trustee data base info, the shared open file list, and the inodes cache information.

Increase this value as the number of file trustee rights assignments increases. Also increase this value if you enable inodes caching. Refer to Appendix A for recommended values, based on the size of the inodes cache.

The default is 512K. The number entered must be in bytes.

**NOTE:** Increasing the value of `fs_shm_size` may require you to increase the value of `SHMMAX` in the kernel configuration file and rebuild the kernel.

**`fs_shm_key=n`**

This token indicates the unique number that is the NetWare file system shared memory segment key. This is the access number of the shared memory block created each time the NetWare file server is started.

The default is 3126770193. *Do not* change this value.

## NWConfig file example

```
/* NWConfig NetWare configuration/tunables file */
config_file_version = 1
max_procs = 25
shm_size = 512*1024
max_connections = 50
max_volumes = 64
file_server_name = "AVIION"
binaries = "/usr/opt/netware/bin"
volume =
"DOS|SYS:0:/usr/netware/sys:/usr/netware/NWControl/sys/inodes"
volume =
"OS2|VOL2,AFP|VOL2:1:/usr/netware/vol2:/usr/netware/NWControl/vol2/inodes"
console_device = "/dev/console"
console_flag = ACTIVE
log_watchdog_logouts = ACTIVE
display_watchdog_logouts = ACTIVE
login = ACTIVE
req_password_encryption = ACTIVE
shm_key = 101861
max_file_size = 16*1024*1024
language = english
hu_group_owner = 690
hu_user_owner = 690
file_mask = 0600
dir_mask = 0700
native_locks = INACTIVE
read_ahead_cache = ACTIVE
read_ahead_cache_block_size = 1024
write_behind_flag = ACTIVE
alert_notify_list = "BRYAN;"
packet_burst = ACTIVE
ncp_packet_signature_level = 2
fs_shm_size = 512*1024
fs_shm_key = 3126770193
```



## NPSConfig

NPSConfig is the Novell Protocol Suite (NPS) configuration/tunables file. It specifies the services that run on the host server, and supplies server-specific parameters. Lines in the file set various tokens that are extracted when **npsd** runs.

Tokens are set by entering a number (decimal or hex), text string, or the words **ACTIVE** or **INACTIVE** after the token and an equal sign (=).

The syntax of each of the tokens is shown below. The letter *n* specifies that a decimal number must be entered in its place. Quotation marks with a space (" ") specify that a text string must be entered in quotation marks. The words **ACTIVE** or **INACTIVE** specify that either of these words must be entered (without quotation marks).

A sample configuration/tunables file follows the token descriptions. See this sample file for examples of actual token entries.

**nvt\_server\_name = " "**

This token specifies the name of the NVT server that the workstation is attached to.

**spx = ACTIVE**

This token specifies whether SPX is started by the architecture daemon. SPX is a Novell transport protocol that works with the IPX transport to guarantee successful delivery of data packets across the network. IPX is a datagram service, and SPX is a connection-based service. SPX must be active for **PSERVER** and **RPRINTER**, and some other network software such as **MHS**.

**nvt = ACTIVE**

This token specifies whether NVT is started by the architecture daemon. NVT allows NetWare workstations to run terminal emulation software and connect to the host via Ethernet, just as if they were connected directly to the host's terminal ports.

Setting this token to ACTIVE opens a communication link between the host and network users by connecting a host device driver (NVT) to the server's IPX driver. When the NVT flag is set to INACTIVE, network users cannot access the host through the NetWare Virtual Terminal facility.

**sap = ACTIVE**

This token specifies whether the architecture daemon starts the Service Advertising Protocol.

**netbios = ACTIVE**

This token specifies whether the architecture daemon starts NetBIOS. Setting this token to ACTIVE activates both the NetBIOS datagram and NetBIOS session transport endpoints.

**netbios\_shim = "nbix"**

This token defines the NetBIOS shim. This shim provides the protocol interface to the NetBIOS driver.

**nvt\_max\_retries**

This token specifies the maximum time interval that an NVT connection stays connected. To change the time interval that an NVT connection stays connected, you must change this token and the **nvt\_timeout\_interval** token. Use the following formula to determine the time interval to enter for these parameters.

---

$\text{nvt\_max\_retries} \times \text{nvt\_timeout\_interval} \div 60 =$   
interval (in seconds) before the connection closes

### **nvt\_timeout\_interval**

See the above description of the **nvt\_max\_retries** token.

### **nvt\_pty\_name**

This token specifies the pseudo-tty device names. To use the /dev/ttyN name, enter **berkeley**. To use the /dev/pts/N device names, enter the default, **att**.

### **spx\_max\_connections**

This is the maximum number of simultaneous connections that will be supported.

The range is 5 to 1024. The default is 100.

### **spx\_max\_sockets**

This is the maximum number of SPX sockets that will be supported.

The range is 5 to 1024. The default is 100.

**sap\_standard\_out = " "**

**sap\_error\_out = " "**

These tokens specify where the *sapd* daemon is to print its messages. The **sap\_standard\_out** specifies the standard output for the daemon; errors from the daemon are sent here. The **sap\_error\_out** is the output for errors.

**priority = n**

This token specifies priorities of NetWare processes within the host environment. Priority determines how much CPU time a process gets on the host system. This priority can be in the range of 1 to 40, with 1 having the highest priority. In UNIX, priorities range from 0 to 39, with priority 0 being the highest.

**internal\_network = “ ”**

This token specifies the unique network number for the internal network, set by the system administrator. Enter a string representing a hexadecimal number in the range of 0x0 – 0xF, non-inclusive (00000001 – FFFFFFFE).

**lan\_<n>\_network = “ ”**

**lan\_<n>\_adapter = “ ”**

**lan\_<n>\_adapter\_type = “ ”**

**lan\_<n>\_frame\_type = “ ”**

**lan\_<n>\_module = “ ”**

These tokens are used to specify the configuration of the server; replace <n> in the above lines with a number from 1 to 15 specifying the LAN number. For example, the string assigned to the lan\_1\_adapter token specifies the adapter for LAN 1.

**lan\_n\_network** specifies the network number; this is entered as string representing a hexadecimal number. The range for this number is 0x0 – 0xF, noninclusive (00000001 – FFFFFFFE). This is the network number that the **lan\_n\_adapter** is attached to. If you have multiple network boards and network cables attached to your file server, each board and cable is considered a separate network and must be assigned its own network number. Network addresses are used by the NetWare operating system to set apart networks (cabling systems). This network address is also assigned to all stations on the file server's network.

You need to use the following parameters if IP Tunneling is used on lan n :

**lan\_n\_adapter** is the adapter device name which specifies the path of the device driver file in the AViiON system's device directory.

**lan\_n\_adapter\_type** specifies the device driver interface for the LAN adapter. Choices are **ETHERNET\_DLPI**, which is used for drivers that support AT&T's DLPI interface; and **TOKEN-RING\_DLPI**, which is used for Token Ring cards that support AT&T's DLPI interface. **IP\_TPI** is used for IP Tunnelled networks.

**lan\_n\_frame\_type** specifies the type of packet header that the Ethernet or Token Ring driver uses. The default for Ethernet is **ETHERNET\_II**, and the default for Token Ring is **TOKEN-RING**. The choices for this token are as follows: for Ethernet, you may use **ETHERNET\_802.3**, **ETHERNET\_802.2**, or **ETHERNET\_II**. For Token Ring, you may use **TOKEN-RING**. Use **IP\_UDP** for IP Tunnel.

#### **nvt\_term\_on\_hangup**

This token is used to specify whether to terminate the children processes of **nvt**d, if a PC NVT Client terminates its NVT session without first logging off from the server to which it is attached.

**lan\_n\_module** specifies the name of the shim to be pushed on the LAN. The choices for this token are as follows.

Packet Type	Module
ETHERNET_II	PAD
ETHERNET_802.2	ALIGN
ETHERNET_802.3	PAD
TOKEN_RING	MAP_TOKEN_RING_ADDRESS or MAP_TOKEN_RING_NO_SR
IP_UDP	IP

### **lan\_n\_ipaddress**

This parameter specifies the IP address of this host. Enter this parameter as a string representing a hexadecimal number. The range for this number is 0x0 to 0xF, non-inclusive (00000001 to FFFFFFFE).

The **lan\_n\_adapter** attaches to this is IP address.

### **lan\_n\_iphost <x>**

This parameter specifies the IP address of another server on the IP Tunnel network. Enter this parameter as a hexadecimal number. The range for this number is 0x0 to 0xF.

## NPSConfig file example

```
/* Novell Protocol Suite (NPS) configuration/tunables file
 *
 * scssid="@(#) DG_NFAS 3.11 NPSConfig 3.2 01 Jul 1994"
 */

nvt_server_name = "showme"

spx = ACTIVE
nvt = INACTIVE
sap = ACTIVE
netbios = ACTIVE

netbios_shim = "nbix"

nvt_getty_entry = "9600"
nvt_init_level = 23
nvt_line_disc =
nvt_timeout_interval = 7200
nvt_max_retries = 15
nvt_pty_name = "ATT"
nvt_term_on_hangup = 1

spx_max_connections = 100
spx_max_sockets = 100
sap_standard_out = "/usr/opt/netware/sap.output"
sap_error_out = "/usr/opt/netware/sap.error"

priority=15

internal_network = "BBBB0101"

lan_1_network = "00EF1EEE"
lan_1_adapter = "/dev/hken0"
lan_1_adapter_type = "ETHERNET_DLPI"
lan_1_frame_type = "ETHERNET_II"
lan_1_module = "PAD"
lan_2_adapter = "/dev/udp"
lan_2_adapter_type = "IP_TPI"
lan_2_frame_type = "IP_UDP"
lan_2_module = "IP"
lan_2_network = "00EF1EFF"
lan_2_ipaddress = "80DE7362"
lan_2_iphost1 = "80DE7365"
lan_2_iphost2 = "80DE73E7"
```

## PRTConfig

The PRTConfig configuration/tunables file is used to set parameters used by RPRINTER so that it can access host printers. These parameters can also be set in SCONSOLE using the “Add a Host Printer to System” option, or they can be edited in this file with a text editor.

Each line in the configuration file must be preceded by the letters “hq” in either upper- or lower-case letters; this designates that the line specifies a host queue. The fields in each line must be separated by one or more spaces. A header line can be included if it is preceded by a pound sign (#).

The fields in each line are as follows:

### **Host Printer Name**

This phrase uniquely describes the host printer or queue. The name can be up to 20 characters long.

### **Host ID**

This parameter is the ID number that the host system has assigned to the queue or printer. RPRINTER uses this number to find and open the host printer or queue.

### **Priority**

This parameter allows you to assign a priority level to the printer. You can assign a value from 1 to 40; the highest priority is 1.

### **Form Name**

This parameter identifies the form that the queue or printer is configured for. This field can be left blank.



**PRTConfig file example**

#	Host	Printer Name	HostID	Priority	Form Name
hq	lp		lp	1	1
hq	North_Office		mtx80_1	1	Landscape

## RPControl

The RPControl configuration/tunables file is used to set parameters that set up remote printer assignments. This file ties the print server slot number with the printer configuration information set in the PRTConfig file. These parameters can also be set in SCONSOLE using the “Add a Remote Printer” option, or they can be edited in this file with a text editor.

Each line in the configuration file must be preceded by the letters “rp” in either upper- or lower-case letters; this designates that the line specifies a remote printer. The fields in each line must be separated by one or more spaces. A header line can be included if it is preceded by a pound sign (#).

The fields in each line are as follows:

### **PServer**

This parameter specifies the print server to which RPRINTER attaches the printer defined in this file. RPRINTER validates the print server name when it tries to initialize the printer.

### **Printer Slot**

This parameter specifies the printer server slot number that the printer uses. The slot number must be between 0 and 15, and PCONSOLE must configure the slot as a remote printer.

### **Host Printer Name**

This parameter specifies the host printer queue that RPRINTER uses for this printer. This name must be the same name as the “host printer name” in the PRTConfig file. SCONSOLE checks that the names match if this utility is used to enter the parameters.

## RPControl file example

```
# PServer Printer Slot Host Printer Name
rp ACCT 0 South_Office
rp MKT 15 Lab
rp PAYROLL 0 Lab
```

## RPConfig

The RPConfig configuration/tunables file is used to set parameters that configure the remote printers so that they work well with your system. These parameters can also be set in SCONSOLE using the “Add a Host Printer to System” option, or they can be edited in this file with a text editor.

Valid parameters in the file are as follows:

### **Max\_Wait\_Packet\_Time = *n***

This parameter specifies the maximum time in milliseconds that RPRINTER waits to receive packets before going on to other processes.

The default is 2500 milliseconds; the range is 100 to 32000.

### **Status\_Check\_Interval = *n***

This parameter specifies the time in seconds that RPRINTER is idle when checking status.

The default is 5 seconds; the range is 1 to 3600.

### **Idle\_Before\_Job\_End = *n***

This parameter specifies the number of status counts that RPRINTER waits after packets have stopped coming before deciding that the print job has ended. Increase this count if RPRINTER is incorrectly assuming that print jobs have ended.

This count is multiplied by the “Status Check Interval” to determine the actual time to wait; for example, if the “Status Check Interval” is 5 seconds and this count is 2, then the printer waits 10 seconds.

The default is 2; the range is 1 to 60.

**Idle\_Before\_Prt\_Status = *n***

This parameter specifies the maximum number of status counts that RPRINTER skips doing a status check on an idle printer.

This count is multiplied by the “Status Check Interval” to determine the actual time to wait; for example, if the “Status Check Interval” is 5 seconds and this count is 20, then RPRINTER waits 100 seconds.

The default is 20; the range is 1 to 32000.

**Error\_Before\_Inform = *n***

This parameter specifies the maximum number of times that RPRINTER skips displaying a second or subsequent identical error message. This is used to prevent the scrolling of error messages that occur in rapid succession.

The default is 5; the range is 1 to 32000.

**Warn\_Before\_Inform = *n***

This parameter specifies the maximum number of times that RPRINTER skips displaying a second or subsequent identical warning message. This is used to prevent the scrolling of warning messages that occur in rapid succession.

The default is 5; the range is 1 to 32000.

## RPCConfig file example

```
Max_Wait_Packet_Time = 2000
Status_Check_Interval = 5
Idle_Before_Job_End = 2
Idle_Before_Prt_Status = 20
Error_Before_Inform = 5
Warn_Before_Inform = 5
```

**End of Chapter**



# A Improving the Performance of NetWare for AViiON Systems

---

This appendix gives suggestions to help your NetWare for AViiON Systems server run faster and more efficiently. These suggestions are in the following areas:

- Setting engine counts
- Setting connections
- Splitting large volumes
- Tuning the inodes cache
- Enabling burst mode
- Limiting trustee assignments

These are general suggestions that should work on most NetWare servers. However, depending on factors unique to each server (such as how the server is used, applications it runs, user load), applying these suggestions will affect each server differently. You may need to experiment with these suggestions to get the best performance from your server.

Unless otherwise noted, refer to Chapter 2 for detailed information on the suggestions in this appendix.

## Setting engine counts

Set a high client-to-engine ratio. Servers typically run more efficiently with a higher number of clients running on a lower number of engines. NetWare for AViiON lets you specify the number of Service Engines you run and the total connections allowed. We recommend that you configure your server with about five NetWare clients per Service Engine. Use the following formula.

$$\frac{\text{Maximum Connections} + 5}{\text{Maximum Processes}} = \text{number of NetWare clients per Engine}$$

where:

**Maximum Connections** is the maximum number of connections allowed by your license

**+ 5** is the 5 connection slots reserved for pserver

**Maximum Processes** is the number of Engines defined on your NetWare system

To adjust the clients-per-Engine ratio, use SCONSOLE to modify Maximum Processes and Maximum Connections. For example, if you want NetWare to run with five clients per Engine, change the Maximum Connections to 45 and change the Maximum Processes to 10.



## Setting connections

Specify only the number of connections you actually need when setting the Maximum Connections parameter. Reducing the number of connections to match the number you actually use frees up shared memory by reducing the size of the Connection Table.

**NOTE:** The number of connections should not be greater than the user license count.

The following items need a connection on a NetWare for AViiON system:

- A user logged into the server
- A user who has loaded the NETX or VLM redirector, but who has not actually logged in
- A user who has logged out, but still is running the redirector
- A UNIX-based utility that uses the NetWare APIs, such as SCONSOLE, **userlist**, and **pmonitor**
- An application that uses the NetWare APIs, such as MHS for AViiON Systems

For example, you would have a connection count of 14 on a NetWare system with the following:

- Ten users logged onto the server
- One user who logged out, but is still running the redirector
- Two UNIX-based NetWare utilities, such as Print Servers
- An MHS for AViiON application

## Splitting large volumes

The NetWare filing system consists of logical pieces called *volumes*. Several smaller volumes typically run more efficiently and are easier to manage than a single large volume. Dividing large volumes into smaller ones also keeps the database that stores NetWare-specific information as small as possible, making file access quicker.

SYS is the initial NetWare volume that you create when you install the NetWare Services software. Depending on how you use your server, you may also want to create the following volumes:

- APPS for application programs
- DATA for common data files
- USERS for private user directories
- MHS for MHS directory tree and mail

## Splitting inodes files

NetWare for AViiON Systems stores NetWare and client-specific file information in files called inodes files. `/usr/netware/NWControl/volume_name` is the default location of these inodes files. Since NetWare creates one inodes file for each NetWare volume, these files can become very large. As with volumes, several smaller inodes files typically run more efficiently and are easier to manage than a single large inode.

You split up inodes files by splitting up volumes. Whenever you split up a large volume, you also split up (and reduce the size of) the corresponding inodes file.

## Move inodes files from SYS volume

You free up disk space (and possibly improve performance) by moving the inodes files to a UNIX file system that is different from SYS volume of the NetWare file system (`/usr/netware`).

## Use **compressnw** to reduce inodes files

Your inodes files can become very large after your NetWare for AViON System has been running for a while. Use the **compressnw** script to reduce the size of these files. The **compressnw** script does the following:

- Runs the **nwbackup** utility to back up NetWare-specific file information and trustee rights
- Brings down NetWare file and print services
- Deletes the inodes files and trustee database
- Brings up NetWare file and print Services.  
When NetWare comes back up, it rebuilds the inodes files. This rebuilding process reduces the size of inodes files by removing many unused areas of the files.
- Runs the **nwrestore** utility to restore the NetWare-specific information and trustee rights

You can set up **compressnw** to run at a regular time interval (for example, monthly) by placing it in a UNIX cron batch job that runs automatically. To do so, follow procedures in the next section.

## Editing `compressnw` to run as a cron job

The following conditions require you to perform additional steps, either before or after running `compressnw` as a cron job.

- If MHS for AViiON Systems software is running on your NetWare file server, replace any soft links for MHS executables with the actual files from `/usr/opt/mhs/bin/exe`. Otherwise, the `compressnw` script may remove the execute permission from MHS executables. If this happens, MHS will not come up properly and will not process mail.
- If hybrid users create file names that are not 8.3 DOS names, the DOS name will not match the UNIX file name. When `compressnw` runs the `nwrestore` utility, `nwrestore` will attempt to correct file name mismatches. If `nwrestore` cannot correct any file name mismatches, `compressnw` may not work properly.

If `compressnw` does not work, check the `nwrestore.log` for a list of file names that `nwrestore` failed to correct. Change DOS names on this list to 8.3 DOS names and rerun `compressnw`.

Edit the `compressnw` script to run automatically, as a cron job. Follow these steps.

1. Access the `compressnw` script using `vi` or any text editor.

2. Add the following line at the beginning of the **compressnw** script to designate **/usr/opt/netware** to store back-up files. Type:

```
AREA=$DEFAULT_AREA
```

**NOTE:** To designate a location other than **/usr/opt/netware** to store back-up files, replace the text "**\$DEFAULT\_AREA**" with the path to that location.

For example, to designate **/usr/nwbackups** to store back-up files, add the following line at the beginning of the **compressnw** script:

```
AREA=/usr/nwbackups
```

3. Remove the "while loop" line (that prompts the user to designate a location in which to store backup files). This line begins with the following text:

```
while [ ${PASS} != true ]
```

4. Replace the line:

```
/usr/opt/netware/bin/nwbackup ${AREA}
```

with the following line:

```
echo "spasswd" | /usr/opt/netware/bin/nwbackup ${AREA}
```

where **spasswd** is the NetWare supervisor user's password.

## Allocating shared memory for inodes caching

Allocate enough shared memory to hold caching information of inodes files. Whenever you specify caching for a volume, you can also allocate shared memory (in `/etc/netware/NWConfig`) to hold the cached information of inodes files. Allocating enough shared memory for caching typically makes file access quicker.

Follow these steps to allocate shared memory.

1. Specify size of the cache on a per-volume basis.

**NOTE:** If you make a cache too small, you can actually hurt performance. Before changing cache size, run **cacherep** (located in `/usr/bin/netware`) to list information on how efficiently your system is using the NetWare cache.

Specify the size of the cache as the last parameter to the volume definition. We suggest cache sizes of 240,000, 480,000 or 960,000 bytes.

For example, to activate inodes caching for the SYS volume with a cache size of 240,000 bytes, include a `NWConfig` file entry similar to the following in the volume definition:

```
volume =  
"DOS|SYS:0:/usr/netware/sys:/usr/netware/NWControl/sys/  
inodes:240000"
```

**NOTE:** You can also increase cache performance by turning off the Read-Ahead Cache.

2. Determine how much shared memory your NetWare system needs.

The following table lists standard cache sizes on volumes and the amount of additional NetWare shared memory required to hold the cached information on your NetWare system. Use this table to determine how much shared memory your NetWare system needs.

Sum of all caches on all volumes	fs_shm_size (Change to allocate more NetWare shared memory)	SHMMAX * (Change to allocate more system shared memory)
0	512*1024	2097152
120,000–480,000	1024*1024	2621440
600,000–960,000	1536*1024	3145728
1,080,000–1,440,000	2048*1024	3670016

\* These settings allow about 1 megabyte of shared memory for other DG/UX applications. Increase the SHMMAX setting as required by other applications.

**3. Allocate more NetWare or system shared memory.**

To allocate more NetWare shared memory, change the fs\_shm\_size in the /etc/netware/NWConfig file.

To allocate more system shared memory, change the SHMMAX value in the kernel configuration file. Then use **sysadm** to build a new DG/UX kernel.

**4. Do one or both of the following.**

If you changed the SHMMAX value in step 3, reboot the system.



If you changed the `/etc/netware/NWConfig` file in step 3, bring down the NetWare Services software. Then bring the NetWare Services software back up again.

**NOTE:** The first time a NetWare user attempts to access a directory (shared by NetWare users) after a UNIX user has modified the contents of that directory, the system may delay responding (for several minutes, depending on the number of changes) while it rebuilds the inodes files.

For example, if a UNIX user moves a large number of files into the directory `/usr/netware/sys/public`, the next time NetWare users attempt to access the `SYS:\PUBLIC` directory from a PC, they will experience a delay while the system updates the inodes files.

## Tuning the inodes cache

Tuning the inodes cache speeds processing time on your NetWare system. If you fail to tune the inodes cache, your system may have a low hit ratio that results in slower processing time.

Follow these steps to tune the inodes cache.

1. Enable the inodes cache.
2. Select a cache size for the frequently used volumes.

Start light users with 240,000 bytes, medium users with 480,000 bytes, and heavy users with 960,000 bytes. See the section “Allocating Shared Memory for Inodes Caching” for details on specifying size of the cache on a per-volume basis.

3. Determine the cache hit rates.

Use the cache profiling **cacherep** utility in the **/usr/bin/netware** directory of your AViiON system to list cache hit rates. The **cacherep** utility lists cache hit rates for the following cache elements:

- NetWare inodes
- Name spaces
- File attributes
- Misc. info
- Inodes headers

To get an accurate report for a day, restart NetWare Services at the beginning of the work day. Then run the cache profiler at the end of the work day and record the results.

Once you enter **cacherep**, you can run **cacherep** throughout the day by pressing <Enter>. When you press <Enter>, the system displays the hit rates (updated since the last hit rate display). Keep a record of each display of the hit rates for the five elements.

4. Adjust the hit rates of the first two elements until they are above 90% most of the time.

The first two hit rates have the greatest effect on performance. If your hit rates for the first two elements are lower than 90%, increase the cache sizes in the NWConfig file. Then bring NetWare Services software down, and back up again.

Continue to increase the cache sizes for the first two elements until you get 90% hit rates, or until you reach the maximum shared memory that you are willing to dedicate to the NetWare caches.

5. If your shared memory is the maximum size and your hit rates are not high enough, adjust the number of cache entries for the various cache elements.

You should increase hit rates on the first three elements in this order: 2, 1, 3. Use the TK\_SLEEP2 token in the NWConfig file to increase hit rates.

The TK\_SLEEP2 token value specifies the number of elements for each cache structure.

The format of the TK\_SLEEP2 token value is:

`TK_SLEEP2="vv:ww:xx:yy:zz"`

where the cache elements are:

vv for NetWare inodes  
 ww for Name spaces  
 xx for File attributes  
 yy for Misc. info  
 zz for Inodes headers

The default value is `TK_SLEEP2="100:100:50:40:1"`

The sizes of the cache elements (in bytes) are:

76, 680, 564, 4, and 8192.

So, the default size of a cache is:

$$\begin{aligned} &100*76 + 100*680 + 50*564 + 40*4 + 1*8192 = \\ &7600 + 68000 + 28200 + 160 + 8192 = \\ &112152 \text{ bytes} \end{aligned}$$

For example, if you specified the cache element size of `"100:100:50:10:1"`, the required memory would be:

$$\begin{aligned} &100*76 + 100*680 + 50*564 + 10*4 + 1*8192 = \\ &7600 + 68000 + 28200 + 40 + 8192 = \\ &112032 \text{ bytes} \end{aligned}$$

**NOTE:**

The **cacherep** utility may report slightly higher numbers than these examples due to padding and alignment by the NetWare Engines. For example, if the SYS volume specified a cache size of 120000 bytes, then you could fit 100, 100, 50, 10, and 1 elements of each cache type. (112032 fits into the 120000 bytes of allocated cache.)

For example, if your SYS volume specified a cache size of 240000 bytes, then NetWare would double the number of elements, since  $240000/112032 = 2$ . You would have 200, 200, 100, 20, and 2 elements, respectively.

## Other cache tuning suggestions

Try the following suggestions.

- Adjust the size of the second cache element as follows:
  - Find the directory on the volume with the largest number of files and subdirectories in it. Make the second cache element value exceed the number of files and subdirectories in this directory.  
  
For example, if the largest directory contains 150 files, use a cache size of 240000 on the volume and `TK_SLEEP2="100:100:50:10:1"`. This cache size gives 200 elements in the second cache, which is enough to hold all directory entries.
  - Specify enough elements in the second cache to hold all directories of users (assuming all users have directories defined in a HOME directory).
  - Specify enough elements in the second cache to exceed the number of MHS users on your system (as the MHS directory structure will create a directory for each user's mail).
- Adjust the size of the cache elements to meet the following criteria:
  - The size of the last cache element should always be 1.
  - The size of the fourth cache element should be 30 or less.
  - The size of the largest cache element value you can specify is 10,000.

**NOTE:** Make sure that the total memory required by your cache element values *exceeds* the value on the volume. Otherwise, the cache will be disabled.

## Reducing the number of files in a directory

Directories containing a large number of files can hurt NetWare performance. For example, when you create a unique file name, the NCP Engine must search all files in a directory to determine uniqueness. Try to limit directories to about 100 files. If this is not possible, the hit rate for element 2 in the inodes cache must be above 90%.

## Enabling burst mode

Enabling burst mode may improve performance of applications that read or write large files. Refer to the NetWare DOS Workstation manual for details on enabling and using burst mode.

## Limiting trustee assignments

Each time you add a trustee assignment, the Trustee Database (where NetWare for AViiON Systems stores NetWare trustee assignments) gets larger and uses more shared memory. To reduce shared memory usage, assign only the number of trustee assignments you actually need for NetWare security.

Plan to limit trustee assignments when adding new or modifying existing trustee assignments. For example, instead of specifying a trustee assignment for many files or directories, assign a single trustee assignment for a single directory one level above. Refer to *Concepts* and *Utilities* for more information on trustee assignments and NetWare security.

**NOTE:** You do not need to grant trustee assignment to the group **EVERYONE** for the root of each NetWare volume, in order to improve performance, as you did in earlier revisions.

For solutions to common NetWare network problems and tips for preventing common network problems, see *Messages*.

End of Appendix





# Index

---

## A

Adapter Type parameter, 2-18  
Add a Network, 2-20  
Add a Remote Printer, 2-51  
Add a User for Alert Notification,  
2-64  
Add a Volume, 2-37  
Add Hybrid User, 2-58  
Add Printers to System, 2-47  
Administration Menu, 2-4  
Alert Notification  
    add a user, 2-64  
    delete a user, 2-65  
Alert Notification List, 2-63  
Alert\_notify\_list token, 3-13  
Allocating shared memory for inodes  
    caching, A-9  
Architecture daemon, 2-5, 2-14  
Assessing system efficiency, A-9

## B

Binaries token, 3-6  
Bindery, Repair, 2-103  
Bindfix, 2-103  
Burst, multi-packet, 3-13

## C

Cache, 2-31  
    changing, 2-40  
    increasing performance of, 2-31,  
    2-33  
    read-ahead, 3-12  
    write-behind, 3-12  
Cache elements size, criteria for  
    changing, A-15  
Cache hit rates, determining, A-12  
Cache Hits, 2-83  
Cache Misses, 2-83  
cachrep  
    number inflation, A-14  
    using to assess system  
    performance, A-9  
Change a Volume Name and Name  
    Space, 2-39  
Change Sample Interval, 2-75  
Changing cache, 2-40  
Changing clients per Engine, 2-30,  
    3-3, A-2  
Changing Volume Paths and cache,  
    2-40  
Clear Error Log, 2-10  
Clear SAP Error Log, 2-16  
Clear Tracking Log, 2-102  
Cleartext, 2-70  
Cleartext passwords, 3-9  
Client signature levels, 2-69

Clients per Engine formula, 2-30,  
3-3, A-2

compressnw  
    how it works, A-6  
    preparing to use, A-7  
    running automatically, A-7

Config\_file\_version token, 3-2

Configuration Menu, 2-11

Connection Statistics, 2-94

Connections, 2-81  
    determining the maximum  
    supported, 2-77

Connections in Use, 2-78

Console Device, 2-73

Console Flag, 2-72

Console\_device token, 3-8

Console\_flag token, 3-8

Contacting Data General, xiii

Create Connection Requests, 2-81

Create File Requests, 2-81

Current Shared Memory Usage,  
2-85

## D

Data General, contacting, xiii

Default Hybrid Binding, 2-60

Delete a Network, 2-23

Delete a Remote Printer, 2-52

Delete a User from Alert  
Notification, 2-65

Delete a Volume, 2-42

Delete Hybrid User, 2-59

Delete Printers from System, 2-48

Determining system shared memory  
needs, A-10

Dir Mask, 2-32

dir\_mask, 2-33

Dir\_mask token, 3-10

Directories, Number of, 2-92

Directory Path, 2-92

Directory structure, 2-38

Display\_watchdog\_logouts token,  
3-8

Document sets, vii

## E

Edit Security Parameters, 2-66

Edit System Parameters, 2-71

Encrypted passwords, 3-9

Encryption, 2-70

Error Count Before Inform, 2-54

Error Log Menu, 2-9, 2-16

Error messages, 2-9, 2-72, 2-101

Error\_Before\_Inform token, 3-28

---

## F

File Lock Requests, 2-88  
File locks, 2-34, 3-11  
File Mask, 2-33  
File Open Requests, 2-82  
File Read Requests, 2-82  
File server, 2-1  
File Server Information, 2-76  
File Server Internal Statistics, 2-85  
File Server Name, 2-76  
File Server Software, 2-79  
File Server Statistics, 2-80  
File Service Parameters, 2-29  
File Services Configuration Menu,  
2-28  
File Size Limit, 2-34  
File Write Requests, 2-82  
File Writes, 2-32  
File\_mask token, 3-10  
File\_server\_name token, 3-1, 3-5  
Flags  
  Console Flag, 2-72  
  Forced Logout Display, 2-66  
  Forced Logout Logging, 2-66  
  Login Flag, 2-32  
  Native Locks Flag, 2-34  
  NetBios Flag, 2-14  
  NVT Flag, 2-24  
  Password Encryption Flag, 2-70  
  Read-Ahead File Cache Flag, 2-31  
  SAP Flag, 2-14  
  SPX Flag, 2-14  
  Write-Behind Flag, 2-32

Forced Logout Display, 2-66  
Forced Logout Logging, 2-66  
Form Name, 2-46  
Form name token, 3-24  
Formula, clients per Engine, 2-30,  
3-3, A-2  
Frame type, 3-21  
Frame Type parameter, 2-18  
Free Space, 2-92  
fs\_shm\_key, 3-15, 3-21  
fs\_shm\_size, 3-14  
Function call library, 2-2

## G

Group ID, 2-61  
Group Name, 2-57

## H

Host directory structure, 3-6  
Host ID, 2-45  
Host ID token, 3-24  
Host Path, 2-36  
Host Printer Configuration Menu,  
2-44  
Host Printer Name, 2-45, 2-50  
Host printer name token, 3-24, 3-26  
Host printers, 2-45, 3-24  
Host system, 2-1  
Host user, 3-10  
Host User Name, 2-56

Hu\_group\_owner token, 3-10  
Hu\_user\_owner token, 3-10  
Hybrid Group ID, 2-61  
Hybrid User  
  Add, 2-58  
  Delete, 2-59  
Hybrid User Configuration, 2-55  
Hybrid User Group ID, 2-60  
Hybrid User ID, 2-61  
Hybrid User Parameters, 2-60  
Hybrid Users, 2-33, 3-10  
  List, 2-56

**I**

Idle Count Before Job End, 2-53  
Idle Count Before Printer Status,  
  2-54  
Idle\_Before\_Job\_End token, 3-27  
Idle\_Before\_Prt\_Status token, 3-28  
Improving NetWare performance  
  allocating shared memory for  
    inodes caching, A-9–A-11  
  enabling burst mode, A-16  
  limiting trustee rights, A-17  
  reducing files in a directory, A-16  
  setting connections, A-3  
  setting engine counts, A-2  
  splitting large volumes, A-4–A-8  
  tuning the inodes cache,  
    A-11–A-15  
Inodes cache, tuning procedures,  
  A-11–A-15  
Inter-process Communication, 2-71  
Interface parameter, 2-18

Internal Network Number, 2-13  
Internal\_network token, 3-20  
IP Address (for IP Tunneling), 2-19  
IP Hosts (for IP Tunneling), 2-19  
IP Multiple Tunneled network, 2-21  
IP Tunneling procedures, 2-21  
  between server and LAN  
    WorkPlace clients, 2-21  
  between servers, 2-21  
  multiple tunneled network, 2-21  
IPX, 3-17

**L**

LAN parameter, 2-17  
Lan\_n\_adapter token, 3-20  
Lan\_n\_adapter\_type token, 3-20  
Lan\_n\_frame\_type token, 3-20  
lan\_n\_module choices, 3-22  
Lan\_n\_module token, 3-20  
Lan\_n\_network token, 3-20  
Language token, 3-10  
Levels, ncp\_packet\_signature\_level,  
  3-14  
License\_key token, 3-13  
Limiting trustee assignments, A-17  
List Hybrid Users, 2-56  
List Network Assignments, 2-17  
List Printers on System, 2-45  
List Remote Printer Assignments,  
  2-50  
List Volumes, 2-35  
Lock Manager Statistics, 2-87

---

Locks, 2-34  
Log\_watchdog\_logouts token, 3-8  
Logical Lock Requests, 2-87  
Logical network mapping, 2-99  
Login Flag, 2-32  
Login token, 3-9  
Logout Logging, 2-66  
Lost Packets Resends, 2-83

## M

Mapping, 2-36  
    logical networks, 2-99  
Mask(s)  
    Dir Mask, 2-32  
    File Mask, 2-33  
Max Wait Packet Time, 2-53  
Max\_connections token, 3-4  
Max\_file\_size token, 3-9  
Max\_procs token, 3-2  
Max\_volumes token, 3-5  
Max\_Wait\_Packet\_Time token, 3-27  
Maximum Connection Supported,  
    determining, 2-77  
Maximum Connections, 2-30  
Maximum Processes, 2-29–2-30  
Maximum Shared Memory Usage,  
    2-86  
Maximum Simultaneous File Locks,  
    2-88

Maximum Simultaneous Logical  
    Locks, 2-88  
Maximum Simultaneous Open Files,  
    2-82  
Maximum Simultaneous Physical  
    Locks, 2-89  
Maximum Simultaneous  
    Semaphores, 2-90  
Maximum Volumes, 2-31  
Maximum Volumes Supported, 2-78  
Memory Size, 2-71  
Menu  
    Administration, 2-4  
    Configuration, 2-11  
    Error Log, 2-9, 2-16  
    File Services Configuration, 2-28  
    Host Printer Configuration, 2-44  
    Hybrid User Configuration, 2-55  
    Remote Printer Configuration,  
        2-43  
    Remote Printer Control, 2-49  
    Security Configuration, 2-62  
    Service Utilities, 2-103  
    Services Configuration, 2-27  
    Startup/Shutdown, 2-5  
    Statistics, 2-74  
    Tracking, 2-101  
    Transport Configuration, 2-12  
    Transport Utilities, 2-98  
    Utilities, 2-97  
Messages, 3-8, 3-13  
Modify a Network, 2-22  
Module parameter, 2-19  
Module values, 2-19  
Monitor Print Server, 2-106  
Multi-packet burst, 3-13

## N

- Name Space, 2-35
- Name space, 3-6
- Native Locks Flag, 2-34
- Native\_locks token, 3-11
- NCP Packet Signature, definition, 2-67
- NCP Packet Signature Option, 2-67–2-69
- ncp\_packet\_signature\_level, 3-14
- netbios = ACTIVE token, 3-18
- NetBios Flag, 2-14
- NetBios Shim, 2-14
- Netbios\_shim token, 3-18
- NetWare, startup/shutdown, 2-7
- NetWare Processes, 2-80–2-81
  - determining if sufficient, 2-81
- NetWare User Name, 2-56
- NetWare Version, 2-77
- Network
  - add, 2-20
  - delete, 2-23
  - list assignments, 2-17
  - modify, 2-22
- Network adapters, 2-17
- Network Assignments, 2-17
- Network boards and cables, 2-18, 3-20
- Network number, 2-13, 2-18
- Network Number parameter, 2-18
- Network Status, 2-100
- New Line key, x
- Notational conventions in this manual, x
- NPSConfig file, 2-3
- npsd, 2-5, 2-8, 2-14, 3-17
- Number of Directories, 2-92
- Number of File Locks, 2-88
- Number of Logical Locks, 2-87
- Number of Open Files, 2-82
- Number of Physical Locks, 2-89
- Number of Semaphores, 2-89
- NVT, 3-18
  - connection restrictions, 2-24
- NVT Flag, 2-24
- NVT Gettydefs Entry, 2-25
- NVT Init Levels, 2-25
- NVT Interval between Keep Alives, 2-25
- NVT Line Discipline, 2-25
- NVT Maximum Keep Alive Retries, 2-25
- NVT Parameters, 2-24
- NVT Pty Name, 2-26
- NVT Service Name, 2-25
- Nvt token, 3-18
- Nvt\_max\_retries, 3-18
- Nvt\_pty\_name, 3-19
- Nvt\_server\_name token, 3-17
- Nvt\_timeout\_interval, 3-19
- NWConfig file, 2-3, 3-1
- NWinode file, 2-36, 3-7

## O

- Open Files, 2-82

---

**P**

- Packet forgery, preventing, 2-67
- Packet header, 3-21
- Packet Resends, 2-83
- Packet signature levels, NVT packet signature, 2-67–2-69
- Packet\_burst token, 3-13
- Packets, 2-53, 2-81
- Padding, 2-19, 3-20
- Parameters
  - Adapter Type, 2-18
  - Cache Hits, 2-83
  - Cache Misses, 2-83
  - Connections in Use, 2-78
  - Console Device, 2-73
  - Create Connection Requests, 2-81
  - Create File Requests, 2-81
  - Current Shared Memory Usage, 2-85
  - Dir Mask, 2-32
  - Error Count Before Inform, 2-54
  - File Lock Requests, 2-88
  - File Mask, 2-33
  - File Open Requests, 2-82
  - File Read Requests, 2-82
  - File Size Limit, 2-34
  - File Write Requests, 2-82
  - Form Name, 2-46
  - Frame Type, 2-18
  - Free Directories, 2-92
  - Free Kilobytes, 2-92
  - Group Name, 2-57
  - Host ID, 2-45
  - Host Path, 2-36
  - Host Printer Name, 2-45, 2-50
  - Host User Name, 2-56
  - Hybrid User Group ID, 2-60
  - Hybrid User ID, 2-61
  - Idle Count Before Job End, 2-53
  - Idle Count Before Printer Status, 2-54
  - Interface, 2-18
  - Internal Network Number, 2-13
  - IP Address (for IP Tunneling), 2-19
  - IP Hosts (for IP Tunneling), 2-19
  - LAN, 2-17
  - Logical Lock Requests, 2-87
  - Lost Packet Resends, 2-83
  - Max Connections, 2-30
  - Max Processes, 2-29–2-30
  - Max Volumes, 2-31
  - Max Wait Packet Time, 2-53
  - Maximum Connections Supported, 2-77
  - Maximum Shared Memory Usage, 2-86
  - Maximum Simultaneous File Locks, 2-88
  - Maximum Simultaneous Logical Locks, 2-88
  - Maximum Simultaneous Open Files, 2-82
  - Maximum Simultaneous Physical Locks, 2-89
  - Maximum Simultaneous Semaphores, 2-90
  - Maximum Volumes Supported, 2-78
  - Module, 2-19
  - Name Space, 2-35
  - NetBios Shim, 2-14
  - NetWare Processes, 2-80–2-81
  - NetWare User Name, 2-56
  - Network Number, 2-18
  - Number of File Locks, 2-88
  - Number of Logical Locks, 2-87
  - Number of Open Files, 2-82
  - Number of Physical Locks, 2-89

- Number of Semaphores, 2-89
- NVT Gettydefs Entry, 2-25
- NVT Init Levels, 2-25
- NVT Interval between Keep  
Alives, 2-25
- NVT Line Discipline, 2-25
- NVT Maximum Keep Alive  
Retries, 2-25
- NVT Pty Name, 2-26
- NVT Service Name, 2-25
- NWinode File, 2-36
- Peak Connections Used, 2-78
- Physical Lock Requests, 2-88
- Physical Point of Attachment,  
2-18
- Print Requests, 2-83
- Printer Slot Number, 2-50
- Priority, 2-46, 2-72
- PServer Name, 2-50
- Read-Ahead Cache Block Size,  
2-32
- Revision Date, 2-77
- Revision Level, 2-79
- Sample Interval, 2-75
- SAP Error File/Device, 2-14
- SAP Standard Output, 2-14
- Semaphore Requests, 2-84, 2-89
- Server Name, 2-72, 2-76
- SFT Level, 2-79
- Shared Memory Key, 2-71
- Shared Memory Size, 2-71, 2-85
- Status Check Time Interval, 2-53
- Total Directories, 2-92
- Total Kilobytes, 2-92
- Total Packets, 2-81
- TTS Level, 2-79
- Unknown Requests, 2-84
- User Name, 2-63
- Version, 2-77
- Volume Name, 2-35, 2-92
- Volume Number, 2-91
- Warn Count Before Inform, 2-54
- Password Encryption Flag, 2-70
- Passwords, 3-9
- Peak Connections Used, 2-78
- Permissions, 2-32
- Physical Lock Requests, 2-88
- Physical Point of Attachment  
parameter, 2-18
- Print Requests, 2-83
- Print Server, 2-106
- Print Statistics to a File, 2-95
- Printer
  - add, 2-51
  - configuration, 2-53
  - delete, 2-52
- Printer Assignments, list, 2-50
- Printer configuration, 2-43
- Printer Slot Number, 2-50
- Printer slot token, 3-26
- Printers
  - adding, 2-47
  - deleting, 2-48
  - listing, 2-45
- Printing, 3-24, 3-26
- Priority, 2-46, 2-72
- Priority token, 3-19, 3-24
- Procedures, IP Tunneling, 2-21
- Process, 2-76
- Processes, 2-1, 2-72, 2-80
- PRTConfig file, 2-3, 3-24
- PServer name, 2-50
- PServer token, 3-26



---

**R**

Ratio, clients per Engine, 2-30, 3-3, A-2

Read-Ahead Cache Block Size, 2-32

Read-Ahead Cache Flag, 2-31

Read\_ahead\_cache token, 3-12

Read\_ahead\_cache\_block\_size token, 3-12

Reducing files in a directory, A-16

Reducing the hit rate element, A-16

Related manuals, vii

Remote Printer Configuration, 2-53  
menu, 2-43

Remote Printer Control Menu, 2-49

Remote printers, 3-26, 3-27

Repair Bindery, 2-103

Req\_password\_encryption token, 3-9

Requests, 2-84, 2-89

Reset Router Table, 2-99

Restrictions, NVT connections, 2-24

Revision Date, 2-77

Revision Level, 2-79

Router Table, 2-99

RPCConfig file, 2-3, 3-27

RPCControl file, 2-3, 3-26

RPRINTER, 2-53

**S**

Sample Interval, 2-75

SAP Error File/Device, 2-14

SAP Flag, 2-14

SAP Standard Output, 2-14

Sap token, 3-18

Sap\_error\_out token, 3-19

Sap\_standard\_out token, 3-19

sapd, 3-19

SCONSOLE, 2-1, 3-1  
main menu, 2-2  
menu use, 2-3  
starting, 2-2

SCONSOLE menu path  
add to, delete from, manage the  
file system, 1-2  
add, change, delete or list  
volumes, 1-3  
control and configure the file  
server, 1-6  
manage network users and  
groups, 1-10  
modify configuration, 1-8  
set server caching and capture  
flags, 1-4  
set system flags, 1-9  
view file system information, 1-2  
view network information, 1-5-1-6

Security Configuration, 2-62

Security feature, Clients must "sign"  
NCP packet, 2-67-2-69

Security Parameters, 2-66

Semaphore Requests, 2-84, 2-89

Server List, 2-104

Server Name, 2-72, 2-76

Server signature levels, 2-68

Service advertising protocol, 2-14  
Service Utilities Menu, 2-103  
Services Configuration Menu, 2-27  
Setting connections  
    connection count examples, A-3  
Setting engine counts, A-2  
Setting engine counts and connections, A-3–A-4  
SFT Level, 2-79  
Shared memory, 2-31, 3-4, 3-9  
    Assessing the system needs for, A-10  
Shared Memory Key, 2-71  
Shared Memory Size, 2-71, 2-85  
Shim, 3-22  
Shm\_key token, 3-9  
Shm\_size token, 3-4  
Shutdown NetWare Transport, 2-6  
Shutdown Portable NetWare Server, 2-6  
Shutdown Print Server, 2-6  
Shutdown Remote Printer, 2-6  
Signature levels, 3-14  
    client, 2-69  
    server, 2-68  
Software Version, 2-77  
Splitting inodes files, A-5  
Splitting large volumes, A-4  
SPX, 2-14, 3-17  
SPX Flag, 2-14  
Spx token, 3-17

Standard cache sizes, A-10  
standard output, 3-19  
Start NetWare Services, 2-6  
Start NetWare Transport, 2-5  
Start Portable NetWare Server, 2-5  
Start Print Server, 2-6  
Start Remote Printer, 2-6  
Starting printers  
    all print servers, 2-6  
    print server, 2-7  
    print server daemon, 2-6  
    remote printing, 2-7  
Startup/Shutdown Menu, 2-5  
Statistics, Print to File, 2-95  
Statistics Menu, 2-74  
Status Check Time Interval, 2-53  
Status\_Check\_Interval token, 3-27  
stdio, 3-19  
Stopping printers  
    print server, 2-8  
    remote printing, 2-8  
Streams, 2-2  
SYS\$LOG.ERR, 2-9, 2-72  
System errors, 2-10  
System Parameters, 2-71

## T

Terminal emulation software, 2-24  
Tokens  
    alert\_notify\_list, 3-13  
    binaries, 3-6  
    config\_file\_version, 3-2

- console\_device, 3-8
  - console\_flag, 3-8
  - dir\_mask, 3-10
  - display\_watchdog\_logouts, 3-8
  - Error\_Before\_Inform, 3-28
  - file\_mask, 3-10
  - file\_server\_name, 3-1, 3-5
  - form name, 3-24
  - fs\_shm\_key, 3-15, 3-21
  - fs\_shm\_size, 3-14
  - host ID, 3-24
  - host printer name, 3-24, 3-26
  - hu\_group\_owner, 3-10
  - hu\_user\_owner, 3-10
  - Idle\_Before\_Job\_End, 3-27
  - Idle\_Before\_Prt\_Status, 3-28
  - internal\_network, 3-20
  - lan\_n\_adapter, 3-20
  - lan\_n\_adapter\_type, 3-20
  - lan\_n\_frame\_type, 3-20
  - lan\_n\_module, 3-20
  - lan\_n\_network, 3-20
  - language, 3-10
  - license\_key, 3-13
  - log\_watchdog\_logouts, 3-8
  - login, 3-9
  - max\_connections, 3-4
  - max\_file\_size, 3-9
  - max\_procs, 3-2
  - max\_volumes, 3-5
  - Max\_Wait\_Packet\_Time, 3-27
  - native\_locks, 3-11
  - ncp\_packet\_signature\_level, 3-14
  - netbios, 3-18
  - netbios\_shim, 3-18
  - nvt, 3-18
  - nvt\_max\_retries, 3-18
  - nvt\_pty\_name, 3-19
  - nvt\_server\_name, 3-17
  - nvt\_timeout\_interval, 3-19
  - packet\_burst, 3-13
  - printer slot, 3-26
  - Priority, 3-24
  - priority, 3-19
  - PServer, 3-26
  - read\_ahead\_cache, 3-12
  - read\_ahead\_cache\_block\_size, 3-12
  - req\_password\_encryption, 3-9
  - sap, 3-18
  - sap\_error\_out, 3-19
  - sap\_standard\_out, 3-19
  - shm\_key, 3-9
  - shm\_size, 3-4
  - spx, 3-17
  - Status\_Check\_Interval, 3-27
  - volume, 3-1, 3-6
  - Warn\_Before\_Inform, 3-28
  - write\_behind\_flag, 3-12
  - Total Packets, 2-81
  - Tracking Menu, 2-101
  - Transport Configuration Menu, 2-12
  - Transport Parameters, 2-13
  - Transport Utilities, 2-98
  - TTS Level, 2-79
- ## U
- ulimit, 3-9
  - umask, 2-33
  - UNIX Processes, 2-72
  - Unknown Requests, 2-84
  - User ID, 2-61
  - User List, 2-104
  - User Name, 2-63
  - Using burst mode, A-16
  - Utilities Menu, 2-97

## V

Version, 2-77  
View Alert Notification List, 2-63  
View Error Log, 2-9  
View Network Status, 2-100  
View Print Server List, 2-105  
View Router Table, 2-99  
View SAP Error Log, 2-16  
View Server List, 2-104  
View Tracking Log, 2-101  
View User List, 2-104  
Volume  
  add, 2-37  
  delete, 2-42  
  mappings, 2-35  
  modify, 2-39  
Volume and cache, changing, 2-40  
Volume Assignments, 2-35, 2-37,  
  2-42

Volume Mapping, 2-36  
Volume Name, 2-35, 2-92  
Volume Number, 2-91  
Volume Size, 2-92  
Volume Statistics, 2-91  
Volume token, 3-1, 3-6  
Volumes, 2-31, 3-5  
  definition, A-4  
  examples of, A-4  
  list, 2-35  
  supported, 2-78

## W

Warn Count Before Inform, 2-54  
Warn\_Before\_Inform token, 3-28  
Watchdog logouts, 3-8  
Write-Behind Flag, 2-32  
Write\_behind\_flag token, 3-12



NetWare® for  
AViiON® Systems:  
System  
Administration

069-000487-06

Cut here and insert in binder spine pocket