Advanced Checkout Solution

Release 4.0

Installing and Supporting an ACS System

B005-0000-1058
Issue B

The product described in this book is a licensed product of NCR Corporation.

NCR is a registered trademark of NCR Corporation.

It is the policy of NCR Corporation (NCR) to improve products as new technology, components, software, and firmware become available. NCR, therefore, reserves the right to change specifications without prior notice.

All features, functions, and operations described herein may not be marketed by NCR in all parts of the world. In some instances, photographs are of equipment prototypes. Therefore, before using this document, consult with your NCR representative or NCR office for information that is applicable and current.

To maintain the quality of our publications, we need your comments on the accuracy, clarity, organization, and value of this book.

Address correspondence to:

Manager, Information Products
NCR Corporation
2651 Satellite Blvd.
Duluth, GA 30096

Copyright © 2000
By NCR Corporation
Dayton, Ohio U.S.A.
All Rights Reserved

Table of Contents

Revision Record

Issue	Date	Remarks
B	Jan 2000	Update to new format

Chapter 1: Planning and Defining a System

Overview

In planning and defining a runtime system, you must be able to answer the following questions:

- What kind of workstations do you want to use?
- How many workstations will you have in your system?
- What applications will you be running?
- How will you organize those workstations to ensure that your LAN traffic and server processing are equally distributed?
- How will you ensure that the store data will be up-to-date and safe from temporary interruptions?
- How will you keep your store environment up and running in time of an emergency?
- Will you be using ASW clients or just running ASW on the server?
- How many ASW clients will be used?

Terms

Automatic switching ensures that the secondary server can take over for the primary server automatically in the event of primary failure. The Runtime Configurator (RT Config) enables automatic switching.

BBK files are sent from the server to the workstations during workstation loading. They contain drivers, Terminate and Stay Resident (TSR) files, and other files that set up the workstation environment.

A **LAN type** determines how files are distributed across the Local Area Network. LAN types are defined for all runtime files using the DS Config tool.

A **LAN node** is a logical address for a server or workstation that TMS uses for communication.

A **load group** is a collection of workstation nodes that require identical Boot Block Image (BBK) files for workstations.

A **node group** is a collection of nodes having certain common runtime characteristics.

A **server set** is a collection of one or more distributed data files and a LAN node that retains those files. The three server sets are TLOG, PLU, and Gateway/Load.

Transaction Management Services (TMS) provides network support, file access support, file mirroring and data redundancy, and peripheral access.

Key Concepts

To plan and define a runtime system successfully, you must understand the following concepts:

- Server sets
- Node groups
- Load groups

Server Sets

Server sets are implemented by Transaction Management Services (TMS) for the distribution (replication or backup) of specific internal and user-definable data files. A server set must contain at least one file and one LAN node.

TMS defines three server sets:

- Transaction Log (TLOG) server set
- Price Look Up (PLU) server set
- Gateway/Load (G/L) server set

TMS places no restrictions on the server set assignments of a user's distributed files. By convention, however, the server sets are used as follows:

- PLU for files that are read from frequently
- TLOG for files that are written to frequently
- G/L for configuration and option type files

In a runtime system, the node that currently has the master copies of all files for a given server set is considered to be the "primary" for the server set. The node that has the backup copies of the files is considered to be the "secondary" for the server set. A secondary is further identified as the node that can assume the role of the primary node if the primary is unavailable.

Node members of a server set that are neither the primary nor the secondary (such as POS workstations) are considered to be ordinary member nodes. These member nodes receive copies of the distributed files assigned to the server set, but are not considered as possible backup nodes.

Member nodes of a server set can be designated as the alternate read location for files belonging to that server set, thus minimizing the amount of LAN traffic directed to the primary server for the server set. This option is typically used for the PLU server set to offload the processing of PLU reads from the primary server and to allow stand-alone processing by the POS workstations.

As a general rule, one physical server is configured as the primary server for all three-server sets. If you want to direct PLU reads from the secondary server, you can use the alternate read location option in the Runtime Configurator rather than splitting primary server sets between two physical servers.

A stand-alone Advanced Store Workbench (ASW) workstation cannot be a member of any server set, so it cannot be used as an alternate read location.

Node Groups

Group numbering is a strategy used by TMS to associate LAN nodes (workstations or servers) with a particular set of characteristics (peripheral devices, applications). LAN nodes with the same characteristics are referenced by a node group number.

Node numbering is defined as follows:

- 001 - 199 for workstations
- 200 - 250 for servers

Note: Use 201 for the primary server and 202 for the secondary. If you have Advanced Store Workbench workstations, use 211-219, starting with 211.

With node groups, you can perform tasks, such as loading files, on a group basis.

All workstations in the same node group must have:

- Identical hardware (NCR 7452s and NCR 7453s must belong to separate node groups)
- Identical hardware port locations for all input devices (including installable driver assignments)
- Identical application and data load files (including load options)
- Identical data file locations specified for spooling TLOG data and accessing TLOG, PLU, and Gateway/Load server set files
- Identical timeout and retry limits

Server nodes usually share a group number (201). The Advanced Store Workbench workstation can belong to group 201.

Load Groups

Load groups are used by the SLP Loader to determine which BBK file to send to a POS workstation.

Workstations sharing BBK files have the same:

- Memory sizes
- File requirements (number, buffer sizes)
- Operator displays (CRT, LCD, or 2x20)

Load groups are defined in the `group.txt` file, which is located in the \acs\server\data directory. A single load group definition supports up to four files, corresponding to the four keylock positions on the workstation, although usually the same file is used for all positions.

Each load group must also be defined in the `groupdir.txt` file (\acs\server\data directory) to specify directories on the server where the POS workstations can retrieve files through redirection.

A workstation belongs to a load group as well as to a node group. If a workstation has not been assigned to a load group, the SLP Loader uses the first load group entry in the default `group.txt` file. If multiple BBK files are used, you can associate a specific BBK file with the terminal ID or Ethernet address of each POS workstation using the `term.txt` file. The `term.txt` file is also located in the \acs\server\data directory.

ACS requires that you have different load groups for disk and diskless workstations.

Procedural Overview

For each phase of the planning process, a description of the information needed is given; suggestions concerning reference configuration variations are included; and a sample configuration is described.

The planning process phases are:

1. Identify a base system.
2. Identify and map workstation devices.
3. Identify and map applications.
4. Identify and map data files required supporting the POS applications.
5. Assign node groups.

Decisions made during each phase are collected in tables. The information gathered in these tables establishes a summary of each example system. Information in these system summaries identifies the input required by the system configuration tools.

You can find blank system planning tables in Appendix A of this book.

Note: The examples used in this chapter do not cover all optional hardware or software available for a runtime system and are not intended to recommend a configuration for your specific site.

Identifying a Base System

Identifying a base system involves:

- Choosing the appropriate reference configuration
- Defining hardware requirements
- Defining software requirements

Choosing the Appropriate Reference Configuration

ACS has two certified reference configurations that identify server(s), workstations, and local and wide area communications. These configurations are suggested starting points for your planning. Keep in mind that each site will have slightly different configurations.

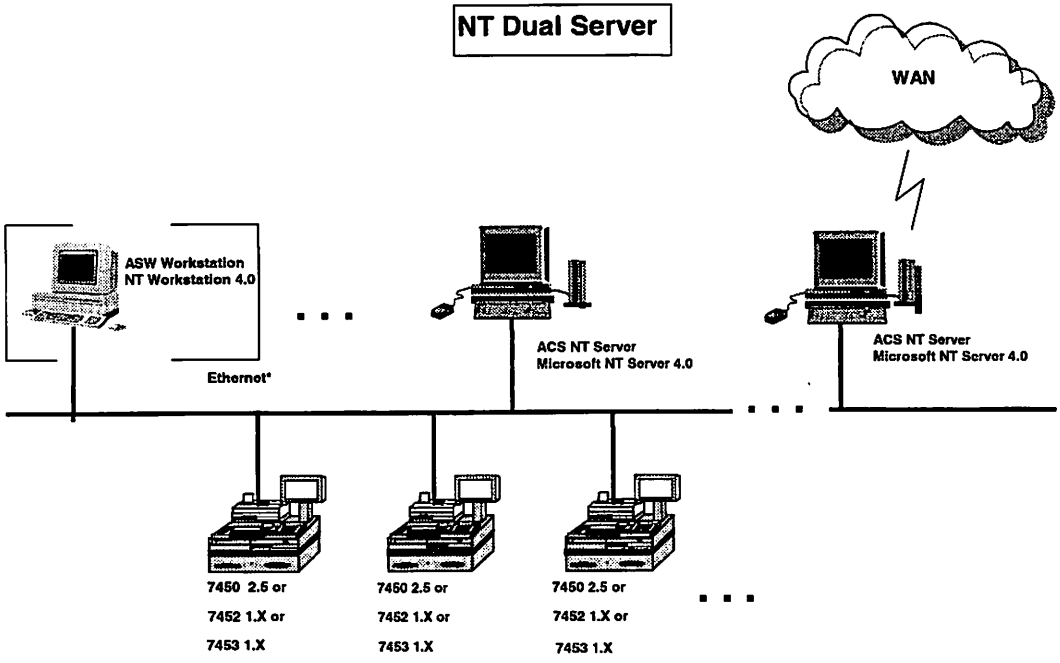
You can start your planning by determining which reference configuration is required in your site.

The main factor in selecting a reference configuration is the number of workstations needed for your system.

Reference Configuration		Workstations Supported
1	Dual server	120
2	Single server	20

Note: ACS 4.0 for Windows NT® does not support a workstation/server. The single server environment uses local PLU reads and TLOG spooling as options on the workstations; however, a workstation cannot function as a backup server.

Advanced Checkout Solution 4.0 REFERENCE CONFIGURATION (1)



CERTIFICATION

Servers: S10/S16/S26/3259/3269/3271, NT server

ASW Workstation (opt): 3259/3269/3271, NT Workstation 4.0

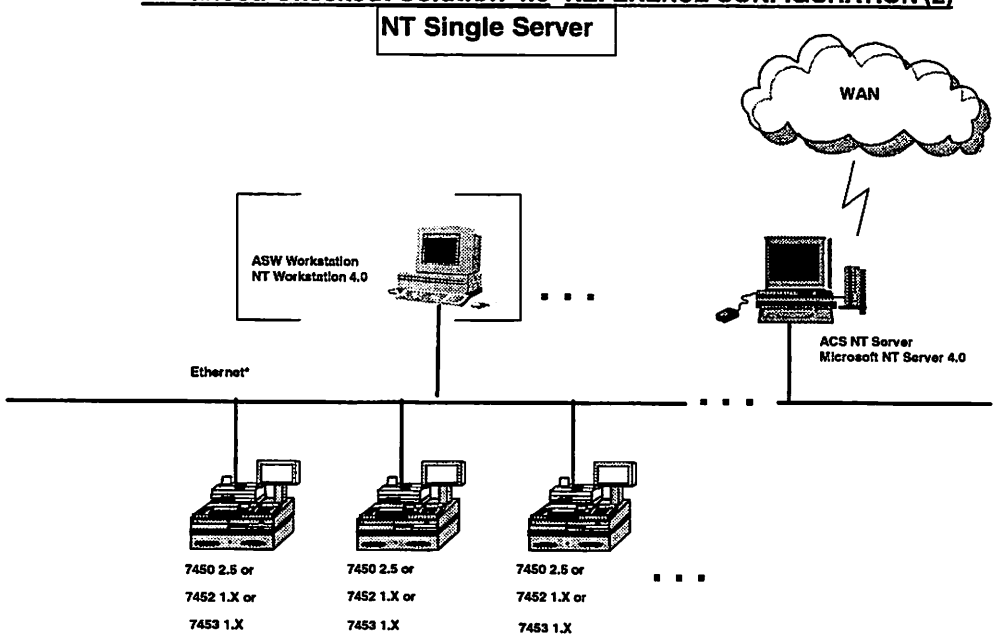
Terminals: Mixed environment, up to 120 terminals
7450 or 7452 or 7453 w/ MS-DOS 6.22
7450 or 7452 or 7453 w/ Win 3.11& NICE 1.5 or Win 95

LAN: Ethernet 10-BASE-2 (may require Repeater Hub)
10-BASE-T

WAN: Microsoft SNA Server or TCP/IP

Figure 1-1:Sample Dual Server Configuration

Advanced Checkout Solution 4.0 REFERENCE CONFIGURATION (2)



CERTIFICATION
Servers: S10/S16/S26/3259/3269/3271 NT server
ASW Workstation (opt): 3259/3269/3271 NT Workstation 4.0
Terminals: Mixed environment, up to 20 terminals
7450 or 7452 or 7453 w/MS-DOS 6.22
7450 or 7452 or 7453 w/ Win 3.11& NICE or Win 95
Note: No DOS Backup Client Supported under NT
LAN: Ethernet 10-BASE-2 (may require Repeater
10-BASE-T
WAN: Microsoft SNA Server or

Figure 1-2: Sample Single Server Configuration

Reference Configuration 1 is composed of the following:

Servers	Dual NT servers (S10, S16, S26)
ASW Workstation	3259, 3269, 3271
Workstations (120 supported)	7450 Release 2.5 (ACS DOS application, ACS Windows application) 7452 Release 1.x (ACS DOS application or ACS Windows application) 7453 Release 1.x
LAN	Ethernet 10-Base-T (with one or more 10-Base-T hubs) Ethernet 10-Base-2 (may require repeater hub)
WAN	TCP/IP or Microsoft SNA Server

Reference Configuration 2 is composed of the following:

Servers	Single server (S10, S16, S26)
ASW Workstation	3259, 3269, 3271
Workstations (20 supported)	7450 Release 2.5 (ACS DOS application, ACS Windows application) 7452 Release 1.x (ACS DOS application, ACS Windows application) 7453 Release 1.x
LAN	Ethernet 10-Base-T (with one or more 10-Base-T hubs) Ethernet 10-Base-2 (may require repeater hub)
WAN	TCP/IP or Microsoft SNA Server

Defining Hardware Requirements

The following lists identify possible characteristics for runtime servers.

Runtime Servers

The following servers are certified for a runtime system.

Note: These part numbers were accurate at the time this book was released. Check with your NCR sales representative for the most recent part numbers.

Feature Description	S10	S16	S26	3259	3269	3271
Server, CTO/NT	3404-2302-8090	3422-2301	3426-7601	3259-2600-8990	3269-F000	3271-3700-8990
Windows NT 4.0 Server	Bundled	Bundled	Bundled	3259-F695	3269-F691	3271-F695
1.44MB Flex Drive	Bundled	Bundled	Bundled	3259-F702	Bundled	3271-F702
US power cord for system	3404-F050	3422-F050	Bundled	3259-F940	3269-F020	3271-F940
Intel® 200MHZ Pentium® Processor	3404-F036	3422-F044	3426-F043	3259-F011	3269-F011	3271-F005
Memory, 64 MB SIMM(2x32)	3404-F105	3422-F952	3426-F952	3259-F139	3269-F140	3271-F135
Ethernet Adapter, PCI	3404-F147	3422-F143	3426-F143	3259-F367	3269-F367	3271-F327
Manual/Drivers, Ethernet	3404-F148	3422-F144	3426-F144	Bundled	3269-F393	3271-F328
4 GB SCSI Hard Drive	3404-F340	3422-F411	3416-K345	3259-F765	3269-F765	3271-F785
17" VGA Color Monitor	3298-2286-8090	3298-2287	3298-2286-8090	3298-2286	3298-2286	3498-2288
US power cord for monitor	1428-C001-0010	1428-C001-0010	1428-C001-0010	1428-C001-0010	1428-C001-0010	1428-C001-0100
WAN Adapter	3404-F160	3422-F162	3426-F162	NA	NA	NA
Manuals/Drivers, WAN	3404-F163	3422-F163	3426-F163	NA	NA	NA
CD-ROM SCSI 5.25/HH	3416-K450	3422-F450	3426-F450	3259-F598	3269-F596	3271-F596
Keyboard	3404-F700	3422-K700	Bundled	3259-F540	3269-F540	3271-F540
Mouse-PS/2, two button	3404-F781	3422-F781	3426-F781	3259-F371	3269-F371	3271-F371

Note: If you are installing a stand-alone Advanced Store Workbench (ASW) workstation, you are not required to purchase one of the servers in the previous table. You should, however, make sure to select at least an Intel® 166MHz Pentium® processor, at least 64MB of RAM, VGA display (SVGA recommended), and 1GB of hard disk space. Additionally, you should order the appropriate LAN board, drivers, and cables required to connect the ASW workstation to the server.

Standard ACS POS Server Hardware

- 64 MB RAM minimum
- 1.44 MB 3.5" Flex Disk
- SCSI Host Adapter (integrated on some models)
- 2 GB SCSI Fixed Disk minimum
- CD-ROM SCSI Drive
- 14" VGA Monochrome Monitor
- 101-Key PC Keyboard
- 10-Base-T Ethernet Card
- 10-Base-2 Ethernet Card
- UPS
- Mouse

Optional ACS POS Server Hardware

- WAN Adapter

Communications

- NCR 10 MB Hub IEEE, 4261-1001 (10Base-T hub)
- NCR Smart Hub, 4261-1003
- NCR Smart Hub E, 4261-1004
- Model 2814 Synoptics Lattice Hub

Workstations

Runtime workstations supported by ACS include the 7450 Release 2.5, the 7452 Release 1.x , and the 7453 Release 1.X. The 7052 workstation is *not* supported by ACS Release 4.0. All 7452 models (except 7452-1000) and 7453 models can support ACS Windows 95™ application

Note: The information provided here is not intended to replace the reference materials for these workstations.

Feature Description	7450 2.5	7452 1.x	7453 1.x
Base Unit - no slot/disk	7450-1400 (no O/S)	NA	7453-F100 (no O/S)
Base Unit - 686	7450-F215 (no O/S)	7452-3011 (w/DOS)	NA
Base unit Processor	NA	7452-3011 (w/DOS)	7453-F113 (no O/S)
Hard Disk Drive	NA	7452-F161	7453-F161
DOS Operating System	D370-0369	Bundled	7453-F700
Windows Operating System	D370-0372-0100	7452-F710	D370-0405
8 MB Memory (DOS only)	7450-F258	7452-F132	7453-F132
16 MB Memory (recommended; DynaKey™ for Windows™ requires 16 MB RAM)	7450-F259	7452-F134	7453-F134
32 MB Memory (DynaKey™ for Windows 95 requires 32 MB RAM)	NA	7452-F135 7452-F137	7453-F135
US Power cord	7450-F040	7452-F190	7453-F190
Integrated Internal UPS Battery	7450-F392	NA	7453-F175
64-key keyboard	7450-F100	7452-F202	7453-F202
MSR-ISO Track	7450-F425	7452-F211	7453-F210
VGA monochrome 9" CRT	7450-F170	7452-F304	7453-F404
VGA color 10"	NA	7452-K403	7452-K403
VGA color 14"	NA	3298-2243-8090	NA
VFD 2x20 line display	7450-F127	7452-F321	7453-xxxx
Color DynaKey™	7450-F104	7452-F305	7453-F407

Feature Description	7450 2.5	7452 1.x	7453 1.x
Retail/Ethernet 10 base T	7450-F318	7452-F150	7453-F171
7156 Printer; rec/impact slip/knife, MICR	7450-F988	7452-F504	7453-F504
7156 integrated printer cable	7450-F952	7452-F620	7453-F621
Standard Integrated Cash Drawer	7450-F910	7452-F001	7453-K003
Universal Cash Drawer Till	7450-F700	7452-F011	7453-K060
LCD Controller Card	NA	7452-F145	7453-F145

Note: Refer to *ACS Consumer Marketing Reference Guide* (B005-0000-1028) for workstation POS RAM requirements for the Consumer Marketing application.

The following table shows the items that need to be added to the POS configuration for a food court setup.

Feature Description	7450 2.5	7452 1.x	7453 1.x
7193 Thermal printer (no slip)	7193-3005-9001	7452-F506	7453-F504
Cable RS-232 Remote cable printer	NA	1416-C266-0040	7453-F621
7193 Power Supply	7193-F300	NA	NA
7193 Power Cord	7193-F320	NA	NA
7193 Wall Mount Bracket	7193-K260	NA	NA
Y Cable (for 7450-2400 Y to 7156 (provides power))	1416-C208-0040	NA	NA
7193 RS-485 Drop Cable (wallbox to 7193)	1416-C105-0040	NA	NA
Remote Cash Drawer	7450-F708	NA	NA
2260 Cash Drawer	NA	NA	7453-K002

Printers, Magnetic Stripe Readers, Scanners, and Scales

Peripherals	7450 2.5	7452 1.x	7453 1.x
Printers - RS-485			
7155 Impact Printer	X		
7156 Thermal Printer w/MICR	X		
7193 Thermal Printer	X		
Printers - RS-232			
7156 Thermal Printer w/MICR		X	X
7193 Thermal Printer		X	X
7152 Three Station Printer		X	
Magnetic Stripe Readers (MSR) - OCIA			
Integrated MSR (ISO)	X		
Remote MSR (ISO)	X		
Magnetic Stripe Readers (MSR) - RS-232			
Integrated MSR (ISO)		X	X
Remote MSR (ISO)		X	X
5945 EPT (in 4430 emulation)		X	X
5992 Signature Capture		X	X
Scanners - OCIA			
7880 Sub-compact Scanner	X		
7890 Presentation Scanner	X		
7870 Bi-Optic Scanner	X		
7875 Bi-Optic Scanner/ Scale	X		
7852 Slot Scanner	X		
7835 Hand Held Scanner	X		
7836 Hand Held Scanner	X		
Scanners - RS-232			
7870 Bi-Optic Scanner		X	X
7875 Bi-Optic Scanner/Scale		X	X

Peripherals	7450 2.5	7452 1.x	7453 1.x
7880 Sub-compact Scanner		X	X
7890 Presentation Scanner		X	X
7835 Hand Held Scanner		X	X
7836 Hand Held Scanner		X	X
Scales - OCIA			
7870 Bi-Optic Scanner/Scale	X		
7875 Bi-Optic Scanner/Scale	X		
7880 Sub-Compact Scanner/Scale	X		
Scales - RS-232			
7870 Bi-Optic Scanner/Scale		X	X
7875 Bi-Optic Scanner/Scale		X	X
7880 Sub-Compact Scanner/Scale		X	X
Consumer Information Display			
10" monitor		X	X
14" monitor	X	X	
Colorgraphics Card	X		
Flat Panel CID		X	X

ASW Workstation

The Advanced Store Workbench (ASW) extends the open nature of ACS by providing a framework for implementing in-store decision support systems and back office functions using standard graphical tools.

The ASW platform uses Microsoft Windows NT to provide an easy-to-use graphical environment, standard access to data by employing SQL through an ODBC interface seamlessly to the ACS file system, and an integrated office environment that leverages "off the shelf" applications like Excel, Word, Access, Power Point, Lotus, or others. ASW runs on the NT servers and can also run on multiple stand-alone NT workstations connected to the store LAN.

ASW is certified to run on the NCR 3259, NCR 3269, or NCR 3271.

Feature Description	3259	3269	3271
Desktop, Windows NT O/S	3259-2600-8990	3269-F000	3271-F695
Windows NT 4.0 workstation	3259-F690	3269-F690	3271-F695
US power cord for system	3259-F940	3269-F020	3271-F940
1.44MB Flex Drive	3259-F702	Bundled	3271-F702
Processor,166 MHZ Intel® Pentium®	3259-F010 (no O/S)	NA	NA
Processor, 200MHZ Intel® Pentium®	3259-F011 (no O/S)	3269-F011	3271-F005
Memory, 64 MB SIMM(2x32)	3259-F139	3269-F140	3271-F135
Ethernet Adapter, PCI	3259-F367	3269-F367	3271-F327
4 GB SCSI Hard Drive	3259-F765	3269-F765	3271-F785
4/8 GB SCSI Tape Drive	3259-F412	3269-F413	3271-F412
17" VGA Color Monitor	3298-2286	3298-2286	3498-2288
US power cord for monitor	1498-C001-0010	1498-C001-0010	1428-C001-0100
CD-ROM SCSI 5.25/HH	3259-F598	3269-F596	3271-F596
Keyboard	3259-F540	3269-F540	3271-F540
Mouse-PS/2, two button	3259-F371	3269-F371	3271-F371

Suggestions

As you make base configuration decisions, collect this data in a table (use a spreadsheet or the form provided in Appendix A). This procedure helps you keep track of the configuration information you need to define the system. The first entries in your table should identify how many workstations (WS) and servers (SV) exist and should specify the basic characteristics of each.

Sample Configuration Plan

The following sample configuration, which is continued throughout this chapter, indicates that dual Windows NT servers and 4 workstations are used. The workstations are 7452s; both servers are S16s.

Plan A (Ref. Config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
Base Unit	7452	7452	7452	7452	S16	S16
RAM (w/RAM disk)	16MB	16MB	16MB	16MB	64MB	64MB
LAN/WAN	Ether.	Ether.	Ether.	Ether.	Ether.	Ether.

Number of node groups needed to describe hardware distinctions	2
Total number of node groups	2

At this point, all workstations can be grouped together because they are the same type. Both servers can also be grouped together.

Defining Software Requirements

The primary operating environment and other optional software may also be identified for the base system. Both the servers and workstations in a runtime system must contain required software in order to function properly and may contain optional software packages that provide system enhancements.

Servers

At the highest software level are the applications. On the server, these applications include:

- ACS Base Application (includes the Asynchronous Update Process (AUP) and Back Office functionality)
- ACS Electronic Funds Transfer
- ACS Electronic Journal
- ACS SIL Interpreter
- ACS LAN Capture Interface
- ACS Consumer Marketing

Workstations

On the workstation, these applications include:

- ACS Windows™ Application
- ACS DOS Application
- ACS Consumer Information Display
- ACS Windows™ 95 Application

Note: Refer to *Configuring Self-Checkout for Express with ACS 1.1* (B005-000-1026) and *NCR Self-Checkout for Express Installation and Service Guide* (BD20-1447-A) for server and workstation software supported by the Self-Checkout for Express application.

Suggestions

For best performance results, limit the number of configured workstations to those needed. Excess workstation nodes increase the number of TMS poll table entries and increase overall LAN processing.

Sample Configuration

The following table shows the software that will be used by the sample configuration.

Plan A ... cont. (Ref. Config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
Base Unit	7452	7452	7452	7452	S16	S16
Base OS	WIN	WIN	WIN	WIN	Windows NT Server	Windows NT Server
Application (Operator CRT)	x	x	x		x	x
Application (DynaKey™ for Windows™)				x	x	x

Defining Site Requirements

Listed below are some of the resources you should consult when preparing for your site installation.

Note: Make sure you consult the associated documentation for the peripherals and software you intend to use.

Workstations	
NCR 7450 2.5 Workstation Hardware Installation and Service	BSTO-2122-17
NCR 7452 1.x Workstation Hardware Installation and Service	BD20-1373-B
NCR 7453 1.x Workstation Hardware Installation and Service	BD20-1424-A

LAN Communication	
Ethernet Wiring Guide	BSTO-2118-82
Ethernet Local LAN Module Installation Instructions	150-00011905

Note: All network configurations should follow ANSI, IEEE, and ISO standards.

Identifying and Mapping Workstation Devices

Once you identify the base system, the next step is to identify the workstation peripherals the sales application accesses. Workstation peripherals include input and output devices.

Input devices could include:

- Keyboard
- Magnetic Stripe Reader (MSR)
- Scanner
- Scale

Output devices could include:

- Operator Display
- Customer Display
- Printer
- Cash Drawer

When selecting input and output devices, consult the section, "Identifying a Base System" in this chapter.

Sample Configuration

The following sample configuration shows possible selections of workstation devices. Two of the 7452 workstations in this configuration (WS1 and WS2) have MSRs as input devices and two do not (WS3 and WS4). However, WS3 and WS4 have different keyboards, so they must be in different groups.

Plan A ... cont. (Ref. config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
Base Unit	7452	7452	7452	7452	S16	S16
WS Input Devices:						
64 key keyboard			x			
DynaKey™	x	x		x		
Scanner/scale	x	x	x	x		
5945	x	x				
WS Output Devices:						
CRT	CID	CID				
Customer display	2x20	2x20	2x20	2x20		
Printer	7156	7156	7156	7156		

Number of additional node groups needed to describe workstation devices	2
Groups required for previous reasons	2
Total number of node groups	4

The `devini` file defines all devices in the system. For more information about the `devini` file, refer to the "Loading Workstations" chapter of this book.

Identifying and Mapping Applications

In addition to the base software selected for the system, you also need to define which applications the workstations will load. Possible applications include:

- DOS Application
- Windows Application
- Consumer Information Display
- Windows 95 Application

POS workstations are grouped based on the applications they load. Workstations loading different applications, terminal options, or DynaKey™ layouts must belong to separate groups.

Note: Self-Checkout for Express uses the workstation group 7 by default. Refer to *Configuring Self-Checkout for Express with ACS 1.1* (B005-000-1026) for configuration file information for the Self-Checkout for Express application.

Sample Configuration

The following sample configuration shows how you might group the workstations based on the applications they are running. Because the first three workstations are running the same sales application, they could belong to the same group. However, they have already been separated into two groups because they have different peripheral devices (WS1 and WS2 in one group and WS3 in another). WS4 cannot belong to the same group as WS1, WS2, or WS3 because it is running a different application. So far, you have four node groups: (1) WS1 and WS2, (2) WS3, (3) WS4, and (4) SV201 and SV202.

Plan A ... cont. (Ref. config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
Base Unit	7452	7452	7452	7452	S16	S16
Applications:	DOS	DOS	DOS	DOS	Windows NT Server	Windows NT Server
Transaction Management Services	TMS	TMS	TMS	TMS	TMS	TMS
Checkout Application (Operator CRT)	X	X	X		AUP, Back Off.	AUP, Back Off.
ACS Windows application				X		

Number of additional node groups needed to describe workstation applications.	0
Groups required for previous reasons	4
Total number of Node Groups	4

You have already identified two node groups because you are using diskless and disk-based 7452s. You also need a third node group based on the peripheral devices used by the diskless 7452s. Because all workstations are using the same applications, you will not need to add additional node groups. The number of required groups remains four.

Identifying and Mapping Data Files

The next step in the planning process is determining the location of data files on the runtime system. You define files and their LAN types through the Data Services Configurator (DS Config) tool.

After the data files are mapped, TMS file information is coupled with the necessary C language header files and input to the Data Services Configurator (DS Config) tool as part of the application development process. DS Config creates two files, which define the files to the runtime system. These files are `gdbxft.nnn` and `gbdxlat.nnn`. These files must be present on the servers in the store system.

Node locations (where files are kept) and read locations (where applications gain access to those files) are defined through the Runtime Configurator (RT Config) tool. The "Configuring Servers" chapter of this book describes RT Config. Online help is also available for this tool.

LAN type and location affect data redundancy, and may possibly affect system performance. For example, files with a dual LAN type exist on both the primary and secondary server. Distributed files exist on all members of the server sets to which these files belong. With distributed files, you can create more copies of important files; however, you can also increase LAN traffic as the files are mirrored across the system.

When planning a dual server configuration, you should consider distributing the workload between the servers by using a local server node for PLU reads. Splitting TLOG writes and PLU reads between the servers or between a server and the workstations takes advantage of the overall processing power of the ACS system.

Suggestions

To achieve maximum performance from a runtime system, the following considerations should be kept in mind when planning file characteristics.

- Delay defining future files to DS Config.

  Files that are defined in TMS, but are not actually in use in the system, increase processing overhead and affect system performance. This is especially true of files that are defined as distributed files (LAN type = Dual or Distributed).

- Use the "immediate updates" option for files, which are distributed infrequently.

  Each time a write is sent to a distributed file with immediate updates, TMS replicates that write to all nodes that have a copy of the file (server set members).

  If the distributed file is non-immediate and a write is issued, all copies are flagged as out-of-date and the entire file is sent to all server set members when the file is closed by the application.

  Therefore, consider the following for each file:

  - Number of workstations receiving file updates
  - Size of the file
  - Availability of an updated file

  Many TLOG server set files are non-immediate files that are backed up on a timed basis. AUP application processing can automatically close (called "time close" or "tclose") selected files at certain intervals.

A small file may also be a candidate for non-immediate updates because sending the entire file may prove more efficient than immediate updates.

PLU files are usually immediate files because updates such as price corrections need to be current for all workstations. You should reserve excessive updates to a large number of nodes for after-hours processing.

The Write Immediate (WI) application function call may be an alternative to defining distributed files with immediate updates.

Sample Configuration

The following sample configuration shows how to distribute the workload in a dual server configuration. You can split the services in high demand by:

- assigning important files as distributed LAN types
- assigning files to separate server sets
- directing reads of those files to different locations

Plan A ...cont. (Ref. config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
TLOG Server Set Files					Primary	Second
`gdbtlog?.dat`					Master	Backup
PLU Server Set Files					Primary	Second
PLU	Back up	Back up	Back up	Back up	Master	Backup
G/L Server Set Files					Primary	Second
`gdbxft.000`					Master	Backup
Non-Distributed Files						
`gdbspool.dat`						Master

Number of additional groups needed to describe where workstations access files	0
Groups required for previous reasons	4
Total number of Node Groups	4

The sample configuration takes advantage of its dual servers by separating its AUP and PLU processes. Although 201 is the primary server for all three server sets, the local workstations are designated as the alternate read location for files belonging to the PLU server set. When workstations need to read the PLU file, they will look for a local copy before going to the primary PLU server. Using the workstations for PLU reads frees the server to process TLOG data.

The sample configuration spools TLOG writes to 202 (the secondary TLOG server). When workstations cannot write TLOG data to 201, they write transaction data to the spool file on 202. The TLOG server set is defined with automatic primary switching. If a primary server switch is performed and 202 takes over as the acting primary TLOG server, all despooling is done on the 202 server.

Assigning Node Groups

Now that you have completed the previous sections of this chapter, you can assign the workstations and servers to node groups.

Keep in mind the guidelines for node group numbering:

001-199 for workstations
200-250 for servers

Try to use 201 for the primary server, 202 for the secondary, and 211-219 for stand-alone ASW workstations.

Also, remember the guidelines for creating group nodes:

- POS workstations and servers must be in different groups
- different models of POS workstations must be in different groups
- workstations with different peripheral devices (keyboards, displays, scanners, scales) must be in different groups
- workstations running different sales applications (Operator CRT, DynaKey™ for Windows™) must be in different groups
- workstations with different terminal options or DynaKey™ layouts must be in different groups
- workstations using another workstation as a local server node (rather than themselves or a server) must be in groups of five, including the local server node

Sample Configuration

Here is an overview of the sample configuration used throughout this chapter.

Plan A ... cont. (Ref. config. 1)	WS 1	WS 2	WS 3	WS 4	SV 201	SV 202
Base Unit	7452	7452	7452	7452	S16	S16
64-Key Keyboard	X	X	X			
DynaKey™				X		
5945 MSR	X	X				
Operator CRT application	X	X	X			
DynaKey™ for Windows application				X		

SV201 and SV202 can belong to the same group (201). Workstations WS1 and WS2 can belong to the same group because they are the same type of workstation, have the same peripheral devices, and run the same application. Although WS3 is similar to WS1 and WS2, it does not have a 5945 MSR, so it must belong to a separate group. WS4 uses a different input device (DynaKey™) from WS1, WS2, and WS3 and it runs a different sales application (DynaKey™ for Windows), so it must belong to its own group.

In review, the sample configuration resulted in four node groups:

Node ID	Node Group
201	201
202	201
1	001
2	001
3	002
4	003

Suggestions

Make sure you spend time identifying and mapping node groups because they will play an important role in the performance of your system. However, remember also that after the system is up and running you can adjust the configuration to improve performance.

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What is TMS?

_____

What tool defines LAN types for runtime files?

_____

What are the three server sets and what kind of files are usually grouped into each server set?

1. _____

2. _____

3. _____

How many workstations are supported using the dual server reference configuration?

_____

What is the minimum RAM requirement for a runtime server?

_____

What is the minimum RAM requirement for a 7452 running ACS Windows application?

_____

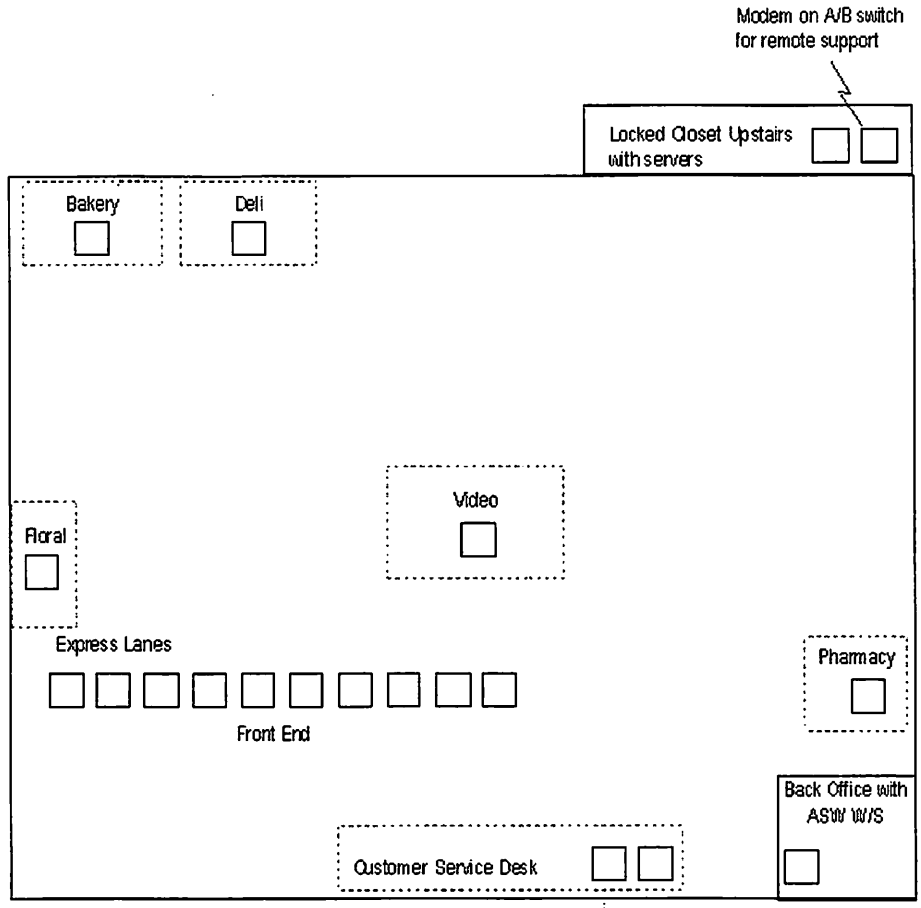
What printers are supported for the 7452?

_____

Refer to Appendix C for the answers to the questions.

On Your Own

1. Assign node IDs for the servers and workstations in the sample store below.



2. Use the details in the following table to assign each node in the previous sample store to a node group. Assume that all workstation hardware is the same. Reserve group 002 for future Front End expansion.

Front End	10 workstations; 7452 with ACS Windows application; all have hard drives for local PLU reads; sales application
Pharmacy	1 workstation; 7452 with ACS Windows application; hard drive; pharmacy application
Video	1 workstation; 7452 with ACS Windows application; hard drive; video application
Floral	1 workstation; 7452 with ACS Windows application; hard drive; floral application
Bakery/Deli	2 workstations; 7452 with ACS Windows application; hard drive; bakery/deli application
Customer Service Desk	2 workstations; 7452 with ACS Windows application; both with hard drives; front end application
Back Office	2 servers; S16s (in locked closet)
ASW Workstation	1 server; 3269 in the back office running ASW back office functions

A blank system-planning table is in Appendix A for you to use when you are ready to plan your own system.

Chapter 2: Installing Runtime Software

Overview

1 Planning and Defining a System

2 Installing Runtime Software

3 Installing Development Software

4 Configuring Servers

5 Loading Workstations

6 Configuring Advanced Store Workbench

7 Migrating Store Data

8 Supporting a Runtime System

This chapter explains how to install the software packages required for a runtime system.

Note: For information on how to install an application development system, refer to Chapter 3 of this book.

After reading this chapter, you will be able to answer the following questions:

- How do you install the ACS software?
- Which packages are required and which are optional?
- Is there a certain order in which components must be installed?

Terms

The **Broadcast Loader Interface Module (BLIM)** (pronounced B-Lim) is a transport protocol driver used to support the SLP workstation loader. BLIM is the DOS loader interface to the Network Driver Interface Specification (NDIS) Media Access Control (MAC) driver. It is used when downloading redirected files to the workstations.

The **devini** files contain device configurations for the POS workstations in the runtime environment. The files reside on the runtime server. The devini files enable or disable devices.

A **Key** or **CD-Key** refers to a unique number assigned to each installable component. Entering the key when prompted at install time permits you to successfully install the application. A unique key is provided with each installable component purchased.

Media Access Control (MAC) is a layer in the network architecture that deals with network access and collision detection. MAC addresses (unique 48-bit numbers) are assigned to the network interface card by the manufacturer.

ND Init (ndinit) is a tool that assigns a workstation or server to a specific node ID.

The **Network Driver Interface Specification (NDIS)** is the Microsoft/3Com specification for the interface of network device drivers. The network adapter card drivers and protocol drivers used in ACS conform to NDIS.

A **Node ID** is a unique number assigned with the ndinit tool, which TMS uses to keep track of workstations and servers in an ACS system.

NTFS (NT File System) is an advanced file system designed specifically for the Windows NT operating system. It supports file system recovery, extremely large storage media, long filenames, and other features. NTFS is recommended for the ACS system.

Perl is an interpreted language optimized for scanning arbitrary text files, extracting information from those text files, and printing reports based on the information. ACS 4.0 (NT) uses Perl for some scripts in ACS. Perl script files have a .pl file extension.

The `README.TXT` file contains information you should read before beginning to use ACS.

The **Runtime Configurator (RT Config)** permits you to configure an ACS system. RT Config is run only on the primary Gateway/Load (G/L) server. Use RT Config to configure node groups, nodes, and server sets.

A **self-extracting executable** is a compressed executable file (.exe file extension) that, when run, decompresses into files in a hierarchy of directories and subdirectories. Self-extracting zip files are used during workstation loading to speed up the LAN load process.

The **shutdown** command performs an orderly shutdown of the NT server, so the server can be powered off. It closes all running applications and services and informs you when you can safely turn your computer off.

Additionally, you should be familiar with the following Windows NT-related terms. For more information on these terms, see the Windows NT online help.

- Administrator
- Primary Domain Controller (PDC)
- Backup Domain Controller (BDC)
- Simple Network Management Protocol (SNMP)

Key Concepts

Before you install an ACS system, there are several concepts you must understand. These concepts include:

- the responsibilities of the administrator
- how to uninstall applications
- how to determine the version number of currently installed applications
- pre-installation requirements

System Administrators

An administrator is a person responsible for setting up and administering the ACS system by assigning user and group accounts, assigning passwords and permissions, and helping users with networking issues. To perform these management functions and to use the WINNT Administrative tools, an administrator must be logged on as a member of the administrators local group of the computer or domain, respectively. Since the administrator can be any member of the administrators group, there can be more than one person with administrator privileges. However, for system management purposes, the number of administrators should be kept to a minimum.

The administrator is responsible for the security and performance of the system. Administrators control access to the system by ensuring that users have access to the parts of the system they need to do their job, but do not have access to other functions. Administrators are also responsible for ensuring that the system performs at its maximum potential.

To accomplish this, administrators need to understand how to access and use the Windows NT and ACS tools available to support the system.

To ensure that you have a qualified administrator, you should be sure that your administrator(s) attends a certified Windows NT administration class.

Determining Software Versions

Whenever you are not sure which version of a software product you are currently running, there is an easy way to find out. Start the application, then choose Help, About. This option will display a dialog box containing copyright information about the product as well as the version number of the currently installed application.

Procedural Overview

Runtime software should be installed on the server in the following order:

1. Install Windows NT.
2. Install Simple Network Management Protocol (SNMP).
3. Install NT 4.0 with Service Pack 5 (or above).
4. Install Broadcast Loader Interface Module (BLIM).
5. Install ACS Server applications.
6. Install ACS Back Office applications.
7. Install ACS Custom applications.
8. Install any other optional components your system configuration requires.

Installing NT and ACS on the Server

This section provides procedures for installing Windows NT and ACS on the server. Note that if you are not installing a fresh copy of Windows NT or ACS, the dialog boxes and prompts you see may not be the same as those described in this chapter. If the installation process detects that a program or file it needs to install is already installed, it proceeds to the next task.

Installing Windows NT

Systems are typically shipped with the operating system pre-loaded. If the operating system needs to be installed, use the information provided with your Windows NT Server software. Be sure you are installing the latest version of NT certified by NCR for use with ACS. The approximate time required for the installation is 50 minutes.

Note: NT 4.0 Service Pack 5 (or above) is required but is not pre-loaded with the system. You will need to install this *after* installing SNMP. You can download Service Pack 5 from the Microsoft web site. It is recommended (but not required) to install the Windows NT debug symbol files onto the ACS servers when NT is installed or any service pack upgrade is performed. The files are located on the Windows NT install CD (or within the service pack in the case of a service pack upgrade). The installation instructions can also be found on the NT CD.

If you are reinstalling Windows NT, for any reason, you need to type **N** (new installation) to install a fresh copy of Windows NT. Fresh copy is a term defined by Microsoft and it means to copy over the existing Microsoft Windows NT Software. If you are installing Windows NT for the first time, this message will not appear. Be sure to format the hard drive using NTFS as the disk file system. Also make sure that the TCP/IP protocol is the *only* network protocol you install.

Note: If an earlier version of Windows (non-WINNT) is installed on your PC, you must change the directory. When prompted, choose to install to a new directory. Do **not** update the existing *WINDOWS* directory. You can then delete the existing drive partition and reformat the drive with the NTFS file system. By default, Windows NT will install to the *WINNT* directory.

If your system is delivered without Windows NT Server installed or you need to re-install Windows NT for any reason, please follow these steps.

1. Insert the **Microsoft Windows NT Server Setup Boot Disk** in Drive A and power on the computer.

   The screen prompts you when to insert the **Microsoft Windows NT Server Setup Disk #2.**

2. Insert the **Microsoft Windows NT server Setup Disk #2** and Press **Enter**.

   Welcome to Set-up screen displays,

3. Select **Setup Windows NT** (blue screen), press **Enter**

4. Press **Enter** to detect mass storage devices already on your computer.

   Press S to skip detecting mass storage devices. (Setup will permit you to manually select SCSI adapters, CD-ROM drives, and special disk controllers for installation.

5. Insert the **Microsoft Windows NT server Setup Disk #3** and press Enter.

   The system shows the mass storage devices that the Microsoft Windows NT server Setup has recognized on your PC. If you need to specify additional mass storage devices at this point, enter S.

6. Press **Enter** to accept the mass storage devices displayed.

7. Insert the Windows NT CD-ROM in the drive.

   The Windows NT Server Microsoft License Agreement displays.

8. Read the agreement, press the **Page Down** button to scroll through the agreement and then press **F8** to agree to its terms.
9. A server setup screen listing your computer's hardware and software components' displays. If the list correctly details your computer's hardware, press **Enter**

   Note: If the components are listed incorrectly and you want to change an item on the list, press the Up or Down arrow keys to move the highlight to the components you want to change. Press **Enter** to view the alternatives for the item.

10. The next screen displays information about partitions and space available for creating a new partition. Press **Enter** to create a partition in the unpartitioned space.
11. Using the arrow keys, select **Format the Partition Using the NTFS File System** and press **Enter.**
12. To format the drive, Press **F.** This process may take up 30 minutes to complete.

    The screen prompts you for the location to install the Windows NT files.
13. Choose the files that you want installed. Select the **\WINNT** directory, press **Enter**

    A setup screen prompts if you want to examine the hard disk for corruption.
14. Press **Enter** to perform an exhaustive secondary examination of the hard disk or **Esc** to skip the exhaustive examination and continue.

    Please wait, setup continues to copy files to the hard drive.
15. A prompt displays indicating this portion of setup is complete. Press **Enter** to restart the computer.
16. After restarting your computer, re-insert the Microsoft Windows NT Server CD into the CD-ROM and press **Enter**

Windows Screen NT Setup

1. Gathering information about your computer, press **Next**

   The Name and Organization screen displays.

   - Enter your **Name** and **Organization**, press **Next**

     The product Registration screen displays

   - Enter the 10-digit CD Key found on the back of the CD case, click **Next**

   - The Licensing Mode screen displays. Click on the Per Server radio button and enter the number of servers purchased.

   - The Computer Name screen displays, enter **SERVER**, (or any desired name) click **Next**

   - Select a type for this server. A description of each type of server is explained in detail in chapter 1, *Planning and Defining a System*
     - Primary domain
     - Back-up domain
     - Stand-alone

   - The Administrator Account screen displays, Enter a Password and retype that password in the Confirm Password field, Press **Next**

     Note: You can leave the Password and Confirm Password fields blank, but it is strongly recommended an administrator password be selected to ensure system security

   - The Emergency Repair Disk screen displays, **Select Yes, create an emergency repair disk** radio button if you want to save your configuration settings on an emergency repair disk. If not, select **No**, Press **Enter**

   - Click **Next** to accept the default components already selected by the system.

2. Installing Win NT Networking, click **Next**

- Select the **Wired to the Network** checkbox, click **Next**
- The Install Microsoft Internet Information Server screen displays, Press **Next**
- Select , Start Search and then select **DEC PCI Fast Ethernet,** click **Next**
- Select the networking protocols that are used on your network, (i.e. **TCP/IP Protocol**), click **Next**
- Listed are the services that will be installed by the system. To keep all services specified in the box, click **Next**
- Ready to Install Networking Components, click **Next**
- **DEC DECchip 21140 Based Adapter Setup** Screen appears, scroll down to locate **10BaseT (Twisted Pair)**, click **Continue**
- **TCP/IP Setup** Screen question Yes or No, click **No**
- **Microsoft TCP/IP Properties** screen, insert IP Address, 150.1.1.201, Press **OK (For Primary Server Only)**
- Screen to disable network bindings, click **Next**
- Start the Network to complete the installations, click **Next**
- **Computer Name** and **Domain** will appear, verify that these are correct. Make sure that there are no spaces between the names, click **Next**

3. Finishing Setup, select **Finish** to finalize setup of your Windows NT Network.
   - **Microsoft Internet Information Server 2.0 Setup**, click **OK** to accept default options
   - The following directory does not exist. Do you want to create it? Click Yes
   - Publishing Directory, click **OK**
   - The following directories do not exist, do you want to create it, click Yes

- Microsoft Internet Information Server 2.0 Setup
  Don't have an Internet domain, click **Ok**
- Select **SQL Server**, click **Ok**
- Are you sure you want to replace?, click **No**
  (this might show when you are re-installing Windows NT, otherwise move to the next step)
- **Date/Time Properties**, verify that these are correct, Click **Close**

  The system lists the display adapter found during auto-detect display click **Ok** to continue.
- The Desktop Area should be set at **800X600** pixels and

  Click **TEST** to confirm.
- Testing Mode, Did it test properly, click **Yes** or **No**
- Move forward from Display Properties, click **Ok**
- Windows NT 4.0 has been successfully installed, Click **Icon** to restart computer.

Installing SNMP

After Windows NT is installed, use the following procedure to install SNMP on the server from the Windows NT Server Installation CD-ROM (this procedure assumes D drive is the CD-ROM location). SNMP should be installed *prior* to installing any Windows NT Service Packs certified by NCR for use with ACS. Therefore, you should install SNMP before installing the required NT 4.0 Service Pack 5 (or above).

This procedure takes approximately 5 minutes to complete.

1. From the Windows NT screen, select Start, Settings, Control Panel.
2. Double-click the Network folder.
3. Select the Services tab.
4. Click Add.

5. Select SNMP services from the list then click OK.

   You are prompted to insert the CD-ROM.

6. Insert the Windows NT Server Installation CD-ROM in D drive, wait for the drive to initialize, then click Continue.

7. Close the auto run window to continue.

8. Enter the Contact information and then click Apply.

9. Select the Traps tab.

10. Type `public` (lowercase) in the Community field, click Add, and then click Apply.

11. Select the Security tab.

12. Verify that `public` displays, click OK, and then click Close.

    Windows NT prompts you to restart the computer to have your changes take effect. **Do not restart the computer at this point.**

Installing Service Pack 5

Before continuing, you should install Service Pack 5. There are no prompts to install Service Pack 5; however, the existence of Service Pack 5 will be checked by ACS SERVER packaging. If the enhancements made by Service Pack 5 are not found, the system will be exited.

Service Pack 5 is not distributed with ACS. You can obtain Service Pack 5 from the Microsoft web site.

Insert the **Service Pack 5** disk into the CD-ROM

View Contents of CD and Introduction.

1. Select **Install Service Pack 5**

2. Click **Install Service Pack 5 for Intel based systems**
   Open file
3. Confirm **License Agreement**, check box to accept agreement.

   Make sure that the Back-up check box is selected.
4. Click **Install** to install Service Pack 5

   You might get an error screen, Select **Yes** and continue.
5. Click **Restart** to restart the computer
6. Remove the CD from the CD-ROM Drive.

Release Specific Information: Performing Service Pack Upgrades

The following information applies to the **initial GCA build only**:

This package contains post Windows NT Service Pack ODBC fixes. This requires a re-installation of the ACS ODBC package anytime the Service Pack is re-installed (required when any system changes are made).

To re-install the ODBC packages, run the setup program from the ODBC directory off the installation CD.

Installing BLIM

Use the following procedure to install BLIM from the ACS 4.0 Installation CD-ROM (this procedure assumes D:\ drive is the CD-ROM location). The BLIM driver is required for 7450 workstation loading.

To perform this procedure you need:

- A computer with Windows NT 4.0 Server installed with Service Pack 5 (or above).
- The Advanced Checkout Solution (ACS) Installation CD-ROM.

This procedure takes approximately 5 minutes to complete.

1. From the Windows NT screen, select **Start, Setting, Control Panel,** and double-click the **Network** folder.

2. Select the **Protocols** tab.

3. Click **Add**, then click **Have Disk.**

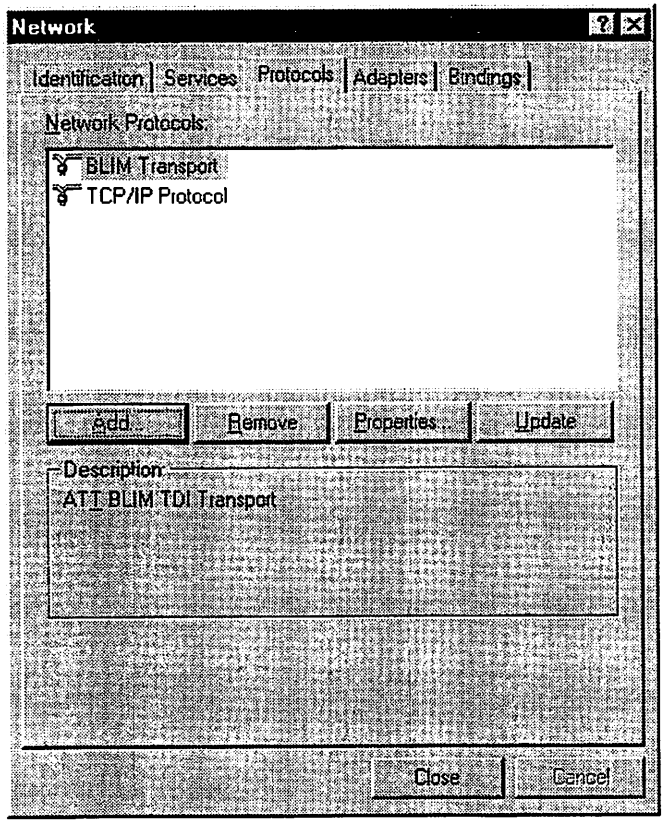
   You are prompted to insert the CD-ROM.

4. Insert the ACS Installation CD-ROM, set the path to D:\ drive, and then click OK.

   Close the Auto run window and then Select OEM Option window displays BLIM Transport.

5. Click OK.

6. Verify that BLIM Transport displays on the Network window, select **OK**, and click **Close**.



7. Remove the CD-ROM from D:\ drive, and then restart the computer to have your changes take effect.

Installing Server

The following procedure describes how to install the Advanced Checkout Solution (ACS) server platform. To perform this procedure you will need to logon as an Administrator. You will also need the following:

- A computer with Windows NT 4.0 Server installed with Service Pack 5 (or above).
- The Advanced Checkout Solution (ACS) CD-ROM.

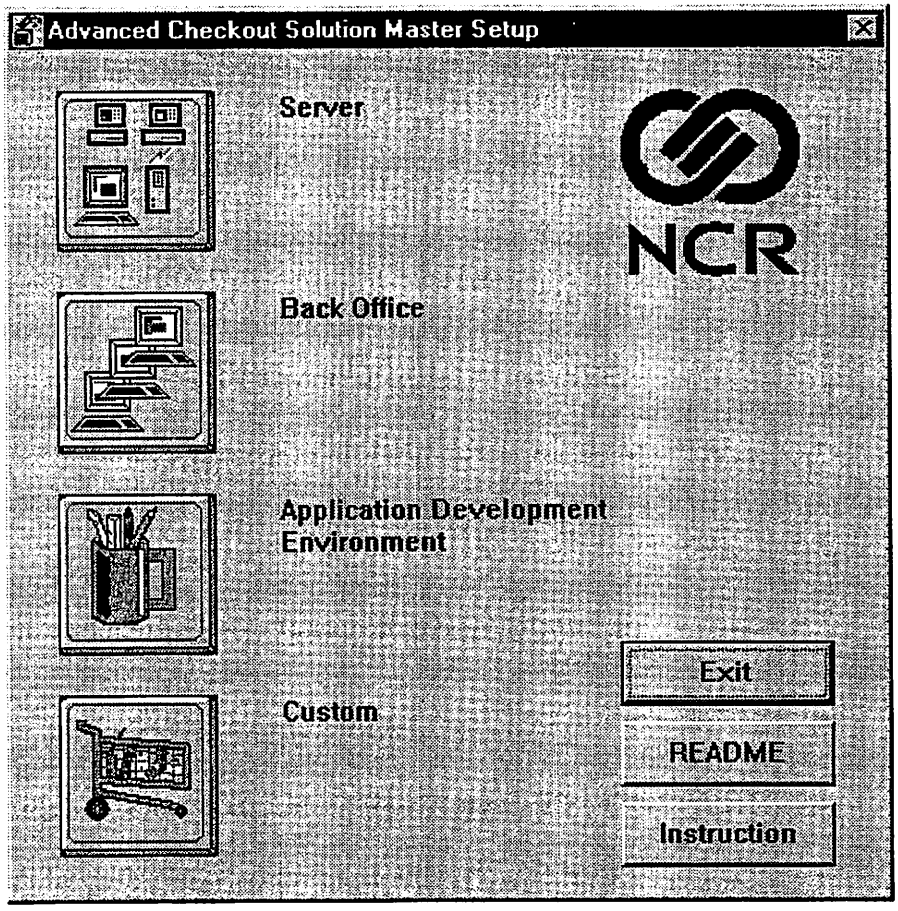
This procedure takes approximately 15 minutes to complete.

Note: There is a `readme.txt` file on the ACS CD-ROM. It contains the latest installation-related notes and procedures. Before beginning this procedure, you should read the information in this file. You may want to print the file to have a hard copy available while installing the ACS components.

1. With the Windows NT server running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\ drive).

   After a short pause, the ACS Master Setup screen displays for you to install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom



2. Click the **Server** icon.

   The ACS Setup Welcome screen displays.

3. Click **Next.**

   The ACS Product Validation screen displays.

4. The four-digit key supplied to you for each component installed is displayed, please verify, and click **Next**

The Select Destination Directory screen displays. This will only display on the first install; re-installation procedures will skip step 5 because the directory has already been created.

5. Click **Next,** to accept the default directory (C:\ACS).

   A message displays indicating that you have entered a directory that does not exist and asks if you want the setup program to create the directory for you.

6. Click **Yes** to create the **C:\ACS** directory.

   The Component Selection screen displays a component for each of the four-digit keys you entered in step 4. The boxes should default to checked for each component.

   Note: On the initial installation, install all default options. Do not make changes to the Component Selection or Sub-component selection screen.

7. Click **Next,** to accept the default components.

   The **Customer/Store Information** screen displays.

   Note: Storeminder is one of the components that always install with the ACS application.

8. Type your Company's Name and the name of the store location where you are installing ACS, click **Next**

   The ACS User and Group Account Information screen displays. Enter the user and Account information and click **Next**

9. **Advanced Store Workbench Registry** Information screen displays. Click **Next** to leave the server field blank unless you plan to use a remote server where ASW tools will read and write their registry information. If you want a standalone ASW workstation to use registry information from one of the NT servers, you must specify a remote server.

10. Click **Next,** to accept the default prefix *ASW*. This prefix must be used for any Windows NT group that needs to access the back office tools.

11. Click **Next,** to accept the default user and group information.

    The ACS and ACSBACK user accounts are the initial entries in the ACSBACKGRP user group; ACS is also the initial entry in the ACSGROUP user group.

    ACSGROUP is the back office administrator group and has the ability to view all tabs in the Advanced Store Workbench. Members of the ACSBACKGRP are back office users that have an additional login (as permitted in the `opauth` file). Back office users are restricted to the tabs, toolboxes, and tools defined in the `opauth` file.

12. Setup begins copying the files to the hard disk.

13. If installing the ILM sub-component checkbox at this time, the ILM installation setup screen will display. Click the ILM Icon at the left-hand corner of the screen and continue.

14. The NCR Store Minder 1.0 Welcome screen will display, Press **Next**

15. Select components for installation, select **Typical.**

16. Verify the destination of files, click **Next**

17. In the Select Program folder window, **NCR Store Minder** should appear in the Program Folders section, Click **Next.**

18. Server, choose Primary or secondary server, click **Next**

19. Define IP Address
    Can change the address here if needed or add a secondary address, click **Next**

20. Start copy files, click **Next**

21. Set up complete, select **Finish**

    Will proceed with ACS installation of:

    - Support Application Components
    - ACS common Platform Components
    - Advanced Store Workbench Platform

    After install, the `README` file window will appear. Click **Yes** or **No**

22. Select **Finish** to restart the computer.

23. The server shuts down, then restarts and requires you to log on.

24. Log on as the administrator to complete the installation.

You can now install other ACS applications or use the Runtime Configurator (RT Config) to configure the system. RT Config is described in the *Configuring Servers* chapter 4 of this book.

Installing Back Office (ASW)

You can now install the ACS Back Office (ASW) application on the ACS NT server (non-client machine) or you can install ASW by itself on an ASW client machine.

Installing ASW on an ACS NT Server

If you are installing ASW on the ACS NT server , you will need the following to perform this procedure:

- A computer with Windows NT Server installed with Service Pack 5 (or above).
- The ACS server applications installed.
- The Advanced Checkout Solution (ACS) CD-ROM.

This procedure takes approximately 15 minutes to complete.

1. With the Windows NT server running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\drive). If the CD is already inserted, open and close the CD-ROM drive to initiate ACS CD diskette.

   After a short pause, the ACS Master Setup screen displays. You can install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom

2. Click the **Back Office** icon.

The ASW Setup Welcome Screen displays.

3. Click **Next.**

   The ASW Product Validation screen displays for you to identify each Back Office application you want to install.

4. Enter the four-digit key supplied for each application you want to install, then click **Next.**

   You can enter the keys in any box; there is no required order. If you enter less than 3 keys, the remaining boxes must contain all zeroes.

   The Component Selection screen displays a component for each of the four-digit keys you entered. The boxes should default to check for each component.

5. Click **Next** to accept the selected applications to install.

   Setup copies files to the server hard disk. This process takes several minutes to complete. When it is finished, a message box asks if you want to view the README file.

6. Click Yes.

   The README file contains information specific to this version of ASW. You should read this file carefully before proceeding.

7. Close the README file.

   The Setup Complete screen displays.

8. Click **Yes** or **No** to restart the computer, then click **Finish** to complete the installation process.

   After this screen displays, you can reboot. When the computer restarts, you should log on as the administrator.

Introduction to ASW Tutorial

The *Introduction to ASW Tutorial* is delivered on diskette. You must install it if you want to use an online tutorial to train users on the Advanced Store Workbench.

1. Insert Diskette #1 of the tutorial, Select **Start, Run**
   Type a:\setup, press **Enter**

2. Choose destination location, click **Next**

3. Program folders, click **Next**
   Will prompt you to insert Diskette #2 and #3

4. Finish Install, Select **Finish**

Installing Back Office (ASW) on Client Machine

When you install ASW on a client machine, you do not need to install ACS prior to installing ASW. The ASW install program will take care of installing the necessary ACS components it needs to run as a client.

You will need the following to perform this procedure:

- A computer with Windows NT 4.0 Server installed with Service Pack 5 (or above).
- The Advanced Checkout Solution (ACS) CD-ROM.

This procedure takes approximately 15 minutes to complete.

1. With the Windows NT server running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\ drive).

   After a short pause, the ACS Master Setup screen displays. You can install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom

2. Click the Back Office icon.

   The ASW Setup Welcome screen displays.

3. Click Next.

The ASW Product Validation screen displays for you to identify each Back Office application you want to install.

4. Enter the four-digit key supplied for each application you want to install, then click **Next**.

   You can enter the keys in any box; there is no required order. If you enter less than 3 keys, the remaining boxes must contain all zeroes.

   The Component Selection screen displays a component for each of the four-digit keys you entered. The boxes should default to checked for each component.

   Note: On the initial installation, install all default options. Do not make changes to the Component Selection screen.

5. Click **Next**.

   The Advanced Store Workbench Registry Information screen displays.

6. Click **Next** to leave the server field blank unless you plan to use a remote server where ASW tools will read and write their registry information. If you want a standalone ASW workstation to use registry information from one of the NT servers, you must specify a remote server.

7. Click **Next** to accept the default prefix *ASW*. This prefix must be used for any Windows NT group that needs to access the back office tools.

   The ACS User and Group Account Information screen displays.

8. Click **Next** to accepts the default user and group information.

   The ACS and ACSBACK user accounts are the initial entries in the ACSBACKGRP user group; ACS is also the initial entry in the ACSGROUP user group.

ACSGROUP is the back office administrator group and has the ability to view all tabs in the Advanced Store Workbench. Members of the ACSBACKGRP are back office users that have an additional login (as permitted in the `opauth` file). Back office users are restricted to the tabs, toolboxes, and tools defined by their authorization class in the `opauth` file.

Setup copies the files to the hard disk. This process takes several minutes to complete. Setup copies files to the server hard disk. This process takes several minutes to complete. When it is finished, a message box asks if you want to view the `README` file.

9. Click **Yes**.

   The `README` file contains information specific to this version of ASW. You should read this file carefully before proceeding.

10. Close the `README` file.

    The Setup Complete screen displays.

11. Click **OK** to confirm that the installation is complete.

After this screen displays, you can reboot. When the computer restarts, you should log on as the administrator.

Installing ASW Upgrades

Upgrades are performed if the new version of ASW is greater than the installed version of ASW on your system. If the installing version is less than the installed version on your system, the installation program displays an error message and terminates. In this case, a full uninstallation of the software is required before an upgrade can be performed.

Use the following process to install upgrades on an ASW NT Server and Client:

1. Log in as Administrator.

2. Exit all ASW programs, if any are running.

3. Stop TMS services.

4. Stop the Nutcracker Kernal, if running. (Select Services, Nutcracker Kernal from the NT control panel. Click Stop.)

5. With the Windows NT server running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\ drive).

   After a short pause, the ACS Master Setup screen displays. You can install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom

6. Click the **Back Office** icon.

   The ASW Setup Welcome screen displays.

7. Click **Next.**

   The ASW Product Validation screen displays for you to identify each Back Office application you want to install.

8. Enter the four-digit key supplied for each application you want to install, click **Next.**

   You can enter the keys in any box; there is no required order. If you enter less than 3 keys, the remaining boxes must contain all zeroes.

   The Component Selection screen displays a component for each of the four-digit keys you entered. The boxes should default to checked for each component.

9. A confirmation screen for each component for which the need for upgrade was detected will display. For each screen, click Yes to continue with the upgrade, or click No to terminate the upgrade process.

   The following confirmation screens may display:

   "ACS ODBC Components exist on this system. Do you want to overwrite this installation?"

   "ACS Common Platform Components exist on this system. Do you want to overwrite this installation?"

   "ACS Support Application Components exist on this system. Do you want to overwrite this installation?"

   "Advanced Store Workbench exists on this system. Do you want to overwrite this installation?"

   If you chose to overwrite all of the existing components needing upgrades, setup copies the files to the hard disk. This process takes several minutes to complete. Setup copies files to the server hard disk. This process takes several minutes to complete. When it is finished, a message box asks if you want to view the `README` file.

10. Click **Yes.**

    The `README` file contains information specific to this version of ASW. You should read this file carefully before proceeding.

11. Close the `README` file.

    The Setup Complete screen displays.

12. Click **OK** to confirm that the installation is complete.

After this screen displays, you can reboot. When the computer restarts, you should log on as the administrator.

Installing Custom Environment

The Install Custom Environment option is used to install applications you have created to work in conjunction with the ACS software. This procedure assumes that you (normally a software developer) have done the following:

- modified the checkout application.
- Created an executable file (`setup.exe`) using any NT-compatible package, such as Install Shield.
- Created a CD that contains the ACS deliverables within the ACS directory paths.
- Placed your `setup.exe` file and any other needed deliverables on the CD.

If you plan to launch your application from the ACS master setup installation program, your deliverables must be in the **custom** directory on the CD. Your `setup.exe` file must contain details for installing the application, such as filenames and directory paths.

The following procedure describes how to install your custom application. It assumes that your custom application is incorporated on the CD with the ACS master setup installation program.

1. With the computer running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\ drive).

   After a short pause, the ACS Master Setup screen displays. You can install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom

2. Click the Custom icon.

   The master setup program passes control to your `setup.exe` file in the Custom directory. The process from this point is dependent upon the information in your file.

Image List Maintenance (ILM) Tool

Once you install all of the required components of ACS, this is an additional component that your site application may require.

The ILM tool is required if your configuration uses a CID and you want to display a series of image files on the CID. The CID contains two graphics windows on which graphic images may be displayed. The display may be a constant image or it may be a series of images specified through an image list file. The `nl_cd.ini` file specifies whether you want to display a constant image or use an image list file. The ILM tool is a Windows™ tool that contains online help. For more information on using the ILM tool, refer to *ACS Developer's Online Reference*.

You can install ILM on a server with the ACS server software or you can install ILM by itself on any processor that runs Windows 95 or Windows NT. The initial steps for installing ILM on a server and a processor differ, but the core ILM installation program for these is the same.

Initial steps for installing ILM on the server

If the CID images will be created at the store site, you will probably want to install ILM on the server with the rest of the ACS server software.

When you install server software, a Component Selection screen displays which shows all of the components you are installing. If you select the Sub-component button from this dialog, you will see ILM listed as a sub-component under the CID sub-component. Make sure the ILM checkbox is selected in this sub-component list.

Continue with the Server installation process. You will be prompted during the installation process to install ILM.

Follow the steps in the "ILM Installation Process" section.

Initial steps for installing ILM on a processor

If the CID images will be created at the corporate site or another remote location, you can install ILM by itself without any other runtime components on any processor, which can run Windows 95 or Windows NT.

You must perform the following initial steps to install ILM by itself on a processor:

1. Insert the ACS Installation CD.

2. Select Run from the Start menu.

3. Select d:\ilm\setup.exe.

   You can now follow the ILM installation process described in the following section.

ILM Installation Process

1. An ILM Setup dialogs displays. This dialog recommends that you close all applications because setup cannot install system files or update shared files in use. Click OK to continue.

2. A dialog to begin installation displays. Select the Change Directory button if you want to change the installation destination. Otherwise, ILM will be installed to the default directory, c:\ProgramFiles\ilm32. Click the install icon to begin ILM installation.

   Note: At this point in ILM installation, clicking OK can dismiss two error messages you may encounter:

   - Not enough free disk space, where the available disk space is a negative number.
   - The MSVCRCRT40.DLL is in use.

3. An ILM installation confirmation dialog displays. Click Install now to complete ILM installation.

5. An ILM Setup complete dialog box will display when ILM installation is complete. Click OK.

Component Integration

Consumer Marketing (CM)

The Consumer Marketing package has two diskettes enclosed, the CM 1.1 and the Promotional Maintenance Tool.

Insert the CM 1.1 diskette in the D:\ drive and follow the diskette prompted instructions.

You will need to install the Promotional Maintenance Tool. Insert the diskette in the D:\ drive and follow the prompted instructions.

Please refer to the CM manual, (IP B005-0000-1028) *ACS Consumer Marketing Reference Guide*, release 1.0, for more information.

SCOT Reference for Configuring and Installing on an ACS System

Please refer to the Self-Checkout Express (SCOT) manual, (IP B005-0000-1026) *Configuring and Installing Self-Checkout Express on an ACS System*, release 1.0 for more information.

Note: NCR employees may refer to the URL address, www.learnzone.ncr.com/learning/self-checkout/

Uninstall Process

The uninstall process completely removes an installed component. When a component is installed on a Windows NT system, it usually modifies several files and writes information to the Windows NT registry. If you simply delete applications from the system, any files that were modified are not updated and the registry will contain invalid information, which could affect system performance. You should always use the uninstall program for ACS and ASW when removing components from a Windows NT system.

There are certain components the ACS and ASW Uninstall Programs do not remove by design.

The Advanced Store Workbench Platform, the ACS Common Platform Components and the ACS ODBC Driver Components packages are shared between Advanced Store Workbench and Advanced Checkout Solution. They will only be removed if the Shared Counts in the registry are decrement to zero (all installed packages that these depend on are removed from the system). This is automatically done by the uninstall program for ASW and ACS.

The uninstall programs for ACS and ASW uninstall all files except for the base application configuration and data components.

Using ACS Uninstall Process

If you choose to remove the base application configuration and data components, you must use the Add/Remove Program icon from the Control Panel. However, the following process is the recommended process for the uninstalling of all other components.

The registry entries for the ACS base installation directory, ACS groups and ACS users are not removed in this process.

During the ACS uninstall process, TMS will stop automatically. Use the following process to uninstall ACS.

1. Log in as Administrator
2. Select the Start button.
3. Select Programs.
4. Select "Advanced Checkout Solution" program.
5. Select Uninstall ACS Server.

   The Confirm File Deletion message box displays.
6. Click Yes to start the uninstall program.

   The Remove Programs from Your Computer dialog displays and then the User Profile message box displays.
7. Click on Yes to preserve existing user profiles (recommended).

   The uninstallation of the ACS packages will start.

   Note: During de-installation of the support application component a DOS window may be started. This window performs a copy of the bgf files that were installed in the data directory to the server\migrate\oldbgf directory. This preservation of files will take a short time and should be permitted to complete.

Using ASW Uninstall Process

As with ACS uninstall, the registry entries for the ACS base installation directory, ACS groups and ACS users are not removed in the following process.

In addition, ASW Uninstall program does not remove the configuration files such as ASW Default.ini, Loans.mdb, and so on.

Use the following process to uninstall ASW files using the ASW Uninstall program.

1. Log in as Administrator
2. Stop TMS services if it is running.
3. Select the Start button.
4. Select Programs.
5. Choose "Advanced Store Workbench" program.
6. Select ASW Uninstall program.

   The Confirm File Deletion message box displays.
7. Click Yes to start the uninstall program

   The Remove Programs From Your Computer main screen displays, and then the Users Profiles message box displays.
8. Click Yes if you want to preserve the user profiles (recommended).

   The uninstallation of the ASW packages will start.

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What are the administrator's responsibilities?

_____

What is the unique number you must enter in order to install an ACS application called?

_____

When installing Windows NT or any ACS application, what should you do if you are in doubt about a decision the install program is asking you to make?

_____

Where can you find the latest information about the release of ACS that you are installing?

_____

Refer to Appendix C for the answers to these questions.

Terms

A **Key** or **CD-Key** refers to a unique number assigned to each installable application. Entering the key when prompted at install time permits you to successfully install the application. A unique key is provided with each installable application purchased.

The `README.TXT` file contains information you should read before beginning to use ACS.

Key Concepts

Before you install the ACS development software, you must understand the concept of application development.

Application Development

Application development is the process of developing new software applications for the ACS environment or modifying existing applications. For ACS (NT) these applications must run on a certified Windows NT server platform. The "Preparing Hardware" section of this chapter contains specific information on application development requirements in the NT environment.

Pre-Installation Requirements

The only pre-installation requirement is to ensure that the baud rate of the printer is set correctly. The ACS UNIX system required printers to be set to 9600 baud; the ACS NT system requires them to be set to 19200 baud. Consult your hardware manual for instructions on configuring the printer DIP switches for 19200 baud.

Procedural Overview

This section explains how to install the Windows NT development software and describes the individual packages that the process installs.

Installing the Application Development Environment

This procedure describes how to install the Advanced Checkout Solution (ACS) Application Development Environment (ADE). To perform this procedure you need:

- A server with Windows NT Server installed and operating problem-free.
- The Advanced Checkout Solution (ACS) CD-ROM.

This procedure takes approximately 15 minutes to complete. This will be completed after the **ACS Server** and **Back Office** information has been successfully installed.

1. With the server running, insert the Advanced Checkout Solution CD in the CD-ROM drive (this procedure assumes D:\ drive).

   After a short pause, the ACS Master Setup screen displays. You can install the following applications:

   - Server
   - Back Office
   - Application Development Environment
   - Custom

2. Click the Application Development Environment icon.

   The ACS Setup Welcome screen displays.

3. Click **Next.**

   The ACS Product Validation screen displays for you to identify each application you want to install.

4. Enter the four-digit key supplied for each component you want to install, then click **Next.**

   You can enter the keys in any box; there is no required order. If you do not enter keys in all the boxes, the unused boxes must contain all zeroes.

   The **Component selection** screen displays a component for each of the four-digit keys you entered. The boxes should default to checked for each component.

Note: On the initial installation, install all default options. Do not make changes to the **Component selection** screen.

5. Click **Next** to install the selected applications.

   Setup copies files to the server hard disk. This process takes several minutes. When it is complete, the Setup Complete screen displays.

6. Click **Finish** to restart the computer.

The server shuts down, then restarts and requires you to log on. This completes the ADE installation procedure.

If you have just installed the **Server, Back Office,** and **ADE** applications, proceed to Chapter 4 to configure the server.

Directory Structure

The default main directory for development (ade) is a subdirectory of the base ACS directory. Figure 2-1 shows the subdirectories under the ade directory.

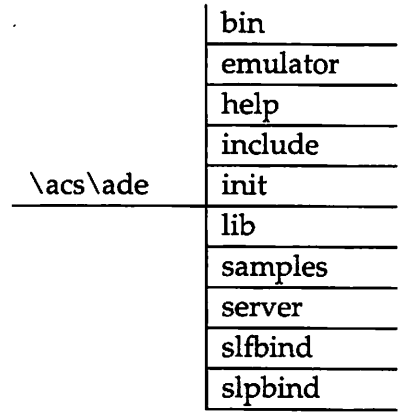


Figure 3-1: Directory Structure

Note: There are additional subdirectories.

Required Software

You must install the NT software on the development systems before installing the development environment.

NT Development System Software

The minimum software requirements for the Windows NT development environment are the following:

For all ADE systems:

- Microsoft Windows NT, Version 4.0 with Service Pack 3

For server development:

- Microsoft Visual C++, Version 5

- Visual Basic 4.0/Crystal Reports - Required for ASW application modification/development
- MS Access 7.0 - Required for ASW system reports modification/development
- G370-0985: ACS NT Server Runtime
- G370-1006: ACS Base Application Source
- G370-1007: ACS Electronic Funds Transfer Source
- G370-1008: ACS Electronic Journal Source
- G370-1009: ACS SIL Interpreter Source
- G370-1001: Advanced Store Workbench Platform
- G370-1011: Advanced Store Workbench Reports Source
- G370-1012: Advanced Store Workbench Cash Office Source
- G370-1002: Advanced Store Workbench Reports
- G370-1003: Advanced Store Workbench Cash Office

For BGEN development:

- NuTCRACKER® SDK

For ASW development:

- Visual Basic 4.0/Crystal Reports - Required for ASW application modification/development
- MS Access 7.0 - Required for ASW system reports modification/development
- G370-1001: Advanced Store Workbench Platform
- G370-1011: Advanced Store Workbench Reports Source
- G370-1012: Advanced Store Workbench Cash Office Source
- G370-1002: Advanced Store Workbench Reports
- G370-1003: Advanced Store Workbench Cash Office

For POS workstation development:

- Microsoft Visual C++, Version 1.52
- Phar-Lap 286 DOS Extender SDK 3.1 (for DOS POS development only)
- *One* of the following:
  - G370-0996: ACS Win 95 Client System Services
  - G370-0994: ACS DOS Client System Services
  - G370-0993: ACS DOS Backup/Client System Services
  - G370-0995: ACS Windows Client System Services
  - G370-0996: ACS Win 95 Client System Services
- G370-0986: ACS NT Platform Services Interface Kit (PSIK)
- G370-991: ACS IA/PS CONFIGURATORS
- G370-1006: ACS Base Application Source
- G370-1010: ACS DOS DynaKey™ Application Source

ADE Components

The ADE installation process installs all development tools on the Windows NT server. The ACS development environment is made up of these components:

- Platform Services Interface Kit (PSIK)
  - Header files and Application Programming Interface (API) libraries for interfacing to Transaction Management Services (TMS), Input Analyzer, Presentation Services, and Device Application Programming Interface (DAPI)
  - Data Services Configurator (DS Config)
  - Signature Capture Configurator (SC Config)
  - Default Boot Block (.BBK) files

  - Components for building the Boot Block (.BBK) files for the NCR 7452 workstation, including the Boot Block Builder, and the `config.sys` file that the Builder uses
  - Drivers and executable files for the 7452 workstation platforms
  - Drivers and executable files from the Pathway for DOS operating system
  - Workstation Emulator (includes the Device Emulator and TMS Emulator DLLs)
- Input Analyzer Configurator (IA Config) and Presentation Services Configurator (PS Config))
- Back Office Application Generator (BGen) Format Editor
- Image List Maintenance tool

Changing the ADE

Refer to the *ACS Developer's Online Reference* for information about how to use and modify the ADE.

Preparing Hardware

The development server for applications written for ACS is any hardware platform supporting a Microsoft Windows NT development environment. The S16, S26, 3259, 3269, and 3271 servers are certified as ACS NT development servers. If BGen development is required, the NT server can be networked to an S10 or higher running UNIX.

NT Development Environment

The following figure shows a typical Windows NT development environment:

Hardware Requirements

The following hardware is required for a Windows NT development environment:

- Windows NT Operating Environment Release Version 4.0 with Service Pack 3
- S16, S26, 3259, or 3271 Platform
- 64 MB RAM
- CD-ROM Drive
- 1.44 MB 3.5" Flex Disk
- 2 GB Hard Disk
- Ethernet Card
- SVGA Color Monitor
- PC Keyboard
- Mouse

The hardware required for the BGEN development environment includes:

- UNIX 3.02.00 Operating Environment
- NuTCRACKER SDK
- S10, S16, or S26 Platform
- 64 MB RAM minimum
- 1.44 MB 3.5" Flex Disk
- 1 GB Tape Drive
- 2 GB Fixed Disk
- VGA Monitor
- PC Keyboard

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What is done in the Application Development Environment (ADE) installation process?

_____

When should the ADE be installed in the store environment? Circle the correct answer.

A. After the Server application is installed.

B. Before the Back Office applications are installed.

C. Never

D. Whenever other ACS applications are installed.

What is the default main directory where ADE files are installed?

_____

Name at least two ADE components.

_____

Where would you look for information about how to use and modify the ADE?

_____

What is the application key and what is it used for?

_____

In an ACS (NT) environment, what must you do if BGen development is required?

_____

Chapter 4: Configuring Servers

Overview

1 Planning and Defining a System
2 Installing Runtime Software
3 Installing Development Software
4 Configuring Servers
5 Loading Workstations
6 Configuring Advanced Store Workbench
7 Migrating Store Data
8 Supporting a Runtime System

Before you can configure the servers, you must install all required software. This chapter identifies the steps you must perform to configure the servers in a store system.

After reading this chapter, you will be able to answer the following questions:

- How do you designate the primary and secondary servers?
- How do you define node IDs for the servers?
- How do you set up read alternate servers (local server nodes) and spool locations (base nodes)?
- How do you create server set members?
- How do you define groups of nodes?

Terms

A **read alternate server** (local server node) redirects reads of server sets to another server or workstation. Local server nodes are used most commonly for the PLU server set to offload processing of PLU reads from the primary server.

Base Node
See **TLOG spooling location**

The **Gateway/Load server set** is one of the three server sets. This server set usually contains files used during initialization or files that are not used frequently. High order communications are directed through the primary Gateway/Load server. Also, RT Config is run on this server (primary).

A **LAN node** (also called a Node ID) is a logical address for a server or workstations that you assign using the Node Initialization (ndinit) tool.

Local Server Node
See **Read Alternate Server**

The **PLU server set** is one of the three server sets. This server set usually contains files that are read from frequently.

The **TLOG server set** is one of the three server sets. This server set usually contains files that are written to frequently.

A **TLOG spooling location** (also called a base node) is the location where you want spooling to take place in the event that the TLOG data cannot be written to the primary TLOG server. The spool location can be another server, a workstation/server (UNIX systems only), or a local disk or RAM disk. Spool locations are defined using RT Config.

Key Concepts

Before you can configure the runtime servers, you must understand the following concepts:

- Node ID
- Read Alternate Server
- Node Group

Node ID

In a runtime system there is a three-digit node ID associated with every node. Transaction Management Services (TMS) use these node IDs to control communication between the servers and workstations.

The following ranges are the recommended node IDs:

Device Type	Valid Range
Workstations	001 - 199
Servers	200 - 250

For consistency across systems, configure the primary server as node 201, the secondary server as node 202, and the first Advanced Store Workbench (ASW) workstation as node 211 (with 212-219 for additional ASW workstations).

Nodes are configured with RT Config and assigned with ND Init. These tools are described in this chapter.

RT Config defines the following characteristics for each node:

- The server sets of which the node is a member
- The node group to which the node belongs

Automatic Switching is a feature that provides a second level of data integrity for the store system. If the primary server for any given server set fails, the secondary server can be activated in its place automatically. The Runtime Configurator (RT Config) tool on the primary Gateway/Load server enables automatic switching.

You must configure each server set for either automatic or manual primary switching. The configured secondary server continually sends a message to the configured primary to verify that the primary server sets are functioning properly.

For more information on Automatic Switching, see the *Supporting a Runtime System* chapter of this book.

Read Alternate Server

Use the Runtime Configurator (RT Config) to specify a server or workstation where the server set files will be read for workstation operations. This read alternate server is commonly used for the PLU server set.

Configuring the workstations to read the PLU file from a location besides the primary PLU server reduces the workload of the primary server and speeds up PLU processing. The PLU file is updated on the primary Gateway/Load server and then mirrored to all members of the PLU server set, including the read alternate server(s).

When you specify a read alternate server for the PLU server set you create an alternate PLU server location. The read alternate server is where the workstations will read the PLU file. If a read failure occurs, then the workstations will try to read the PLU file from the primary server. If the workstations cannot read from the primary server, then the read cannot be completed.

The read alternate server can be the secondary server, or a workstation. You can also define the read alternate server for a group as local. Local means that each node in the group conducts PLU reads from its own RAM or hard disk. When a workstation is used as a read alternate server for PLU reads, including itself, it supports five workstations. Therefore, if you specify workstations as read alternate servers for PLU reads you should create a node group for every five workstations.

Note: Five workstations are the typical maximum number of workstations a read alternate server can support. However, you may find that you can support more than five. The maximum number it will support depends on the power of your workstation.

Setting a read alternate server is not recommended if the files associated with the server set are not used frequently, or when it is important that all workstations use exactly the same information.

The following table shows the read alternate server information for a possible configuration.

Tool: RT Config	Node Groups					
File: gdbconfg.ggg	WS 1	WS 2	WS 3	WS 4	SV 1	SV 2
Group Number (.ggg)	1	2	3	4	201	202
Read Alternate Server (PLU)	202	202	202	202	000	000

Note that only the PLU server set uses a read alternate server. This means that the workstations will look on server 202 for their PLU reads rather than the primary PLU server. The other server sets always refer to the primary server first. Servers always read locally.

All changes to the PLU file are still made to the copy on the primary PLU server. Transaction Management Services distributes updated copies of the file to the other members of the PLU server set, including the read alternate server.

Node Group

The locations for the services used by each workstation in a store system are not configured individually. Workstations are combined into workstation groups (or node groups), who obtain their services from the same location. The extensions of the configuration files match the node group number. All servers, including a stand-alone Advanced Store Workbench workstation, can be combined into one group (201). Workstations are grouped with other workstations with similar characteristics.

Procedural Overview

This section explains how to configure ACS runtime servers. It describes the configuration tools used in this process and provides step-by-step procedures for using these tools.

The basic steps for configuring an ACS server are:

1. Set system options using the RT Configurator (RT Config):
   - Configure Groups
   - Configure Nodes
   - Configure Server Sets
2. Print the `rtconf.txt` file for a record of the current configuration.
3. Set node IDs (ND Init).
4. Add the NT Administrator user as a member of the ACSGROUP and ACSBACKGRP groups.

   This provides the administrator with the ability to view all tabs in the ASW workbench and also gives access to the back office tabs, toolboxes, and tools as defined in the `opauth` file.

If you need more information about a procedure, or you need help determining what to enter in a specific field, use the online help.

Setting System Options

The information required for setting system options was identified during the planning phase, and can be obtained from the tables created during the planning process. Refer to the *Planning and Defining a System* chapter, for additional details about planning a store system.

Once you identify the nodes that make up the system, you are ready to configure the servers. Use the Runtime Configurator (RT Config) to:

- Configure Groups
- Configure Nodes
- Configure Server Sets

Note: Remember that online help is available in RT Config and all of the support tools with graphical interfaces.

Creating New Configuration

RT Config should be run only on the primary Gateway/Load (G/L) server.

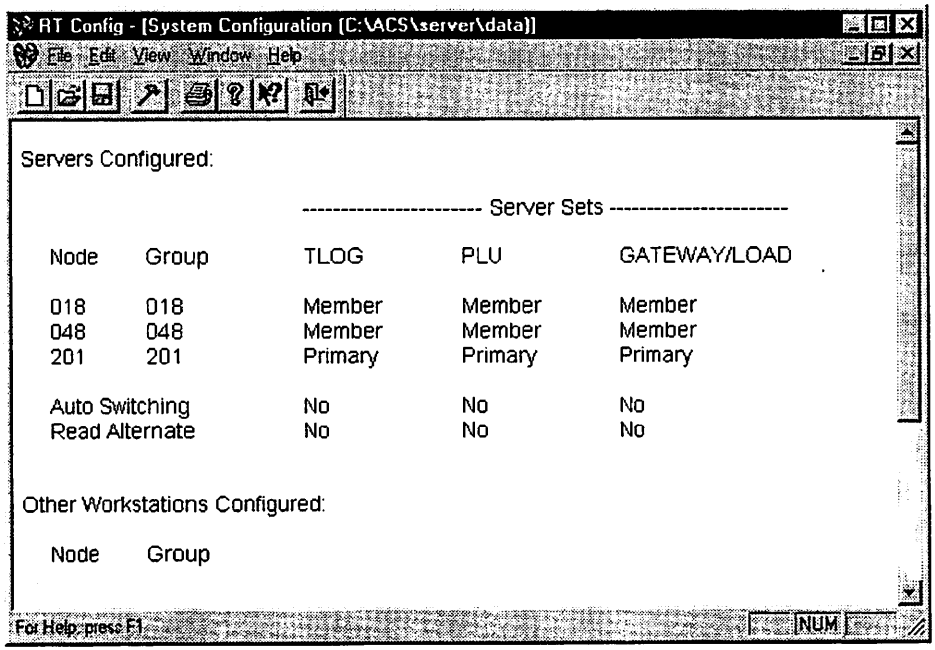
To create a new configuration file:

1. Select **Start, Programs, Advanced Checkout Solution 4.0, RT Config.**

If a system configuration does not exist, a message will display that says the system configuration could not be opened.

2. Click **OK** to dismiss the message.

The **RT Config** main screen displays.



3. Select **File, New.**

   The configuration screen displays with all fields blank. You may need to maximize the display for better viewing.

4. Select **Edit, Configuration.**

   The Edit New Configuration dialog box displays the Groups tab.

The next section explains how to configure groups.

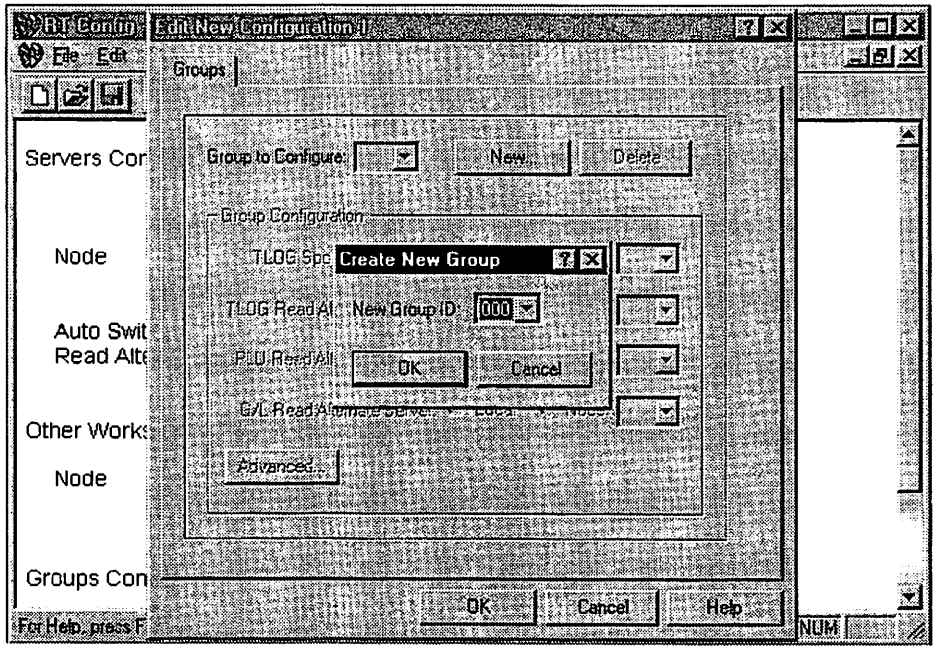
Configure Groups

Use the Groups tab to add new node groups or delete existing groups. Node groups allow you to specify configuration information for a group of workstations with similar characteristics at one time rather than defining each workstation individually.

To add new groups:

1. Click **New.**

   The **Create New Group** box displays.



2. Select a group number that you want to add from the list.

   The group number you select displays in the Group to Configure box. The TLOG spooling location defaults to Local. The **Nodes** and **Server Sets** tabs become active. The Advanced button also becomes active.

   You can also configure all numbers by inserting all of them at once.

3. Click **OK** to add the group number(s).

4. The numbers will show under the **Group** in the **Read Alternate Server** heading in the **RT Config.** screen. Make sure you add a node group for the servers (probably 201) as well as one for each group of workstations (usually starting with 001).

5. Click **OK** to exit the **Edit new configuration** screen

The next section explains how to configure Nodes.

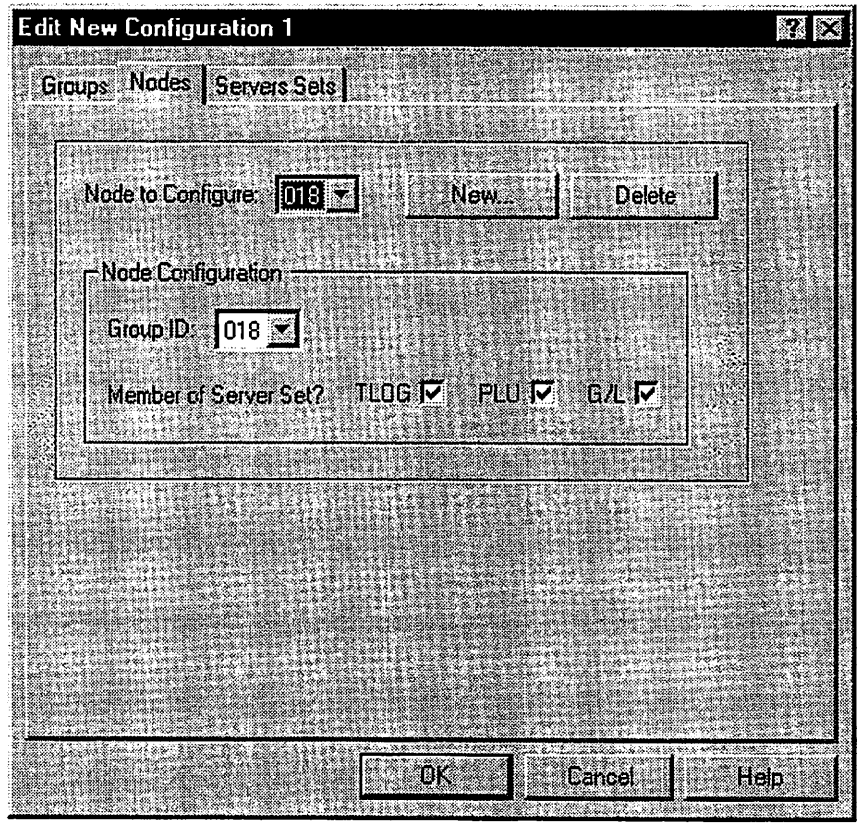
Configure Nodes

Now that you have added groups, you can configure nodes. When you configure nodes, you assign Group IDs to each node.

To add a node:

1. From the RT Config screen, select **Edit, Configuration**

2. Select the **Nodes** tab.



3. Click **New.**

   The **Create New Node** box displays.

4. Select a node ID from the list. Only node IDs that are not in use are displayed in the list.

5. Click OK to add the node.

   The Node number displays in the Node to Configure field. The Group ID field in the Node Configuration box displays the default Group ID to use for this node.

6. Select the Group ID you want to use for this Node ID from the Group ID box.

7. Check the appropriate TLOG, PLU, and G/L boxes to indicate the server sets you want this node/group to be a member of (if any). (Description of TLOG, PLU, and G/L boxes are located in Chapter 1, *Planning and Defining a System,* in the *Server Sets* section.)

   If you make a workstation a member of a server set, it will receive copies of all distributed files, which will be stored in RAM unless the workstation has a hard disk. As a general rule, you should not make workstations members of a server set unless configuring a workstation/server (member of TLOG server set) or configuring local PLU reads on the workstations (member of PLU server set).

   Note: Remember that ACS 4.0 (NT) does not support workstation/servers.

   A stand-alone ASW workstation cannot be a member of any server set. Both the primary and secondary servers must be members of all three-server sets.

8. Repeat steps 2-6 to add nodes for each workstation, server, and ASW workstation in your system.

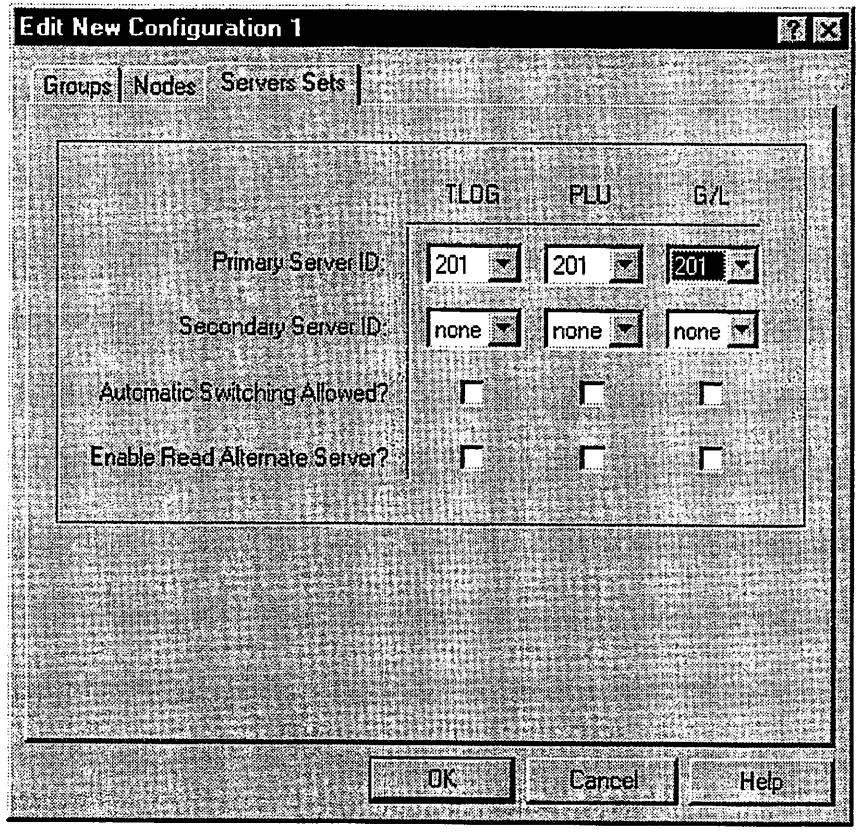
The next section explains how to configure Server Sets.

Configure Server Sets

Now that the nodes are configured, you are ready to configure server sets.

To configure server sets:

1. From the RT Config screen, select **Edit, Configuration,** and select the **Server Sets** tab.



2. Select the node ID for the primary and secondary servers for each server set. In most cases of dual servers, 201 is the primary server ID for all server sets and 202 is the secondary. If there is not a secondary server, that server is set to none.

3. Enable automatic switching for all three-server sets if you are installing a dual server system. Disable it for a single server system.

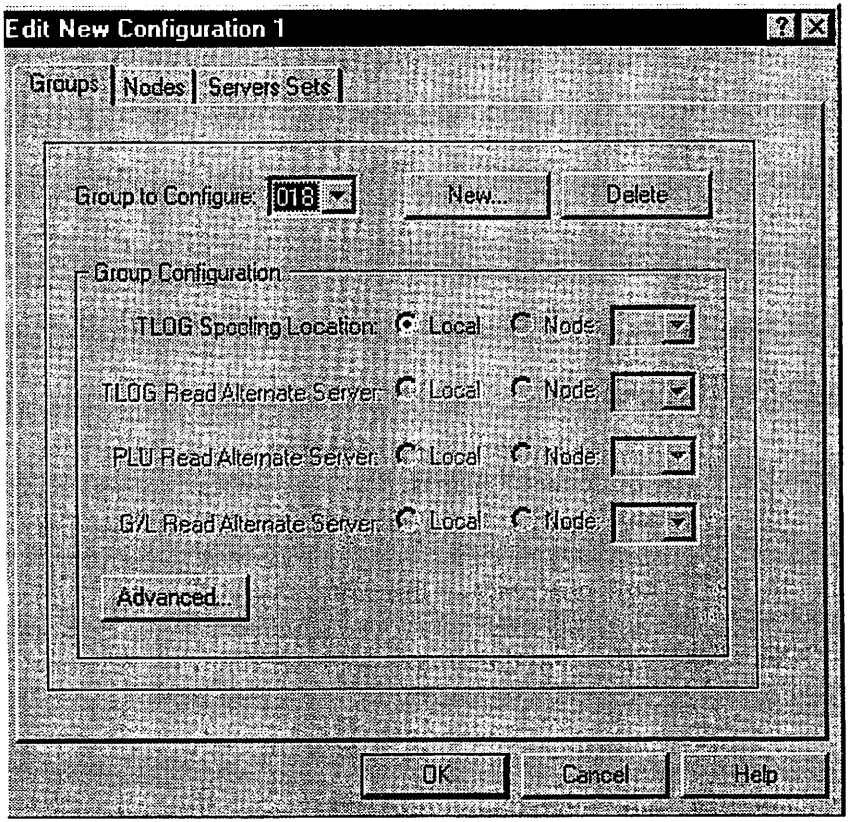
4. Enable or disable read alternate servers. If you are going to configure a read alternate server for the PLU reads, enable the read alternate server for the PLU server set.

Configure Groups for Alternate Server Location (optional)

If you enabled a read alternate server location or if you want the TLOG spooling location for workstations to be different from local, you must return to the Groups tab to complete the configuration.

To configure groups:

1. From the RT Config screen, select **Edit, Configuration,** and the **Groups** tab.



2. Select the ID of the group you wish to configure.

3. Change the TLOG Spooling Location as desired.

Local means TLOG data will be written to the RAM or hard disk for each workstation in the group. Node means TLOG data will be spooled to a specific node.

4. Change the Read Alternate Server Location as desired.

   If you did not enable any read alternate servers when configuring server sets, this option will be unavailable. If you did enable a read alternate server such as for redirecting PLU reads, choose the location where you want the workstations to read the PLU file before going to the primary PLU server. A PLU read alternate server redirects workstation reads for all files in the PLU server set to the read alternate server, not just the PLU file.

5. Changing the Advanced options for Groups is not recommended.

6. Repeat steps 2-4 for each workstation group. Do not change the TLOG Spooling Location or Read Alternate Server values for the server groups; they should be local only.

Saving a Configuration

After you define the configuration parameters, you should save them to a file for backup or other purposes. Saving writes the information for the currently displayed configuration to files. Configuration files are saved as special format data files with a standard naming convention. There is no default location for saving configurations. You must specify where the configuration should be saved. Only one configuration can be saved as the system configuration. The system configuration is the configuration used by the system at runtime.

To save a configuration:

1. Be sure the configuration file you want to save is the active window on the main screen.

2. Do *one* of the following:

   - To save the file as the system configuration, select, **File, Save As,** filename **gdblconf.dat.** (do this for initial configuration) This should save as stated.
   - To save the file to an alternate location, select **File, Save As.** (do this if saving multiple configurations)

     The Save Configuration As dialog box displays for you to define the location.

3. Print the `rtconf.txt` report if desired.

The following table lists the file output by RT Config.

Filename	Content
`gdblconf.dat`	Node ID and server set configuration data.
`gdbsvset.dat`	Server set configuration information. Identifies primary and secondary rules and switching data.
`gdbconfg.nnn`	Group configuration data (nnn= unique numeric extension for each node group).
`rtconf.txt`	Report of configuration information in ASCII

Setting Node IDs

The Node Initialization tool (ND Init) assigns a Node ID to each device in a runtime system. Although a node may be configured in RT Config, it is not recognized by TMS until you use `ndinit` to assign it a Node ID.

To assign an ACS node ID on the server:

1. Select **Start, Run,** and type `ndinit.exe`, Press **Enter**

   A DOS window displays the current node ID in the format:

   Enter node ID [201]

   The number inside the brackets is the currently assigned node ID.

2. Do *one* of the following:

- If the node ID inside the brackets is correct, press Enter.
- If the node ID inside the brackets is not correct, type the correct number, and then press Enter.

If you typed a node ID number, the prompt shown in step 1 displays again with the node ID you typed inside the brackets. Press Enter to verify your change.

Recommended server IDs are numbers between 201 and 250. For easier support, it is recommended that you number the primary server 201, the secondary server 202, and a stand-alone Advanced Store Workbench (ASW) workstation 211 (additional ASW workstations should be numbered 212 through 219).

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What tool assigns node IDs? _____

How do you run it on the servers?

_____

What is another name for a read alternate server?

_____

What is another name for the spooling location?

_____

What server sets can have a read alternate server?

_____

What is the suggested range of node IDs for POS workstations?

_____

What tool configures node groups for the servers?

_____

How do you run it?

_____

What is the suggested range of node IDs for servers?

_____

What node ID (LAN node) is recommended for:

A primary server? _____

A secondary server? _____

An Advanced Store Workbench workstation? _____

Refer to Appendix C for the answers to the questions.

On Your Own

Configure the servers in your system.

1. Use RT Config to configure the primary gateway/load server for the workstations and servers you are using. Do this only on one server.

2. Use ND Init to assign a node ID to each server (use 201 for the primary and 202 for the secondary). Start numbering stand-alone ASW workstations with 211.

Chapter 5: Loading Workstations

Overview

1 Planning and Defining a System

2 Installing Runtime Software

3 Installing Development Software

4 Configuring Servers

5 Loading Workstations

6 Configuring Advanced Store Workbench

7 Migrating Store Data

8 Supporting a Runtime System

The ACS (NT) platform supports the NCR 7450 POS Workstation family (7450 Release 2.5, 7452 Release 1.x, and 7453 Release 1.x.) You will learn how to configure your workstations to load the ACS base applications.
After you read this chapter, you will be able to answer the following questions:

- How do you prepare a POS workstation for the runtime environment?
- How do you define node group load information?
- What are the `group.txt`, `groupdir.txt`, and `term.txt` files and how do you configure them?
- How do you define devices for POS workstations?
- How do you select files for load groups?
- How do you initialize a runtime system?

Terms

For a Windows-based workstation load, **acsinit** parses the `gdblconf.dat` file which contains information about the node IDs and the workstation group they are associated with. With this data, acsinit then sets an environment variable called TGROUP. For example, if the terminal is in workstation load group 28, the TGROUP would equal 028. The variable can be used later in the loading of the terminal; for example, it could be used in `setupwin.txt` to load different files based on load group.

The **apconf** file (`apconf.xxx`) is a configuration file generated by PS Config that determines the location of elements on the display and receipt. The `condef.ggg` file points to the correct `apconf` file to use for a particular load group.

The **apdesc** file (`apdesc.xxx`) is a descriptor file generated by PS Config that contains text for literal text on the display and receipt. The `condef.ggg` file points to the correct `apdesc` file to use for a particular load group.

The **apmsg** file (`apmsg.xxx`) is a message file created by a text editor. The `condef.ggg` file points to the correct `apmsg` file to use for a particular load group.

A Windows NT **Console Application** is a program that has no graphical interface and must be run from a DOS command line prompt.

The **`devini`** file configures devices for the POS workstations in the runtime environment. The file resides on the runtime server in the \acs\server\data directory. The `devini` file enables or disables devices.

For a DOS-based workstation load, the **gposinit** gets the workstation information from the `gdblconf.dat` file, and loads the files listed in the `wsldconf.ggg` file (.ggg = node group ID).

The **`group.txt`** file specifies the BBK file (depending on the keylock position) that is to be downloaded to the POS workstations.

The `groupdir.txt` file defines additional information about groups for SLP loads. Its main use is to specify which directories to look in when files are redirected.

The **SLP (System Load Protocol) Loader** process is started by the Task Manager and runs constantly on the primary Gateway/Load server. When a workstation comes online, it requests a download. The SLP Loader downloads the appropriate BBK file to the workstation.

An **SLP Boot Block Image (BBK)** is a compressed set of files (image) that the SLP Load process sends to the POS workstation to set up its environment (operating system, drivers, communications). The files end with a .BBK extension. Refer to *ACS Developer's Online Reference* for information on how to build a BBK file.

The **sttbl** file (`sttbl.xxx`) is a state table file generated by IA Config that determines which keyboard can be used. The `condef.ggg` file points to the correct `sttbl` file to use for a particular load group.

The **Task Manager** is the first runtime process started. It is installed as an NT service and starts automatically whenever Windows NT starts. It manages the other ACS processes and can be accessed through Start, Programs, Advanced Checkout Solution 4.0, Task Manager.

The `term.txt` file contains the mac address of the network card for workstations (7452, 745x) or the terminal id in cmos (for the 7450). This file also contains a tag for each workstation which is used to associate the workstation (by mac address or terminal id) with a bbk.

Key Concepts

To configure the workstations, you must understand the following concepts:

- Defining Devices
- Selecting Files for Node Groups
- SLP Process

Defining Devices

Devices are defined through a text file called `devini`. A `devini` file contains multiple sections. Each section defines a device and begins with the device's name (eight or fewer characters) provided in brackets. Following the device name are attributes (defined through keywords) and their associated values.

For example, an entry in the `devini` file for a printer journal could look like the following:

```
[JRNL]
dllName=amprint
functionName=PrinterAccessMethod
model=7150
station=journal
width=42
height=25
psconfType=PRINTER
```

If you want to disable the printer journal, you should null out the entry rather than delete it from the file.

If a device is specified in `apconf` and you delete the device entry from `devini`, the application will not load.

To null out the journal entry, modify it as follows:

```
[JRNL]
dllName=amnull
functionName=NullAccessMethod
; dllName=amprint
; functionName=PrinterAccessMethod
model=7150
station=journal
width=42
height=25
psconfType=PRINTER
```

If a device is specified in the `apconf` file (created by PS Config), it must have an entry in the `devini` file. However, the `devini` file can have entries that are not specified in the `apconf` file, which might be the case if you are using the same `devini` file for two similar configurations.

When used in the runtime environment, the `devini` file has a three-digit extension. The extension is the number of the group that uses the particular `devini` file.

Refer to the *ACS Developer's Online Reference* for a full listing of `devini` keywords and values. Also, you can look in \acs\server\data\samples at the `devini.ref` file for default configurations.

Following are the `devini` files delivered for the ACS DOS application.

Filename	Supports
`devini.001`	7052; Not used for ACS 4.0
`devini.002`	7052; Not used for ACS 4.0
`devini.003`	7450 with 7150 printer; VCO or 2x20
`devini.004`	7450 with 7156 printer; VCO or 2x20
`devini.005`	7450 with 7193 printer; VCO or 2x20
`devini.201`	Primary server with back office applications

Note to UNIX Users

The `devini.201` file shown in the table above should not be used for UNIX systems running ASW clients. The NT `devini.201` contains 32-bit references to TMS DLLs rather than 16-bit references. For example, `amconsole` is now `amcons32` in NT `devini.201`. If you are using ASW clients in a UNIX environment, you will need to create a new `devini` file for this system. For more information, see the Getting Started with NT Client section in chapter 6, "Configuring Advanced Store Workbench."

Additional `devini` files delivered for the ACS DOS application are listed below.

Filename	Supports
`devini.006`	7450 with DynaKey™; 7156 printer; VCO or 2x20
`devini.007`	7450 with DynaKey™; 7150 printer; VCO or 2x20
`devini.008`	7450 with DynaKey™; 7156 printer; VCO or 2x20
`devini.009`	7450 with DynaKey™; 7156 and 7193 printer; VCO or 2x20 (food court)

Following are the `devini` files delivered for the ACS Windows application.

Filename	Supports
`devini.018`	7450 with DynaKey™; 7156 printer; VCO or 2x20
`devini.019`	7450 with DynaKey™; 7156 and 7193 printer; VCO or 2x20 (food court)

Following are the `devini` files delivered for the Consumer Information Display (CID):

Filename	Supports
`devini.028`	7450 with DynaKey™; 7156 printer; VCO or 2x20; CID
`devini.029`	7450 with DynaKey™; 7156 and 7193 printer; VCO or 2x20 (food court); CID

The CID requires the ACS Windows application.

Following are the `devini` files delivered with the ACS Windows 95 application sales package:

Filename	Supports
`devini.038`	7452 or 7453; DynaKey™ for Windows 95; 7156 printer; no customer display, MSR, scanner, or scale
`devini.039`	7452 or 7453; DynaKey™ for Windows 95; 7156 and 7193 grill printer; no customer display, MSR, scanner, or scale

Following are the `devini` files delivered with the CID application package:

Filename	Supports
`devini.048`	7452; DynaKey™ for Windows 95; CID; 7156 printer; no customer display, MSR, scanner, or scale
`devini.049`	7452; DynaKey™ for Windows 95; CID; 7156 and 7193 grill printer; no customer display, MSR, scanner, or scale

Selecting Files for Node Groups

The `condef.ggg` file contains the input- and output-related configuration files that should be used by each workstation group. The .ggg extension specifies the group that uses that `condef` file. The `condef` files are located in the `\acs\server\data` directory. One `condef.ggg` file should exist for each node group.

The `condef.ggg` file points to the following files:

- `apconf.xxx` (configuration file generated by PS Config; determines location of elements on display and receipt)
- `apdesc.xxx` (descriptor file generated by PS Config; contains text for literal text on display and receipt)
- `sttbl.xxx` (state table file generated by IA Config; determines which keyboard can be used)
- `apmsg.xxx` (message file created by a text editor)

Within the `condef.ggg` file, you specify the extensions of the files used by the node group to which that `condef.ggg` file applies. The extensions used for the files listed in the `condef` file do not reflect node groups.

apconf file

The `apconf.xxx` files delivered for ACS DOS application are:

Filename	Supports
`apconf.001`	VCO, cust. display, 7150 printer
`apconf.002`	2x20, cust. display, 7150 printer
`apconf.003`	VCO, cust. display, 7156 printer
`apconf.004`	2x20, cust. display, 7156 printer
`apconf.005`	VCO, cust. display, 7155 printer
`apconf.006`	2x20, cust. display, 7155 printer

Additional `apconf.xxx` files delivered for the ACS DOS application with DynaKey™ devices are:

Filename	Supports
apconf.008	DynaKey™, cust. display, 7156 and 7193 printer
apconf.010	DynaKey™, cust. display, 7150 printer
apconf.011	DynaKey™, cust. display, 7156 printer

The apconf.xxx files delivered for the ACS Windows application are:

Filename	Supports
apconf.018	DynaKey™, cust. display, 7156 printer
apconf.019	DynaKey™, cust. display, 7156 and 7193 printer (food court)

The apconf.xxx files delivered for the Consumer Information Display (CID) are:

Filename	Supports
apconf.028	DynaKey™, 7156 printer; CID
apconf.029	DynaKey™, 7156 and 7193 printer (food court); CID

Refer to the *ACS Developer's Online Reference* for more information about apconf files.

apdesc file

The apdesc.xxx file has an extension of .001. The same descriptor file is used with all of the base Advanced Checkout Solution POS applications.

Refer to the *ACS Developer's Online Reference* for more information about apdesc files.

sttbl file

The sttbl.xxx files delivered for the ACS DOS application are:

Filename	Supports
sttbl.001	56-key keyboard
sttbl.002	101-key (big ticket) keyboard
sttbl.003	64-key keyboard
sttbl.005	bottle return keyboard

The sttbl.xxx files delivered for the applications with DynaKey™ devices are:

Filename	Supports
sttbl.010	DynaKey™ keyboard
sttbl.011	DynaKey™ food court keyboard

Refer to the *ACS Developer's Online Reference* for more information about sttbl files.

apmsg file

The apmsg.xxx file has an extension of .001. The same descriptor file is used with all of the base Advanced Checkout Solution base applications.

condef file

The condef.ggg files delivered for the ACS DOS application are:

Filename	Partial Contents	Environment
condef.001	apconf.001 sttbl.001	VCO display, 7150 printer, 56-key keyboard
condef.002	apconf.001 sttbl.002	VCO display, 7150 printer, 101-key keyboard
condef.003	apconf.001 sttbl.003	VCO display, 7150 printer, 64-key keyboard
condef.004	apconf.003 sttbl.002	VCO display, 7156 printer, 101-key keyboard
condef.005	apconf.003 sttbl.005	VCO display, 7156 printer, bottle return keyboard

The condef.ggg files delivered for the ACS DOS application with DynaKey™ devices are:

Filename	Partial Contents	Environment
condef.006	apconf.008 sttbl.010	DynaKey™; 7156 and 7193 printer
condef.007	apconf.010 sttbl.010	DynaKey™; 7150 printer
condef.008	apconf.011 sttbl.010	DynaKey™; 7156 printer
condef.009	apconf.008 sttbl.011	DynaKey™; 7156 and 7193 printer (food court)

The `condef.ggg` files delivered for the ACS Windows Application are:

Filename	Partial Contents	Environment
`condef.018`	`apconf.018` `sttbl.010`	DynaKey™; 7156 printer
`condef.019`	`apconf.019` `sttbl.011`	DynaKey™; 7156 and 7193 printer (food court)

The `condef.ggg` files delivered for the Consumer Information Display (CID) are:

Filename	Partial Contents	Environment
`condef.028`	`apconf.028` `sttbl.010`	DynaKey™; 7156 printer, CID
`condef.029`	`apconf.029` `sttbl.011`	DynaKey™; 7156 and 7193 printer (food court); CID

The `condef.ggg` files delivered with the ACS Windows 95 application package are:

Filename	Partial Contents	Environment
`condef.038`	`apconf.018` `sttbl.010`	DynaKey™ for Windows 95 (keyboard and display); 7156 printer
`condef.039`	`apconf.019` `sttbl.011`	DynaKey™ for Windows 95 (keyboard and display); 7156 and 7193 printer (food court)

Additional `condef.ggg` files delivered with the CID application package are:

Filename	Partial Contents	Environment
`condef.048`	`apconf.028` `sttbl.010`	DynaKey™ for Windows 95 (keyboard and display); 7156 printer ; CID
`condef.049`	`apconf.029` `sttbl.011`	DynaKey™ for Windows 95 (keyboard and display); 7156 and 7193 printer (food court); CID

Refer to the *ACS Developer's Online Reference* for information about the `condef` file.

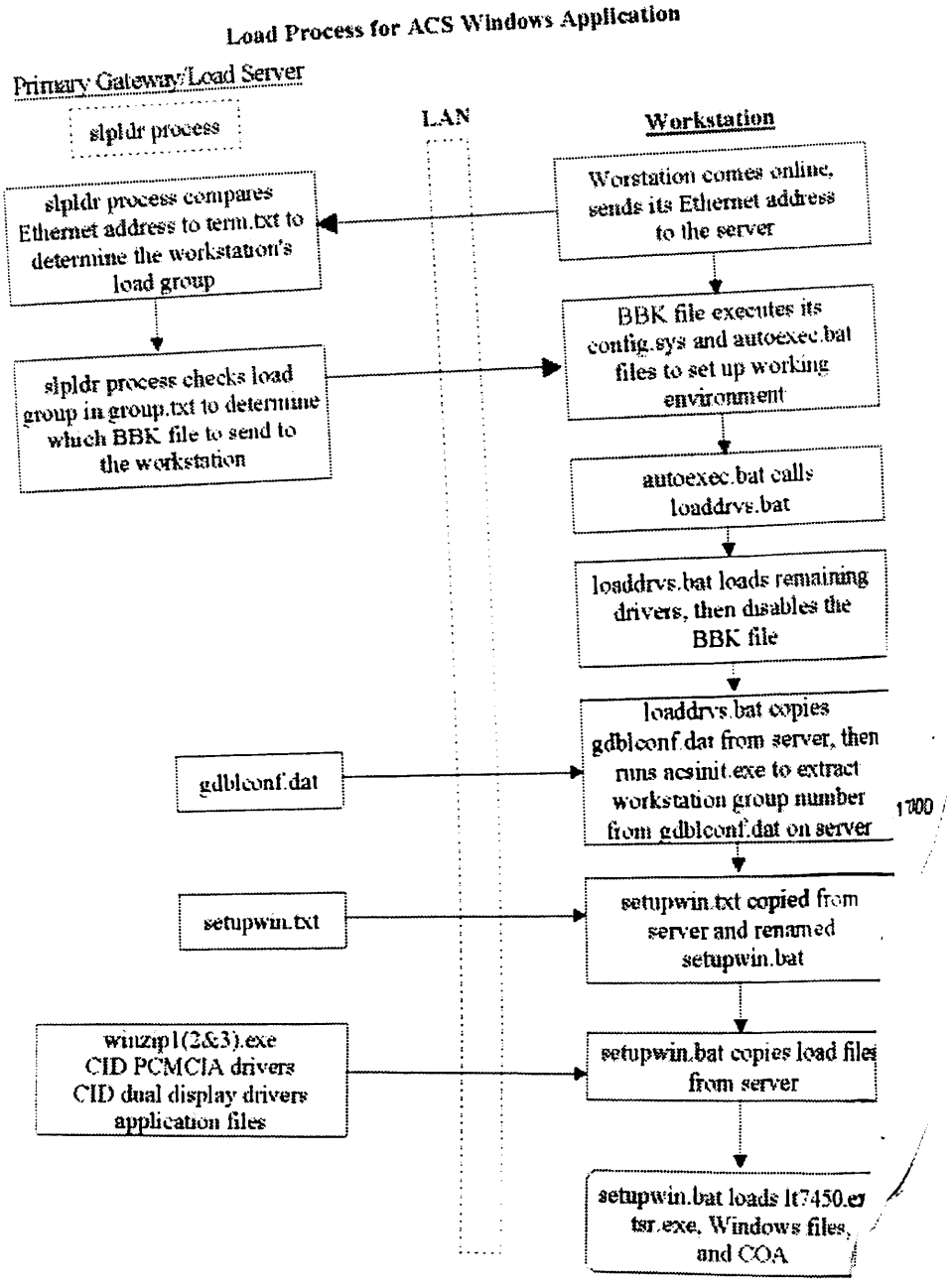


Figure 5-1: Load Process for ACS Windows Application

Loading Workstations Overview

Workstation Loading for ACS DOS Application

For the ACS DOS application, files to be loaded on workstations are defined in the `wsldconf` file for the workstation group. For each file to be loaded on the workstation, the following information must be defined:

- Name of the file to load on the workstation
- Position of the file (when it should be loaded) (SEQUENCE)
- Whether to run the file (if the file is executable), or just load the file (if the file is a data file) (/EXECUTE)
- Whether the file should be deleted from RAM as soon as it is loaded (/NODEL)
- Whether the file should be locked into a RAM disk on the workstation for performance (/NOPREDEL)

  If a file is locked, it cannot be erased when additional room is required to make room for a new file.

Save the load information for each group in the text file `wsldconf.ggg`, where .ggg is the node group ID. The `wsldconf`, `condef`, and `devini` files with the same extension configure a node group. You can edit the `wsldconf` file using an ASCII text editor.

Default `wsldconf` files are provided with the ACS server platform and with the ACS base applications. Some of the files listed for broadcast in these files are Dynamic Link Libraries (DLLs); others are self-extracting zip files.

The reference `wsldconf` files delivered for the ACS DOS application are:

Filename	Supports
`wsldconf.001`	Not used for ACS 4.0
`wsldconf.002`	Not used for ACS 4.0
`wsldconf.003`	7450 with 7150 or 7155 printer
`wsldconf.004`	7450 with 7156 printer
`wsldconf.005`	7450 with 7193 printer

Additional reference `wsldconf` files delivered for the ACS DOS application are:

Filename	Supports
`wsldconf.006`	7450 with DynaKey™ and 7156 printer
`wsldconf.007`	7450 with DynaKey™ and 7150 printer
`wsldconf.008`	7450 with DynaKey™ and 7156 printer
`wsldconf.009`	7450 with DynaKey™ and 7193 printer

The following table provides the files and options in the COA default `wsldconf.003`, `wsldconf.004`, and `wsldconf.005` files.

File to be Broadcast	Seq	/EXECUTE	/NODEL	/NOPREDEL	Purpose
`SET UNITYCONFIG=C:\`	n/a	n/a	n/a	n/a	Sets environment variable for TMS files
`drive n:`	n/a	n/a	n/a	n/a	Enables file redirection
`platzip.exe -o`	1	Y	N	N	Platform zip file that contains TMS and DLLs; -o = overwrite existing files with files in zip file
`applzip.exe -o`	2	Y	N	N	Application zip file that contains checkout executable and some files it uses; -o = overwrite existing files with files in zip file
`apdesc.001`	3	N	Y	N	Descriptor file generated by PS Config
`apmsg.001`	4	N	Y	N	Message file
`lt7450.exe`	5	Y	N	Y	Logs & Tallies TSR
`tms.exe -n`	6	Y	N	Y	TMS; -n = do not accept distributed files until application has initialized

`load286.exe`
`- PDNMI sales`
`- delexes`
`- deldlls`
	7	Y	N	Y	Protected mode loader for `sales.exe`; PDNMI = the file, delexes = delete executable files, deldlls = delete DLLs

Use the default `wsldconf.003`, `wsldconf.004`, or `wsldconf.005` file for a workstation group with the following environment:

- 7450 or 7452 workstations without server capabilities
- A checkout application called `sales.exe`
- The `apdesc.001` descriptor file
- The `apmsg.001` message file

For ACS, the POS workstations are loaded using self-extracting zip files to increase the speed of the load process. Redirection is still possible, but it is slower than using zip files to load locally. Redirection enables the workstation to load files when needed from the server in the directory specified in the `groupdir.txt` file if the file cannot be found on the RAM disk. Subdirectories of the specified directory on the server are not searched. By default, `groupdir.txt` points to \acs\server\data.

The following table provides the files and options in the COA default `wsldconf.006`, `wsldconf.007`, `wsldconf.008`, and `wsldconf.009` files.

File to be Broadcast	Seq	/EXECUTE	/NODEL	/NOPREDEL	Purpose
`SET UNITYCONFIG=C:\`	n/a	n/a	n/a	n/a	Sets environment variable for TMS files
`drive n:`	n/a	n/a	n/a	n/a	Enables file redirection
`platzip.exe -o`	1	Y	N	N	Platform zip file that contains TMS and DLLs; -o = overwrite existing files with files in zip file
`dkeyzip.exe -o`	2	Y	N	N	Application zip file that contains checkout executable and some files and bitmaps it uses; -o = overwrite existing files with files in zip file

File to be Broadcast	Seq	/EXECUTE	/NODEL	/NOPREDEL	Purpose
apdesc.001	3	N	Y	N	Descriptor file generated by PS Config
apmsg.001	4	N	Y	N	Message file
lt7450.exe	5	Y	N	Y	Logs & Tallies TSR
tms.exe -n	6	Y	N	Y	TMS; -n = do not accept distributed files until application has initialized
load286.exe - PDNMI salesdky - delexes - deldlls	7	Y	N	Y	Protected mode loader for salesdky.exe; PDNMI = the file, delexes =delete executable files, deldlls = delete DLLs

Use the default wsldconf.006, wsldconf.007, wsldconf.008, or wsldconf.009 file for a workstation group with the following environment:

- 7450 or 7452 workstations without server capabilities
- A checkout application called salesdky.exe
- The apdesc.001 descriptor file
- The apmsg.001 message file

The default wsldconf files provided with the applications contain tms.exe, which is a version of TMS for a workstation without server capabilities. The default wsldconf files also assume that your application name is either sales.exe or salesdky.exe.

All 7450 wsldconf files contain keepalive.exe. This file sets the Pathway keep alive time limit for netBIOS sessions in these workstations.

To use one of the default `wsldconf` files at installation, replace the file extension with the three-digit workstation group number of the group using the file, if necessary. Be sure to keep the file that you want to use in the \acs\server\data directory.

Refer to the *ACS Developer's Online Reference* for information about creating a `wsldconf` file.

Workstation Loading for ACS Windows Application

The ACS Windows application does not use `wsldconf` files. Instead, it uses the batch file `setupwin.bat`. This file sets up the workstation environment using self-extracting zip files.

Each BBK file has its own subdirectory in \acs\server\data\gcsa. In each subdirectory, you will find all of the files required to load Windows onto the workstation as well as the specific files for loading the ACS Windows application.

Each subdirectory has its own `setupwin.txt` file. The file is renamed to `setupwin.bat` during the load process. This prevents the batch file from being run accidentally on the NT server.

You can add additional files or commands for the workstations to this `setupwin.txt` file. The `condef` and `devini` files are stored in the \acs\server\data directory with all of the ACS base applications.

Workstation Loading for ACS Windows 95 Application

For the ACS Windows 95 application, files that are loaded to the workstation from a Windows NT server are specified through one batch file: `copyapp.bat`

The `copyapp.bat` files are located in the C:\acs\server\data\gcsaw95\wingroup.ggg directories by deafult.

The copyapp.bat files use normal DOS Copy commands rather than FTP to load files to the workstation's hard disk. The files are copied from the NT server through a share point which is mapped onto the workstation as a virtual hard drive. The share point on the NT server is the C:\ACS directory by default. The default mapping of this point is to the F:\ drive on the workstation. Therefore, the files are copied from the F:\ drive to the workstation's C:\ drive. The copyapp.bat files are also used to extract files from self-extracting zip files. The copyapp.bat files also can be used to move or copy files to different locations on the workstation.

- Files listed in the ugczip95.exe self-extracting zip file, or cidzip95.exe, if using a Consumer Information Display (CID)
  - Checkout application executable

    salesugc95.exe, if no CID

    salescid95.exe, if CID
  - Icon files (*.ico)
  - Bitmap files (*.bmp)
- Files listed in the ugcplt95.exe self-extracting zip file
  - Dynamic Link Libraries (DLLs)
  - TMS (tmsinit.msg)
- DLLs and files listed in the niczip95.exe self-extracting zip file

You may modify copyapp.bat if you want to:

- Continue using the mapped NT drive
- Add icons or bitmaps (You may add the icons and bitmaps to the ugczip95.exe or cidzip95.exe file and re-create ugczip95.exe or cidzip95.exe, or add the icon or bitmap to copyapp.bat after the ugczip95.exe or cidzip95.exe file.)
- Add DLLs (You may add DLLs to the ugcplat95.exe file and re-create ugcplat95.exe, or add the DLLs to copyapp.bat after the ugcplat95.exe file.)

One other batch file, `loadftp.bat`, is used in the NT server loading process for the ACS Windows 95 application. This file maps the NT share point to a virtual drive, prepares the downloaded workstation files, runs programs on which the checkout application depends, and runs the checkout application.

The `loadftp.bat` file performs numerous load functions. This file calls the `copyapp.bat` file and starts the following applications:

- TMS
- `polltms.exe` (Identifies when TMS has initialized with the server so the application can be started)
- `pollsales.exe` (Ensures that the sales application successfully loads and initializes. Reboots the workstation if the sales application has not initialized after a given time. The time is configured in the `runapp95.ini` file.)
- ACS Windows 95 application

Because it controls the flow of the workstation loading, do not modify the `loadftp.bat` file. If you want to add new components or remove installed components use the `copyapp.bat` file. To change the base IP address or TCPIP subnet mask, edit the `loadftp.bat` and add the following command line option for TCPREG:

```
TCPREG -b 100 -s 255.255.0.0
```

Application Monitoring

Default `runapp95.ini` files are in the `nwload.exe` and `cidnwld.exe` files. The default `runapp95.ini` file tells `pollsales.exe` to verify that the ACS Windows 95 application (`salesugc95.exe` for no CID, `salescid95.exe` for CID) has initialized within 10 minutes. If it has not, the workstation reboots itself.

You may modify the `runapp95.ini` file if you want `pollsales.exe` to check other Windows 95 applications or to wait for a period of time other than 10 minutes. The format of the `runapp95.ini` file is shown in the following example file:

```
[application]
name=salesugc95.exe
time=600000
```

where:

- name is the name of the application to monitor
- time is the amount of time to wait (the timeout value) in milliseconds

Default BBK Files

The default BBK files that are provided with the ACS server platform permit you to load the workstations as quickly as possible. (The workstation load time has been decreased by loading most files locally through the BBK instead of through redirection.)

If your configuration is different from the configuration assumed by the default BBK files, you may want to generate your own BBK file. For the ACS DOS application, you may generate your own BBK file; however, you are not provided with the necessary files and information for creating a new ACS Windows application BBK file that works differently than the default files.

You can access specific information about default BBKs and generating new BBKs by selecting Preparing the Application for Workstation Loading under the Preparing the Application for Runtime contents topic in the *ACS Developer's Online Reference*.

Default BBK files for ACS DOS Application

The following default BBK files are installed as part of the ACS server platform to the <base directory>\server\data directory (the default base directory is acs) for use with the ACS DOS application:

Filename	Environment
NOCONFIG.BBK	Default BBK file that notifies the user that the workstation needs to be configured
UNTY745x.BBK or (UNY745xe.BBK)	Diskless 7452-3000 and 7453, 4MB RAM disk, Ethernet (ESC/POS printer driver)

Note: For information about setting up a workstation to use the ESC/POS printer, refer to the section "Steps to switch a Windows 95 workstation from using the MFP printer to the ESC/POS printer."

Default BBK files for ACS Windows Application without a Consumer Information Display (CID)

The following default BBK files are installed as part of the ACS server platform to <base directory>\server\data\gcsa\<BBK filename> for use with ACS Windows application *without* a Consumer Information Display (CID):

Filename	Environment
GCSA7452.BBK or (GCS7452e.BBK)	7452-1000 and 7452-2000 (ESC/POS printer driver)
GCSA745x.BBK or (GCS745xe.BBK)	7452-3000 and 745 (ESC/POS printer driver)
FGC745x.BBK or (FGC745xe.BBK)	7452-3000 and 7453 with foodcourt application (ESC/POS printer driver)

Default BBK files for ACS Windows Application with a Consumer Information Display (CID)

The following default BBK files are installed as part of the ACS server platform to <base directory>\server\data\gcsa\<BBK filename> for use with ACS Windows application *with* a CID:

Filename	Environment
CID7452.BBK or (CID7452e.BBK)	7452-1000 and 7452-2000 (ESC/POS printer driver)
CID745x.BBK or (CID745xe.BBK)	7452-3000 and 7453 (ESC/POS printer driver)
C745xHD.BBK or (C745xHDe.BBK)	7452-3000 and 7453 with hard drive (ESC/POS printer driver)

NOCONFIG.BBK file

Another default BBK file, NOCONFIG.BBK, is installed to the <base directory>\server\data directory to notify you that the workstation needs to be configured. All terminals get this BBK until they are configured.

Files Used in Loading

The following files used in loading are on the server in the \acs\server\data\gcsa\<BBK filename> directory:

Filename	Purpose
`ugczip.exe` (no CID) `cidzip.exe` (CID)	Contains application files; referenced in `setupwin.bat`
`ugcplat.exe`	Contains Access Method files; referenced in `setupwin.bat`
`nicezip.exe` (no CID) `nicezip.exe` (CID)	Contains NICE DLLs and executable files; referenced in `setupwin.bat`
`winzip1.exe` (7450) `winzip1.exe` (7452)	Contains Windows files; referenced in `setupwin.bat`
`winzip2.exe` (7450) `winzip2.exe` (7452)	Contains Windows files; referenced in `setupwin.bat`
`winzip3.exe`	Contains Windows files for OLE; referenced in `setupwin.bat`
`winzip4.exe`	Optional; enables a database to track the time bitmaps display on the CID (for billing purposes)
`voyager.exe`	Contains driver files for CID PCMCIA card for 7450 with a CID
`intellig.exe`	Contains driver files for dual displays for 7452 with a CID

ACS Windows 95 Application Setup

This section describes the steps for installing the workstation components for the ACS Windows 95 application.

Workstation Setup

Workstations can be installed with Windows 95 in two ways:

- Pre-installed at the factory
- Manually installed by the user

If Windows 95 was pre-installed on your workstation at the factory, follow the instructions in the sections listed below to prepare the workstation to run the ACS Windows 95 application.

The sections are numbered to specify the order in which you should perform them.

1. Preparing Workstation to Boot Windows 95
2. Initial Setup for Factory Installed Windows 95 Workstation
3. Adding Network Adapter Support
4. Removing the Windows 95 Welcome Dialog Box
5. Configuring Network Protocols
6. Configuring IRQ/DMA for 7452-3000 and 7453 Workstations
7. Setting Communications Ports for Windows 95 Version 4.00.950 B
8. Running the ACS Windows 95 application Setup Diskettes

If you have to manually install Windows 95 onto your workstation, follow the instructions in the sections listed below to prepare the workstation to run the ACS Windows 95 application.

The sections are numbered to specify the order in which you should perform them.

1. Preparing Workstation to Boot Windows 95
2. Installing Windows 95 from Diskettes
3. Initial Setup for Manually Installed Windows 95 Workstation
4. Adding Network Adapter Support
5. Removing the Windows 95 Welcome Dialog Box
6. Configuring Network Protocols
7. Configuring IRQ/DMA for 7452-3000 and 7453 Workstations
8. Setting Communications Ports for Windows 95 Version 4.00.950 B
9. Running the ACS Windows 95 application Setup Diskettes

Note: Multiple versions of the Windows 95 operating system exist. During the installation and configuration of Windows 95 workstations, there are steps specific to the workstation's installed version of Windows 95. Therefore, you must know the version of Windows 95 installed on your workstation.

Once Windows 95 is installed you can obtain the version information from the System program in the Control Panel. When this program is run, a dialog box is displayed that includes the version number. The version should be either 4.00.950 or 4.00.950 B. Make a note of the version number so you can configure the workstation correctly in the following steps.

Preparing Workstation to Boot Windows 95

Workstations are initially configured to boot from the network using a BBK. For Windows 95 to start, the load process must be changed to boot from the hard drive which has Windows 95 installed. Follow these steps to configure the workstation for the hard drive boot.

1. Power on the workstation.

2. Press **F1** when prompted with either of these phrases:

   `Press <F1> to configure Bootware settings` **(7452-3000 and 7453)**

   or

   `Configuring SMC Ethernet Adapter, press <F1> to modify configuration...` **(7452-2000)**

3. Press the down arrow key to highlight the "Default Boot" setting.

4. Press **1** until the value is set to Local.

5. Press **F10** or **F8** to save the changes.

6. Power off the workstation.

Installing Windows 95 from Diskettes

Workstations which do not have Windows 95 installed at the factory need to be installed using the Windows 95 installation diskettes. Follow the Windows 95 documentation to install from the installation diskettes. The steps below indicate specific points in the installation process where you should use specific information or select a specific option. For most of the steps, the dialog box title is noted below for guidance.

1. Insert the Windows 95 boot diskette into the workstation's flex drive.

2. Follow the screen instructions.

3. In the Setup Option dialog box, select "Typical" when prompted for a Setup Option.

4. In the User Information dialog box, fill in the Name and Company fields and then select Next.

5. In the Analyzing Your Computer dialog box, do not select any hardware from the list displayed. Select Next.

6. In the Windows Components dialog box, select "Install the most common components (recommended)" and then select Next.

7. In the Startup Disk dialog box, answer Yes or No as desired.

8. Continue with the installation, inserting the proper diskette when instructed.

9. Reboot the workstation when instructed.

10. After the workstation restarts, Windows 95 starts and prompts you that the mouse was not detected. Press **Tab** to select the "Do not show this message in the future" check box. Press the spacebar to insert a check in the check box and then select OK.

Initial Setup for Factory Installed Windows 95 Workstation

When a workstation is factory-loaded with Windows 95, you must perform some initial setup the first time the workstation is booted. Follow these steps to prepare a factory-loaded Windows 95 workstation to run the ACS Windows 95 application.

You are led through the setup process by setup screens and dialog boxes. These steps only describe the interaction you have during the process. For most of the steps, the dialog box title is noted.

1. In the Regional Setting dialog box, select a value for your location and then select Next.

2. In the Keyboard Layout dialog box, select the value for the keyboard you would use if connected to the DynaKey™ device and then select Next.

3. In the User Information dialog box:

   - Type the person's name beside the Name field
   - Type the Company name beside the Company field
   - Select Next

4. In the License Agreement dialog box, select the "I accept the agreement" option and then select Next.

5. In the Certificate of Authenticity dialog box, type the information from the certificate delivered with the workstation and then select Next.

6. In the Start Wizard dialog box, select Finish to continue with the initial Windows 95 setup. Windows 95 starts setting up the Plug and Play devices.

7. When prompted with the devices found, do not select any from the list. Select Next.

8. In the Date/Time Properties dialog box, select the time zone where you are located by pressing the up and down arrow keys. Click the "Automatically adjust clock for daylight saving changing" check box, if desired.

9. In the Add Printer Wizard dialog box, select Cancel since a printer does not need to be configured.

10. Select OK to restart the workstation.

11. After the workstation restarts, Windows 95 starts and prompts you that the mouse was not detected.

    - Press **Tab** to select the "Do not show this message in the future." check box
    - Press the spacebar to insert a check in this check box
    - Select OK

12. In the Welcome to Windows 95 dialog box, select Close.

Initial Setup for Manually Installed Windows 95 Workstation

When a workstation is manually loaded with Windows 95, some initial setup must be performed the first time the workstation is booted. Follow these steps to prepare a manually loaded Windows 95 workstation to run the ACS Windows 95 application. You are lead through the setup process by setup screens and dialogs. These steps will only describe the interaction you have during the process. For most of the steps, the dialog box title is noted for guidance.

1. Windows 95 searches for Plug and Play devices. Insert the install diskettes as directed.

2. In the Date/Time Properties dialog box, select the time zone where you are located by pressing the up and down arrow keys. Click the "Automatically adjust clock for daylight saving changing" check box, if desired.

3. In the Add Printer Wizard dialog box, select Cancel since a printer does not need to be configured.

4. Select OK to restart the computer.

5. In the Welcome to Windows 95 dialog box, select Close.

Adding Network Adapter Support

Windows 95 is capable of detecting and configuring the network adapters used in the 7452 and 7453 workstations. Follow these steps to add support for the network adapter in your workstations.

1. Press **Ctrl+Esc** to open the Start Menu.

2. Select Settings.

3. Select Control Panel.

4. Select Add New Hardware and press **Enter**.

5. Select Next to begin installation.

6. Select Yes to answer the question, "Do you want Windows to search for your new hardware?" and then select Next.

7. Select Finish when Windows is finished detecting devices.

8. If prompted with the message, " You must provide computer and workgroup names that will identify this computer on the network":

   - Type computer name
   - Type the same workgroup name used on your NT server
   - Select Close

9. Select OK when prompted to "Please insert Windows 95 CD-ROM."

   or

   Insert the installation diskettes, as prompted.

10. If prompted with the AMD AM2100/AM1500t and Compatibles Properties dialog box, change the value of the IRQ setting to 10 and the value of the DMA setting to 5.

11. Select No when prompted to restart your computer.

12. Press **Alt+F, C** to close the Control Panel Window.

13. Press **Ctrl+Esc** to open the Start Menu.

14. Select "Shut Down... "

15. Select "Restart the computer?"

16. Permit the workstation to reboot and start Windows 95.

17. When prompted to "Enter your network password for Microsoft Networking":

    - Type **anonym** for Username.
    - Select OK. Do not enter a value for password.

Removing the Windows 95 Welcome Dialog Box

By default a "Welcome to Windows 95" dialog box is displayed every time Windows 95 starts. Remove this dialog box by following these steps.

1. Press **Tab** until the "Show this Welcome screen next time you start Windows" check box is selected. Press the spacebar to remove the check from the check box.

2. Select Close.

Configuring Network Protocols

The ACS Windows 95 application makes use of the TCP/IP protocol for network communications. The workstation needs to be configured to use the TCP/IP protocol and to remove any other unused protocols.

Follow these steps to configure the workstation with the TCP/IP protocol.

1. Press **Ctrl+Esc** to open the Start Menu.

2. Select Settings.

3. Select Control Panel.

4. Select Networks and press **Enter.**

5. Highlight the "IPX/SPX - compatible Protocol" entry.

6. Press **Tab** to select the Remove button.

7. Press **Enter**. The protocol and the Client for NetWare Networks are removed.

8. Select Add.

9. Select Protocol and then select the Add... button.

10. Highlight "Microsoft" in the Manufacturers list and press **Tab**.

11. Highlight "TCP/IP" in the Network Protocols list and select OK. You return to the Network dialog box.

12. Highlight "TCP/IP" from the list of network components.

13. Select Properties.

14. Press **Ctrl+Tab** until the Advanced tab is selected.

15. Press **Tab** to move to the box beside "Set this protocol to the default protocol," and press the spacebar to select the check box. If your workstation is not using version **4.00.950 B** of Windows 95, select OK. You return to the Network dialog box.

16. If your workstation is using version **4.00.950 B** of Windows 95, press **Ctrl+Tab** until the NetBIOS tab is selected. Press **Tab** to move to the box beside "I want to enable NetBIOS over TCP/IP," and press the spacebar to check the check box if it is not already checked. Select OK to return to the Network dialog box.

17. If you are using a Windows NT server, press **Ctrl+Tab** to select the Identification tab, and then type the same Workgroup name used for the NT server.

    Note: You may have already identified the Workgroup name in the Adding Network Adapter Support section.

18. Select OK to complete the Network changes.

19. Insert the installation diskettes, if prompted.

20. Select No when prompted to restart your workstation.

21. If prompted with a DHCP message, select No to avoid seeing future DHCP messages.

22. Press **Alt+F, C** to close the Control Panel Window.

Configuring IRQ/SMA for 7452-3000 and 7453 Workstations

When Windows 95 detects and configures the network adapters used in the 7452-3000 and 7453 workstations, it does not always set the Interrupt Request (IRQ) and Direct Memory Access (DMA) settings to values matching the adapter's BIOS. Therefore, you must verify the settings and manually change them if they are incorrect. This change is only necessary if you are using 7452-3000 or 7453 workstations.

Follow these steps to verify and modify (if necessary) the IRQ and DMA settings.

1. Press **Ctrl+Esc** to open the Start Menu.

2. Select Settings.

3. Select Control Panel.

4. Select Networks, and press **Enter.**

5. Highlight the "AMD AM2100/AM1500t and Compatibles" entry.

6. Press **Tab** to select the Properties button, and then press **Enter.**

7. Press **Ctrl+Tab** to select the Resources Tab.

8. Check to see if the Interrupt (IRQ) value is set to 10 and if the DMA channel value is set to 5. If they are, then no changes are required. If the values are not 10 and 5, you must modify the settings. Press **Cancel** twice to return to the Control Panel. If you do not have to make any changes, go to step **20**.

9. Select System and press **Enter**.

10. Press **Ctrl+Tab** to select the Device Manager Tab.

11. Select the AMD AM2100/AM1500t and Compatibles adapter subentry of the Network adapters entry.

12. Press **Tab** to select the Properties button and then press **Enter**.

13. Press **Ctrl+Tab** to select the Resources Tab.

14. In Resources Settings dialog box, select the Interrupt Request entry and press **Tab** to select Change Setting. Press **Enter**.

15. Change the value for Interrupt Request to 10 and press OK.

16. Select the Direct Memory Access entry and press **Tab** to select Change Setting. Press **Enter**.

17. Change the value for Direct Memory Access to 05 and press OK.

18. Press OK twice to return to the Control Panel window.

19. Select No when prompted to restart your workstation.

20. Press **Alt+F, C** to close the Control Panel Window.

Setting Communications Ports for Windows 95 Version 4.00.950B

If you are using version 4.00.950 B of Windows 95 on your workstation, a conflict exists between Windows 95's use of the serial communication ports (COMx) and the retail printers connected to the workstation. To resolve this conflict, follow these steps to configure the serial ports to which a printer is attached.

1. Press **Ctrl+Esc** to open the Start Menu.
2. Select Settings.
3. Select Control Panel.
4. Select System and press **Enter**.
5. Press **Ctrl+Tab** to select the Device Manager Tab.
6. Select the "Communications Port (COM1)" subentry under the Ports (COM & LPT) entry.
7. Press **Tab** to select Properties, and then press **Enter**.
8. Press **Tab** to select the check box entry in Device Usage.
9. If the check box entry states, "Disable in this hardware profile," press the spacebar to check this box.

   or

   If the check box entry states, "Original Configuration (Current)," press the spacebar to uncheck this box. This change disables Windows 95's access to the serial port.
10. Select OK to go back to the Device Manager Tab box.
11. If a foodcourt printer is attached to the workstation, repeat steps 6 through 10 for the "Communications Port (COM2)" entry.

12. Select OK to go back to the Control Panel.

13. Press **Alt+F, C** to close the Control Panel Window.

When the serial ports are disabled in Windows 95, the operating system also modifies the workstation's BIOS settings to disable the serial ports. For the printers to function properly, these serial ports must be re-enabled within the workstation BIOS. Follow these steps to modify the BIOS settings.

1. Press **Ctrl+Esc** to open the Start Menu.

2. Select Shut Down...

3. Select "Restart the computer?" and press **Yes.**

When the workstation is booting, you are prompted in the lower left corner of the screen with the phrase:

"Press <F2> to enter SETUP"

4. Press **F2** to enter the BIOS setup utility.

5. Press the arrow keys to select the Advanced Tab.

6. Highlight the Integrated Peripherals entry, and press **Enter.**

7. Select the port 1 entry, and press the spacebar until the "3F8, IRQ4" value is selected.

8. If you disabled port COM2 earlier, select the port 2 entry, and press the spacebar until the "2F8, IRQ3" value is selected.

9. Press **Esc** to return to the original setup screen.

10. Use the arrow keys to select Exit, and press **Enter.** If prompted to save the changes, select Yes, and press **Enter** to exit the setup. Permit the workstation to boot into Windows 95.

Preparing the BIOS Setting on a 7452 Workstation

The BIOS setting on a 7452 workstation must be compatible with ISA and PCI wedge cards. The terminal should have the BIOS settings in place before installing ACS.

The following settings should be enabled in the BIOS for the 7452-3000 POS Terminal:

1. Go to BIOS by pressing **F2** in DOS.

2. Go to Main Tab and go to Memory Cache.
   The Memory Cache should be enabled. Next, enable the following values:
   Cache System BIOS: [ENABLED]
   Cache Video BIOS: [ENABLED]

3. Enable Memory Shadow.
   System Shadow: ENABLED
   [ENABLED]

The following settings should be enabled in the 7452-2000 POS Terminal:

1. Go to Main Tab in BIOS, and then to Memory Cache.
   Enable the following values:
   External Cache: [Enabled]
   CPU Internal Cache Enable: [Enabled]

2. Go to Memory Shadow and enable the following values:
   System Shadow: Enabled
   Video Shadow: Enabled

Running the ACS Windows 95 Application Setup Diskettes

The ACS Windows 95 application setup diskettes install essential files that permit the workstation to perform a network load of the application from the server. The setup software is delivered on four 1.44 MB diskettes. To install the software, follow these steps:

1. Insert diskette 1 into the flex drive.

2. Select Start, Run...

3. Type **a:\setup.exe** in the edit box.

4. Select UNIX or NT server to indicate the type of server from which you are loading. Select Next.

5. Select the desired configuration for this workstation from the list and then select Next.

   The configurations are described in the table below:

Configuration	Description
7452-2000 General	Non-CID application on 7452-2000 workstations
7452-2000 CID	CID application on 7452-2000 workstations
7452-2000 General Foodcourt	Non-CID foodcourt application on 7452-2000 workstations
7452-2000 CID Foodcourt	CID foodcourt application on 7452-2000 workstations
7452-3000/7453 General	Non-CID application on 7452-2000/7453 workstations
7452-3000/7453 CID	CID application on 7452-2000/7453 workstations
7452-3000/7453 General Foodcourt	Non-CID foodcourt application on 7452-2000/7453 workstations
7452-3000/7453 CID Foodcourt	CID foodcourt application on 7452-2000/7453 workstations

6. Follow the instructions on the screen.

7. When ODBC setup has completed (CID configurations only), a message box displays to indicate that the system registry has been modified with the ODBC registry settings. Select OK.

8. Select Yes to reboot the workstation.

You are ready to load the application.

Note: If prompted to permit windows to search for drivers for unknown devices, select Cancel.

Caution: On the initial application load, a dialog box will display with the following message, "A new MS-DOS driver named 'FS_CMOS' may decrease your system's performance would you like to see more information about this problem?" Select **No**.

Removing the ACS Windows 95 Application from a Workstation

In order to change a ACS Windows 95 workstation's configuration, the ACS Windows 95 application software must first be removed. After this has been completed, the ACS Windows 95 application setup disks should be run again and the new configuration selected. To do this, follow these steps:

1. Attach a PC keyboard to the Dynakey keyboard port.
2. Terminate the sales application by pressing **Ctrl+Atl+Del**, selecting the sales application, and then selecting End Task.
3. From the Start menu, select Settings, Control Panel, Add/Remove Programs.
4. From the list of software, select POS Files and then Add/Remove...
5. Select OK when prompted that the software has been removed.
6. Restart the workstation by selecting Shut Down from the Start menu.
7. Once the workstation has started again, run the ACS Windows 95 application setup disks and select the new workstation configuration.

Windows 95 CID Image Formats

For the Windows 95 CID application, the image areas can display Windows Bitmap (BMP), JPEG (JPG), Paintbrush (PCX), and Portable Network Graphics (PNG) file formats.

List of Files Downloaded from the Server (Windows NT)

The following is a list of files downloaded from the server to the workstation for the default ACS Windows 95 application configurations. The two sets of loading batch files are used to control the flow of the workstation load process. These batch files should not be modified.

To download additional files to the workstation, modify the `copyapp.bat` file. The `config.xxx` file listed for each configuration list installs the device drivers used while running the ACS Windows 95 application. The file may need to be modified if the driver or the command line parameters are changed. This file can be found in the following default directories:

NT server -- c:\acs\server\data\gcsaw95\nwload and c:\acs\server\data\gcsaw95\nwload\cid

Configuration	Initial loading batch file	Runtime config.sys file	Final loading batch file
Non-CID application on 7452-2000 workstation	`loadapp.bat`	`config.75d`	`loadftp.bat`
CID application on 7452-2000 workstation	`loadcid.bat`	`config.752`	`cidftp.bat`
Non-CID application on 7452-3000/7453 workstation	`loadc32.bat`	`config.c3d`	`loadftp.bat`
CID application on 7452-3000/7453 workstation	`ldc32cid.bat`	`config.c32`	`cidftp.bat`

Configuration	Initial loading batch file	Runtime config.sys file	Final loading batch file
Non-CID Foodcourt application on 7452-2000 workstation	`loadappt.bat`	`config.fcd`	`loadftp.bat`
CID Foodcourt application on 7452-2000 workstation	`loadcidt.bat`	`config.fct`	`cidftp.bat`
Non-CID Foodcourt application on 7452-3000/7453 workstation	`loadc32t.bat`	`config.cfd`	`loadftp.bat`
CID Foodcourt application on 7452-2000/7453 workstation	`ldc32cdt.bat`	`config.cft`	`cidftp.bat`

Creating a New Node Group ID

When a new node group ID is created on the ACS server using the RT Config tool, a new wingroup.xxx directory must be created in the `./data/gcsaw95` directory. The `xxx` extension is the new group ID value. Copy these files to the `wingroup.xxx` directory.

Application	Action
For non-CID application	Copy all files from wingroup.038 directory
For non-CID Foodcourt application	Copy all files from wingroup.039 directory
For CID application	Copy all files from wingroup.048 directory
For CID Foodcourt application	Copy all files from wingroup.049 directory

Make these modifications on the server.

1. Copy the corresponding `condef.xxx` and `devini.xxx` files in the data directory.

2. Modify the `term.txt` file to add the new Windows 95 workstation ID using the `noconfig` configuration.

Creating Windows 95 Installation Diskettes

If Windows 95 was installed on the workstation at the factory, functionality exists to create Windows 95 installation diskettes. These diskettes can be used to reinstall the operating system on the workstation, if necessary. Follow these steps to create the installation diskettes. You need 29 formatted 3.5", 1.44 MB diskettes to complete this process.

1. Press **Ctrl+Esc** to open the Start Menu.
2. Select Programs.
3. Select Accessories.
4. Select System Tools.
5. Select Create System Disks and then follow the Windows 95 instructions.

Switch a Windows 95 workstation from using the MFP printer to the ESC/POS printer

You can use the ESC/POS printer by editing the `devini` file and `config.sys`.

1. Edit the `devini` file for the workstation group to change the printer sections to use "dllName=amepos95" instead of "dllName=amprint95". The amepos95 entries are commented out in the devini file so uncomment those lines and then comment out the amprint95 lines using a ";".

2. Edit the runtime config.sys file on the server that corresponds to the workstation's configuration. The runtime `config.sys` files are located on the server in the c:\acs\server\data\gcsaw95\nwload (/appl/unity/data/gcsaw95/nwload) directory. The ESC/POS printer driver must be loaded instead of the MFP driver. Both drivers are listed in the `config.sys` files by default with the ESC/POS being commented out as shown here:

```
;DEVICEHIGH=C:\RETAILDD\EPOSPRT.DOS /P:1 /Q:8 /TO:8
DEVICEHIGH=C:\RETAILDD\MFP.DOS /P:1 /Q:8
```

3. To use the ESC/POS printer, uncomment the EPOSPRT.DOS line and comment out the MFP.DOS line using a ";". To decide which `config.sys` file to edit on the server, match the workstation configuration to the config.* file listed in the table in the "List of Files Downloaded from the Server (Windows NT)" section.
4. Reload the workstation.

Procedural Overview

The basic steps for configuring workstations are:

1 Configure the workstation loaders by editing the `group.txt`, `groupdir.txt`, and `term.txt`.

2 Enable Workstations

3. Configure devices (`devini`).

4. Select files for node groups (`condef`).

5. Define workstation node IDs.

Configuring Workstation Loaders

To configure the SLP loader, you must edit the `group.txt`, `groupdir.txt`, and `term.txt` files (optional). Following is a description of each file, an example of the file, and steps for modifying or creating the file.

Defining `group.txt`

The `group.txt` file specifies the file (depending on the keylock position) that is to be downloaded to the workstation(s). This file contains six fields per entry: a load group name, a BBK filename for each of the four keylock positions (Ex, L, R, and S), and a description of the group.

Load Group

The load group name can be up to 10 characters long. The first load group name in the file is considered the default and the download files that follow this group name are downloaded to any workstation that is not defined in the `term.txt` file.

Note: You should configure Windows 95 workstations to use the SLP load group. Modify the term.txt file to add the Windows 95 workstations IDs using the noconfig configuration.

Filenames for Keylock Positions

The columns indicate the keylock positions. The filenames indicate the SLP Boot Block file that is downloaded in that keylock position.

The filename can be either a full path name or just a filename that refers to the current directory. If no path is specified in `groupdir.txt` for an SLP file, the file must be in the current directory.

Downloads can be prohibited when the workstation is in a specific key position by entering a dash (-) for the filename for that key position.

Group Description

The group description is free-form text and can be up to 40 characters long. A description is optional.

Example `group.txt` file

```
GROUP DEFINITION FILE
;
;
;
; Group     Ex Key Pos.  L Key Pos.     R/N Key Pos.  S Key Pos.    Comment
;-------------------------------------------------------------------------
;
;
;
; infolan   bootblk.bbk  bootblk.bbk    bootblk.bbk   bootblk.bbk   Sample
;
;
;
noconfig   noconfig.bbk  noconfig.bbk   noconfig.bbk   noconfig.bbk  Unity 2.0
;unty745x  unty745x.bbk  unty745x.bbk   unty745x.bbk   unty745x.bbk  Unity 745x
;uny745xe  uny745xe.bbk  uny745xe.bbk   uny745xe.bbk   uny745xe.bbk  Unity 745x ESC/POS
gcsa7452   gcsa7452.bbk  gcsa7452.bbk   gcsa7452.bbk   gcsa7452.bbk  GCSA 7452
;gcs7452e  gcs7452e.bbk  gcs7452e.bbk   gcs7452e.bbk   gcs7452e.bbk  GCSA 7452 ESC/POS
;gcsa745x  gcsa745x.bbk  gcsa745x.bbk   gcsa745x.bbk   gcsa745x.bbk  GCSA 745x
;gcs745xe  gcs745xe.bbk  gcs745xe.bbk   gcs745xe.bbk   gcs745xe.bbk  GCSA 745x ESC/POS
;fgc745x   fgc745x.bbk   fgc745x.bbk    fgc745x.bbk    fgc745x.bbk   Food Court GCSA
;fgc745xe  fgc745xe.bbk  fgc745xe.bbk   fgc745xe.bbk   fgc745xe.bbk  Food Court GCSA ESC/POS
;cid7452   cid7452.bbk   cid7452.bbk    cid7452.bbk    cid7452.bbk   CID 7452
;cid7452e  cid7452e.bbk  cid7452e.bbk   cid7452e.bbk   cid7452e.bbk  CID 7452 ESC/POS
;cid745x   cid745x.bbk   cid745x.bbk    cid745x.bbk    cid745x.bbk   CID 745x
;cid745xe  cid745xe.bbk  cid745xe.bbk   cid745xe.bbk   cid745xe.bbk  CID 745x ESC/POS
;c745xhd   c745xhd.bbk   c745xhd.bbk    c745xhd.bbk    c745xhd.bbk   CID 745x w/HD
;c745xhde  c745xhde.bbk  c745xhde.bbk   c745xhde.bbk   c745xhde.bbk  CID 745x w/HD ESC/POS
```

Edit the `group.txt` file

1. Log in on the primary Gateway/Load server.

2. Use an ASCII text editor to change or add entries to include the .BBK files you plan to download to the POS workstations. Edit the delivered `group.txt` file in the \acs\server\data directory.

   Note: To determine which BBK files are to be loaded to your workstation, refer to the tables in the Default BBK files of the **Loading Workstation Overview** section.

3. Place a ';' in front of the list of BBK files you are not using in the `group.txt` file. There should not be spaces between the ';' and the BBK filename.

4. Select **File, Save**

Defining groupdir.txt

The `groupdir.txt` file defines additional information about groups for SLP loads. The main purpose of the file is to point to a directory on the server where files can be found if the workstation needs them.

The `groupdir.txt` file has a format that is similar to the `group.txt` file. Lines that begin with a semicolon (;) are comment lines.

The `groupdir.txt` file contains four fields per entry: Load Group, Load Selector Value, Search Path for file requests, and the Description field.

These items must appear on a single line.

Load Group

The load group name can be up to 10 characters long. It normally corresponds to a load group in the `group.txt` file. If a load group is defined in the `groupdir.txt` file, but not in the `group.txt` file, keylock position requests from workstations in this load group are ignored. The load group name links each workstation from the `term.txt` file with the proper group in the `group.txt` and `groupdir.txt` files.

Load Selector

The load selector value may be used by the workstation to determine which server to select if multiple servers respond to its load request. If all other parameters are equally acceptable, the server with the highest load selector is chosen. The range of valid load selectors is -128 to (+)127. The default load selector by the Program Loader is 0.

Search Path

The search path specifies the search path used to find files requested by workstations in the group (redirection). The directories in the search path are separated by semicolons (;). The maximum length of this field is 100 characters.

Group Description

The group description is free-form text and can be up to 40 characters long. A description is optional.

Example `groupdir.txt` file

```
;
; GROUP DIRECTORY DEFINITION FILE
; NOTE: All BBK filenames within search path subdirectories must be UPPERCASE
;
;Group    Load Selector      Search Path                Comment
;-------------------------------------------------------------------
;infolan 1  .;\data;\exe              Data and Executables
;
noconfig 1  ..\data;..\data\gcsaw95\nwload;..\data\gcsaw95\nwload\cid;..\data\gcsaw95 BBK
                                                                  for unconfigured term
;unty745x 1  ..\data                          BBK for diskless 745x
;uny745xe 1  ..\data                          BBK for diskless 745x ESC/POS
gcsa7452  1  .;..\data\gcsa\gcsa7452.bbk;..\data  BBK for advanced CHECKOUT 1.0 7452
;gcs7452e 1  .;..\data\gcsa\gcs7452e.bbk;..\data  BBK for advanced CHECKOUT 1.0 7452 ESC/POS
;gcsa745x 1  .;..\data\gcsa\gcsa745x.bbk;..\data  BBK for advanced CHECKOUT 1.0 745x
;gcs745xe 1  .;..\data\gcsa\gcs745xe.bbk;..\data  BBK for advanced CHECKOUT 1.0 745x ESC/POS
;fgc745x  1  .;..\data\gcsa\fgc745x.bbk;..\data   BBK for advanced CHECKOUT 1.0 745X
;fgc745xe 1  .;..\data\gcsa\fgc745xe.bbk;..\dat   BBK for advanced CHECKOUT 1.0 745X ESC/POS
;cid7452  1  .;..\data\gcsa\cid7452.bbk;..\data   BBK for ACS CID on 7450-FS32
;cid7452e 1  .;..\data\gcsa\cid7452e.bbk;..\data  BBK for ACS CID on 7450-CC32 ESC/POS
;cid745x  1  .;..\data\gcsa\cid745x.bbk;..\data   BBK for ACS CID on 7450-CC32
;cid745xe 1  .;..\data\gcsa\cid745xe.bbk;..\data  BBK for ACS CID on 7450-CC32 ESC/POS
;c745xhd  1  .;..\data\gcsa\c745xhd.bbk;..\data   BBK for ACS CID on 7450-CC32 HD
c745xhde  1  .;..\data\gcsa\c745xhde.bbk;..\data  BBK for ACS CID on 7450-CC32 HD ESC/POS
```

Edit the `groupdir.txt` file

1. Log in on the primary Gateway/Load server.
2. Open the `groupdir.txt` file located in the \acs\server\data directory.

   Note: To determine which BBK files are to be loaded to your workstation, refer to the tables in the Default BBK files of the **Loading Workstation Overview** section
3. Change or add entries for any additional SLP groups. Place a '**;**' in front of the BBK files you are not using.

Note: There should not be spaces in between the ';' and the BBK filename.

4. Select **File, Save**.

Defining `term.txt`

The `term.txt` file assigns each workstation in the system to a specific group for downloading purposes. These groups are defined in the `group.txt` and `groupdir.txt` files.

The `term.txt` file does not have to exist when a loader is started. Any workstation that is not identified in the `term.txt` file is assigned to the default download group (the first group in the `group.txt` file).

If a workstation that is not in `term.txt` requests a load, the loader automatically adds the workstation to `term.txt` and assigns it to the default load group in `group.txt`.

The `term.txt` file contains three fields per entry: LAN Address (or sometimes Terminal ID), Load Group, Workstation Description. These items must appear on a single line for each workstation.

LAN Address

The LAN address is the Ethernet address used by the workstation on the ACS LAN.

Load Group

The load group field is the name of the load group that the workstation is assigned to. The load group must match one of the load group names defined in the `group.txt` or `groupdir.txt` file.

Workstation Descriptions

The workstation descriptions are free-form text and can be up to 40 characters long. Descriptions are optional.

Example of `term.txt` file

```
;
; TERMINAL DEFINITION FILE
;
;TERMINAL ID  Group Name     Comment
;-------------------------------------------------------------
;
;
0000C08EF9D2 gcsa7452        LAN information
```

Edit the `term.txt` file

1. Open the `term.txt` file in the \acs\server\data directory.

2. Add the POS workstations.

   Note: You need the Node Address from the POS Workstation. You can locate the Node Address by turning on the POS Workstation. This number is specific to each individual workstation. Add each number to the `term.txt` file with the group name, as shown in the example above.

   Example of a Node Address:

```
BootWare Centralized Boot ROM for SLP
© Copyright Lanworks Technologies Inc. 1991-1996.  All right reserved
NIC Description:  SMC Elite-Eth v1.06 (960618)
RAM Address = none, ROM Address = DC00h, I/O Address = 0240h, Interrupt =
10
Node Address = 0000C08EF9D2, Media = Auto

Initializing Adapter: OK

Select Key Position
PRESS ANY KEY TO CONTINUE
```

   Make sure that there is not a ';' in front of this address or the system cannot recognize your information.

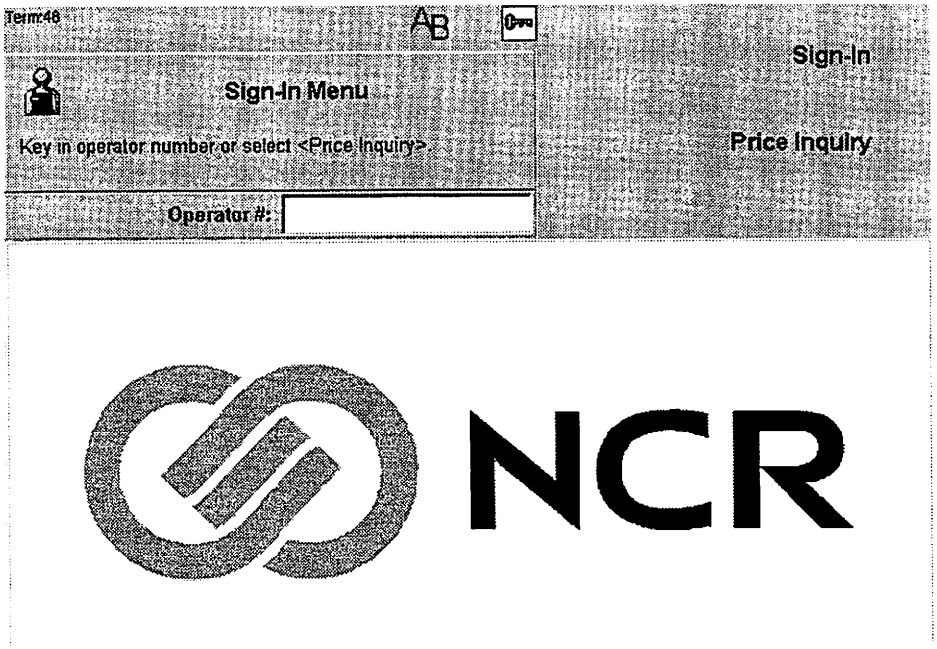
3. Select **File, Save.**

4. Turn on the POS Workstation to verify changes.

Enable Workstations

After configuration of the workstations is complete, you need to enable the POS Workstation(s).

Turn on your POS Workstation, if not already turned on. If you see the Sign-In screen, then the configuration is successful.

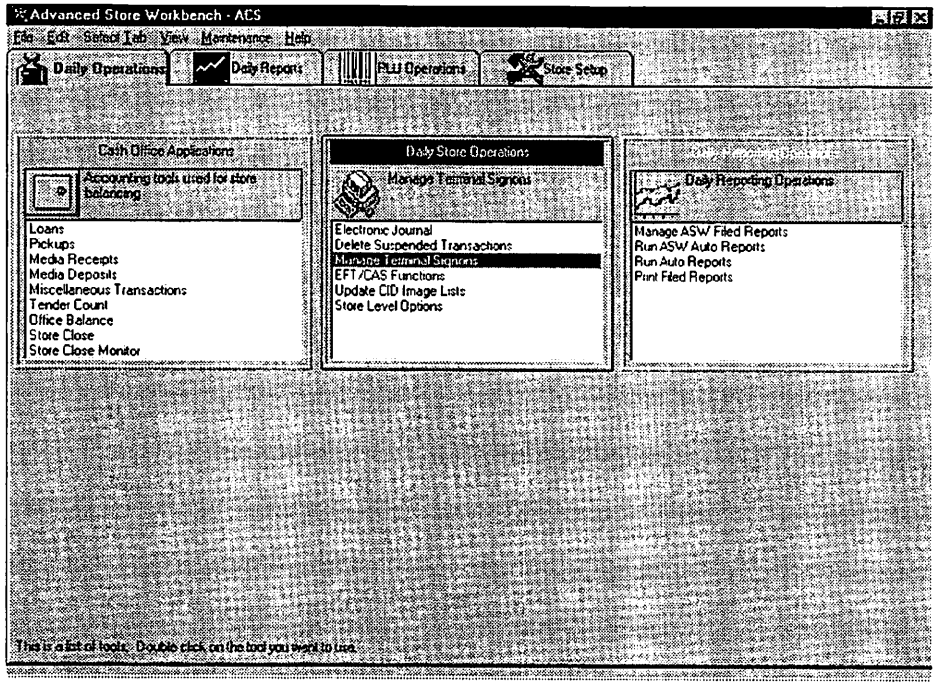


In order to enable your terminal(s), you need to log in under **ACS** at your primary server.

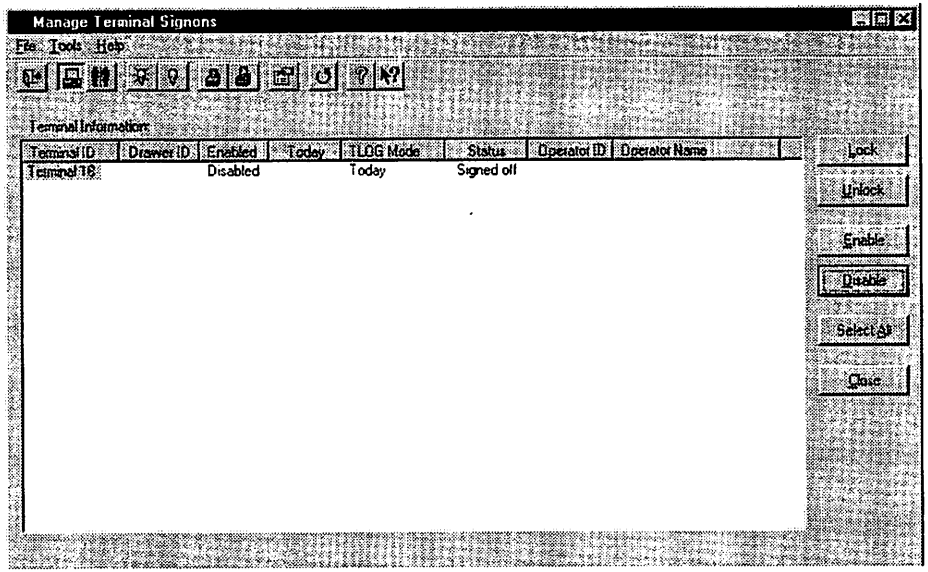
1. Select **Start, Shutdown**, and **"Close all programs and log on as a different user"**
2. Click **Yes**.

   A new log on screen appears.
3. At User Name, Type **ACS**, click **OK**.
4. Select, **Start, Programs, Advance Store Workbench, ASW Shell**

The following screen appears.



5. Under the **Daily Operations** Tab, double-click **Manage Terminal Signons** under **Daily Store Operations**. The **Manage Terminal Signons** screen appears.



6. Select the terminal number(s) you want to enable then click **Enable** on the right hand side of the screen. Click **Close.**
7. Select **Start, Shutdown, "Close all programs and log on as a different user".**
8. Under User name re-type **Administrator,** and password.

Configuring Devices (devini)

Refer to the "Key Concepts" section of this chapter for an explanation of the devini file.

To configure devices:

1. Copy the devini files to a safe location or name. One safe method is to create a new subdirectory and copy them there.
2. Select the devini file delivered with the COA that best matches the configuration you have for each node group.

Following are the devini files delivered for the ACS DOS application.

Filename	Supports
devini.001	Not used in ACS 4.0 (NT)
devini.002	Not used in ACS 4.0 (NT)
devini.003	7450 with 7150 printer; VCO or 2x20
devini.004	7450 with 7156 printer; VCO or 2x20
devini.005	7450 with 7193 printer; VCO or 2x20
devini.201	Primary server with back office applications

Note to UNIX Users

The devini.201 file shown in the table above should not be used for UNIX systems running ASW clients. The NT devini.201 file contains 32-bit references to TMS DLLs rather than 16-bit references. For example, amconsole is now amcons32 in NT devini.201. If you are using ASW clients in a UNIX environment, you will need to create a new devini file for this system. For more information, see the Getting Started with NT Client section in the "Configuring Advanced Store Workbench" chapter.

Chapter 6: Configuring Advanced Store Workbench

Overview

1 Planning and Defining a System
2 Installing Runtime Software
3 Installing Development Software
4 Configuring Servers
5 Loading Workstations
6 Configuring Advanced Store Workbench
7 Migrating Store Data
8 Supporting a Runtime System

This chapter explains how to configure Advanced Store Workbench (ASW).

After reading this chapter, you will be able to answer the following questions:

- What is the procedure for running ASW on NT Server?
- How do you set up ASW End-of-Day and End-of- Period reports?

Terms

The **ASW Default file** (`ASW Default.ini`) can be imported to apply a predefined configuration to ASW. When you import this file, it specifies tabs, toolboxes, and tools that can be added to the Workbench.

An **End-of-Day Report** is the physical separation between one day's accounting information and the next day's accounting information.

An **End-of-Period Report** typically includes accumulated totals from several consecutive days (usually one week). Totals can be accumulated from one end-of-period to the next.'

Key Concepts

Before you configure an ASW system, there are several concepts you must understand. These concepts include:

- ASW Registry Entries
- ASW Security
- ASW Configuration Guidelines

ASW Registry Entries

ASW adds four entries to the NT registry. These entries cannot be removed, even if you are not using an Advanced Checkout Solution (ACS) system.

DataSourceName specifies the ODBC database to use for file access (used only for ACS system). The default is "ASW Data Source."

GroupAdmin specifies the group that is granted Workbench system administrator privileges (used for all systems). The default is "ACSGROUP."

GroupPrefix specifies the prefix of NT groups that can be used to assign security levels to tools (used for all systems). The default is "ASW."

GroupTier2 specifies the NT group for regular Workbench users using an ACS system (used only for ACS system). The default is "ACSBACKGRP."

ASW Security

ASW uses NT Groups for its first level of security. For an Advanced Checkout Solution (ACS) system, a second level of security is added, using the OPAUTH file.

After installing ACS and Workbench, the NT Administrator should assign regular Workbench users to GroupTier2 (ACSBACKGRP) and system administrators to both GroupTier2 (ACSBACKGRP) and GroupAdmin (ACSGROUP).

Regular users will be forced to go through the Workbench login dialog box and will see only those tools that match their authorization classes. When regular users log in using their operator IDs, workbench will check their authorization classes in the OPAUTH file and display only those tools for which the user has permission to use.

System administrators will go directly into Workbench and will see all of the tools.

ASW Configuration Guidelines

The Node ID is automatically set on the Workbench NT server workstation during the ACS installation process. However, the node ID for a Workbench NT client workstation is not automatically set during ASW installation. For client workstations, you will need to use the NDINIT tool to set node IDs manually. The NDINIT tool is located in the \ACS\SERVER\BIN directory.

You will need to configure node ID characteristics for both Workbench NT server workstations and Workbench NT client workstations using RT Config.

When you configure nodes for ASW in RT Config, the following configuration guidelines are recommended.

- Use 211 to 219 as the range of node IDs for ASW.
- If you only have one workstation, number it 211 to make remote support easier.
- If using a standalone system, do not make the ASW workstation a member of any server sets.
- For ASW clients, make the group ID 201 and do not make them members of any server sets.

  For more information about RT Config, see chapter 4 "Configuring Servers" or see RT Config online help.

Note to UNIX Users

It is recommended that you put any ASW clients used for UNIX systems in group 203 when you complete node ID configuration in RT Config.

Procedural Overview

The following procedures explain the tasks you need to accomplish to get started in ASW on NT server and on NT Client. For more detailed information about ASW see ASW online help. You can also install and run the *Intro to ASW tutorial* delivered on diskette for interactive training.

In order to successfully run the ASW components using the ASW shell, you will need to perform the following procedures:

Getting Started with ASW on NT Server

1. Log in as Administrator.
2. Add the Administrator to the ACSGROUP and ACSBACKGROUP, if not already added, use the following post-installation preparation procedure.

Adding the Administrator to ACSGROUP and ACSBACKGRP

- Select **Start, Programs, Administrative Tools (Common), User Manager for Domains**
- In the **Domain** screen, double click **Administrator** under the Username category
- In the **User Properties** screen, click **Groups** in lower left-hand corner
- The **Group Membership** screen will appear, In the **Not Member box**, highlight the **ACSGROUP** and **ACSBACKGROUP**
- Click **Add** and these groups will move to the **Member of** box
- Click **Ok** to exit **Group Membership**
- Click **Ok** to exit **User Properties**
- Close the **Domain Screen** with the **X** at the top right-hand corner or select **User, File,** and Exit

3. Use the Runtime Configurator (RT Config). RT Config is described in chapter 4 "Configuring Servers."

4. Restart the computer.

5. From the NT Start menu, select Programs, Advanced Store Workbench, ASW Shell to start ASW.

   The ASW System Parameters screen displays.

6. Click **OK**.

   The ASW main screen displays.

7. Select Maintenance from the ASW toolbar.

8. Select Import tabs, toolboxes, and tools.

9. Click Find to open a list of files and select `ASW Default.ini`.

10. Import the `ASW Default.ini` file.

    The default tools that are set by the `ASW Default.ini` can be customized for the target system.

11. Log out.

Getting Started with ASW on NT Client

1. Log in as Administrator.

2. Add the Administrator to ACSGROUP and ACSBACKGRP, if not already added. This procedure is described in the previous section, **Getting Started with ASW on NT server.**

3. Run NDINIT from \ACS\SERVER\BIN directory and set the node ID accordingly.

Note to UNIX Users

UNIX systems that are using ASW clients need their own `devini` file. UNIX `devini.201` contains references to 16-bit TMS DLLs which have changed to 32-bit DLLs for NT. It is recommended that you create `devini.203` for these systems. This devini file should contain the following changes:

- Change all occurrences of amconsole to amcons32
- Change all occurrences of amprint to amprnt32

4. Use the Runtime Configurator (RT Config) on the primary G/L server to configure the system. RT Config is described in chapter 4 "Configuring Servers."

Note to UNIX Users

It is recommended that you put any ASW clients used for UNIX systems in group 203 when you complete node ID configuration in RT Config.

5. Restart the computer.

6. Start the ACS Transaction Management Service (TMS) on the primary server.

7. Start ASW. (Select NT Start menu, Programs, Advanced Store Workbench, ASW Shell.)

   The Advanced Store Workbench System Parameters screen displays. For more information about using ASW shell, refer to *Introduction to ASW Tutorial*.

8. Click OK.

   The Advanced Store Workbench main screen displays.

9. Select Maintenance, Import tabs, toolboxes, and tools from the ASW toolbar.

10. Click Find to open a list of files and select `ASW Default.ini`.

11. Import the `ASW Default.ini` file.

The default tools that are set by the `ASW Default.ini` can be customized for the target system.

12. Log out.

Setting up End-of-Day and End-of-Period Reports

In setting up your first End-of-Day and End-of-Period reports, you will need to perform the following steps:

Note: This section assumes the default install directory is c:\ACS.

1. Log in as Administrator.
2. From the NT Start menu, select Programs, Windows NT Explorer.
3. Navigate to c:\acs\back office\data\ samples.
4. Double-click the `eodeop.reg` file from this directory.
5. Click OK to import the default registry settings for the End of Day and End of Period reports.

These settings can be customized using the ASW Profile Builder tool. For more information about the customization process, see the Profile Builder tool online help. The profiles created are named EODX and EOPX under the appropriate reports where X is where the file falls in the order of creation. For example, the first profile file will be named EOD1 and EOP1. The second profile you create will be named EOD2 and EOP2, and so on.

For more information on setting up End-of-Period and End-of-Day report scripts, refer to the "Store Close Scripts" section of chapter 3 in *Back Office Options* (B005-0000-1060).

Copying Auto Report Configuration to the Secondary Server

Currently, the configuration information for the ASW Auto Reports functionality is stored locally on a per machine basis. Therefore, when the ASW Auto Reports system is configured on the primary NT server, the configuration information is not automatically propagated to the secondary server (or any of the ASW client machines). Consequently, the ASW Auto Reports application can only be executed on systems that have been explicitly configured for ASW Auto Reports.

Any configuration change made to the ASW Auto Reports system must be manually propagated to any ASW workstation where auto reports might be executed. In the least, the changes should be made on both the primary and secondary servers to allow for the case of a server switch.

Unfortunately, there is no convenient mechanism by which a user can easily propagate the configuration changes to multiple machines. There are two methods of manual propagation. Each is described in this document. Choose whichever method is most convenient for your situation.

The first is to simply run the Profile Builder and Define ASW Auto Reports maintenance utilities on every ASW workstation. For each workstation, you would repeat the configuration changes made on the other workstations. This method can be quite tedious and time consuming if there are many ASW workstations and report profiles to be added.

The second method involves copying the profile registry settings and auto report configuration files from one workstation to the rest. Like in the first method, you must configure one machine using the Profile Builder and Define Auto Reports utilities. Afterwards, you can copy the configuration to the other ASW workstation by performing these steps:

1. From the command prompt or run menu, start the registry editor by typing "regedit" and pressing the enter key.

2. Find the "HKEY_LOCAL_MACHINE\SOFTWARE\NCR\ Advanced Store Workbench\Cash Office Applications" key in the registry tree. Note, a registry "key" is similar to a directory in the file system. As a directory contains files and other directories, a registry key can contain registry values and other keys.

3. Highlight the "Cash Office Applications" key by clicking on it.

4. From the "Registry" menu, choose the "Export Registry File".

5. Choose a directory and type in the filename of your choice (e.g. "CashOffConfig.reg"). The filename must end in ".reg". If you leave off the extension, it will be automatically appended to the name.

6. Click on the "Save" button.

7. Repeat steps 2 through 6 for the "HKEY_LOCAL_MACHINE\SOFTWARE\NCR\ Advanced Store Workbench\Manager's Reports" key as well. When exporting the key to a file, choose a different filename than the one you chose for the "Cash Office Applications" key. Otherwise, you will overwrite the settings you exported earlier.

8. Exit the registry editor.

9. In addition to the two files you just created, copy the following files to every ASW workstation where you intend to run the auto reports:

- C:\ACS\Back Office\maintenance\DefineAutoReportsU.mdb
- All "C:\ACS\Back Office\data\AutoReportFile?.ini" files (where the "?" in the file names is replaced by a number).

Except for the two ".reg" file you create, make sure you copy the files into the same directories you got the file from on the original machine.

10. In the file explorer on each ASW workstation, locate the two registry files that you copied from the original machine.

11. Double-click the registry files to import them into the registry. You should see a message box stating that the information has been successfully entered into the registry.

After completing the above steps, the auto reports should successfully run on any of the workstations you've configured. At first glance, the second method of propagation might appear more difficult than the first. However, once you've done it a few times, the second method will most likely be much quicker than the first.

Regardless of the method you choose, the auto report configurations must be re-propagated to every workstation whenever you make a change to configurations. Fortunately, the auto report configurations should not change very often (if at all). Generally, configuring the ASW auto reports system is a one-time event.

ASW Configuration Files

ASW configuration files include such files as `ACS System` Control.ini, `ASW Default.ini`, `asweod.ini`, `asweop.ini`, `loans.mdb`, and so on. Anytime you install ASW, the configuration files are installed to the c:\acs\backoffice\data\samples directory, assuming the default install directory is c:\ACS.

When you install ASW on a clean machine, the installation program copies the configuration files from this sample directory to their appropriate directories. This file copy does not occur if you re-install ASW and these files currently exist. Therefore, if you customize tabs, toolboxes, and tools settings in the `ASW Default.ini` file, your changes will not be overwritten if you re-install ASW.

Exploring the `ASW Default.ini` file

Your `ASW Default.ini` will not be overwritten when you re-install ASW; however, it is recommended that you export this file to a unique name as a backup if you make any changes to the file.

To export the `ASW Default.ini` file, use the following process:

1. Select Maintenance, Export tabs, toolboxes, and tools from the ASW toolbar.

2. Select the tabs you want to export by clicking on them. To select multiple tabs, hold down **Control** while clicking on additional selections.
3. Once all the tabs you want to export are highlighted, specify a unique name for your export file.
4. Click on the Create Export File button to export the tabs to the filename you entered. The file will be created in the c:\ACS Back Office\Platform directory with an `.ini` extension.

   Note: This section assumes the default install directory is c:\ACS.

   This directory is where ASW by default when searching for `.ini` files to import.

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What are the four registries ASW adds to NT?

_____

Which of these registries should regular Workbench users be assigned to? Which should system administrators be assigned to?

_____

What is the range of node IDs which should be used when configuring for ASW in RT Config?

_____

Where can you access an interactive tutorial for ASW?

_____

Refer to Appendix C for the answers to these questions.

Chapter 7: Migrating Store Data

Overview

This chapter describes the Advanced Checkout Solution (ACS) tools provided to convert ACS data files from an existing file structure or type to a new structure or type. When upgrading from one ACS release to another, you may use these tools to convert data files from an old release to a new release. These tools, which are called Data Migration Utilities, let you:

- Create a list of ACS data files that need to be converted.
- Convert all ACS data file structures and types, based on the list created.
- Convert an individual ACS data file from an existing file structure or type to a new structure or type.
- Replace runtime ACS data files with converted data files.
- Replace file formats.

Note: The Data Migration Utilities use the File Utilities during file conversion. Refer to the "Supporting a Runtime System" chapter for information about the File Utilities.

After reading this chapter, you should be able to answer the following questions:

- What are the Data Migration Utilities used for?
- Where are these utilities located?
- How do you access and use these utilities?
- What is the end result of using these utilities?

Terms

Keyed files are fixed length files divided into equal-sized sectors. Within each file, relative sector zero contains control information; the rest of the sectors contain fixed length data records.

Like keyed files, **direct files** are fixed length files divided into equal-sized sectors. Also like keyed files, within each direct file, relative sector zero contains control information; the balance of the sectors contain fixed-length data records.

The primary difference between keyed and direct files is how data records are placed in sectors. In direct files, fixed-length records are placed in sectors sequentially, with any remaining sector space filled with zeros.

The **Indexed Sequential Access Method (ISAM) file** type is similar to the keyed file type in that it is composed of fixed size records with a fixed size key at the beginning of each record. However, ISAM can have up to six secondary keys which can also be used for searching the file.

ISAM files are not fixed size, but grow dynamically in 4K chunks (initial file size is 32K). Also, deletion of records does not cause the file to shrink. An offline utility must be used to pack the file. However, added records will re-use the space.

Sequential files are files in which records are read from and written to sequentially. The file grows as each record is added. At the start of each sequential file is a 512-byte control block. You cannot convert sequential files with the Data Migration Utilities.

Random files are binary data files that have no particular structure (byte streams). Conversion utilities are available to convert random files to keyed files and keyed files to random files.

Key Concepts

Before you use the Data Migration Utilities, you should be familiar with the process of data migration.

Process of Data Migration

Example: To help you understand the process of data migration, assume that you want to convert the current structure of a keyed data file, BDMCF, to a new structure. Throughout this section, the BDMCF file is used as an example of how the data migration process works.

The Data Migration Utilities convert a file in three stages that are performed automatically. These stages are explained here to provide you with a background of how the Data Migration Utilities work. For information about how to use the utilities, go to the "Converting Files with the Data Migration Utilities" section.

The three stages follow:

1. Convert an ACS data file to a random (flat) file
2. Convert the random (flat) file to a new random (flat) file
3. Convert the new random (flat) file to a new ACS data file

Stage 1: convert an ACS data file to a random (flat) file

Since an ACS data file can be one of several file types, the data migration process first uses one of the File Utilities to convert the data file to a random (flat) file. A random or flat file is file that contains the data without the control information.

Example: In stage 1, the keyed-to-random File Utility (**kfclktor**) converts the keyed file BDMCF to a random file. The File Utilities, such as **kfclktor**, are discussed in the "Supporting a Runtime System" chapter.

The random file then is passed to the Central Data Conversion Program (**dmbincon**) component of the Data Migration Utilities.

Stage 2: convert the random (flat) file to a new random (flat) file

The Central Data Conversion Program receives the random file as input. It reads the old `.bgf` file associated with the data file to get information about the data file's current structure. It also reads the new `.bgf` file associated with the data file, which specifies its new structure.

A `.bgf` file is an ASCII text file that specifies the file structure of the data file. It is created by the Data Services Configurator (DS Config) for use by back office applications. For more information about `.bgf` files, see *ACS Developer's Online Reference*

A sample `.bgf` file is shown next:

```
FILE       BDMCF
RECORD     000 0054 GDB_BDMCF
FIELD      02 batchid LG 000 004 KEY
FIELD      02 seqno UC 004 001 KEY
FIELD      03 price_chg CH 005 001
FIELD      01 batch_type S3 006 002
FIELD      03 pflag1 CH 008 001
FIELD      03 pflag2 CH 009 001
FIELD      01 target S3 010 008
FIELD      02 filenum IN 018 002
FIELD      02 num_recs IN 020 002
FIELD      02 status IN 022 002
FIELD      02 exec_time LG 024 004
FIELD      02 num_error IN 028 002
FIELD      02 err_rec UL 030 004
FIELD      02 host_seq IN 034 002
FIELD      01 host_name S3 036 012
FIELD      01 reserved S3 048 006
RECORD     001 0030 GDB_BDMCOFF
FIELD      02 batchid LG 000 004 KEY
FIELD      02 seqno UC 004 001 KEY
FIELD      02 plu_num IN 006 002
FIELD      02 pri_num IN 008 002
FIELD      02 cas_num IN 010 002
FIELD      02 oper_num IN 012 002
FIELD      02 tax_num IN 014 002
FIELD      01 reserved S3 016 013
INCLUDE   BDMCF.H
END
```

If the ACS data file contains two or more record structures, the Central Data Conversion Program also reads an `.inf` file (information file). The `.inf` file basically maps the `.bgf` file records to the actual records in the data file.

When the Central Data Conversion Program reads a `.bgf` file that contains more than one record structure, the Central Data Conversion Program needs the `.inf` file to decipher which structure is associated with which records in the file.

Default `.inf` files are provided in the <base directory>\server\migrate\inf directory. (The default base is acs.) Most data files do not require an `.inf` file, but if you need an `.inf` file that does not exist, you may copy one of the existing files and create a new `.inf` file using a text editor.

The Central Data Conversion Program reads two data statements from the `.inf` file to determine which record structure to use: `R_SWITCH` and `V_REC_MAP`.

Data Statement	Meaning
`R_SWITCH`	Identifies the data file field that provides the value used by the `V_REC_MAP` statement. For example: `R_SWITCH 0` means that the first field in the data file (field 0) contains the value used by `V_REC_MAP`.

`V_REC_MAP`	Specifies which record structure to use, based on the value of the field specified with `R_SWITCH`. `V_REC_MAP` says that if the value of the field specified with `R_SWITCH` is between *x* and *y*, then use record structure *z*. For example:
	`R_SWITCH 0`
	`V_REC_MAP 1 99 1`
	means that if the value of field 0 is between 1 and 99, use the second record structure in the data file. (The first record structure is 0, the second structure is 1, and so forth.)

In addition to these two statements, the Central Data Conversion Program also uses a third statement to "clean up" a data file during conversion: CRIT_FIELD.

Data Statement	Meaning
CRIT_FIELD	Marks a field as a "critical" field, which means that the record is converted only if the critical field contains data. If the field does not contain data, the record is not part of the new data file. If a record does not contain any critical fields, the record is converted whether its fields contain data or not. The CRIT_FIELD statement may be used for fields in files with multiple record structures or in files with only one record structure.

A sample .inf file is shown next:

```
//
// Filename : BDMCF
//
FILE        BDMCF
#DATA       R_SWITCH 0
#DATA       VREC_MAP 0 999999999 0
#DATA       VREC_MAP 1000000000 1000000000 1
#DATA       VREC_MAP 1000000001 2000000000 0
END
```

The Central Data Conversion Program compares the old and new .bgf files, and uses these files and the .inf file (for data files with multiple record structures and/or critical fields) to create a new random file based on the new file structure. This new file contains data organized according to the new structure of the data file. The record capacity of the new file is the same as the record capacity of the data file.

Example: In stage 2, the Central Data Conversion Program reads the old and new .bgf files, and the .inf file associated with BDMCF. The Central Data Conversion Program creates a new flat file based on the new .bgf file and the .inf file associated with BDMCF.

Stage 3: Convert the new random (flat) file to a new ACS data file

Finally, the new random file is converted to a new ACS data file. The new file has the same name as the data file, with a `.cnv` extension.

Example: In stage 3, the flat-to-keyed File Utility (**kfclrtok**) converts the new random file to a new ACS keyed data file (with a new structure) called `BDMCF.cnv`. The File Utilities, such as **kfclrtok**, are discussed in the "Supporting a Runtime System" chapter.

Before Converting Files

Before you use the Data Migration Utilities, be sure that the following criteria have been met:

- The ACS server platform must be installed.
- The ACS base application, which contains the Data Migration Utilities, must be installed without the data files.
- You must have write permissions to the `$MIGRATE` directory (<base directory>\server\migrate).
- The data files that you want to convert must exist in the <base directory>\server\data directory.
- Both the old and new `.bgf` files are required.
  - The old `.bgf` files define the current structure of the data files and have the same primary names as the data files. The `.bgf` files are created through the Data Services Configurator (DS Config) tool. The files are in the <base directory>\server\migrate\oldbgf directory.
  - The new `.bgf` files define the new structures of the data files and have the same primary names as the data files. The `.bgf` files are created through the Data Services Configurator (DS Config) tool. The files are in the <base directory>\server\bgf directory.
  - For data files with more than one record structure, `.inf` files are required.
    - The `.inf` files have the same primary names as the data files. The files should be in the <base directory>\server\migrate\inf directory. If an `.inf` file does not exist, create it by copying and modifying a sample `.inf` file in the <base directory>\server\migrate\inf directory. (Refer to "The Process of Data Migration" for information about `.inf` files.)

- The External File Table (`gdbxft.xxx`) and File Translation Table (`gdbxlat.xxx`) are required. These tables are generated by the Data Services Configurator (DS Config) and used by Transaction Management Services (TMS) at runtime. These tables are in the <base directory>\server\data directory.
- If you plan to install new data files for the ACS base application, you must use the Data Migration Utilities (the Convert Files utility) to convert your current data files before you install the new data files. Then you can install the new data files and use the Data Migration Utilities (the Restore Files utility) to replace any of the new data files with your converted data files. When you install the new data files, be sure that you do not re-install the base application and the configuration files.
- If you are running a dual server system, you should perform the data migration on both servers.
- Make sure TMS is not running.

You are now ready to run the selected Data Migration Utility.

Converting Files with the Data Migration Utilities

The Data Migration Utilities permit you to:

- Create a list of the ACS data files that need to be converted.
- Convert all ACS data file structures and types, based on the list created.
- Convert an individual ACS data file from an existing file structure to a new structure or from an existing file type to a new file type.
  - The file structure refers to the file's format, as defined in a header (`*.h`) file for files used by sales applications and in a `.bgf` file for files used by back office applications.
  - The file type refers to how information is organized in the file. The file type is assigned through the Data Services Configurator (DS Config) and may be keyed, direct, or Indexed Sequential Access Method (ISAM). (You cannot convert sequential files.)
- Replace runtime ACS data files with converted files.
- Replace file formats.

Note: Data Migration Utilities only convert ACS data files.

These utilities and their associated files are installed with the ACS base application in the following runtime directories:

Component	Directory
Data Migration Utilities	<base directory>\server\migrate\bin
File Utilities	<base directory>\server\bin
Old `.bgf` files	<base directory>\server\migrate\oldbgf
New `.bgf` files	<base directory>\server\bgf
`.inf` files	<base directory>\server\migrate\inf
Old External File Table (`gdbxft.xxx`) and File Translation Table (`gdbxlat.xxx`)	<base directory>\server\migrate\oldxft

Creating a List of the ACS Data Files that Need to be Converted

Before you convert the files, you must create a list of the ACS data files that need to be converted. The Create List utility creates this list by comparing the file structures and types of the old data files (specified in the old `.bgf` files) with the file structures and types of the new dat files (specified in the new `.bgf` files).

Create List

From the <base directory>\server\data directory, type:

dmcmp_formats -b<oldbgf> -c<newbgf> -t<oldxft> -u<
-x -v

at the command line, where:

dmcmp_formats is the name of the Data Migration Util

and the following command line options may be spec
specified, default values are assumed):

-b<oldbgf> is the directory that contains the old versions of the `.bgf` files. This directory is created and populated by removing the ACS base application or by using the `dmcp_formats` script. The default value is <base directory>\server\migrate\oldbgf.

-c<newbgf> is the directory that contains the new versions of the `.bgf` files that match the data files currently installed on the system. This directory is created and populated when the ACS base application is installed. The default value is <base directory>\ server\bgf.

-t<oldxft> is the path and filename of the External File Table (XFT) for the previous release. The XFT is generated by the Data Services Configurator (DS Config) and used by Transaction Management Services (TMS) at runtime. The default value is <base directory>\server\migrate\oldxft\`gdbxft.003`.

-u<newxft> is the path and filename of the External File Table (XFT) for the data files currently installed. This file is copied to the system during the installation of the ACS base application. The default value is <base directory>\server\data\`gdbxft.003`.

-l sends all standard and error messages to the log file. The default for the command line is to send messages to standard output and errors to standard error.

-x turns on the debug mode. If not specified, the default value is to have the debug mode turned off.

-v turns on verbose mode so that all of the details about a message or error are displayed. If not specified, the default value is to have the verbose mode turned off.

Generated Output Files

The following files are generated to the <base directory>\server\migrate\log directory:

- `files_to_convert` -- contains a list of the files that need to be converted. The first line contains the program name and date. The remaining data lines contain:

Field	Contents
1	data filename
2	conversion type (structure or type); structure may refer to structure and type or just structure, while type refers to type only
3	`.bgf` filename
4	old file type
5	new file type

- `files_to_skip` -- contains a list of the files that do not require conversion and the reason why each file does not require conversion:
  - No file structure or type differences between the old and new versions
  - No new `.bgf` file exists (implies that the data file no longer exists)
  - No entry for the file in the External File Table (XFT), which is `gdbxft.003`
  - One or both of the file types are sequential (you cannot conv data files with sequential file types)
- `virtual_list` -- contains a list of the `.bgf` files that define a' that are treated as files (these arrays are in memory, but are written to disk)

- `new_file_list` -- contains a list of the `.bgf` fi
  installed with the new version of the softw
  the old version

Converting All File Structures and Types

To convert all of the data fi
the next, you use the Co
used in conjunction
utility. The Con
List utility to
have bee
the ol

Converting an Individual File Structure or Type

Sometimes, you may want to convert an individual ACS data file from an existing file structure to a new structure or from an existing type to a new type. For example, if you receive an error when converting all of the data files, you may correct that error and then convert only the file for which the error occurred.

The Convert One File utility permits you to convert an individual data file. You may use the Convert One File utility to convert the structure or the type of a data file.

The file structure refers to the file's format, as defined in a header (`*.h`) file for files used by sales applications and in a `.bgf` file for file used by back office applications. A structure change is necessary fo files with different structures and types, or just with different structures.

The file type refers to how information is organized in the file assigned through the Data Services Configurator (DS Config) type may be keyed, sequential, direct, or Indexed Sequentia Method (ISAM). A type change is necessary for files with d types, but with the same structure.

If you are unsure of a file's old or new file type, you ma `files_to_convert` file generated by the Create List u (**dmcmp_formats**).

Note: You cannot convert data files with sequenti

c
fi

-b<ol
files. Th
base appl
value is <ba

Convert an Individual File

From the <base directory>\server\data directory, type:

dmcnv_1file -f<datafile> -o<convtype>
-t<oldtype> -u<newtype> -g<bgffile> -a<appdir>
-b<oldbgfdir> -c<newbgfdir> -i<infdir> -l -x -v

at the command line, where:

dmcnv_1file is the name of the Data Migration Utility,

and the following command line options are required:

-f<datafile> is the name of the data file to be converted.

-o<convtype> is the type of conversion, which may be either structure or type.

-t<oldtype> is the file type of the old data file. This value may be keyed, direct, or isam (not sequential).

-u<newtype> is the file type of the new data file. This value may be keyed, direct, or isam (not sequential).

-g<bgffile> is the name of the `.bgf` file that defines the format of the data file to be converted. This value is required if the conversion type specified with the -o option is "structure."

The following command line options may be specified (if not specified, default values are assumed):

-a<appdir> is the directory that contains the data files for the installed application. This directory is installed and populated when the ACS base application is installed. The default value is <base directory>\server\data.

-b<oldbgfdir> is the directory that contains the old versions of the `.bgf` files. This directory is created and populated by removing the ACS base application or by using the `dmcp_formats` script. The default value is <base directory>\server\migrate\oldbgf.

-c<newbgfdir> is the directory that contains the new versions of the `.bgf` files that match the data files currently installed on the system. This directory is created and populated when the ACS base application is installed. The default value is <base directory>\server\bgf.

-i<infdir> is the directory that contains the versions of the `.inf` files that match the data files currently installed on the system. These files are the same for the old and new data files. This directory is created and populated when the ACS base application is installed. The default value is <base directory>\server\migrate\inf.

-l sends all standard and error messages to the log file. The default for the command line is to send messages to standard output and errors to standard error.

-x turns on the debug mode. If not specified, the default value is to have the debug mode turned off.

-v turns on verbose mode so that all of the details about a message or error are displayed. If not specified, the default value is to have the verbose mode turned off.

Generated Output Files

The converted data file is written to the <base directory>\server\migrate\tmp directory. The file has the same name as the original data file, plus a `.cnv` extension. For example, a data file called `example` would be called `example.cnv`.

Note: If the new structure of an ACS data file includes new fields, these fields are initialized to 0 in the new data file.

Remember to copy the new file (without the `.cnv` extension) to the <base directory>\server\data directory so the application can read the file at runtime.

Replacing All Old Files with New Files

Once you have converted all data files (**dmcnv_files**), you must replace the old data files with the new files so that the application can read the new files at runtime. The directory that contains the runtime data files is <base directory>\server\data.

Replace Files

From the <base directory>\server\data directory, type:

dmcp_files -c<convsrc> -d<datadir>
-o<olddata> -l -x -v

at the command line, where:

dmcp_files is the name of the Data Migration Utility,

and the following command line options may be specified (if not specified, default values are assumed):

-c<convsrc> is the name of the directory that contains the converted files. The default value is <base directory>\server\migrate\tmp.

-d<datadir> is the directory to copy the converted files to. The default value is <base directory>\server\data.

-o<olddata> is the directory used to back up the old data files that are being replaced. The default value is <base directory>\server\migrate\olddata.

-l sends all standard and error messages to the log file. The default for the command line is to send messages to standard output and errors to standard error.

-x turns on the debug mode. If not specified, the default value is to have the debug mode turned off.

-v turns on verbose mode so that all of the details about a message or error are displayed. If not specified, the default value is to have the verbose mode turned off.

Generated Output Files

The converted data files are written to the <base directory>\server\data directory. These files replace the data files that exist in the directory. The old data files are backed up to the <base directory>\server\
migrate\olddata directory.

In addition, two files are generated to the <base directory>\server\migrate\log directory:

- `files_replaced` -- contains a list of the files that were replaced
- `files_not_replaced` -- contains a list of the files that were not replaced

Replacing File Formats

In some error situations, you may need to replace the file formats that are specified in the `.bgf` files. You should not need to replace the formats during normal operation. However, if an error occurs, such as the ACS base application was not removed before the new ACS base application was installed, you may need to replace the file formats.

Replace Formats

From the <base directory>\server\data directory, type:

dmcp_formats -b<bgfsrc> -c<bgfdest>
-t<xftsrc> -u<xftdest> -l -x -v

at the command line, where:

dmcp_formats is the name of the Data Migration Utility,

and the following command line options may be specified (if not specified, default values are assumed):

-b<bgfsrc> is the name of the directory that contains the `.bgf` files that describe the old data files. The default value is <base directory>\server\bgf.

-c<bgfdest> is the name of the directory to copy the `.bgf` files to. The default value is <base directory>\server\migrate\oldbgf.

-t<xftsrc> is the name of the directory that contains the External File Table (`gdbxft.xxx`) and File Translation Table (`gdbxlat.xxx`) that describe the old data files. The default value is <base directory>\server\data.

-u<xftdest> is the name of the directory to copy the External File Table (`gdbxft.xxx`) and File Translation Table (`gdbxlat.xxx`) to. The default value is <base directory>\server\migrate\oldxft.

-l sends all standard and error messages to the log file. The default for the command line is to send messages to standard output and errors to standard error.

-x turns on the debug mode. If not specified, the default value is to have the debug mode turned off.

-v turns on verbose mode so that all of the details about a message or error are displayed. If not specified, the default value is to have the verbose mode turned off.

Generated Output Files

When you replace the formats, the `.bgf`, `gdbxft.xxx`, and `gdbxlat.xxx` files are copied to the directories used by the Data Migration Utilities. The `.bgf` files are copied from the <base directory>\server\bgf directory to the <base directory>\server\migrate\oldbgf directory. The `gdbxft.xxx` and `gdbxlat.xxx` files are copied from the <base directory>\server\data directory to the <base directory>\server\migrate\oldxft directory.

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What tools are used to convert ACS data files from an existing structure or type to a new structure or type?

_____

What are the five specific activities you can do with the Data Migration Utilities?

1. _____
2. _____
3. _____
4. _____
5. _____

What is the primary difference between a keyed file and a direct file?

_____

If you plan to install new data files for the ACS base application, should you convert your current data files before or after you install the new data files?

_____

What directory should contain the data files that you want to convert?

_____

What directory contains the Data Migration Utilities?

_____

In the process of data migration, what do the `.bgf` files do?

_____

How does the Convert Files Data Migration Utility (for converting all file structures and types) know which files need to be converted?

_____

If you think you may want to convert an individual file's type, but are unsure of the file's type, where may you look?

_____

Which file type cannot be converted with the Data Migration Utilities?

_____

Refer to Appendix C for the answers to the questions

Chapter 8: Supporting a Runtime System

Overview

1 Planning and Defining a System

2 Installing Runtime Software

3 Installing Development Software

4 Configuring Servers

5 Loading Workstations

6 Configuring Advanced Store Workbench

7 Migrating Store Data

8 Supporting a Runtime System

This chapter describes the tools available to support your system after it has been properly installed and configured. The tools described in this chapter are used for maintaining and supporting a runtime (store) system. All of these runtime tools are delivered with the server installation.

For more information on the ACS tools, including instructions on how to use them, see the online help.

After reading this chapter, you should be able to answer the following questions:

- What tools are available to support ACS?
- Where are these tools located?
- How do you access these tools?
- How do you interpret the information these tools provide?

Terms

Automatic Switching provides a second level of data integrity for the store system. If the primary server for any given server set fails, the secondary server can be activated in its place automatically. Automatic switching is enabled by the Runtime Configurator (RT Config) tool on the primary Gateway/Load server. In most dual server configurations, all three server sets are configured for automatic switching.

Base Node

See **TLOG Spooling Location**

Despooling consists of reading the transaction data from the workstation spool file (`gdbspool.dat`) and writing it back to the primary TLOG server. Despooling is always initiated by the primary TLOG server.

Spooling ensures that the order of the records written (spooled) to the TLOG file are maintained when the primary TLOG server is unavailable.

A **TLOG Spooling Location** (also called a base node) is the location where you want spooling to take place in the event that the TLOG data cannot be written to the primary TLOG server. The spool location can be another server, a workstation/server (UNIX systems only), or a local disk or RAM disk. Spool locations are defined using RT Config.

The **velocity file** increases the speed of PLU reads on workstations and enables workstations to make PLU reads when in offline mode. The velocity file resides locally on the workstation.

Key Concepts

Before you use the support tools, you must understand the following concepts:

- Automatic Switching
- Spooling
- Despooling
- Special Spooling
- Special Despooling
- Combination Spooling
- Velocity File

Automatic Switching

Automatic Switching is a feature that provides a second level of data integrity for the store (runtime) system. If the primary server for any given server set fails, the secondary server can be activated in its place automatically. Automatic switching is enabled by the Runtime Configurator (RT Config) tool on the primary Gateway/Load server.

You must configure each server set for either automatic or manual primary switching. The configured secondary server continually sends a message to the configured primary to verify that the primary server sets are functioning properly.

Spooling

Spooling ensures that the order of the records written to the TLOG file are maintained when the primary TLOG server is unavailable. In a normal runtime situation, the workstations write their TLOG data to the primary TLOG server when a transaction is completed. If the primary TLOG server cannot be found, TMS redirects the workstations to write their TLOG data to a temporary file (`gdbspool.dat`) at the TLOG spool location (or base node). The TLOG spool location is set using the Runtime Configurator (RT Config) when defining Groups of Nodes for workstation groups.

Velocity File

The velocity file increases the speed of PLU reads on workstations and enables workstations to make PLU reads in offline mode. The velocity file resides locally on the workstation. It contains common items that are either high movers (within a user-defined range) or that were flagged in the PLU file to be included in the velocity file.

During normal operation, workstations can perform PLU reads from the velocity file rather than from the primary PLU server (optional). If workstations normally read the PLU file on the primary PLU server (or a read alternate server node such as the secondary server), they can be configured to read from the velocity file when the PLU server is unavailable to ensure that POS operations continue.

When operating in standalone mode (separated from the servers), workstations can read only items in the velocity file, which is a subset of the PLU file.

For more information about the velocity file, refer to the *Back Office User Guide* (B005-0000-1059).

Support Tools

System support tools are available to configure, monitor, and support an ACS runtime system. System tools include:

- ACS Graphical Interface Tools
- Command Line Tools
- Windows NT Administrative Tools

Each graphical tool or utility has its own online help file.

Note to UNIX Users

Some of the support tools have been ported to Windows NT directly from UNIX and do not have a graphical interface. In these cases, you must run the applications from a command line (in a DOS window) or from the Windows NT Explorer. Their functionality is the same as in UNIX. Some tools now have a graphical interface, while others have been incorporated into the Windows NT Administrative Tools (for example, all event logging is directed to the Windows NT Event Viewer)

The following sections describe each of the more commonly used ACS tools. The tools are listed in alphabetical order. Tools that are part of a multi-utility interface are described as part of the interface. For example, you will find a description of the TMS Trace utility under the TMS Administrator user interface.

The most commonly used Windows NT tools are described after the ACS tools.

AUP Monitor

The AUP Monitor is a graphical tool that displays the AUP Status Report.

To connect to the AUP Monitor, select Start, Programs, Advanced Checkout Solution 4.0, AUP Monitor.

The AUP Monitor is a dynamically updated window which shows the:

- Current AUP activity

- Time the AUP process was started
- Time the last transaction was processed
- Time of last store closing
- Time of last timed closing
- Offset into the TLOG file being processed
- Size of the TLOG file being processed
- Number of bytes left to process
- Percentage of the file left to process
- Number of TLOG records processed
- Number of transactions processed
- Processing rate in bytes per second

At the bottom of the window, the AUP Monitor shows a count of the number of times each file it writes to has been updated.

You cannot edit information on the AUP Monitor.

Context Switching Monitor

The Context Switching Monitor (`cswitch.exe`) is a program which interfaces between the Task Manager (TM) and the ACS Transaction Management Services (TMS). Contexts are groups of related tasks that TM treats in certain ways. Each context can be in one of three states: Primary, Backup, or Other. When TM is used in an ACS system with TMS, the first three contexts are assumed to be the three ACS server sets: TLOG, PLU, and Gateway/Load. The purpose of `cswitch` is to find out what states the three TMS server sets are in, and to switch the corresponding TM contexts into the same state.

When TM starts, the three TMS contexts are in the state Other. When cswitch starts, it immediately sends context switch messages to TM to set their states to their current status. `cswitch` is always waiting for a server set switch in TMS. When a switch is detected, it sends the appropriate switch message to TM. This permits certain tasks to be stopped or started, depending on whether the server is Primary or Backup for a particular server set.

For example, AUP should only be run on a server when that server is the TLOG primary. If a primary switch occurs, `cswitch` on the new TLOG secondary sends a switch message to TM to set the TLOG context to the Backup state. This causes TM to stop AUP, and all other task that belong to that context and are only valid to be run in the Primary state.

Note to UNIX Users

In Windows NT, `cswitch` is implemented as a console application, not a service. It recognizes the **Ctrl+Break** sequence, and terminates when it receives it. This sequence is what TM uses to cleanly terminate a console application. Aside from that, `cswitch` for NT is exactly like the UNIX version.

`cswitch` does not log messages directly log to the NT Event Viewer. Instead it uses a message file and routines which the ACSCOM library translates into Event Viewer calls. That being the case, `cswitch` uses `cswitch.msg` as a message file. The messages and their descriptions follow.

Error		Meaning
-100	Error connecting to Task Manager	This error occurs when cswitch is unable to connect to the Task Manager named pipe. This usually happens when TM is not currently running, or has just died. NT specific error text explaining the error code follows the message.

Error		Meaning
-101	Error getting context list from Task Manager	This error occurs when cswitch is unable to get the list of contexts from Task Manager. This usually happens when TM has just died. NT specific error text explaining the error code follows the message.
-102	Context Switch initialization error	This message is in the message file, but is not logged by the NT version. Any initialization error has its own, more specific message logged.
-103	Unable to initialize with TMS. Return code	This error occurs when cswitch is unable to initialize with TMS. This usually happens when TM is not currently running or has just started running, and is not able to accept application requests yet. If TMS is not running **NL:DS** is logged as part of the message. If TMS is not yet able to accept initialization, **IL:II** is logged.
-104	TMS Get Role call (immediate timeout) failed. Return code	This error occurs when cswitch is unable to get the initial state of the TMS server sets. This usually happens when TMS has just died. If TMS is not running **NL:DS** is logged as part of the message.
-105	Error sending context switch message	This error occurs when cswitch is unable to send a switch message to Task Manager. This usually happens when TM is not currently running, or has just died. NT specific error text explaining the error code follows the message.

Error		Meaning
-106	TMS Get Role call (indefinite timeout) failed. Return code	This error occurs when cswitch gets an error while waiting for a server set switch to occur. This usually happens when TMS has just died. If TMS is not running NL:DS is logged as part of the message.
1	Context <CONTEXT> switched to <STATE> at <TIME>	This message is logged when cswitch successfully sends a context switch message to TM. The message includes which context has been switched, the state it switched to, and the time the switch occurred.

File Reports

The File Utilities are used to generate keyed file reports. Reports generated by the File Utilitie are:

- Keyed file
- Direct file
- Random file

For more information, see "Keyed File Conversions" above File Utilities Interface in the "ACS Graphical Interface Tr of this chapter. Also see the online help.

Forced Load Utility

The `fluimain.exe` program is a graphical tool instruct one ormore workstations on the LA load. A ForcedLoad is the same as an initi

When a ForcedLoad is requested by a 7 Load Protocol (SLP) Loader responds file to the workstation.

- t
w
ISA
sear

ISAM
(initial
file to sh
However,

- Random

Random files structure rules. ... the keyed file or direct file files to keyed fi... are available to convert random converted to ran... keyed files to random files. Keyed files are ... files to transmit them over a Wide Area Network (WAN) to a host.

Forced Load processing involves these components

- Workstation Transaction Management c.
- Send Message kernel
- Forced Load user inte~

The action you
program.

For each of these file types, the File Utilities provide the following file conversions:

- Keyed file to random file
- Random file to keyed file
- Keyed file to keyed file (reorganization)
- ACS data file to a flat (random) file
- Flat (random) file to a ACS data file
- Direct file to a random file
- Random file to a direct file
- ISAM file to a flat (random) file
- Flat (random) file to an ISAM file
- Keyed file to an ISAM file
- ISAM file to a keyed file

The File Utilities consists of the File Utilities kernals. The File Utilities kernels perform actual conversion and reporting.

NCR Loader Monitor

The NCR Loader Monitor is part of the Windows NT Loader Toolkit. It is a graphical utility used to monitor the status of the Loader running on either the local or a remote Windows NT host.

You can use the Monitor to display the current load status of workstations, however, it is not required for download functions.

The NCR Loader Monitor permits you to connect to a remote computer across a LAN and view the parameters associated with the load process for the remote computer.

The NCR Loader Monitor displays the:

- Status
- Terminal List (`term.txt` file)

- Group List (`group.txt` and `groupdir.txt` file)
- Loader Configuration
- SLP Configuration Parameters

The NCR Loader Monitor also provides a direct link to the Windows NT Event Viewer so you can view error log information. Unlike the other ACS tools which write their error information to the Event Viewer Application Log, the NCR Loader Monitor writes error information to the Event Viewer System Log.

Runtime Configurator

The Runtime Configurator (RT Config) is a graphical interface tool that permits you to configure the Groups, Nodes, and Server Sets for your system. The "Configuring Servers" chapter describes how to use RT Config.

You can open and display the report for any configuration in the main window of RT Config. If you want to specifically view the information for the system configuration (the configuration used at runtime), you should select File, Open System Configuration. You can print the report at any time.

For more information, see the "Configuring Servers" chapter of this book and the RT Config online help.

Task Manager User Interface

Each server in the configuration contains a Task Manager. This background program:

- Processes messages received from the Context Switching Monitor when a context switch occurs.
- Initiates and controls tasks (applications) that you associate with a specific context.

For example, when a secondary server assumes primary server responsibilities, the Task Manager will call the entire set of primary tasks as a context.

The ACS Task Manager starts automatically whenever you start Windows NT. The Task Manager in turn starts and controls all other ACS tasks. Some are automatic; others you control manually. For certain operations, you must stop, then restart the Task Manager. To avoid doing these functions through Windows NT, TMS startup and shutdown are command line functions.

Stopping Task Manager

To stop Task Manager, select Start, Run, then type `tmshutdown`. Check the Task Manager User Interface to verify that it has stopped, then complete the ACS operation. When you are finished, use the procedure in the next section to restart the Task Manager.

Starting Task Manager

To start Task Manager, select Start, Run, then type `tmstart`. Check the Task Manager User Interface to verify that it restarts. The following sections describe the Task Manager User Interface (TMUI).

Using TMUI

The Task Manager User Interface is a graphical interface that helps you associate tasks with a context and define how these tasks should run. Perhaps the most frequently used functions are simply stopping a task and then restarting it after changing some aspect of the system configuration.

TMUI permits you to:

- Connect to a server
- Select a task
- Add or Delete a task
- Modify task options
- Schedule when a task will run
- Start or stop a task manually

- Sort the list of tasks

Errors detected by Task Manager are written to the specific log in the NT Application Event Log. Since it is an NT service, Task Manager is controlled through the NT Services option on the Control Panel.

You can use TMUI to control Task Managers anywhere on the network, not just a Task Manager running locally. Also, you can connect to several Task Managers simultaneously (only one at a time can have focus), then use the TMUI Windows menu to switch between running instances of Task Manager.

In the Task Manager, related ACS tasks are grouped into "contexts." With contexts, a related set of tasks can be treated as a group by the Task Manager. For example, if a secondary server must assume primary server responsibilities, the Task Manager may call the entire set of primary tasks as a context when the transition occurs. See "Context Switching Monitor" in this chapter.

For more information on Task Manager, see the online help.

TLOG Dump

In a store environment, transactions are conducted at the workstation. The workstation buffers the transaction data until the transaction is completed. When the transaction is completed, the workstation sends the data to the Transaction Log (TLOG) file.

The TLOG file is a sequentially organized file on the primary TLOG server. It contains a record of all transactions. The TLOG file is a mirrored file, which means that the primary TLOG server immediately writes the blocks of data to the secondary TLOG server.

If the workstation fails to communicate with the TLOG primary server, Transaction Management Services (TMS) spools TLOG data to the local spool node (the base node) defined through the Runtime Configurator (RT Config) system configuration tool.

If the TLOG secondary server is still available, TMS increments an "out-of-date" count to indicate that despooling is required. When the TLOG primary returns, it polls all local spool nodes for spooled data.

If the secondary is unavailable, updates to the TLOG primary are duplicated in a special spool file located on the same disk as the master TLOG file. When the TLOG secondary returns, it responds to the TLOG primary's poll. The special spooled transactions then are despooled to the TLOG secondary.

Despooling is always initiated by the TLOG primary. Despooling consists of reading the transaction data from the workstation spool file and writing it back to the TLOG primary. When TMS detects an End-of-File (EOF) on a despool read, it decrements the out-of-date count and deletes the spool file.

Transaction records are sent to the TLOG file in blocks of up to 512 bytes. These blocks contain header records that indicate:

- The number of the workstation that sent the block
- The number of the transaction with which the block is associated
- The sequential order of the block within the transaction
- Whether the block is the last block in the transaction

The TLOG Dump tool permits you to view information about a TLOG file or a spool file that contains TLOG information.

TLOG Dump provides information about the:

- Blocks within the TLOG file
- Transaction whose records are being sent in blocks to the TLOG file

Accessing TLOG Dump

TLOG Dump is a command line tool only. The `tlogdump.exe` file is located in the \acs\server\bin directory. To access TLOG Dump, open a Command Prompt window, then run `tlogdump.exe`. The syntax is:

```
tlogdump <TLOG file>
```

If the TLOG file is large, you can pipe the output to the DOS *more* filter or to the UNIX *pg* command. For example:

```
tlogdump gdbtloga.dat | more
```

or

```
tlogdump gdbtloga.dat | more
```

This will display the file one screen at a time. You must press a key to view the next page. The following is an example of a TLOG Dump screen.

TLOG Dump Example Screen

Block	Offset	Len	Id	Trm	Trx	Seq	OK	Tp	Date	Time	Total
0001	0200	016	F	---	---	-	-	G	06/08/92	08:55:14	-----
0002	0212	039	B	1	1	1	-	G	06/08/92	09:20:10	-----
0003	0236	039	B	2	1	1	-	G	06/08/92	09:20:18	-----
0004	0264	039	B	3	1	1	-	N	06/08/92	08:20:20	-----
0005	028d	039	B	3	1	2	-	-	06/08/92	-	-----
0006	03d6	039	B	1	1	1	D	G	06/08/92	09:20:10	-----
0007	0672	099	B	2	2	1	-	N	06/08/92	09:20:22	18.26

Interpreting TLOG Dump Data

The fields on the TLOG Dump data screen provide the following information:

Field	Provides
Block	The decimal number of the block within the TLOG file. These numbers are listed sequentially.
Offset	The hexadecimal representation of the byte offset of the block within the TLOG file.
Len	The decimal length of the TLOG block.
Id	A one-character identification of the kind of block. Possible values are: F = first block [header record that is written only by the Asynchronous Update Process (AUP) application] B = transaction block T = Timed Close (TClose) block S = Close Period block N = sales notification block
Trm	The decimal number of the workstation where the transaction occurred.
Trx	The decimal number of the transaction. This number is assigned sequentially for each workstation.

Field	Provides
Seq	The decimal number of the block within the transaction. For short transactions that consist of only one block, this number is always one. For longer transactions that consist of more than one block, this number indicates the sequential position of the block within the transaction. When this number is greater than one, the remaining fields are filled with dashes. Refer to the first block within the transaction for the remaining TLOG Dump fields. For example, blocks four and five on the data screen example earlier in this section indicate that transaction one on workstation three contains two blocks. All TLOG Dump fields for the first block are filled with data; fields for the second block are filled with dashes.
OK	An indication of whether or not the block is a duplicate. A dash in this field indicates that the block is not a duplicate (the same block has not been received previously by the TLOG file). A "D" in this field indicates that the block is a duplicate (has been received previously by the TLOG file). Even if a block is received twice by the TLOG file, AUP only processes the block once. Thus, a duplicate block does not cause an error in TLOG file processing.
	A duplicate block may occur any time that a TLOG record on its way to the TLOG file is interrupted. For example, if TLOG records being despooled to the TLOG file are interrupted, all of the records are sent again. The records that were successfully sent before the interruption are sent again. In this case, duplicate blocks exist.

Field	Provides
Tp	An indication of the type of the block. The type is determined by the transaction with which the block is associated. Possible values are: G = sign on workstation N = normal transaction F = sign off workstation S = standalone transaction (workstation saves the transaction locally) V = void T = training record P = tender pickup L = tender loan R = raincheck Y = layaway y = cancel layaway v = void previous transaction n = no sale s = suspended transaction p = PLU (price query without ringing the transaction)
Date	The date (MM/DD/YY) on which the transaction occurred.
Time	The time at which the transaction occurred.
Total	The total dollar amount of the transaction. The field only contains a value for the end of a normal transaction (an "N" in the Tp field) or for a voided transaction (a "V" in the Tp field).

TMS Administrator

The TMS Administrator is a multi-utility graphical interface that incorporates several ACS tools. The tools available through the TMS Admin user interface permit you to:

- Check the current status of all servers on the system and manually switch roles of server sets (Server Control Utility)
- Capture and view messages being sent over LAN (TMS Trace)
- View the status of distribution files, including live distribution progress (Distribution Status)

Server Control

After connecting to a server, TMS Administrator displays the following information for each server set:

- Node ID of the server acting as the primary for the selected server set
- Node ID of the server acting as the secondary for the selected server set
- Current run mode: "Configured" indicates that the node currently acting as the primary or secondary is the one designated as such through the RT Config tool; "switched" indicates that its assigned role is currently reversed
- Read location: The node to which read requests are directed for the active node's group
- Number of workstations not responding
- Number of workstations with pending distribution
- Status of current secondary server: is or is not "up to date" (mirrored files associated with the server set are current)

For the TLOG server set, TMS Administrator also indicates whether or not the TLOG secondary is spooling or despooling transaction log information.

To connect to a server and begin the Server Control utility, select File, Connection, Server Control.

You may connect to any server in the network to access the TMS module on that node. You may connect to more than one server simultaneously. If you have established multiple connections, you may switch between servers by selecting the Window menu and then choosing from the servers listed at the end of the menu. A check beside the server name indicates the current connection.

For more information on the Server Control Utility, see the online help for TMS Admin.

Manual Switch

When a primary server becomes unavailable, Transaction Management Services (TMS) can pass or "switch" control to a secondary server. This can occur either automatically, if your system is configured with this option through RT Config, or manually.

After the switch, you will correct the problem that caused the original primary server set to fail. Then, in most cases, you will want to restore the original configuration. This is especially true when your system contains hardware components that are connected only to the original primary.

When you bring the original primary server set back on line, the system will attempt to restore all data files. Ordinarily, you should not perform a manual switch until the original primary takes over as the acting secondary. Use the Server Control utility (see "Server Control Utility") to view the status of all server sets.

In general, you should not initiate a manual switch if TLOG servers are spooling or despooling, or if the secondary is out of date. In fact, TMS Admin will not permit you switch under these conditions unless you select the "Forced Switch" option. A forced switch almost always results in the loss of transacation data. This leads to incorrect accounting totals and inaccurate end-of-day reports. It is recommended that you do not perform a forced switch unless you are an expert in transaction log management and understand the consequences of your actions.

The Transaction Management Services Administrator (TMS Admin) graphical utility permits you to switch server sets. For more information on manually switching server sets, see the online help for TMS Administrator.

TMS Trace

Transaction Management Services (TMS) is the hub of the network communications system. When an application needs a specific file, it formats a request and sends it to TMS. Then TMS either processes the request locally itself or routes it to another node for the copy of TMS running on that node to process. The response is then routed back to the application that initiated the request.

Note to UNIX Users

This utility is the same as nettrace in the UNIX ACS system, with some expanded capabilities. It combines the functions of the nettrace and apptrace utilities.

The TMS Trace utility permits you to view this message traffic, as well as the internal message transfers occurring between TMS and the applications within the host server. When you connect to a server through the Trace utility, it captures the messages and writes them to the document window. Each message appears as a row of data containing up to 30 fields. You may select which fields display, and you may specify filters for each field, permitting you to focus on specific events or entities.

From View, Options, General tab, you can select a maximum number of entries that should display in the trace history.

You cannot edit or enter data through the Trace utility.

To access the Trace utility, select File, Connection, TMS Trace. For more information on tracing LAN activity, see the online help for TMS Administrator.

Distribution Status

When you configure files using the Data Services Configurator (DS Config), you may stipulate which files should be distributed to nodes within the server set at the time of update. The Distribution Status utility permits you to view the lists of files scheduled for distribution; you cannot edit or enter data.

Distribution Status provides the following information:

- External File Table (XFT) number that corresponds to the file scheduled for distribution
- Name of the file scheduled for distribution
- Server set to which the file belongs
- ID of the node to which the file should be distributed
- Action outstanding: the request that necessitated a distribution

  The three most common requests in this category are Close File (CL), Transaction Close (TC), and Write (WR).

To connect to a server and begin the Distribution Status utility, select File, Connection, Distribution Status. You may connect to any server in the network to access the TMS module on that node.

You may connect to more than one server at the same time. If you have established multiple connections, you may switch between servers by selecting the Window menu and then choosing from the servers listed on the menu. A check beside the server name indicates the current connection.

Distribution information will continue to display on your screen (in a document window) as long as you remain connected to that server.

To disconnect from the server without closing the TMS Administrator program, simply close the document window that represents the session.

You can use the File, Save option to save the information to a file. You can also use the File, Load option to load (open) files later for static viewing.

Live Distribution Progress

The Distribution utility status bar enables you to view live distribution status information in two ways: from the status bar and from a detailed dialog.

From the status bar itself, you can view the following information:

- Status of file currently being distributed
- Progress bar depicting distribution
- Number of bytes distributed out of total bytes
- Time remaining before distribution is complete

You can access more detailed information about the file being distributed by double-clicking any part of the status bar (except for the progress bar) to open the Distribution Status Details dialog. This dialog contains 13 descriptive fields, including file size, number, and type.

TMS View

TMS View is a command line only tool that permits you to view the file type of any file that has a TMS format. These files were configured through DS Config. TMS View gets information from the file header and individual records from the file.

If the file is a keyed file, TMS View provides the record length and the key length of the file.

You can also use TMS View as a quick way to determine if a TMS file is corrupted. If you use TMS View for a file that you know is a TMS file, and you get an error message stating that the file is not a TMS file, the file may be corrupt.

Accessing TMS View

To access TMS View from the command line, type:

tmsview <*filename*>

A data screen displays.

Note: If the file you are viewing is large, it will scroll off the screen. To prevent this from happening, you can pipe the output of TMS View through the DOS *more* filter or the UNIX *pg* command. Note that if there are control characters in the file (CTRL+<*character*>), the *more* filter may display those characters as symbols. The following is an example of a TMS View data screen

Example TMS View data screen:

```
------------------
------------------
------------------
FILENAME = /appl/unity/data/CDEPT
FILETYPE = Keyed
RECLEN = 12
KEYLEN = 0
------------------
------------------
------------------
                 1
      012345678901
------------------
------------------
------------------
 [ 0] ...^...*....
 [ 1] ..p..._....?
 [ 2] ....O.E....(
 [ 3] ..x...#...b.
 [ 4] ..m...a...t?
 [ 5] ...,-.[....?
------------------
------------------
------------------
RECORD COUNT = 6
------------------
------------------
------------------
(EOF):
```

Interpreting TMS View Data

The fields on the TMS View data screen provide the following information:

Field	Provides
FILENAME	Name of the TMS file for which you want to view information
FILETYPE	Type of the file configured through DS Config Sequential Direct Keyed Random
RECLEN	Record length (keyed files only)
KEYLEN	Key length (keyed files only); if the file is not a keyed file, this value is 0
ruler	Numbers that help you to determine the offset of each byte in the record so that you can read the record more easily
record	ASCII representation of record; "." represents any ASCII character that cannot be printed
RECORD COUNT	Number of records in the file

XFT Merge

Before the XFT Merge utility program existed, you had to use DS Config to rebuild a complete set of tables for the system. The process required returning to the development environment used to build the ACS application. With the XFT Merge program, you use DS Config to build your set of XFT and XLAT tables that contain only the files you need for development and testing. XFT Merge, used in the installation scripts, moves the required XFT and XLAT entries from the component tables to the installed ACS tables.

XFT Merge is a UNIX or Windows NT console application. One XFT Merge restriction is that it works only on Internal File Table (IFT) entries where there is a single external file defined. It is possible to map a single internal file to multiple external files. XFT Merge generates an error if it finds this condition.

XFT Merge Command Line

XFT Merge requires these parameters:

- Primary XFT table
- Primary XLAT table
- Secondary XFT table
- Secondary XLAT table
- IFT name
- -c switch

IFT names before the switch are entries located in the secondary file set that should replace or add to the current entry with the same IFT name in the primary set when the new XFT and XLAT files are generated.

IFT entries in the primary and secondary tables following the -c switch are only compared. If they do not match, the program exits with an error code that matches the severity of the error. The -c feature of XFT Merge was included for debug and support. A new release of the ACS application or a patch update often includes changes to the XFT and XLAT tables. When upgrading a customer system, the XFT and XLAT table are rebuilt with the changes contained in the new ACS release or patch update. The changes are documented in the release notes, between the new base tables and the customer tables. After building new customer tables, if any problems are encountered bringing up the system, the compare listing may help pinpoint any XFT and XLAT-related issues.

If successful and at least one IFT command line entry was before the -c switch, the program generates a new XFT file, `newxft`, and a new XLAT file, `newxlat`.

Syntax

```
xftmerge xftfile1 xlatfile1 xftfile2 xlatfile2 ift1
[[ift2…iftn] -c iftn+1[iftn+2…ift20]]
```

Parameters

xftfile1 Primary set of XFT files.

xlatfile1 Primary set of XLAT files.

xftfile1 Secondary set of XFT files.

xlatfile1 Secondary set of XLAT files.

ift1-iftn IFT entries in the secondary set to replace or add to the primary set to generate a new set of XFT and XLAT tables.

-c Files before this switch are part of the merge, files after the switch are compared.

-m May occur anywhere on the command line. Loads a new compare mask with the hexadecimal value following the switch (no space). If no value is entered, the -m switch returns the mask to the default. To learn more about masks, see the next section.

iftn+1 - ift20 A compare of the IFT, XLAT and XFT entries is done between the two sets, and if they do not match, the program exits with an error code.

newxft, newxlat Output files. Output is only generated if there is at least one IFT on the command line before the -c switch. The output files, `newxft` and `newxlat`, are generated in four passes. The first pass copies workstation file entries, the second copies workstation pipe devices, the third copies server file devices, and the fourth pass copies server pipe devices.

Compare Mask

The compare mask is used only during the IFT entry comparison phase. It determines how certain differences between the primary file set and the secondary file set should be treated. A difference is either treated as a fatal error, and the program ends the merge and exits with a non-zero error status, or it only generates a warning message. The default mask should not be used unless you have a good understanding of the XFT and XLAT structures.

Compare Mask Option		Meaning
IGNORE_IFT_APPLICATION	0x0001	When this option is set, the application field in the IFT table entry is ignored during the compare. The application field is used to limit access to a file to a certain type of application. Application types are: SALES 0 APPL_AUP 1 OPTIONS 2 REPORTS 3 ACCOUNTS 4 DATAMAIN 5 COOP_SERVICE 6 USERS 7 NO_APP_TYPES 8 The NO_APP_TYPES represents all application types. Almost all the current IFT entries in the base application use this. The default mask includes the application type in this comparison.
IGNORE_IFT_SCRNGROUP	0x0002	When this option is set, the `scrn_group` field in the IFT table entry is ignored during the compare. This field is set to a value of 2 in all entries. The default mask includes the `scrn_group` type in this comparison.
IGNORE_IFT_MINMAX	0x0004	When this option is set, the IFT fields' minimum and maximum do not have to exactly match. Instead, if the values in the secondary file set fall within the range of those in the primary set, only a

Compare Mask Option		Meaning
		warning message is issued. The default mask does not include this option and requires an exact match.
IGNORE_IFT_RECORDTYPE	0x0008	When this option is set, the number of records defined for an IFT entry in the secondary file set does not need to be exactly the same as the primary file set. If all the record types defined in the secondary file set are in the primary file set, then only a warning is issued. This option can be used if the add-on component reads or writes only specific record types. If the component does a sequential read of all records in a file and would not understand new record types, this option should not be used. The default mask does not use this option and requires that the number of records be the same.
IGNORE_IFT_FIELD_HEADER	0x0010	When this option is set, the XLAT field headers and all XLAT field definitions are ignored during the comparison. The XLAT capabilities are rarely used in ACS. Fields are usually used to define the position of AUP restart counters and record switching. The default mask does not use this option so all field headers and definitions must be the same to pass the comparison. In most cases a change in the field definitions indicates that header file changes have occurred.
IGNORE_IFT_FIELD_DEFINITIONS 0x0020		This option is similar to IGNORE_IFT_FIELD_HEADER. With this option the header is still checked, but the field definitions are not. The default mask does not include this option.
IGNORE_XFT_NAME 0x0040		When this option is set, the XFT names are not checked in the comparison. This option is set in the default mask.
IGNORE_XFT_ISAM_KEY_DIFFERENCE 0x0008		When this option is set, a comparison between a keyed file type and an ISAM file type (or the reverse) produces a match. In most cases these files types are

Explanation	Code
workstation tables. Test the return code. If successful, copy the new XFT and XLAT files (`newxft` and `newxlat`) files into a temporary directory so that if no other errors are detected, these files can replace the ACS files.	`comxlat.003 PLUR1 PLUR2`

XFT View

Files defined with DS Config have entries into the External File Table (XFT). The XFT contains file types, statuses, and configurations.

The XFT View tool permits you to view configuration information about any file that has a TMS format. These files were configured through DS Config.

XFT View provides:

- File type
- Number of applications that may access file
- File LAN type
- Server set to which file belongs
- Maximum data size for file

Accessing XFT View

To access XFT View from the command line, type:

xftview <xft filename>

Select the file for which you want information to display: server (`gdbxft.003`), workstation/server (`gdbxft.002`), or workstation (`gdbxft.001`).

A data screen displays.

Example XFT View data screen:

```
External file #000                          GDBXFT.000
  ------------------------------------------------
Interface type : 0x000e
Status flags : 0x0241 ( NEED_INIT DBCONFIG MULTIFILE )
Exclusive application ID : 0x001e
Exclusive node ID : 0x0000
Mirror application ID : 0x001e
Mirror node ID : 0x0000
LAN type : 0x02 (Distributed)
Server set : 0x02 (G/L)
Maximum application access : 0x0003
Remaining application access : 0x0003
CRC value : 0xaf73
Maximum data size : 0x02a00
Device type : 0x0000
Random File
File size in blocks (excluding header) : 0x0005
```

Note: This example data screen is for a random file. The fields on this screen may vary, depending on the file type.

Interpreting XFT View Data

Some fields on the XFT View data screen display for all files. Additional fields may display for specific files:

- Direct and keyed files
- Keyed files

Note: XFT View does not display the copy of the XFT files kept in the TMS memory while TMS is running. Thus, the fields marked with asterisks (*) in the following table are meaningless in XFT View because they are only used in the in-memory copy and are constantly changing. Changes are not written to the file.

The fields on the XFT View data screen for all files and devices provide the following information:

Field	Provides
External file	the number of the index into the External File Table (XFT) that corresponds to the file about which you are viewing information. The number in this field increments sequentially in XFT View.
Interface type	a hexadecimal representation of the number that indicates a specific file. The hexadecimal representations of each file type are: 1 = system (non-user) 7 = tone b = sequential file c = direct file d = keyed file e = random file f = CMOS 13 = pipe

Field	Provides
Status flags	the hexadecimal representation of status flags, with the name of the flag in parentheses. Note: XFT View does not display the copy of the XFT files kept in TMS memory while TMS is running. Thus, the flags marked with asterisks (*) in the following list are meaningless in XFT View because they are only used in the in-memory copy and are constantly changing. Changes are not written to the file. Values are: 0x0001 (XFT_NEED_INIT) = file needs to be issued an Initialize TMS for this Application (IN) request 0x0002 * (XFT_INIT_DONE) = file has been issued an Initialize TMS for this Application (IN) request 0x0004 * (XFT_INIT_OK) = file has been initialized 0x0008 * (XFT_WAITING) = outstanding requests exist for the file 0x0010 (XFT_NEED_TERM) = file requires a Terminate TMS for this Application (TM) request to be sent by TMS upon TMS termination

Field	Provides
Status flags (cont'd)	0x0020 * (XFT_TERM_DONE) = file has been issued a Terminate TMS for this Application (TM) request 0x0040 (XFT_DBCONFIG) = file contains system configuration information 0x0080 (XFT_IMMEDIATE) = file updates are distributed immediately; file or device type must be distributed or binary 0x0100 * (XFT_SYSLOCK) = file is locked by TMS 0x0200 (XFT_MULTIFILE) = file has numeric extension 0x0400 * (XFT_DOING_DIST) = file is being distributed 0x0800 (XFT_REC_SW_XL) = record switch XLAT required 0x1000 (XFT_BLOCK_XL) = block XLAT required 0x2000 * (XFT_LOC_NOT_OPEN) = local read copy of file not opened 0x4000 * (XFT_CREATING) = keyed file being created 0x8000 (XFT_NOT_SUPPORT) = file not supported in this numbered XFT file

Field	Provides
Status flags (cont'd)	Some hexadecimal representations indicate that more than one flag is set. For example, if the status flag field contains `0x0241 (NEED_INIT DBCONFIG MULTIFILE)`, the hexadecimal number is interpreted as: 0x0241 = 0x200 + 0x40 + 0x1 0x200 = XFT_MULTIFILE 0x40 = XFT_DBCONFIG 0x1 = XFT_NEED_INIT This field value indicates that a multi-file configured through DS Config needs to be initialized.
Exclusive application ID	the value provided by TMS when an application requests exclusive access to a file. When this field is set to the hexadecimal value of 0x001e (decimal value 30), any application may access the file. When an application requests exclusive access to the file, the hexadecimal representation of that application's application ID displays in this field.
Exclusive node ID	the hexadecimal representation of the node ID of the workstation that requested exclusive access.
Mirror application ID	the value provided by TMS when it mirrors a file to another location. When this field is set to the hexadecimal value of 0x001e (decimal value 30), TMS may mirror the file to any application that requests the file. When TMS is mirroring the file to an application, the hexadecimal representation of that application's application ID displays in this field.
Mirror node ID	the hexadecimal representation of the node ID of the workstation to which TMS is mirroring the file.

Field	Provides
LAN type	the hexadecimal representation of the LAN type configured for the file through DS Config. The LAN type displays in parentheses beside the hexadecimal representation. LAN types include: Group (00) - the file exists on the disk defined as the base node (also referred to as the local spool node or the logically local disk) for the group [the disk is defined as the local disk through the Runtime Configuration (RT Config) system configuration tool].
LAN type (cont'd)	Dual (01) - the file exists on the server defined as the primary server for a particular server set, and a backup copy of the file exists on the server defined as the secondary server (if a secondary is designated). Distributed (02) - the file exists on the server defined as the primary server for a particular server set, and backup copies of the file exist on all members of the server set. Remote (03) - the file exists on one workstation or server specified by the LAN node ID; requests for the file are routed to the specified node. Node specific (04) - Non-zero file number - the file exists on the shared disk defined for the group that contains the workstation or server; the workstation or server ID is specified by the file number field; may be one file for each workstation. Node specific (04) - Zero file number - the file exists on the server defined as the primary server for a particular server set. Local (05) - the file exists on the physical disk of the workstation.

Field	Provides
Server set	the hexadecimal representation of the number that identifies the server set to which the file belongs. The numbers that represent each server set are: 0 = Transaction Log (TLOG) 1 = Price Look Up (PLU) 2 = Gateway/Load (G/L)
Maximum application access	the maximum number of applications that may access the file at the same time.
Remaining application access	the remaining number of applications that may access the file as it is being accessed by other applications. Each time an application accesses the file, TMS decreases this value by one. This value equals the Maximum application access field value minus the current number of applications accessing the file. For example, if the maximum application access value is ten, and four applications currently are accessing the file, this value is six. Thus, six other applications may access the file.
CRC value	the value used by TMS to ensure that the same version of the DS Config output files are being used on the various nodes in the system. The value in this field is compared with the XFTs on other nodes. If the values do not match, the nodes do not contain the same configuration tables. In this case, TMS returns to the application requesting access to the invalid XFT an IL Return Code and a BX Device Error indicating that the XFTs do not match.
Maximum data size	the maximum amount of data that can be written to or read from the file at one time.
Device type	Not used; always 0.

Field	Provides
xft type	a verbal description of the file type. The file type displayed in this field corresponds to the hexadecimal representation of the file type displayed in the Interface type field of the XFT View data screen. For example, if the Interface type field contains 0x000e, which represents the decimal number 14, the number 14 indicates a random file, and this field contains the verbal description, "Random File."

Note:

- The File size in blocks field displays for all file types, but is valid for direct and keyed only.
- The File size in blocks (excluding header) field contains the number of blocks in the file. TMS uses this value to create the size of fixed-length files. This field is valid only for fixed length files (direct and keyed files configured through DS Config). TMS ignores this value for other files.
- Keyed Files Only:

  Some fields display for keyed files only. Keyed files contain fixed-length records to which information is distributed based on hashing. A key field (such as an item number) is used to identify and access each record.

- Key length

  The Key length field contains the key field length in bytes. This value indicates the number of bytes available in which to store the key value in a keyed file.

- Record length

  The Record length field contains the length of the record, including the key field value.

Windows NT Administrative Tools

Windows NT contains built-in administration tools. These tools can be used to view application-specific information. The Windows NT Administrative Tools that are most useful with ACS are:

- Disk Administrator
- Event Viewer
- Performance Monitor
- Server Manager
- User Manager for Domains

To access these tools, click Start, Programs, Administrative Tools (Common), and then select a tool from the menu.

Disk Administrator

Disk Administrator is a graphical tool for managing disks. This tool encompasses and extends the functionality of character-based disk management tools, such as MS-DOS **fdisk** and the Microsoft LAN Manager Fault Tolerance character applications, into one graphical interface.

The following list provides an overview of some of the things you can do with this graphical tool:

- Create and delete partitions on a hard disk and logical drives within an extended partition
- Format and label volumes
- Read status information about disks such as the partition sizes and the amount of free space that is available for creating additional partitions
- Read status information about Windows NT volumes such as the drive-letter assignment, volume label, file system type, and size
- Make and change drive-letter assignments for hard disk volumes as well as CD-ROM devices

- Create and delete volume sets
- Extend volumes and volume sets
- Create and delete stripe sets with or without parity
- Regenerate a missing or failed member of a stripe set with parity
- Establish or break disk-mirror sets

Partitioning the internal hard disk on a new computer is done during initial setup when you load the Windows NT operating software. Making changes to that disk or partitioning an additional new hard disk is done using the Disk Administrator program.

Disk Administrator cannot be used to further partition the system partition because it contains files required to operate Windows NT Server. For more information, see the Disk Administrator online help.

For specific information on a specific disk, double-click the My Computer icon on the desktop, and then click the disk you want to check. Select File, Properties to view information about the selected disk. For more information on disk properties, see the Properties dialog box online help.

Event Viewer

An event is any significant occurrence in the system or in an application that requires users to be notified. For critical events such as a full server or an interrupted power supply, you may see a message on screen. For many other events that do not require immediate attention, Windows NT adds information to the event log file to provide information without disturbing your usual work. This event logging service starts automatically each time you start your computer running Windows NT. You can stop event logging by choosing the Services tool in Control Panel.

You can use Event Viewer to view and manage System, Security, and Application event logs. You can also archive event logs.

- The System log records events logged by the Windows NT system components. For example, the failure of a driver or other system component to load during startup is recorded in this log. ACS writes system-level events to this log, such as when a task starts or is stopped.
- The Security log records security events. This helps track changes to the security system and identify any possible breaches to security. For example, attempts to log on to the system may be recorded in this log, depending on the Audit settings in User Manager. You can view this log only if you are an Administrator.
- The Application log records events logged by applications. ACS components typically write application-level information to this log, such as error messages that do not affect system operation.

Note: The Event Viewer is not updated dynamically. When you are viewing the logs, any events that are occurring are being recorded, but not displayed. To see those events, you must refresh the display. To do this, you can either close the Event Viewer and re-open it again, or select View, Refresh, or press F5.

At the left side of each line in the viewer is an icon indicating the level of severity of the event.

- A blue icon with the letter i inside it is an information event. This is a low level of severity. It contains information about successful operations of major server services, such as when a program loads successfully.
- A yellow icon with an exclamation point (!) in it indicates a warning. This is a mid-level of severity. These events are not necessarily significant, but may cause future problems (such as when available disk space is low).
- A red icon indicates an error. This is a high level of severity (such as loss of data or loss of functions).

To use the Event Detail dialog box to see more information about a selected event, click an event to select it, then select View, Detail.

For more information, see the Event Viewer online help.

Performance Monitor

The Performance Monitor is a graphical tool for measuring the performance of your own computer or other computers on a network. On each computer, you can view the behavior of objects, such as processors, memory, cache, threads, and processes. Each of these objects has an associated set of counters that provide information about device usage, queue lengths, delays, and information used to measure throughput and internal congestion.

It provides charting, alerting, logging, and reporting capabilities that reflect both current activity and ongoing logging. You can open, browse, and chart log files later as if they reflected current activity.

From the Performance Monitor main screen, you can:

- Use the View, Chart option to select the computer to be monitored and add appropriate objects, counters, and instances.

  To make the graphs more readable, you can vary the scale of the displayed information and the color, width, and style of the line for each counter as you add it to the chart. You can also modify these properties after you add a selection.

- Use the View, Alert option to create an alert log that enables you to monitor the current performance of selected counters and instances for objects.

  With the alert log, you can monitor several counters at the same time. When a counter exceeds a given value, the date and time of the event are recorded in the Alert window.

  A total of one thousand events are recorded, after which the oldest event is discarded when the next new one is added. The event can also generate a network alert. When an event occurs, you can run a specific program every time or just the first time it occurs.

  When an alert occurs while you are not in the Alert view, an alert icon appears in the status bar showing the number of alerts that have occurred since you were last in the Alert view.

- Use the View, Log option to view the performance of counters and instances for objects previously saved to a log file.

  You can also collect data from multiple systems into a single log file. Log files contain detailed data for bottleneck detection or other detailed analysis. For capacity planning, you need to view trends over a longer period, which requires the ability to create a log file and to produce reports from that file.

  To log Performance Monitor errors to the Event Viewer application log, you must edit the Registry. See the Performance Monitor online help for more information on this procedure.

  Because system configuration variables can easily be corrupted, the Registry should be opened for editing only by an Administrator or qualified system technician. It is also a good practice to make an Emergency Repair Disk whenever the Registry is modified.

- Use the View, Report option to create reports showing current information on counter and instance values for selected objects.

  The information is presented in columns for each individual instance. You can create a report on all the counters for a given object and then watch them change under various loads. You can also create reports to reflect the same information that you are charting or to monitor other specific situations.

For ACS, you might want to use the Performance Monitor to see what impact a broadcast load has on the performance of a server.

For more information, see the Performance Monitor online help.

Server Manager

Server Manager is a tool you can use to manage domains and computers. With Server Manager you can:

- Select a domain, workgroup, or computer to be administered.

- Manage a computer. For a selected computer you can view a list of connected users, view shared and open resources, manage directory replication, manage the list of administrative alert recipients, manage services and shared directories, and send messages to connected users.
- Manage a domain. When administering a domain you can promote a backup domain controller to become the primary domain controller, synchronize servers with the primary domain controller, and add computers to and remove computers from the domain.

Some of the capabilities offered by Server Manager are also offered by the Services and Server tools in Control Panel. However, Server Manager can manage both local and remote computers, while these Control Panel tools affect only the local computer.

In most cases, when Server Manager is first started it displays your logon domain. The Server Manager title bar shows the domain name, and the body of the Server Manager window lists the computers of that domain. You can select a computer from this list and then use commands on the Computer menu to manage it.

To administer a domain and its servers using Server Manager, you must be logged on to a user account that is a member of the Administrators, Domain Admins, or Server Operators group for that domain. Members of the Account Operators group can also use Server Manager, but only for the purpose of adding computers to the domain.

A few Server Manager functions are permitted for only Administrators or Domain Admins. When Server Operators, Account Operators, or Power Users attempt to perform these functions, a message appears indicating that access is denied.

For more information, see the Server Manager online help.

User Manager for Domains

User Manager for Domains is a tool you can use to manage security for domains, member servers, and workstations. With User Manager for Domains you can:

- Select the domain or computer to administer.
- Create and manage user accounts.
- Create and manage groups.
- Manage the security policies, such as setting the Audit Policy to determine the types of events displayed by the Events Viewer.

In most cases, User Manager for Domains displays your logon domain when it first starts. The title bar shows the domain name, and the body of the User Manager for Domains window displays two lists. The upper list contains user accounts; the lower list contains group accounts. You can select one or more user accounts, or one group account, and manage them using commands on the User menu.

For specific information, see the User Manager for Domains online help.

Frequently Asked Questions

This section answers some of the more frequently asked questions about ACS.

What causes an automatic switch to occur?

An automatic switch is triggered when the secondary server does not receive a poll from the primary server during the polling timeout period specified in RT Config (Automatic Primary Switch Timeout value). The default time-out period is 80 seconds, which means that once the secondary server has gone 80 seconds without receiving a poll from the primary server, the secondary server will initiate the automatic switch procedure. If the primary server responds during the switch procedure, the switch will be aborted.

Keep in mind that a single server set, such as the TLOG server set, can switch if it has problems. All server sets do not have to switch at the same time. However, all server sets can switch if the primary server is removed from the LAN.

Note: In most dual server configurations, all three server sets are configured for automatic switching.

What causes an automatic switch not to occur?

A secondary server will not automatically take over for a primary server for the following reasons:

- Automatic switching is disabled (must be enabled in RT Config to automatically switch)
- The secondary server is out-of-date from the primary (distributed or dual files need to be distributed from the primary to the secondary)
- The secondary server cannot talk to another node (must be able to contact one other node over the LAN)

- The workstations have a configuration discrepancy (sometimes caused by bringing a previously used workstation onto the LAN without clearing CMOS)
- The primary comes back online during the switch

An automatic switch cannot be reversed back to the original, configured state for the following reasons:

- The configured primary is not the acting secondary (the configured primary must be fixed, running TMS, and acting as the secondary server before a manual switch can be performed)
- The configured primary (acting secondary) is out-of-date from the acting primary (wait until special despooling has completed, then try to perform a manual switch)

Before a switch can occur, both servers must be up-to-date. This means that no files can be in the distribution list for server sets.

Why might a file not be up-to-date?

ACS files are defined by the DS Config tool during application development. For each file, DS Config specifies a LAN type and whether the file is to be updated immediately.

LAN types can be: distributed, dual, group, remote, local, and node specific. Of these LAN types, only distributed or dual can be assigned to a server set.

When updating a dual file, TMS updates the file on the primary server and then sends a copy to the secondary server. When updating a distributed file, TMS updates the file on the primary server and then sends a copy to all members of the server set to which the file belongs. Distributed files may be backed up on a workstation with a hard disk or with sufficient RAM to store copies of the distributed files as long as the workstation is configured as a member of the appropriate server set.

The Immediate Updates option controls the second part of TMS file distribution. If a file is defined to receive Immediate Updates, then the copy on the secondary server (and other members of the server set if the file is distributed) is updated as soon as changes are made to the file on the primary. If the file is not configured for Immediate Updates and it is changed on the primary, the file is distributed when it is closed. If the secondary server is unavailable, the file is placed in the distribution list to be sent when the secondary comes back online.

TMS checks the distribution list during every polling cycle. When a file is found in the distribution list, it will be distributed within 3 polling cycles (90 seconds by default). Each server set has its own distribution list (`gdbmdist.000`=TLOG, `gdbmdist.001`=PLU, `gdbmdist.002`=Gateway/Load). These files are located in the \acs\server\data directory.

When a large system is first started, many files must be distributed to the secondary server, which means a switch will not be possible during this time.

How can you tell if the server sets are up-to-date?

You can use the Distribution Status utility available from the TMS Administrator user interface to determine if the server sets are up-to-date. If any of the files that appear in the distribution list are scheduled to be distributed to the secondary server (usually node 202), then the servers are out-of-date.

Note: Files that have FFFF beside them instead of a node number are not required for the secondary to be up-to-date. These are files that do not have to be distributed immediately; they will be distributed when they are closed. If these files are open when a server reboots, interrupting access to the file, then a specific node number will appear next to the file in the distribution list when the primary server is finished rebooting.

How do you recover from an automatic switch?

Before you can return the system to its original configuration, you must:

- Fix the problem on the configured primary server
- Make sure the configured primary server can start TMS
- Wait for the configured primary server to take over as the acting secondary server. TMS Admin Server Control will show the status as "Switched"
- Perform a manual switch from the acting secondary server (the original primary server)

The servers do not automatically switch back to their original configuration after the primary server is restored. You must use the Manual Switch option in the TMS Administrator User Interface to manually switch the servers back the way they were before the switch.

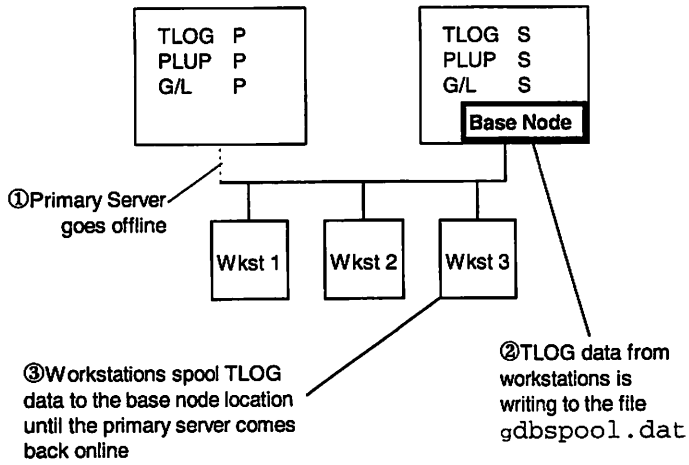
The following table indicates the primary switching entries required for the sample configuration.

Tool: RT Config	Server Sets		
File: GDBSVSET	TLOG	PLU	G/L
Primary Node ID	201	201	201
Secondary Node ID	202	202	202
Auto Switch Permitted	yes	yes	yes

Note that all three server sets are configured for automatic switching. As a general rule, all servers sets are made primary on the same server and all three are set for automatic switching.

How does spooling work?

Most dual server configurations use the secondary server as the TLOG spool location, although any node with a hard disk or with adequate RAM can serve as the TLOG spool location. Systems using velocity files should make the TLOG spool locations for the workstations LOCAL to ensure complete standalone capabilities during an emergency when the workstations are disconnected from the servers.



Once spooling is started, TMS increments an "out-of-date" count to indicate that despooling is required. When the primary TLOG server comes back online (for example, the secondary takes over as primary after an automatic switch), it polls all TLOG spool locations for spooled data.

If required, data is despooled from the TLOG spool location to update the primary server. (See *Despooling* in this section.) In the case of dual servers with the secondary server designated as the TLOG spool location for the workstation groups, the secondary TLOG server set does not automatically receive TLOG data as soon as the primary goes offline. Instead, the TLOG data is spooled on the secondary server until the secondary server set takes over as the primary and despools the TLOG data to update itself.

If both the primary server and the TLOG spool location are unavailable, TLOG information is no longer recorded and only totals are recorded in CMOS.

When the workstations cannot write TLOG data to the primary TLOG server at the end of a transaction, they write the TLOG data to a spool file on the TLOG spool location defined for the group. When the primary TLOG server is available again, the TLOG data in the spool file is despooled to the primary.

If all workstations in a group have either a RAM disk or a hard disk, you can select LOCAL (000) as the spool location. Local spooling means that each workstation in the group spools to its own disk. For complete offline operation, a workstation must have at least 16MB RAM or a hard disk. If all workstations in the group cannot maintain TLOG data, a single node in the group with a hard disk can receive spooled data. If a spool location is not identified, workstations will maintain only totals when in offline operation.

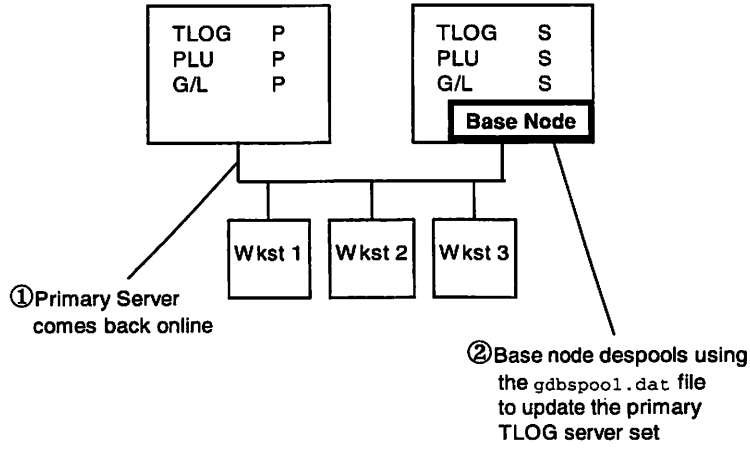
The following table shows the TLOG spool location information for a possible configuration.

Tool: RT Config	Node Groups					
File: `gdbconfg.ggg`	WS 1	WS 2	WS 3	WS 4	SV 1	SV 2
Group Number (.ggg)	1	2	3	4	201	202
TLOG Spool Location ID	202	202	202	202	000	000

Note that the TLOG spool location for the workstations is server 202. If the primary TLOG server goes down, TLOG data will be spooled to server 202. When the primary TLOG server comes back online, TLOG data will be despooled to update the primary.

How does despooling work?

Despooling is always initiated by the primary TLOG server. It consists of reading the transaction data from the workstation spool file (`gdbspool.dat`) and writing it back to the primary TLOG server. When TMS detects an End-of File (EOF) on a despool read, it decrements the out-of-date count and deletes the spool file.



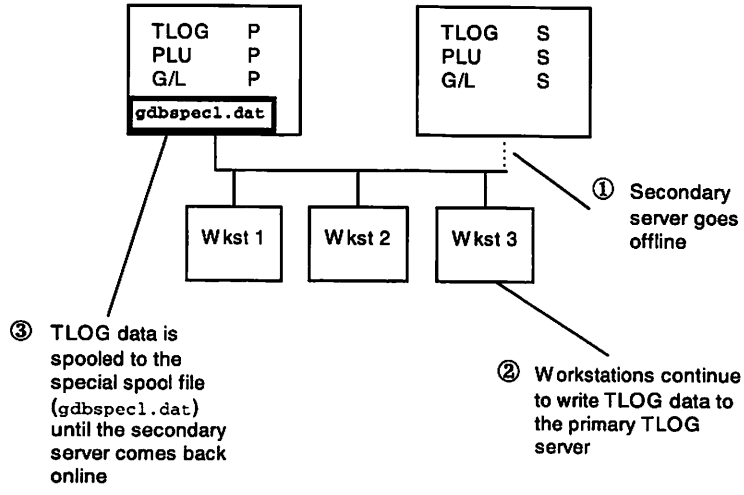
How does special spooling work?

If the secondary TLOG server is unavailable or if the mirrored write of the TLOG file to the secondary TLOG server is unsuccessful, updates to the primary TLOG server are written in a special spool file (`gdbspec1.nnn`) located on the primary TLOG server.

The nnn extension is related to the active TLOG file.

For this active TLOG file	TMS uses this special spool file
`gdbtloga.dat`	`gdbspec1.000`
`gdbtlogb.dat`	`gdbspec1.001`
`gdbtlogc.dat`	`gdbspec1.002`

Special spooling continues until the secondary comes back online.



How does special despooling work?

When the secondary server comes back online, the special spool file is despooled to update the TLOG data on the secondary server. A switch cannot occur while special despooling is occurring.

What is combination spooling?

Special spooling and regular spooling occur in the event of a primary server failure with an automatic switch.

When the primary server becomes unavailable, regular spooling begins at the TLOG spool location. All workstation TLOG data is written to the TLOG spool location in `gdbspool.dat`. Once the secondary server takes over as the primary TLOG server, the `gdbspool.dat` file is despooled until the acting primary server is up-to-date.

At the same time, a secondary server is no longer available because the configured secondary server is now the acting primary server and the configured primary server is unavailable. Consequently, TLOG data is written to the special spool file (`gdbspec1.dat`) on the acting secondary server. When the configured primary server comes back online, it becomes the acting secondary server. The special spool file is despooled to update the new secondary server. To restore the servers to their configured state, you must perform a manual switch.

Note: In most cases, you should not have to force a manual switch. Performing a forced switch can cause data to be lost. If the manual switch utility will not start, make sure TMS is running. If the manual switch utility tells you that you can only perform a forced switch, wait until the servers have despooled their information and distributed their files, then try to perform a regular switch again. The only reason to perform a forced switch is in the case of a disk failure.

Using the Support Tools

The following is an example of a procedure to help you troubleshoot problems that may prevent workstations from loading properly. It describes how to use the Windows NT Event Viewer, the NCR SLP Loader Monitor, and the TMS Trace (TMS Administrator) tools described earlier in this chapter.

1. Start the Event Viewer and clear all logs.

2. Start the NCR SLP Loader Monitor and connect to the server (this computer).

3. Start TMS Trace using the default Column and Filter options.

4. Adjust the size of the Event Viewer, Loader Monitor, and TMS Trace windows so that you can view all three at the same time.

5. Start the workstation(s) in the **S** keylock position.

   If the load never starts, check all connections and the physical LAN. Also check Task Manager to be sure the loader process is running.

6. As the load progresses, watch the workstation screens closely for clues about what is happening. Be sure:
   - the system is attempting to load the correct BBK file.
   - there are no device errors.
   - to determine when the first error occurs. Note that the last error on the screen is not always the cause of the problem. You may need to review the information in the Event Viewer log to determine the initial reason for the failure.

7. Watch the Loader Monitor and TMS Trace for errors with files.

8. If you are setting up a new installation, be particularly suspicious of file configuration errors. Most configuration errors are not reported to the Event Viewer logs; therefore, you should carefully check the `devini`, `condef`, `wsldconf` (or `setupwin.bat`), `term.txt`, `group.txt`, and `groupdir.txt` files for errors. Also remember that changes to loader files in `group.txt` and `groupdir.txt` require stopping and restarting the loader.

9. Be sure to load the workstations in the **S** keylock position to check the node ID.

10. Because so many things are happening at the same time and you need to watch more than one tool, you may need to attempt the load several times and watch only the tool(s) that are giving you the best indication of the problem.

Practice and Review

What Did You Learn?

Answer the following questions about this chapter:

What command switches servers back to their original configuration after an automatic switch?

_____

What tool would you use to determine if your server sets are up to date?

_____

What happens to log file records when the primary TLOG server is unavailable?

_____

What action is required by you to initiate despooling?

_____

What causes an automatic switch to occur?

_____

What prevents an automatic switch from occurring?

_____

How do you recover from an automatic switch?

_____

Why might a file not be up-to-date?

_____

What can you do to increase the speed of PLU lookups on workstations?

_____

On Your Own

With a dual server configuration, force a manual switch to the secondary server.

Appendix A: System Configuration

Overview

The following table is provided for you to record system configuration decisions, or to use as a model for creating a system configuration spreadsheet.

	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	SV ___	SV ___
Base Unit:											
RAM Disk (MB)											
Hard Disk (MB)											
Software:											
Base OS											
WS Input Devices:											
WS Output Devices:											
Applications:											

	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	WS ___	SV ___	SV ___

Node ID											
Node Group Number											
Base Node ID (spool)											
Server Set Member											
TLOG											
PLU											
G/L											
Auto Switch											
TLOG											
PLU											
G/L											
Local Read Location											
TLOG											
PLU											
G/L											

Number of workstation types	
Number of like workstations with different peripheral devices	
Number of like workstations using different POS applications	
Number of locations where workstations need to access files	
Number of groups for servers (Normal = 1)	
Total number of Node Groups	

Appendix B Sample Planning Table

Overview

The Sample Planning Table is provided for you to use as an example when making configuration decisions. You can also use the table to complete the "On Your Own" portion of the *Practice and Review* in each chapter.

	WS 001	WS 002	WS	WS	WS	WS	WS	WS	WS	SV 201	SV 202
Base Unit:	7452	7450								S16	
RAM Disk (MB)	16	16								64	
Hard Disk (MB)	n/a	n/a								2GB	
Software:											
Base OS	WIN	DOS								NT	
NT Server Platform										X	
Base Application										X	
Windows Application										X	
Consumer Info Display										X	
ASW Application										X	
WS Input Devices:											
7890 Hand-Held Scanner	X										
64-key keyboard		X									
DynaKey	X										
WS Output Devices:											
7156 Printer	X	X									
VCO CRT		X									
DynaKey	X										
Consumer Info Display	X										
Applications:											
ACS DOS application		X									
ACS Windows application	X										
ACS for Windows 95 application											
	WS 001	WS 002	WS	WS	WS	WS	WS	WS	WS	SV 201	SV 202
Node ID	001	002								201	

Node Group Number	001	002								201	
Base Node ID (spool)	000	000								000	
Server Set Member											
TLOG										Yes	
PLU	Yes	Yes								Yes	
G/L										Yes	
Auto Switch											
TLOG										No	
PLU										No	
G/L										No	
Local Read Location											
TLOG										No	
PLU	000	000								000	
G/L										No	

Number of workstation types	2
Number of like workstations with different peripheral devices	0
Number of like workstations using different POS applications	0
Number of locations where workstations need to access files	0
Number of groups for servers (Normal = 1)	1
Total number of Node Groups	3

Appendix C: Answers to Review Questions

Chapter 1

What is TMS?

Transaction Management Services (TMS) is the platform for the runtime system that isolates the application from the operating system specific details. TMS manages file access, file mirroring and data redundancy, and process distribution.

What tool defines LAN types for runtime files?

The DS Config tool is used to define LAN types in the application development environment (ADE). Once files are in the runtime environment, their LAN type cannot be changed without returning to the DOS ADE to use DS Config. LAN types are important because they determine how files are distributed. For instance, a file with a dual LAN type is copied to the secondary server, but a file with a distributed LAN type is copied to all nodes that are members of that file's server set.

What are the three server sets and what kind of files are usually grouped into each server set?

Server Set	Description
PLU	Files that are read from frequently.
TLOG	Files that are written to frequently.
Gateway/Load	Files that are used during workstation loading or are used only once.

How many workstations are supported using the dual UNIX server reference configuration?

Up to 120 workstations are supported by the dual UNIX server reference configuration. The single UNIX server with a workstation/server supports up to 20 workstations (including itself).

What is the minimum RAM requirement for a runtime server?

The recommended minimum RAM for a runtime server is 64MB. If you have a large store, plan on keeping several old TLOG files and other log files, or intend to use the server for third party applications, you should consider additional RAM. Remember that the servers are the work horses of the POS system. 128MB of RAM is not unreasonable for an NT server.

What is the minimum RAM requirement for a 7452 running DynaKey™ for Windows™?

If the 7452 has a hard disk, the minimum RAM is 8MB. Without a hard disk, the minimum RAM is 16MB. The graphical nature of this application requires the workstation to handle large bitmap files. Also, running in offline mode requires enough disk space or RAM to keep a local copy of the velocity or PLU file.

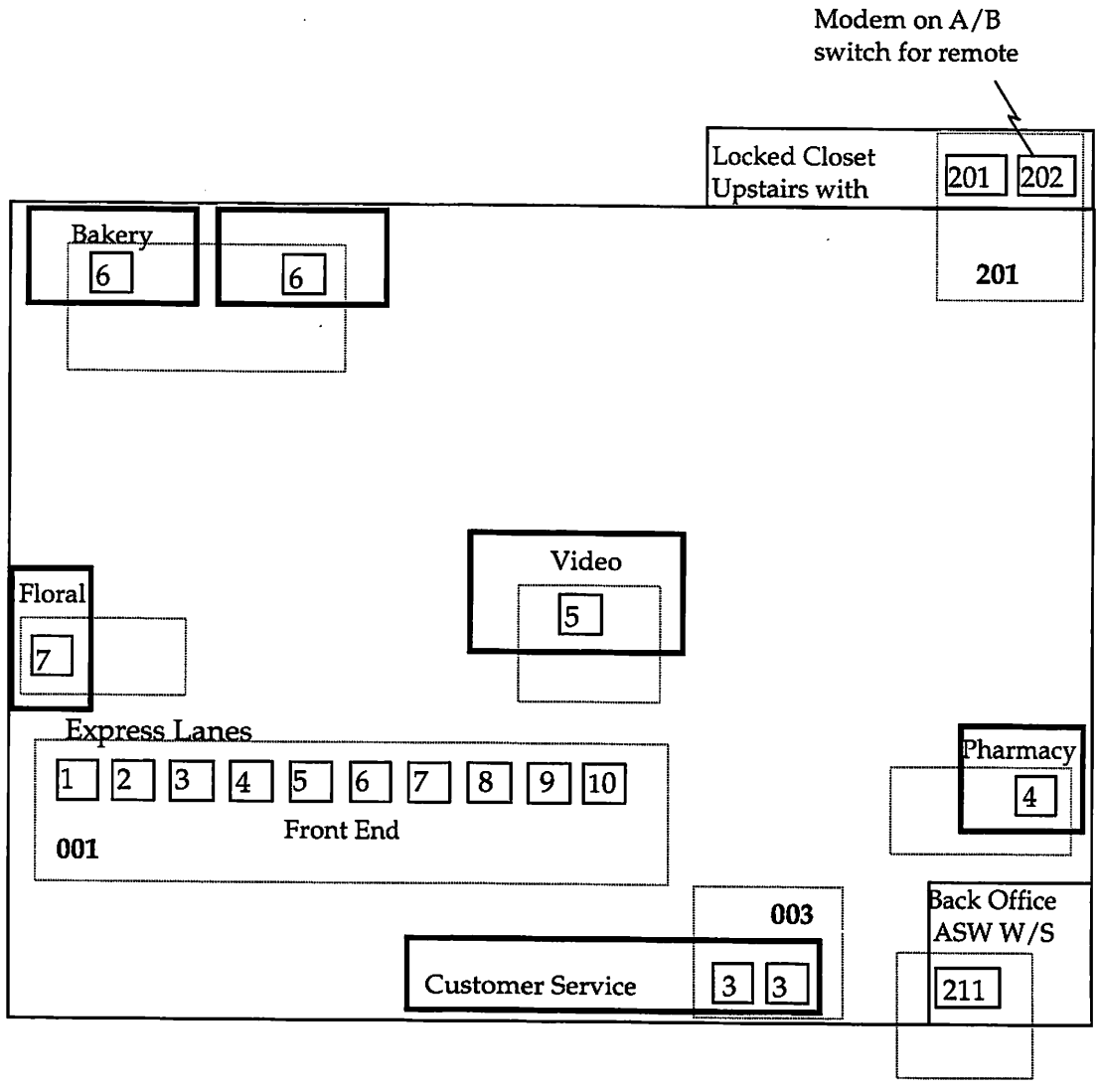
What printers are supported for the 7452?

7152, 7156, and 7193

Following is one possible solution for the sample store.

Node(s)	Group	Explanation
1-10	001	All workstations have hard disks and are otherwise the same, so they can belong to the same node group. Since they have hard disks, the workstations can be made to read their PLU information locally, reducing the amount of LAN traffic and lowering the workload of the server.

	002	Reserved for Front End expansion.
30, 31	003	Customer Service is in its own group because it has a different application.
40	004	Pharmacy is in its own group because it has a different application.
50	005	Video is in its own group because it has a different application.
60,61	006	Bakery/Deli is in its own group because it has a different application.
70	007	Floral is in its own group because it has a different application.
201,202	201	Standard dual server configuration both in group 201.
211	201	ASW workstation always starts with 211; shares group with other servers.


Modem on A/B
switch for remote
Locked Closet
Upstairs with
201
202
201
Bakery
6
6
Video
5
Floral
7
Express Lanes
1
2
3
4
5
6
7
8
9
10
Front End
001
Pharmacy
4
003
Customer Service
3
3
Back Office
ASW W/S
211

Chapter 2

What are the administrator's responsibilities?

The administrator is responsible for setting up and managing domain controllers or local computers and their user and group accounts, assigning passwords and permissions, and helping users resolve networking issues.

What is the unique number you must enter in order to install an ACS application called?

This number is the Key or CD-Key. It is provided by NCR with each application you purchase. You cannot install the application software unless the key you enter during the installation process matches the key assigned by NCR.

When installing Windows NT or any ACS application, what should you do if you are in doubt about a decision the install program is asking you to make?

When you are in doubt about a decision you must make during the install process, the default always is the best option to choose. As a general rule, you can modify the option later if necessary.

Where can you find the latest information about the release of ACS you are installing?

The ACS software is distributed on CD-ROM. Each CD has an `INSTALL.TXT` file which contains any last-minute information pertinent to the current release.

Chapter 3

What does the Application Development Environment (ADE) installation process do?

This process installs the tools necessary to create or modify an ACS sales application.

When should the ADE be installed in the store environment?

Never

What is the default main directory where ADE files are installed?

ade (\acs\ade)

Name at least two ADE components.

PSIK, IA Config, PS Config, BGen Format Editor, ILM

Where would you look for information about how to use and modify the ADE?

ACS Developer's Online Reference

What is the application key and what is it used for?

It is a four-digit number that identifies a particular application. To install an application, it must be on the ACS CD and the key you enter must be correct.

In an ACS (NT) environment, what must you do if BGen development is required?

Network the NT server to an S10 or higher running UNIX.

Chapter 4

What tool assigns node IDs?

The Node Initialization tool (ND Init) permits you to define a node ID for the server.

How do you run it on the servers?

Select Start, Run and enter **ndinit**, or run **ndinit.exe** from the command prompt.

What is another name for an read alternate location?

Local Server Node

What is another name for the spooling location?

Base Node

What is the suggested range of node IDs for POS workstations?

Between 001and 199

What tool configures node groups for the system?

The Runtime Configurator (RT Config) sets up LAN nodes for each workstation and server on the system and places them in related groups of nodes.

How do you run it?

You can run this tool from any of the following: the command line, the Windows NT Explorer, an icon (either placed on the desktop by the installation program or as a shortcut placed by you), or from Start, Programs, Advanced Checkout Solution 4.0, RT Config.

What is the suggested range of node IDs for servers?

Between 200 and 254.

What node ID (LAN node) is recommended for a primary server, a secondary server, and an Advanced Store Workbench workstation?

- primary server=201
- secondary server=202
- Advanced Store Workbench workstation=211 (212-219 for additional ASW workstations)

Chapter 5

What is the workstation loader process called?

The slpldr process.

What three files configure the SLP loader?

The `group.txt`, `groupdir.txt`, and `term.txt` files allow you to configure the SLP loader. The `group.txt` file sets up load groups, which tell which .BBK file to load; the `groupdir.txt` file points to a directory on the server where workstations can obtain files if they are not in the RAM disk (redirection); and the `term.txt` file sets up workstations to use different load groups that are defined in the `group.txt` file.

Where are these three files located for an SLP load?

The files for an SLP load are located in the `\acs\server\data` directory.

What file defines the `sttbl` to be used by a node group?

The `condef` file defines which `sttbl`, `apconf`, `apmsg`, and `apdesc` files to use.

What file defines devices for workstations?

The `devini` file defines devices for workstations.

What tool creates the `apconf` and `apdesc` files?

The Presentation Services Configurator (PS Config) creates the `apconf` and `apdesc` files in the development environment.

What tool creates the `sttbl` file?

The Input Analyzer Configurator (IA Config) creates the `sttbl` file in the development environment.

Using the system default configuration files, answer the following questions:

What printer is used in node group 008?

7156

What keyboard is used in node group 004?

101-key (big ticket) keyboard

What display is used in node group 006?

DynaKey™

Which node group enables you to have both a 7156 and 7193 printer for the food court application?

Group 009

Chapter 6

What are the four registries ASW adds to NT?

DataSourceName, GroupAdmin, GroupPrefix, GroupTier2

Which of these registries should regular Workbench users be assigned to? Which should system administrators be assigned to?

Regular Workbench users should be assigned to GroupTier2. System administrators should be assigned to both GroupTier2 and GroupAdmin.

What is the recommended range of node IDs which should be used when configuring for ASW in RT Config?

211 to 219.

Where can you access an interactive tutorial for ASW?

The *Introduction to ASW tutorial* is an optional component you can install from diskette.

Chapter 7

What tools are used to convert ACS data files from an existing structure or type to a new structure or type?

Data Migration Utilities

What are the five specific activities you can do with the Data Migration Utilities?

1. Create a list of ACS data files that need to be converted.
2. Convert all ACS data file structures and types, based on the created list.
3. Convert an individual ACS data file from an existing file structure or type to a new structure or type.
4. Replace runtime ACS data files with converted data files.
5. Replace file formats.

What is the primary difference between a keyed file and a direct file?

The primary difference between a keyed file and a direct file is how data records are placed in sectors.

If you plan to install new data files for your ACS base application, should you convert your current data files before or after you install the new data files?

Before

What directory should contain the data files that you want to convert?

<base directory>\server\data

What directory contains the Data Migration Utilities?

<base directory>\server\migrate\bin

In the process of data migration, what do the `.bgf` files do?

The `.bgf` files are ASCII text files that specify the file structures of the data files.

How does the Convert Files Data Migration Utility (for converting all file structures and types) know which files need to be converted?

The Convert Files utility (**dmcnv_files**) uses the list generated (the `files_to_convert` file) by the Create List utility (**dmcmp_formats**) to find out which files need to be converted.

If you think you may want to convert an individual file's type, but are unsure of the file's type, where may you look?

You may look in the `files_to_convert` file generated by the Create List utility (**dmcmp_formats**).

Which file type cannot be converted with the Data Migration Utilities?

Sequential file types cannot be converted with the Data Migration Utilities.

Chapter 8

What command switches servers back to their original configuration after an automatic switch?

The manual switch command permits you to switch servers back to their original configuration. The command should be executed on the acting secondary server. It is available from the Task manager User Interface (TMUI32).

What tool would you use to determine if your server sets are up to date?

TMS Administrator (TMS Admin) user interface. Select File, Connection, Server Control, and then select the server you want to connect to.

What happens to log file records when the primary TLOG server is unavailable?

The TLOG data is spooled (written) to the node identified through RT Config as the Spolling Location (or Base Node). A Base Node can be another server, a workstation/server, or a local disk or RAM disk.

What action is required by you to initiate despooling?

None. Despooling is a background function that starts when the original primary server comes back on line. As the TLOG primary server, it sends a Start Despool request to nodes with spooled data.

What causes an automatic switch to occur?

An automatic switch is triggered when the secondary server does not receive a poll from the primary server during the polling timeout period specified in RT Config. The default time-out period is 80 seconds, which means that once the secondary server has gone 80 seconds without receiving a poll from the primary server, the secondary server will initiate the automatic switch procedure. If the primary server responds during the switch procedure, the switch will be aborted.

Keep in mind that a single server set, such as the TLOG server set, can switch if it has problems. All server sets do not have to switch at the same time. However, all server sets can switch if the primary server is removed from the LAN.

What prevents an automatic switch from occurring?

A secondary server will not automatically take over for a primary server for the following reasons:

- Automatic switching is disabled (must be enabled in RT Config to automatically switch)
- The secondary server is out-of-date from the primary (distributed or dual files need to be distributed from the primary to the secondary)
- The secondary server cannot talk to another node (must be able to contact one other node over the LAN)
- The terminals have a configuration discrepancy (sometimes caused by bringing a previously used terminal onto the LAN without clearing CMOS)
- The primary comes back online during the switch

An automatic switch cannot be reversed back to the original, configured state for the following reasons:

- The configured primary is not the acting secondary (the configured primary must be fixed, running TMS, and acting as the secondary server before a manual switch can be performed)
- The configured primary (acting secondary) is out-of-date from the acting primary (wait until special despooling has completed, then try to perform a manual switch)

Before a switch can occur, both servers must be up-to-date. This means that no files can be in the distribution list for server sets.

How do you recover from an automatic switch?

1. Fix the problem on the configured primary server.

2. Make sure the configured primary server can start TMS.

3. Wait for the configured primary server to take over as the acting secondary server.

4. Perform a manual switch from the acting secondary server (the previous primary server).

Note: The primary server will not switch back automatically after the problem is fixed. Instead, you will have to perform a manual switch.

Why might a file not be up-to-date?

ACS files are defined by the DS Config tool during application development. For each file, the DS Config tool specifies a LAN type and whether the file is to be updated immediately.

LAN types can be: distributed, dual, group, remote, local, and node specific. Of these LAN types, only distributed or dual can be assigned to a server set.

When updating a dual file, TMS updates the file on the primary server and then sends a copy to the secondary server. When updating a distributed file, TMS updates the file on the primary server and then sends a copy to all members of the server set to which the file belongs. Distributed files may be backed up on a workstation with a hard disk or with sufficient RAM to store copies of the distributed files as long as the workstation is configured as a member of the appropriate server set

The Immediate Updates option controls the second part of TMS file distribution. If a file is defined to receive Immediate Updates, then the copy on the secondary server (and other members of the server set if the file is distributed) is updated as soon as changes are made to the file on the primary. If the file is not configured for Immediate Updates and it is changed on the primary, the file is distributed when it is closed. If the secondary server is unavailable, then the file is placed in the distribution list to be sent when the secondary comes back online.

TMS checks the distribution list during every polling cycle. When a file is found in the distribution list, it will be distributed within 3 polling cycles (90 seconds by default). Each server set has its own distribution list (gdbmdist.000=TLOG, gdbmdist.001=PLU, gdbmdist.002=Gateway/Load).

When a large system is first started, many files must be distributed to the secondary server, which means a switch will not be possible during this time.

What can you do to increase the speed of PLU lookups on workstations?

Use a velocity file. The velocity file resides locally on the workstation. It contains common items that are either high movers (within a user-defined range) or that were flagged in the PLU file to be included in the velocity file.

During normal operations, workstations can perform PLU reads from the velocity file rather than from the primary PLU server (optional). If workstations normally read the PLU file on the primary PLU server (or an alternate server node such as the secondary server), they can be configured to read from the velocity file when the PLU server is unavailable to ensure that POS operations continue.

When operating in standalone mode (separated from the servers), workstations can read only items in the velocity file, which is a subset of the PLU file.

What tool would you use to determine if your server sets are up to date?

Distribution Status from TMS Admin. File, Connection, Distribution Status.

Which one of the following does not have a graphical Windows interface?

File Utilities

Which one of the following is not a Windows NT Administrative Tool?

Context Switching Monitor

Where would you find the System Configuration Report?

On the main RT Configurator (RT Config) screen.

Which tool has both a graphical interface and at least some command line functionality? (Name at least one)

Forced Load Interface -- fluimain and flsmmain

Which graphical interface helps you associate tasks with a context?

Task Manager User Interface (TMUI)

Which tool shows you node and group information for configured server sets?

System Configuration Report (RT Config)

Where would you find application log information?

Windows NT Event Viewer

What graphical interface permits you to manually switch server sets?

TMS Administrator – Tools, Switch

What graphical interface permits you to view messages being sent over the LAN and what is the name of the option you choose to perform this task?

TMS Administrator
File, Connection, TMS Trace

What graphical interface permits you to view the list files awaiting distribution and what is the name of the option you choose to perform this task?

TMS Administrator
File, Connection, Distribution Status

What tool permits a server to instruct one or more workstations on the LAN to request a program load?

Forced Load Utility (fluimain)

What Windows NT tool is used for managing disks?

The Disk Administrator (Programs, Administrative Tools (Common), Disk Administrator)

Where is the Broadcast Distribution information displayed?

On the status line at the bottom of the Distribution Status screen.

What is the most important requirement for the Broadcast Monitor to be able to function properly?

TMS *must* be running.

What is the quickest, easiest, and most informative way to find out how a tool works and how to use it?

Use the online help.

Appendix D: **Using Ghost**

If one of these conditions occurs on an NCR 745x workstation, use Ghost to copy a Windows 95 operating system image file onto the workstation:

- The workstation hard disk fails and is replaced with a new formatted disk.
- The workstation is upgraded from LAN-booted to disk-booted.

These prerequisites must be completed before you can copy the image file:

- The workstation hard disk is formatted and enabled.
- The image file exists in a directory on the server.
- Ghost software, including license, is available.

Note: The information in this appendix is based on version 5.02 of the Ghost software; information for other versions may vary slightly.

Creating a Boot Disk for an NT Server

The NT server installation CD must be in the server's CD drive before you can create the boot disk. To create the boot disk, follow these steps:

1. Format a floppy disk. Insert a disk into the floppy disk drive of a machine where DOS and no other operating system is installed, and type **Format a: /S**. This command copies all the system files related to DOS [`command.com`, `drvspace.bin` (optional), `io.sys`, `msdos.sys`]

2. If the workstation is an NCR 7450-2000, copy `SMC8000.dos` to the disk. If the workstation is an NCR 7450-3000 (NCR 7453), copy `PCNTND.dos` to the disk.

3. Insert the disk into the NT server's floppy disk drive, then select Start-> Programs-> Administrative tools-> Network Client Administrator.

4. If the server is shared, select Use Existing Share Directory, and type the name of the server to which the workstation connects when the application starts. Type **Clients** in the Share Name Edit Box. (The Clients directory resides on the NT server installation CD and must be shared.)

   If the server is not shared, select Make Network Installation Startup Disk, and press Continue. When you are prompted to Use Existing Path, type the path to the clients directory on the NT server installation CD. (For example, G:\clients, where the Clients directory resides on the NT server installation CD)

   5. Fill in the Target Workstation configuration menu. Select the floppy drive size and the network client (for example, Network Client Version 3.0 for MS-DOS and Windows), and then select a network adapter card from the drop down menu list. If your machine's adapter is not shown (SMC 8416/AMD) select any adapter, then make changes to relevant files as explained later. Select OK.

6. Fill in the Network Startup Disk configuration menu. Type a unique name for your workstation, a user name, and a domain name (only if more than one domain exists in the network area). Enter these TCP/IP settings:

   - Disable automatic DHCP configuration
   - IP address of the client workstation
   - Subnet mask
   - Default protocol (optional)

7. Select the network protocol (for example, TCP/IP). Type the destination path to the boot floppy disk, and select OK. The specified directory must be in shared mode.

Editing Files on the NT Server Boot Disk

After you have created the NT server boot disk, you must edit the `system.ini`, `protocol.ini`, and `autoexec.bat` files on the disk as follows:

1. Edit `system.ini`.

   - In the Network section, enter the workgroup to which the workstation belongs. To determine the workgroup, check the NT server to which the workstation connects. From the Control Panel, select the Network icon, then the Identification tab. Verify that the entry for Computername is unique. LogonDomain is optional.
   - In the Network Drivers section (netcard=), type `SMC8000.dos` if the workstation is an NCR 7450-2000 or `PCNTND.dos` if the workstation is an NCR 7450-3000 (NCR 7453).

2. Edit `protocol.ini`.

   - In the Network.setup section, add entries for the type of driver (SMC8000 if the workstation is an NCR 7450-2000 or PCNTND if the workstation is an NCR 7450-3000). For example, for an AMD machine:

     ```
     make netcard= ms$PCNTND,1,MS$PCNTND,1
     lana0=ms$PCNTND,1,tcpip
     ```

   - Add a section (or edit the section if it exists already) for the workstation driver (SMC8000 or PCNTND). For example, for an AMD machine:

     ```
     [ms$PCNTND]
     drivername=PCNTND$
     ;INTERRUPT=3
     ;IOADDRESS=0x300
     ;DMACHANNEL=none
     ;DMAMODE=burst
     ;MAXTRANSMITS=12
     ;MAXREQUESTS=8
     ```

- If the TCP/IP network protocol is used, add entries for the SubNetMask, IP address, and bindings to the [tcpip] section. For example, for an AMD machine:

```
[tcpip]
NBSessions=6
;DefaultGateway0=
SubNetMask()=255 255 0 0
IPAddress()=128 1 1 6
DisableDHCP=12
DriverName=TCPIP$
bindings=ms$pcntnd
LANABASE=0
```

3. Copy Ghost software onto the workstation hard disk and register it.

4. Edit `autoexec.bat`.

   - Update this command:

     net use z: **ServerName****ShareName**

     ServerName is the name of the server where the image file is located.

     ShareName is the shared directory and subdirectory path that contains the image file.

   - Add an entry for Ghost to run on the workstation:

     To download the image of the Windows 95 operating system and the application to the workstation, add the command:

```
c:\ghost.exe -clone,mode=load,
src=z:\Subdirectorypath\imagefileName,
dst=1 -sure
```

     Specify the subdirectory path only if it exists.

To update the server with the image file that contains the information available on the workstation's hard disk, add the command:

```
c:\ghost.exe -clone,mode=pdump,src=1,
dst=z:\Subdirectorypath\imagefileName
-sure
```

Specify the subdirectory path only if it exists.

Creating a Boot Disk for a UNIX Server

These prerequisites must be completed before you can create a boot disk for a UNIX server:

- The image file exists in a directory on the server and can be accessed by the workstation
- The directory and subdirectory that contain the image file are shared and mounted.
- The login and password for the shared and mounted directories are known.

To create the boot disk, follow these steps:

1. Format a floppy disk. Insert a disk into the floppy disk drive of a machine where DOS and no other operating system is installed, and type **Format a: /S**. This command copies all the system files related to DOS [`command.com`, `drvspace.bin` (optional), `io.sys`, `msdos.sys`].

2. Copy these files to the disk:

   - `bootp.exe`
   - `bootpnd.exe`
   - `config.sys`
   - `netbind.com`
   - `ndinit.exe`
   - `nfs.exe`
   - `mount.exe`
   - `protman.dos`
   - `protocol.ini`
   - `pwconfg.exe`
   - `pwtcp.exe`
   - `cmosfile.dat` (created when the ND Init tool is completed)
   - `SMC8000.dos`, if the workstation is an NCR 7450-2000
   - `PCNTND.dos`, if the workstation is an NCR 7450-3000 (NCR 7453)

3. Edit `protocol.ini` to add an entry for the workstation (SMC8000 or PCNTND).

```
[PROTMAN]
 DRIVERNAME=PROMAN$
[BLIM]
 DRIVERNAME=BLIMDOS$
 BINDINGS= "NDIS_MAC"
[NDIS_MAC]
 DriverName=SMC8000$
[NDIS_MAC]
 DriverName=PCNTND$
```

4. Edit `config.sys` to add an entry for the workstation (SMC8000 or PCNTND).

```
DEVICE=protman.dos
DEVICE=a:\smc8000.dos or a:\pcntnd.dos
LASTDRIVE=z:
```

5. Edit `autoexec.bat`.

```
a:\pwconfig.exe -N:65
a:\NDIS -I:3 -D:3
a:\netbind
a:\bootp.exe
a:\bootpnd.exe
a:\pwtcp.exe
a:\netbios.exe
a:\nfs.exe
copy a:\ghost.exe c:
c:\ghost.exe -#e=a:\xyz.env
set path = x:\
set comspec = x:\command.com
mount x: \\SERVERIPAddress/SHARENAME LOGIN PASSWORD
```

The line **copy a:\ghost.exe c:** copies the Ghost executable to the disk.

The line **c:\ghost.exe -#e=a:\xyz.env** registers the Ghost software. For registration to occur, the floppy disk must contain the `env` file, which comes with the Ghost license and is responsible for registering the Ghost software.

SERVERIPAddress is the IP address. For example, 128.0.1.201

SHARENAME is the shared directory that can be mounted by the workstation. It contains the image file for Ghost. For example, /appl/unity/data/image

LOGIN is the shared directory's login

PASSWORD is the shared directory's password

6. To download the image of the Windows 95 operating system and the application to the workstation, add the command:

```
c:\ghost.exe -clone,mode=load,
src=x:\IMAGEFILENAME,dst=1 -sure
```

IMAGEFILENAME is the name of the image of the Windows 95 operating system

7. Reboot the workstation.

Note: If a single image file is used to load more than one workstation, you must change each workstation's Computername to make it unique. To change the Computername entry, select Control Panel, Network icon, then the Identification tab.

Appendix E: Installing ACS on a UNIX System

Overview

This appendix provides information for installing Advanced Checkout Solution (ACS) 4.0 on a UNIX System V Release 4 (V.4) MP-RAS Release 3.02.00 system.

After reading this appendix, you will be able to answer the following questions:

How do you install UNIX on S16, S26, and older servers?

How do you update UNIX on S16, S26, and older servers?

How do you install UNIX on S20 and S26XLPII servers?

How do you install the ACS packages on UNIX servers?

How do you update the ACS packages on UNIX servers from the ICI release to the GCA release?

Before installing, you should be familiar with some UNIX terms that may be used during installation.

Terms

The **man** command accesses the UNIX manual pages (online help files) for most UNIX commands. The man pages contain command syntax as well as examples of how to use the command properly.

Syntax

man <command>, where <command> is the name of one of the commands for which you want more information.

Example

man pkgadd (displays help for **pkgadd**)

The **pkgadd** command permits you to install packages from a device such as a SCSI cartridge tape drive, a flex drive, or a directory. For an ACS installation, you use this command to install packages directly from tapes and diskettes or to install a spooled package. This command requires root privileges to execute (log in as root).

Syntax

pkgadd -d <device> <pkg_name>, where <device> is diskette1 for a flex drive, the directory path for a spooled file, or the device name of a streamer tape drive such as /dev/rmt/c0t3d0s0 for an external drive and where <pkg_name> is the abbreviation of the package (optional).

Examples

pkgadd -d /dev/rmt/cot2d0s0 (lists contents of tape allowing you to select packages for installation)

pkgadd -d /dev/rmt/c0t2d0s0 unity (installs the `unity` package without listing contents of tape)

pkgadd -d diskette1 (lists contents of diskette allowing you to select packages for installation)

pkgadd -d /var/spool/pkg chkout (installs spooled `chkout` package from /var/spool/pkg directory)

The **pkginfo** command permits you to display a list of installed packages on the server. This command can be executed by any user.

Syntax

pkginfo <pkg_name>, where <pkg_name> is the abbreviation of the package for which you want to display information (optional).

Examples

pkginfo -x | more (displays extra information about all of the packages installed on the server)

pkginfo -x unity (displays the extra information about the `unity` package installed on the server)

pkginfo -l chkout (displays the long information about the `chkout` package installed on the server)

The **pkgrm** command permits you to remove packages from a server. This command requires root privileges (log in as root).

Syntax

pkgrm <pkg_name>, where <pkg_name> is the abbreviation of the package you want to remove (optional).

Examples

pkgrm (lists all of the installed packages on the system and permits you to select the packages to remove)

pkgrm unity (removes the package called `unity`)

The **shutdown** command permits you to perform an orderly shutdown so the server can be powered off and it permits you to change run levels. The **shutdown** command should be used instead of the **init** command. This command requires root privileges (log in as root).

Syntax

shutdown -g0 -i0 -y, where -g specifies the grace period in seconds that users have to log off, where -i specifies the init level to change to, and where -y specifies to accept the defaults of any prompts encountered during shutdown.

Examples

shutdown -g0 -i0 -y (performs an orderly shutdown so the server can be powered off)

shutdown -g0 -i6 -y (reboots the server)

The **init** command controls run levels in UNIX. A run level is a software configuration of the system under which only a selected group of processes exist.

Init is a general process spawner that creates processes from information stored in the inittab file located in the /etc directory. ACS modifies the `inittab` file so run level 4 will spawn the ACS processes.

You can determine the current run level by entering **who -r** at the command line.

Following is a description of the UNIX run levels.

Run Level	System State
s,S	Both run levels enter single-user mode, where only the / file system is mounted and only essential processes are running.
0	Shuts down the server so it is safe to remove power.
1	Puts the system in system administrator mode. All networking is stopped.
2	Puts the system in multi-user state.
3	Puts the system in remote-file-sharing state.
4	Starts Transaction Management Services and other processes.
5	Stops the system and goes to the firmware monitor.
6	Stops the system and reboots to the state defined by initdefault entry in the `inittab` file located in the /etc directory.

Installation Enhancements

The following are new features of the UNIX MP-RAS Release 3.02.00 installation:

The amount of media needed has been reduced when installing through flex disks. The boot flex disk with a tape is needed to boot into maintenance mode or to perform a network install.

Installation utilities have been improved to enhance the performance of new installations and system updates.

pkgplus and VM&F support Software Manager on an Alternate Boot Environment.

Large file systems (>2 GB) may be created during new installations.

Choices for selecting licenses have been simplified.

The boot and load process has been redesigned to reduce installation/maintenance media, boot from CD-ROM, and choose a loadable backup.

VxFS system capacity supports the full range of disk slices up to one terabyte.

Installing UNIX Primary Operating Environment on S16, S26, and Older Servers

You may install UNIX on S16, S26, and older servers for the first time, or you may update existing versions of UNIX on these servers. Before installing or updating UNIX, be sure to order the correct installation media, "ACS Server Runtime for UNIX – full UNIX O/S" (LPID G370-0977-0000), which includes:

Flex disk – NCR UNIX V.4 boot disk

Tape – NCR UNIX V.4 operating environment

Tape – NCR UNIX V.4 maintenance updates, edition 2 for release 3.02.00

Tape – NCR ACS system services for UNIX

CD – NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00

Install UNIX

Follow these steps to install UNIX on S16, S26, and older servers on which UNIX has not been installed previously.

1. Be sure the server is powered off.
2. Insert the flex disk (NCR UNIX V.4 boot disk) and the UNIX installation tape (NCR UNIX V.4 operating environment) into the appropriate drives.
3. Connect your cartridge tape drive to the server.
4. Power on the tape drive.
5. Power on the server.
6. When prompted, remove the flex disk from its drive and press Enter.

7. When the system is booted, the installation selection menu displays:

```
Select one of the following:
1.  Perform Installation
2.  Perform System Maintenance
3.  Perform System Restore (OA/BASE only)
4.  Perform Micro Channel Configuration

Type selection number, then press Enter. >
```

8. Type **1**, "Perform Installation," and press Enter.

```
CAUTION:  A new installation of the UNIX System will destroy all
files currently on the system.

Select one of the following:
1.  Interactive Installation
2.  Installation using UNITY Defaults
3.  Help
4.  Cancel Installation

Type selection number, then press Enter. >
```

9. Type **1**, "Interactive Installation," and press Enter to install UNIX using **pkgplus**.

```
Please enter a System Name for this system. This will set the node
name and the system name. This name will be used for uucp(1) and
networking.

Enter System Name: >
```

10. Type a system name and press Enter.

    Examples of system names are server1 for the primary and server 2 for the secondary. The following restrictions apply to the system name:

    - Can contain letters a – z (upper- or lowercase)
    - Can contain digits 0 - 9

- Cannot be " " (null)
- Cannot be "unix" or "UNIX"
- Cannot exceed 256 characters
- Cannot contain blank spaces

You can change the system name after the installation is complete by logging in as root and executing the **uname -S <system_name>** command, where <system_name> is the new system name. You will also have to execute **./tcpconfig** in the /etc/inet/script directory.

```
Current date and time is:Tue Feb 16 16:22:26 EST 1999
Do you wish to change it y/(n) [default=n]
```

11. Press Enter if the displayed date and time are correct, or type **y** and press Enter to change the date and time.

```
Scanning SCSI BUS for Peripherals
This activity may take some time...

NCR UNIX V.4 MP-RAS INSTALLATION FACILITY

These are the Install Media drives equipped in the
system:

1: SCSI CD-ROM Disk - /dev/rdsk/c<#>t<#>d<#>s<#>
(where c is controller, t is target, d is device, and s is slice,
such as c100t5d0s0)
2: SCSI Tape Drive - /dev/rmt/c<#>t<#>d<#>s<#>
(where c is controller, t is target, d is device, and s is slice,
such as c100t5d0s0)

Type the number of the Install Media device that you
are using, and press ENTER.
```

12. Select the SCSI tape drive to use the tape for installation and press Enter.

    If you receive a message saying, "No cartridge tape device configured in the system," one of the following conditions may exist: (1) the tape drive was either not connected or powered on when you powered on the server, (2) the SCSI connection is bad, or (3) the tape drive is bad. Be sure the tape drive is powered on and check the connection, then restart the installation process at Step 1. If you receive the message again, try a different tape drive.

```
Please insert the Unix System V Release 4.0 Installation media into
the tape drive, /dev/rmt/c<#>t<#>d<#>s<#> (where c is controller, t
is target, d is device, and s is slice, such as c0t3d0s0) and press
ENTER
```

13. Verify that the UNIX installation tape (NCR UNIX V.4 operating environment) is in and press Enter.

```
Among your install media, you will find media labeled "Maintenance
media." These udpates provide corrections for problems reported
against the operating system and add-on packages.

It is strongly recommended that the Maintenance media be installed.

Do you have the "Maintenance media" available (y)/n ?
```

14. Press Enter if you plan to install the maintenance media, or type **n** and press Enter if you do not want to install the maintenance media.

    Note: It is strongly recommended that you install the maintenance media, which contains patches for the problems reported on the operating system and add-on packages.

```
You are about to Initialize the selected Hard disk(s).  This may
destroy all files currently on the system.

Press ENTER to continue or DEL to cancel the installation.
```

15. Press Enter to initialize the hard disk and continue the installation.

    Note: Initializing the hard disk destroys any information that was on it previously.

    After you indicate that the system may initialize the hard disk, the installation software checks to see if the disk has been formatted.

    - If the disk has not been formatted, the system formats the disk automatically.
    - If the disk has been formatted already, one of the following messages displays:

      ```
      Hard disk /dev/rdsk/c<#>t<#>d<#>s<#> appears to be
      fomatted. Do you want to reformat hard disk
      /dev/rdsk/c<#>t<#>d<#>s<#> (n)/y ? (where c is controller, t is
      target, d is device, and s is slice, such as c0t6d0s0)
      ```

      OR

      ```
      WARNING:  Hard disk /dev/rdsk/c100t0d0s0 has a Diagnostic
      Partition. Formatting the disk will delete this partition. Do
      you want to reformat hard disk /dev/… ?
      ```

    You normally do not need to reformat the hard disk, but may want to for the following reasons:

    - The hard disk has been corrupted.
    - You want to remove an existing partition created for another operating system.

16. Press Enter if you do not want to reformat the hard disk, or type y and press Enter to reformat the hard disk.

    ```
    SELECT ONE OF THE FOLLOWING:
    1. Create a partition
    2. Change Active (Boot from) partition
    3. Delete a partition
    4. Exit(Update disk configuration and exit)
    5. Cancel(Exit without updating disk configuration)
    ```

```
Enter Selection:
```

By default, only one partition (100 percent UNIX) is created using the entire hard disk. This is the recommended partitioning for a runtime (store) system.

17. Type **4** "Exit (Update disk configuration and exit)" and press Enter to accept the current partitioning.

    Note: If your disk has been partitioned previously but you want to modify the partitions, refer to the "Installing Interactively" chapter in *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000).

```
UNIX file system will now be created on your disk(s).

This will overwrite all data in the UNIX System partition. Press
ENTER to continue or DEL to cancel the installation.
```

18. Press Enter to continue the installation.

```
CAUTION: Do not cancel the installation at this point.

Initializing the hard disk(s). Please wait ...

Preparing for next phase of installation - Complete

Remove the Boot flex #3 from the flex drive now.

The system will be rebooted.
Press ENTER when you are ready.
```

19. Be sure that the NCR UNIX V.4 boot disk is removed and press Enter to reboot the system.

Caution: Do not remove the SCSI cartridge tape.

The system is rebooted.

```
Loading software installation utilities...
This activity may take as long as 5 minutes...
```

```
The disk device c<#>t<#>d<#>s<#> (where c is
controller, t is target, d is device, and s is slice,
such as c0t0d0s0) must now be sliced and have file
systems created on it. If you want to this manually, be
sure there will be sufficient space for the UNITY
system on whichever slice will contain /appl/unity. Or,
the slicing can be performed automatically to allocate
all available space to the root (/) file system, which
is the default for the UNITY system. The next question
will allow you to choose which option you want.

Allow install process to automatically slice disk? (y/n)
```

20. Type y and press Enter for the disk to be sliced automatically. This is recommended because the install scripts will put the /VAR and /USR space under ROOT (/) where it can be used by the ACS platform.

Caution: You must slice your own disk. Do not attempt to slice your own disk unless you know what you are doing. Refer to *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000) for complete information on disk slicing procedures.

In addition to the procedures in *Installing NCR UNIX SVR4 MP-RAS* (B003-0103-B000), use the following guidelines:

- The maximum size for a file system is 2GB, which limits the slice size to 2GB.
- You may edit large slices only if the information is displayed in MB.
- During slicing, be sure that the /dev/dump directory is twice the size of your RAM.
- You must use Control G to merge the /usr and /var directories with the /root directory.

- For optimum results, the /dev/dump directory should come before the /root directory. To put the dump directory before the root directory, do the following: 1) Change the start of the root space to a high address (such as 2000) so that all slicing sections move down and a gap is created for the dump space. 2) Change the start of the dump space area to just below the stand area. 3) Move the start of the root space area up after the dump area.
- Once the disk has been sliced, allocate the remaining free space to the /root directory and save the configuration. The maximum amount of space that can be allocated is 2GB; any remaining free space must be added to a different slice.

The "pkgplus – Package Selection" screen displays a list of the packages that are available to be installed and/or spooled. The packages selected by default are displayed in reverse video.

21. Select and deselect the UNIX packages to install. Refer to the "List of Packages" heading in this appendix for a list of available packages.

```
(a)Add    (o)Original    (s)Spool    (U)Unselect all
(f)First_Page    (A)Add all    (r)Response    (S)Spool all
(q)Quit/Abort    (n)Next_Page    (h)Help    (R)Rollback on (u)Unselect
(x)Save+Exit    (p)Previou_Page

Press 'i' to revert to the Select License Menu.
```

Unless otherwise specified, packages will use the default responses. If you want to change the responses ahead of time for a package, highlight the package and press **r** (Response) to tag the package for which you want to review the prompts.

22. Press **x** (Save+Exit) to save the **pkgplus** settings, or press **q** (Quit/Abort) if you do not want to save your changes.

The package response process begins for those packages requiring answers to questions.

23. Answer the questions using the "Package Selection" table in the "Installing Interactively" chapter of *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000).

    Note: If you are prompted to insert a cartridge tape into ctape, do not change tapes; keep the NCR UNIX V.4 operating environment tape in the tape drive.

    You are asked if you want to rebuild the kernel during the installation of the first few packages. Do not rebuild the kernel for these packages; wait until the end of the installation to rebuild the kernel.

    A message displays when each package is installed successfully. If the installation is not successful, an error message displays that indicates the error and its cause. If an error occurs, re-install the package after the UNIX installation is complete.

    ```
    Automated System Installation is now in progress
    No more User Interaction is required
    ```

24. You have reached the automated portion of the installation. At this point, the installation software sets up your system disk(s) and adds the default software. Approximate progress of the installation is displayed on the console.

    If you chose to install the maintenance media at the beginning of the installation process, you are prompted to install the maintenance media:

    ```
    Insert 'Maintenance media' in device /dev/dsk/c<#>t<#>d<#>s<#>
    (where c is controller, t is target, d is device, and s is slice,
    such as c100t6d0s0).
    ```

25. Insert the NCR UNIX V.4 maintenance updates, edition 2 for release 3.02.00 tape into the appropriate device and press Enter.

    A list of the patches available in the maintenance media displays. The patches that need to be installed are selected automatically.

26. Verify the list of patches and press Enter.

27. Once each patch has installed successfully, the system must be rebooted. If the system does not reboot itself, reboot the system by typing the following command:

    # cd /
    # shutdown –y –g0 –i6

    When the installation is complete, the operating system base and packages should be installed and operational, and the UNIX kernel is rebuilt.

    When the kernel is rebuilt, any mismatches in the IRQ numbers between the network card and the actual settings is reported.

28. Verify that UNIX V.4 3.02.00 is installed properly by checking the following log files:

Location	Contents
/var/spool/install/`log.install`	Installation procedure information log
/var/spool/install/`roboinstall`	Installation configuration information log

Update Existing UNIX

Follow these steps to install UNIX on S16, S26, and older servers on which UNIX has been installed previously.

Note: Any version of UNIX V.4 that is earlier than 2.03 must be updated to 2.03 before updating to the latest version.

1. Be sure the server is powered off.

2. Insert the flex disk (NCR UNIX V.4 boot disk) and the UNIX installation tape (NCR UNIX V.4 operating environment) into the appropriate drives.

3. Connect your cartridge tape drive to the server.

4. Power on the tape drive.

5. Power on the server.

6. Be sure you are in run level 1 (**who –r**). If you are not, change run levels (**shutdown –y –1 –g0**).

7. Verify in the /var/sadm/install/admin/`default` file that the instance variable is set to overwrite:

```
Mail=root
   instance=overwrite
```

8. Invoke the **pkgplus** command by typing the following:

   # pkgplus –d /dev/rmt/<device name>
   <device name>, for example, may be c0t3d0s0

```
Insert a cartridge tape into ctape.
Type [go] when ready,
Or [q] to quit:
```

9. Verify that the UNIX installation tape (NCR UNIX V.4 operating environment) is in. Then type **go** and press Enter.

```
Do you want to use VM&F (default:y) (y/n/)?
```

10. Type **n** and press Enter.

    Note: You must respond to this question within 30 seconds; otherwise, the update continues with the VM&F feature. In this case, re-start the update installation.

```
Do you have the "Maintenance media" available (y)/n?
```

11. Press Enter if you plan to install the maintenance media, or type **n** and press Enter if you do not want to install the maintenance media.

    Note: It is strongly recommended that you install the maintenance media, which contains patches for the problems reported on the operating system and add-on packages.

    The "pkgplus – Package Selection" screen displays a list of the packages that are available to be installed and/or spooled. The packages and drives to be installed are selected automatically by **pkgplus**.

12. Press **x** (Save+Exit) to save the **pkgplus** settings, or press **q** (Quit/Abort) if you do not want to save your changes.

    The package response process begins for those packages requiring answers to questions.

13. Answer the questions using the "Package Selection" table in the "Installing Interactively" chapter of *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000).

    Note: If you are prompted to insert a cartridge tape into ctape, do not change tapes; keep the NCR UNIX V.4 operating environment tape in the tape drive.

    You are asked if you want to rebuild the kernel during the installation of the first few packages. Do not rebuild the kernel for these packages; wait until the end of the package installation to rebuild the kernel.

    A message displays when each package is installed successfully. If the installation is not successful, an error message displays that indicates the error and its cause. If an error occurs, re-install the package after the UNIX installation is complete.

    Note: If an abort occurred during an update from 3.01 to 3.02 with the following error message:

```
UX: expr: ERROR: Non-numeric
```

be sure that the instance variable in the /var/sadm/install/admin/`default` file is set to overwrite.

If you chose to install the maintenance media at the beginning of the installation process, you are prompted to install the maintenance media:

```
Insert 'Maintenance media' in device /dev/dsk/c100t6d0s0.
```

14. Insert the NCR UNIX V.4 maintenance updates, edition 2 for release 3.02.00 tape into the appropriate drive and press Enter.

    A list of the patches available in the maintenance media displays.

15. Select the patches you want to install and press Enter.

16. Once each patch has installed successfully, the system must be rebooted. If the system does not reboot itself, reboot the system by typing the following command:

    # cd /
    # shutdown –y –g0 –i6

    When the installation is complete, the operating system update and packages should be installed and operational, and the UNIX kernel is rebuilt.

Installing UNIX Primary Operating Environment on S20 and S26XLPII Servers

Before installing UNIX on S20 and S26XLPII servers, be sure to order the correct installation media and corresponding documentation.

Installation Media:

- ACS Server Runtime for UNIX – full UNIX O/S (LPID G370-0977-0000), which includes:
  - Flex disk – NCR UNIX V.4 boot disk
  - Tape – NCR UNIX V.4 operating environment
  - Tape – NCR UNIX V.4 maintenance updates, edition 2 for release 3.02.00
  - Tape – NCR ACS system services for UNIX
  - CD – NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00

Documentation:

NCR S20 Server Installing Network Operating System Release 1 (B003-0186-A000) – includes BIOS settings for S20 servers

NCR S26XLPII Server Installing Network Operating System Release 1 (B003-0186-A000) – includes BIOS settings for S26XLPII servers

Install UNIX

Follow these steps to install UNIX on S20 and S26XLPII servers.

1. Be sure the server is powered off.

2. Insert the UNIX boot and maintenance CD (NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00) into the appropriate drive.

3. Power on the server.

4. Press F2 to go to system configuration.

   The selection menu displays:

```
Operating system selection:

1. Operating system found on device CD-ROM (35, 64) "MP-RAS Release
   030200 041598 - Original Load Image".
2. Operating system found on device TAPE (35, 96) "MP-RAS Release
   030200 110697 - Original Load Image".
```

5. Type **1** and press Enter to select that you want to boot the server from CD.

   When the system is booted, the installation selection menu displays:

```
Select one of the following:
1.  Perform Installation
2.  Perform System Maintenance
3.  Perform System Restore (OA/BASE only)
4.  Perform Micro Channel Configuration

Type selection number, then press Enter. >
```

6. Type **1**, "Perform Installation," and press Enter.

```
CAUTION:  A new installation of the UNIX System will destroy all
files currently on the system.

Select one of the following:
1.  Interactive Installation
2.  Installation using UNITY Defaults
3.  Help
4.  Cancel Installation

Type selection number, then press Enter. >
```

7. Insert the UNIX installation tape (NCR UNIX V.4 operating environment) into the appropriate drive.

8. Type **1**, "Interactive Installation," and press Enter to install UNIX using **pkgplus**.

```
Please enter a System Name for this system. This will set the node
name and the system name. This name will be used for uucp(1) and
networking.

Enter System Name: >
```

9. Type a system name and press Enter.

   Examples of system names are server1 for the primary and server 2 for the secondary. The following restrictions apply to the system name:

   - Can contain letters a – z (upper- or lowercase)
   - Can contain digits 0 - 9
   - Cannot be " " (null)
   - Cannot be "unix" or "UNIX"
   - Cannot exceed 256 characters
   - Cannot contain blank spaces

   You can change the system name after the installation is complete by logging in as root and executing the **uname -S <system_name>**

command, where <system_name> is the new system name. You will also have to execute **./tcpconfig** in the /etc/inet/script directory.

```
Current date and time is:Tue Feb 16 16:22:26 EST 1999
Do you wish to change it y/(n) [default=n]
```

10. Press Enter if the displayed date and time are correct, or type **y** and press Enter to change the date and time.

```
Scanning SCSI BUS for Peripherals
This activity may take some time...

NCR UNIX V.4 MP-RAS INSTALLATION FACILITY

These are the Install Media drives equipped in the
system:

1: SCSI CD-ROM Disk - /dev/rdsk/c<#>t<#>d<#>s<#>
2: SCSI Tape Drive - /dev/rmt/c<#>t<#>d<#>s<#>
3: SCI Tape Drive - /dev/rmt/c<#>t<#>d<#>s<#>
(where c is controller, t is target, d is device, and s is slice,
such as c0t4d0s0)

Type the number of the Install Media device that you
are using, and press ENTER.
```

11. Select the SCSI tape drive to use the tape for installation and press Enter.

    If you receive a message saying, "No cartridge tape device configured in the system," one of the following conditions may exist: (1) the tape drive was either not connected or powered on when you powered on the server, (2) the SCSI connection is bad, or (3) the tape drive is bad. Be sure the tape drive is powered on and check the connection, then restart the installation process at Step 1. If you receive the message again, try a different tape drive.

```
Please insert the Unix System V Release 4.0 Installation media into
the tape drive, /dev/rmt/c<#>t<#>d<#>s<#> (where c is controller, t
is target, d is device, and s is slice, such as c0t3d0s0) and press
ENTER
```

12. Verify that the UNIX installation tape (NCR UNIX V.4 operating environment) is in and press Enter.

```
CAUTION: Do not remove the installation media from
the tape drive. You will be notified when to remove
the tape once the installation has been completed.


Among your install media, you will find media labeled "Maintenance
media." These udpates provide corrections for problems reported
against the operating system and add-on packages.

It is strongly recommended that the Maintenance media be installed.

Do you have the "Maintenance media" available (y)/n ?
```

13. Press Enter to install the maintenance media.

    Note: You must install the maintenance media.

```
You are about to Initialize the selected Hard disk(s).  This may
destroy all files currently on the system.

Press ENTER to continue or DEL to cancel the installation.
```

14. **Press Enter to initialize the hard disk and continue the installation.**

    Note: Initializing the hard disk destroys any information that was on it previously.

    After you indicate that the system may initialize the hard disk, the installation software checks to see if the disk has been formatted.

    - If the disk has not been formatted, the system formats the disk automatically.
    - If the disk has been formatted already, one of the following messages displays:

```
Hard disk /dev/rdsk/c<#>t<#>d<#>s<#> appears to be
fomatted. Do you want to reformat hard disk
```

```
/dev/rdsk/c<#>t<#>d<#>s<#> (n)/y ? (where c is controller, t is
target, d is device, and s is slice, such as c0t6d0s0)
```

OR

```
WARNING: Hard disk /dev/rdsk/c<#>t<#>d<#>s<#> (where c is
controller, t is target, d is device, and s is slice, such as
c100t0d0s0) has a Diagnostic Partition. Formatting the disk will
delete this partition. Do you want to reformat hard disk /dev/…
?
```

You normally do not need to reformat the hard disk, but may want to for the following reasons:

- The hard disk has been corrupted.
- You want to remove an existing partition created for another operating system.

15. Press Enter if you do not want to reformat the hard disk, or type **y** and press Enter to reformat the hard disk.

```
SELECT ONE OF THE FOLLOWING:
1. Create a partition
2. Change Active (Boot from) partition
3. Delete a partition
4. Exit(Update disk configuration and exit)
5. Cancel(Exit without updating disk configuration)

Enter Selection:
```

By default, only one partition (100 percent UNIX) is created using the entire hard disk. This is the recommended partitioning for a runtime (store) system.

If the diagnostic partition exists (NCR_DIAG), you may want to leave this partition if you plan to boot diagnostics from the hard drive.

16. Type 4 "Exit (Update disk configuration and exit)" and press Enter to accept the current partitioning.

    Note: If your disk has been partitioned previously but you want to modify the partitions, refer to the "Installing Interactively" chapter in *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000).

```
UNIX file system will now be created on your disk(s).

This will overwrite all data in the UNIX System partition. Press
ENTER to continue or DEL to cancel the installation.
```

17. Press Enter to continue the installation.

```
CAUTION: Do not cancel the installation at this point.

Initializing the hard disk(s). Please wait ...

Preparing for next phase of installation - Complete

Remove the Boot flex #3 from the flex drive now.

The system will be rebooted.
Press ENTER when you are ready.
```

18. Be sure that the UNIX boot and maintenance CD (NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00) is removed and press Enter to reboot the system.

Caution: Do not remove the SCSI cartridge tape.

The system is rebooted.

```
Loading software installation utilities...
This activity may take as long as 5 minutes...

The disk device c<#>t<#>d<#>s<#> (where c is
controller, t is target, d is device, and s is slice,
such as c0t0d0s0) must now be sliced and have file
systems created on it. If you want to this manually, be
sure there will be sufficient space for the UNITY
system on whichever slice will contain /appl/unity. Or,
```

```
the slicing can be performed automatically to allocate
all available space to the root (/) file system, which
is the default for the UNITY system. The next question
will allow you to choose which option you want.

Allow install process to automatically slice disk? (y/n)
```

19. Type y and press Enter for the disk to be sliced automatically. This is recommended because the install scripts will put the /VAR and /USR space under ROOT (/) where it can be used by the ACS platform.

Caution: Do not attempt to slice your own disk unless you know what you are doing. Refer to *Installing NCR UNIX SVR4 MP-RAS Release 3.02.00* (B003-0103-B000) for complete information on disk slicing procedures.

In addition to the procedures in *Installing NCR UNIX SVR4 MP-RAS* (B003-0103-B000), use the following guidelines:

- The maximum size for a file system is 2GB, which limits the slice size to 2GB.
- You may edit large slices only if the information is displayed in MB.
- During slicing, be sure that the /dev/dump directory is twice the size of your RAM.
- You must use Control G to merge the /usr and /var directories with the /root directory.
- For optimum results, the /dev/dump directory should come before the /root directory. To put the dump directory before the root directory, do the following: 1) Change the start of the root space to a high address (such as 2000) so that all slicing sections move down and a gap is created for the dump space. 2) Change the start of the dump space area to just below the stand area. 3) Move the start of the root space area up after the dump area.

- Once the disk has been sliced, allocate the remaining free space to the /root directory and save the configuration. The maximum amount of space that can be allocated is 2GB; any remaining free space must be added to a different slice.

The "pkgplus – Package Selection" screen displays a list of the packages that are available to be installed and/or spooled. The packages selected by default are displayed in reverse video.

20. Select and deselect UNIX packages to install. Refer to the "List of Packages" heading in this appendix for a list of available packages.

```
(a)Add    (o)Original    (s)Spool    (U)Unselect all
(f)First_Page    (A)Add all    (r)Response    (S)Spool all
(q)Quit/Abort    (n)Next_Page    (h)Help    (R)Rollback on (u)Unselect
(x)Save+Exit    (p)Previou_Page

Press 'i' to revert to the Select License Menu.
```

Unless otherwise specified, packages will use the default responses. If you want to change the responses ahead of time for a package, highlight the package and press **r** (Response) to tag the package for which you want to review the prompts.

21. Press **x** (Save+Exit) to save the **pkgplus** settings, or press **q** (Quit/Abort) if you do not want to save your changes.

Note: If you are prompted to insert a cartridge tape into ctape, do not change tapes; keep the NCR UNIX V.4 operating environment tape in the tape drive.

A message displays when each package is installed successfully. If the installation is not successful, an error message displays that indicates the error and its cause. If an error occurs, re-install the package after the UNIX installation is complete.

Note: You are asked if you want to rebuild the kernel during the installation of the first few packages. Do not rebuild the kernel for these packages; wait until the end of the installation to rebuild the kernel.

```
Automated System Installation is now in progress
No more User Interaction is required
```

22. You have reached the automated portion of the installation. At this point, the installation software sets up your system disk(s) and adds the default software. Approximate progress of the installation is displayed on the console.

    You are prompted to install the maintenance media:

```
Insert 'Maintenance media' in device /dev/dsk/c<#>t<#>d<#>s<#>
(where c is controller, t is target, d is device, and s is slice,
such as c100t6d0s0.
```

23. Insert the NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00 into the appropriate drive and press Enter.

    A list of the patches available in the maintenance media displays. The patches that need to be installed are selected automatically.

    Note: Be sure to deselect the `netbios PNB30100` package.

24. Verify the list of patches and press Enter.

25. Once each patch has installed successfully, select **(x)** to Save and Exit.

26. Remove the UNIX installation tape (NCR UNIX V.4 operating environment) and the UNIX boot and maintenance CD (NCR UNIX V.4 boot CD and maintenance updates, edition 2 for release 3.02.00).

```
Do you want to rebuild UNIX after this installation:
```

27. Type **n** and press Enter. (The UNIX kernel will be rebuilt after the installation is complete.)

28. Shut down the system by typing the following:

    # shutdown –y –g0 –i6

List of Packages

The packages listed in this section are available in the installation media. Lists of UNIX and Advanced Checkout Solution (ACS) packages are provided.

UNIX Packages

Package	Description
BASE	UNIX BASE OS files
compat	Compatibility package
dfm	Built into the base (cannot be removed)
dfs	DFS utilities
ed	Editing package
fmli	NCR Form and Menu Language Interpreter
iee	Intel Ether Xpress (82557) MAC driver
ild	NCR Integrated LAN driver
inet	STREAMware TCP for MP-RAS
lp	LP print services
man	Manual pages
ncrm	Built into ODM (cannot be removed)
Package (cont.)	**Description (cont.)**
netbios	StarPRO NetBIOS
nfs	Network File System
nsu	Networking Support Utilities
oam	Operations, Administration, and Maintenance
odm	System diagnostics
pkgplus	Pkgplus/VM&F

rpc	Remote Procedure Call utilities
scd	SCSI common diagnostics
smbase	NCR Systems Management Base (OA&M & OA/BASE)
support	System support features
sys	Built into base (cannot be removed)
termcap	NCR Termcap Compatibility package
terminf	Terminal Information utilities
usrenv	Built into base (cannot be removed)
xcp	Built into base (cannot be removed)

The UNIX packages in the following table are selected and installed based on the server's Ethernet driver.

Package	Type of Ethernet Card
elnk3	3Com 3c579 MAC (S16, S26, and older servers)
elnk3	3Com 579B
elnk3	3Com 579BT
enetpci	SMC PCI MAC (S16, S26, and older servers)
enetpci	SMC 9334 BDT
enetpci	SMC 9332 BDT
enetpci	SMC 9332 DST
enetpci	SMC 8432 BTA
enetpci	SMC 8432 BT
iee	Intel Ether Xpress Onboard Adapter
mc527	3Com 527B MAC (S16, S26, and older servers)
mc527	3Com 527B
smc943x	SMC 9432 BTX
smc943x	SMC9432 TX
smc9232	SMC 9232 DST
Package (cont.)	**Type of Ethernet Card (cont.)**
wd	WD/SMC 8003/8013 (S16, S26, and older servers)
wd	WD8013 EP/A
wd	WD8013 WP/A
wd	WD8003 E/A
wd	WD8013 ST/A
wd	WD8003 W/A
xpm	IBM Quad

ACS Packages

Package	Description
advcheck	ACS UNIX base application
chkout	ACS UNIX base application
chkoutcfg	ACS UNIX base application
chkoutdat	ACS UNIX base application
cidapp	Consumer Information Display (CID) application
cidplat	Consumer Information Display (CID) platform components
dkey	ACS base application
eftsnabuy	Electronic Funds Transfer (EFT)
ej	Electronic Journal (EJ)
sil	Standard Interchange Language (SIL) interpreter
unity	ACS server runtime for UNIX (full OS)
unity-7	ACS UNIX system services (7 or more workstations)
unitywin	ACS Windows 3.11 client system services
w95patap	ACS Windows 95 application
w95patpl	ACS Windows 95 client system services

UNIX Error Messages

The steps provided here help you to correct problems that exist if either of these error messages displays:

```
DUMP SPACE CONFIGURATION ERROR
```
(message displays every hour)

```
POWER_LOSS STRATEGY HAS CHANGED
```

To check for these conditions, do the following steps:

1. **Type the following:**

   # dumpconfig -m

If the result is	Then
0 (zero)	Neither of these conditions exists because the /etc/init.d/DUMPCHK script did not report errors.

`Dumpconfig: Can't get total dump allocated`
`#echo $?`
`255`
	There is an invalid entry in the CMOS data for the dump details. Further verify the condition by performing the next step.

2. **Type the following:**

   # fdump -l

If the result is	Then
The dump list	The condition does not exist.
`Fdump: dumplist failed: Invalid entry in CMOS`	CMOS had an invalid entry for the dump space configured. Fix the problem by performing the next step.

3. **Type the following:**

   # fdump –i

```
Adding /dev/dsk/c0t0d0s6 0 131072 to dump table
```

4. **Type the following:**

   # fdump –l

```
path               dev   dumplo  blocks
/dev/dsk/c0t0d0s6  35,6  0       131072
```

5. **Type the following:**

   # dumpconfig -b

```
130304
```

6. **Verify the fix by typing the following:**

   # dumpconfig -m

Installing Advanced Checkout Solution (ACS) on UNIX

You may install the Advanced Checkout Solution (ACS) 4.0 packages on S16, S26, S20, S26LPTII, and older UNIX servers. For a list of available ACS packages, refer to the "List of Packages" section in this appendix.

The ACS primary operating environment (`unity`, `unitywin`, or `w95patpl`) packages are the UNIX equivalents to the NT package documented in the "Installing Server" section of the "Installing Runtime System" chapter. The ACS primary operating environment consists of the UNIX operating system, platform services, cooperative services, and system maintenance tools:

- The UNIX V.4 Release 3.02.00 operating system is bundled with the ACS platform.
- Platform services provide straightforward access to data files and peripheral devices and assists in managing the store POS system by providing data redundancy and communications. The platform services include data files and executables such as Task Manager, Program Loader, and Transaction Management Services.
- Cooperative Services provide utilities for maintaining a retail system such as the runtime and workstation configurators, forced load, and manual switch. (These services are documented in the "Supporting a Runtime System" chapter.)
- System Maintenance provides utilities for supporting a runtime system such as Nettrace and TMS Test. (These tools are documented in the "Supporting a Runtime System" chapter.)

Install ACS Packages

Follow these steps to install the ACS packages on your UNIX server. (Instructions for updating ACS 4.0 ICI software to GCA are provided after the ACS installation instructions.)

1. Be sure you are logged in as **root**.

2. Be sure you are in run level 2 (**who -r**). If you are not, change run levels (**shutdown -y -i2 -g0**).

3. Be sure the cartridge tape or diskette with the ACS packages is in the appropriate drive.

4. Type one of the following:

   If installing from a tape, type:
   pkgadd –d /dev/rmt/ctape1 <package name(s)>

   If installing from a diskette, type:
   pkgadd –d /dev/rdsk/fo3ht <package name(s)>

   ACS platform packages must be listed in this order:
   unity unity-7 unitywin cidplat w95patpl chkout

   ACS application packages must be listed in this order:
   chkout advcheck dkey cidapp chkoutdat chkoutcfg ej sil w95patap eftsnabuy

5. Press Enter to start the installation.

6. Accept the default responses to the prompts that display during the installation of each package. Default responses to the prompts that display during the `unity` package installation follow.

   ```
   Enter Directory for UNITY Platform Installation
   (default: /appl/unity) [?].
   ```

7. Press Enter to accept the default.

   ```
   Enter new User ID for UNITY System (default: unity) [?]
   ```

8. Press Enter to accept the default.

```
Enter Home Directory for user (default: /appl/unity) [?]
```

9. Press Enter to accept the default.

```
Enter new Group ID for UNITIY System (default: unity) [?]
```

10. Press Enter to accept the default.

```
If a file exists in the /etc/conf/init.d directory with Virtual
Terminal entries on the target machine, then the answer to this
questions will be ignored. The entries in the file in the
/etc/conf/init.d directory will be used instead.

If not installed, install Virtual Terminal?(default: y) [y, n, ?]
```

11. Press Enter to accept the default.

```
Enter the new User ID for full CS Menu (default:  coop) [?]
```

12. Press Enter to accept the default name for the Cooperative Services menu.

```
Entere new User ID for limited CS Menu (default:  cooplite) [?]
```

13. Press Enter to accept the default name for the limited Cooperative Services menu.

    The installation software validates the IDs specified and adds the specified user entries.

14. After all packages have been installed, remember to reboot the system using the following command:

    **#cd **
    #shutdown –y –g0 –i6

Select the LAN Card

After you install ACS and bring up the system, an ACS Local Area Network (LAN) card PPA address must be specified. The /etc/inet/unityild.stamp file contains the latest configuration of the LAN cards available.

If only one LAN card is present on the system, this card is selected by default. If more than one card exists, you are prompted to choose a card for use by ACS under the following conditions:

- The /etc/inet/unityild.stamp file does not exist, or the /etc/inet/unityild.stamp file and the /etc/ildcf file do not exist.
- There are differences between the card details recorded in the /etc/inet/unityold.stamp file and the output of the ildconfig file.
- The /etc/unitylanvar file, which contains details about the ACS configuration, does not exist.

In these cases, a prompt such as the following example displays:

```
Configuring UNITY parameters needed before ILD init…
```

PPA	Slot	Desc.	Addr.
5	1	3c579-TP	0020aff23e75
6	2	3c579-TP	0020af3cd084

```
Please choose the PPA (LAN Card) to be used by UNITY [???]:
```

Type the number of the LAN card you want ACS to use (such as 5 or 6 in this example) and press Enter.

Update ACS ICI to GCA

Before updating ACS 4.0 from ICI to GCA, be sure to have the ACS Server Runtime for UNIX – full O/S (LPID G370-0977-0000).

Follow these steps to update ACS 4.0 from ICI to GCA.

1. Be sure the server is powered off.

2. Insert the installation media into the appropriate drives.

3. Connect your cartridge tape drive to the server.

4. Power on the tape drive.

5. Power on the server.

6. Verify in the /var/sadm/install/admin/`default` file that the instance variable is set to overwrite:

```
Mail=root
   instance=overwrite
```

7. Verify and save the current ACS LAN PPA address by typing the following:

   # pg/etc/unitylanvar

8. Update UNIX 3.02 to the latest version by inserting the appropriate tape media and typing the following:

   # pkgplus –d /dev/rmt/<device name>
   <device name>, for example, may be c0t3d0s0

9. Once the tape has been installed successfully, type x and press Enter to save and exit.

   Note: During the update, some packages may prompt you to rebuild the kernel. Do not rebuild the kernel for these packages; wait until the end of the installation to rebuild the kernel for all packages.

10. After all packages have been updated, remember to reboot the system using the following command:

    #shutdown –y –g0 –i6

Index

—C—

—D—

—G—

—H—

—I—

—K—

—L—

—R—

—S—

—T—

—U—

—V—

—W—

—X—