
Unicenter

NetMaster File Transfer Management Agent - CONNECT:Direct Installation and Administration Guide

4th edition

P01- 088



Computer Associates
The Software That Manages eBusiness



Edition	Publication Number	Product Version	Min. MS Level	Publish Date
4th Edition	P01-088	5.0	Not applicable	January 2002

This documentation and related computer software program (hereinafter referred to as the "Documentation") is for the end user's informational purposes only and is subject to change or withdrawal by Computer Associates International, Inc. ("CA") at any time.

This documentation may not be copied, transferred, reproduced, disclosed or duplicated, in whole or in part, without the prior written consent of CA. This documentation is proprietary information of CA and protected by the copyright laws of the United States and international treaties.

Notwithstanding the foregoing, licensed users may print a reasonable number of copies of this documentation for their own internal use, provided that all CA copyright notices and legends are affixed to each reproduced copy. Only authorized employees, consultants, or agents of the user who are bound by the confidentiality provisions of the license for the software are permitted to have access to such copies.

This right to print copies is limited to the period during which the license for the product remains in full force and effect. Should the license terminate for any reason, it shall be the user's responsibility to return to CA the reproduced copies or to certify to CA that same have been destroyed.

To the extent permitted by applicable law, CA provides this documentation "as is" without warranty of any kind, including without limitation, any implied warranties of merchantability, fitness for a particular purpose or noninfringement. In no event will CA be liable to the end user or any third party for any loss or damage, direct or indirect, from the use of this documentation, including without limitation, lost profits, business interruption, goodwill, or lost data, even if CA is expressly advised of such loss or damage.

The use of any product referenced in this documentation and this documentation is governed by the end user's applicable license agreement.

The manufacturer of this documentation is Computer Associates International, Inc.

Provided with "Restricted Rights" as set forth in 48 C.F.R. Section 12.212, 48 C.F.R. Sections 52.227-19(c)(1) and (2) or DFARS Section 252.227-7013(c)(1)(ii) or applicable successor provisions.

© 2002 Computer Associates International, Inc.

All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

Contents

	About This Guide.....	xv
	Who Should Read This Guide	xv
	Prerequisite Knowledge	xv
	How to Use This Guide.....	xvi
	All Users.....	xvi
	Platform Administrators	xvi
	CONNECT:Direct Administrators	xvi
	Conventions Used in This Guide	xvi
	Related Documentation.....	xviii
	Support for Customers	xix
Chapter 1	About NetMaster for File Transfer Agent -	
	CONNECT:Direct	1-1
	Overview	1-1
	Licensing	1-2
	Supported Platforms.....	1-2
	Basic Agent Components.....	1-3
	Agent Server.....	1-3
	Command Server.....	1-3
	Event Server	1-5
	CONNECT:Direct Event and Statistics Collection Components	1-5

Part I UNIX Agent

Chapter 2	UNIX Agent Concepts	2-1
	UNIX Agent Components	2-2
	Agent Server	2-3
	Command Server	2-3
	Event Server and Event Collector	2-3
	User Exits and the Exit Log.....	2-3
	Using Standard User Exits.....	2-4
	Mainframe Connections	2-4
	Multiple Connections	2-5
Chapter 3	Installing the UNIX Agent	3-1
	Hardware and Software Requirements.....	3-1
	System Requirements	3-1
	Compiler Requirements.....	3-1
	Cooperating Software Requirements.....	3-2
	TCP/IP Connectivity Requirements	3-2
	Pre-installation Checklist	3-3
	Installing the UNIX Agent	3-5
	Step 1 - Review the Pre-installation Checklist.....	3-5
	Step 2 - Define an Installation Directory.....	3-5
	Step 3 - Install the Required Installation Components.....	3-6
	Step 4 - Run the UNIX Agent Installation Script.....	3-7
	Step 5 - Set HOSTNAME Variable.....	3-10
	Step 6 - Set CD_NODENAME Variable	3-11
	Step 7 - Stop and Start CONNECT:Direct for UNIX	3-11
	Step 8 - Configure Mainframe Resources	3-11
	Completion	3-12
	Uninstalling the UNIX Agent	3-13

Chapter 4	Distributing the UNIX Agent	4-1
	Method of Distribution.....	4-2
	Distribution Overview.....	4-2
	Distribution Requirements	4-2
	Security Considerations.....	4-3
	File Permissions	4-3
	Logging	4-4
	General Distribution of Software and Other Information	4-4
	Pre-distribution Checklist	4-5
	Distributing the UNIX Agent Software	4-6
	Remotely Uninstalling the UNIX Agent.....	4-12
Chapter 5	Managing the UNIX Agent	5-1
	Modifying the UNIX Agent Configuration File	5-1
	Shutting Down UNIX Agent Components	5-2
	Deactivating the UNIX Agent.....	5-3
	Disabling the UNIX Agent on the UNIX System	5-3
	Terminating the UNIX Agent CDMGR on the Mainframe	5-4
	Determining the Status of the UNIX Agent.....	5-4
	Determining Mainframe Connection Status.....	5-4
	Determining Command Server and Event Server Connection Status.....	5-5
	Activating UNIX Agent Debug Message Logging.....	5-6
	Issuing CONNECT:Direct for UNIX Control Commands.....	5-7
Chapter 6	Troubleshooting the UNIX Agent	6-1
Chapter 7	UNIX Man Pages	7-1
Chapter 8	Modifying Existing CONNECT:Direct Exit Files	8-1
	SOFTCDSTATS(1) Man Page Listing	8-2

Part II Windows NT Agent

Chapter 9	Windows NT Agent Concepts	9-1
	Windows NT Agent Components	9-2
	Agent Server	9-3
	Command Server	9-3
	Event Server	9-3
	Event Collector	9-4
	Mainframe Connections	9-4
	Multiple Connections	9-5
Chapter 10	Installing the Windows NT Agent	10-1
	Hardware and Software Requirements.....	10-1
	System Requirements	10-1
	Cooperating Software Requirements.....	10-2
	TCP/IP Connectivity Requirements	10-2
	Pre-installation Checklist	10-3
	Installing the Windows NT Agent	10-4
	Step 1 - Review the Pre-installation Checklist.....	10-4
	Step 2 - Install the Windows NT Agent Software.....	10-4
	Step 3 - Set HOSTNAME Parameter	10-8
	Step 5 - Configure Mainframe Resources	10-9
	Completion	10-10
	Uninstalling the Windows NT Agent.....	10-10
Chapter 11	Distributing the Windows NT Agent	11-1
	Pre-distribution Checklist.....	11-2
	Distributing the Windows NT Agent	11-3
	Sample install.ini File.....	11-4
	Sample install.cdp File	11-5

Chapter 12	Managing the Windows NT Agent	12-1
	Processes	12-2
	Viewing Process and Service Status	12-3
	Stopping and Starting the Windows NT Agent	12-4
	Stopping the Windows NT Agent	12-4
	Starting the Windows NT Agent.....	12-5
	Windows NT Agent Log Files	12-5
	Modifying the Windows NT Agent Configuration File.....	12-6
	Default Configuration File	12-6
	Group and Parameter Descriptions.....	12-7

Chapter 13	Troubleshooting the Windows NT Agent	13-1
-------------------	---	-------------

Part III OS/400 Agent

Chapter 14	OS/400 Agent Concepts	14-1
	OS/400 Agent Components	14-2
	Agent Server.....	14-3
	Command Server.....	14-3
	Event Server	14-3
	Process Monitor.....	14-4
	Agent Controller.....	14-4
	Statistics Collector.....	14-4
	Event Collector.....	14-4
	Mainframe Connections	14-5
	Mainframe Connections to and from the OS/400 Agent	14-6

Chapter 15	Installing the OS/400 Agent	15-1
	Hardware and Software Requirements.....	15-1
	System Requirements	15-1
	Cooperating Software Requirements.....	15-2
	TCP/IP Connectivity Requirements	15-2
	Pre-installation Checklist	15-3
	Installing the OS/400 Agent.....	15-5
	Step 1 - Review the Pre-installation Checklist.....	15-5
	Step 2 - Create an Administrator Profile	15-5
	Step 3 - Install the OS/400 Agent Software	15-5
	Step 4 - Update CONNECT:Direct Users List.....	15-7
	Step 4.1 - Add the Agent Owner and QUSER to the CONNECT:Direct Users List	15-7
	Step 4.2 - Set Authorities for QUSER	15-8
	Step 5 - Customize Initial OS/400 Agent Parameter Settings	15-8
	Step 6 - Configure Mainframe Resources	15-11
	Post-installation Tasks	15-11
	What You Have Installed	15-12
	What You Can Modify.....	15-13
	Uninstalling the OS/400 Agent	15-14
Chapter 16	Managing the OS/400 Agent	16-1
	Granting Users Authority to Manage the OS/400 Agent.....	16-1
	Starting the OS/400 Agent	16-2
	Setting Up Automatic Startup	16-2
	Ending the OS/400 Agent	16-3
	Displaying Information About the OS/400 Agent	16-4
	Active Jobs	16-4
	Subsystem Jobs.....	16-5
	Changing the OS/400 Agent Parameters.....	16-7
	Changing the Initialization File	16-8
Chapter 17	Troubleshooting the OS/400 Agent	17-1
	Before Contacting Technical Support.....	17-2
	Problems and Solutions.....	17-3

Part IV Tandem Agent

Chapter 18 Tandem Agent Concepts	18-1
Tandem Agent Components.....	18-2
Agent Server.....	18-3
Command Server.....	18-3
Event Server	18-3
Event Management Service Collector and Distributor	18-3
Mainframe Connections	18-4
Multiple Connections to and From the Tandem Agent.....	18-4
Chapter 19 Installing the Tandem Agent	19-1
Hardware and Software Requirements	19-1
System Requirements.....	19-1
Cooperating Software Requirements	19-2
Tandem SNMP Agent Subsystem.....	19-2
Pre-installation Tasks.....	19-3
Installing the Tandem Agent from CD-ROM.....	19-3
Hardware and Software Requirements for Installation From CD.....	19-3
Workstation System Requirements	19-3
Tandem System Requirements	19-4
Workstation/Tandem Connection.....	19-4
Step 1 - Complete the Pre-installation Tasks	19-4
Step 2 - Transfer the Tandem Agent Files from CD-ROM to the Tandem System	19-4
Sample File Transfer Session	19-6
Step 3 - Assign File Attributes to the Tandem Agent Files	19-7
Step 4 - Complete the Post-installation Tasks.....	19-7
Installing the Tandem Agent from Tape	19-7
Step 1 - Complete the Pre-installation Tasks	19-7
Step 2 - Install the Tandem Agent Software	19-7
Step 3 - Configure Mainframe Resources	19-8
Step 4 - Complete the Post-installation Tasks.....	19-9
Post-installation Tasks	19-9
Uninstalling the Tandem Agent	19-10

Chapter 20	Managing the Tandem Agent	20-1
	Mapping Logical Names	20-2
	Examples	20-2
	Tandem Agent Startup Syntax	20-2
	Parameters	20-3
	Starting the Tandem Agent	20-4
	Stopping the Tandem Agent.....	20-5
	Displaying Information About the Tandem Agent	20-5
Chapter 21	Troubleshooting the Tandem Agent	21-1
	Before Contacting Technical Support	21-2
	Problems and Solutions.....	21-3
	Event Messages	21-4
	Other Messages	21-5
	Tracing the Tandem Agent.....	21-6
	Starting a Trace.....	21-7
	Specifying Trace Flags.....	21-7
	Directing Trace Output.....	21-8

Index

Figures

Figure 1-1.	NetMaster for File Transfer Agent - CONNECT:Direct Functional Diagram	1-4
Figure 2-1.	UNIX Agent Conceptual Diagram.....	2-2
Figure 3-1.	Agent Configuration File Dialog Box.....	3-8
Figure 4-1.	Mode Selection Dialog Box	4-7
Figure 4-2.	Install Information Dialog Box	4-8
Figure 4-3.	User Names and Passwords Dialog Box	4-9
Figure 4-4.	Question Dialog Box.....	4-11
Figure 4-5.	SOLVE:Operations - Confirm Copy Dialog Box.....	4-11
Figure 4-6.	Uninstall Information Dialog Box	4-13
Figure 9-1.	Windows NT Agent Conceptual Diagram	9-2
Figure 14-1.	OS/400 Agent Conceptual Diagram	14-2
Figure 15-1.	Setup Agent Install Parameters Panel.....	15-6
Figure 15-2.	Change SOLVE Agent Parameters Panel.....	15-9
Figure 16-1.	OS/400 Agent Work with Subsystem Jobs Panel.....	16-6
Figure 18-1.	Tandem Agent Conceptual Overview.....	18-2

Tables

Table 7-1.	UNIX Agent Man Pages	7-1
Table 12-1.	Windows NT Agent Processes.....	12-2
Table 12-2.	CONNECT:Direct for Windows NT Processes.....	12-3
Table 16-1.	OS/400 Agent Component Job Definitions	16-4
Table 16-2.	Active Jobs View Showing OS/400 Agent Jobs and Status Values	16-5
Table 16-3.	Subsystem Jobs View Showing OS/400 Agent Jobs and Status Values.....	16-7

About This Guide

This guide provides information about installing and managing the NetMaster for File Transfer Agent - CONNECT:Direct. The agent software can run on a variety of platforms (UNIX, Windows NT, OS/400, and Tandem) and each is discussed in this guide.

Who Should Read This Guide

This guide is written for system administrators who may perform one or both of the following roles:

- Platform Administrator - manages UNIX, Windows NT, OS/400, or Tandem platforms on a regular basis. Users in this role install, distribute, and configure the agent software on a single platform.
- CONNECT:Direct Administrator - manages CONNECT:Direct on one or more platforms. This user administers the agents across multiple platforms.

Prerequisite Knowledge

To install and administer the agents, these administrators should be familiar with the day-to-day operation and management of:

- The platform onto which they are installing the agent
- CONNECT:Direct
- NetMaster for File Transfer
- TCP/IP

How to Use This Guide

This guide includes information that is common to all agents as well as platform-specific agent information. Platform-specific information for each agent is contained in separate parts. Each part presents conceptual information, installation instructions, management tasks, and troubleshooting information as they apply to a specific platform.

All Users

All users should read Chapter 1 which provides a general overview of how the agent works. This overview applies to all platforms.

Platform Administrators

Platform administrators should read the installation chapter that applies to the agent/platform they are working with.

CONNECT:Direct Administrators

CONNECT:Direct administrators should read Chapter 1 and the management chapter in the part for the agent/platform for which they are responsible. If problems arise, they should also read the troubleshooting chapter.

Conventions Used in This Guide

The following conventions apply in this guide:

Product name

The NetMaster for File Transfer Agent - CONNECT:Direct may also be referred to in text as the File Transfer Agent.

Index entries

In the index, UNIX Agent-specific entries are indicated by (UX), Windows NT Agent-specific entries are indicated by (NT), OS/400 Agent-specific entries are indicated by (OS), and Tandem Agent-specific entries are indicated by (TN).

Mainframe applications

This guide concerns itself primarily with the relationship between NetMaster for File Transfer Agent - CONNECT:Direct and the Computer Associates mainframe application NetMaster for File Transfer. The mainframe application is a separate product, and is not included with NetMaster for File Transfer Agent - CONNECT:Direct.

Menus

An instruction to choose a menu option is shown as: choose **menu bar item-menu option**. For example:

Choose **File-Open**.

Commands and other user entries

Commands and user entries are shown in monospace font. Italic entries indicate a value that you supply. For example:

```
copy sourcefile targetfile
```

Optional parameters and arguments that have several choices are shown between brackets ([]), separated by a vertical bar. For example, [PARM1 | PARM2]. Do not type the brackets.

Default values for parameters and arguments are shown underlined. If an argument is not specified on the command line, the default value for that parameter is always used. For example:

```
set default=[config.ini | filename.ini]
```

Mandatory values that have several choices are shown between braces, separated by a vertical bar. For example, {OPTION1 | OPTION2}. Do not type the braces.

File and application names

Distributed system file names and internal applications are shown in mixed upper and lower case and in monospace font. For example, SOLVEAgent.

Dialog boxes and windows

Names of dialog boxes and windows are shown in bold type. For example:

Respond to the prompt in the **Start Up** dialog box.

Fields and lists

Field and list names are shown as they appear on the panel, dialog, or window. For example:

Select a new region from the **Region** list.

Keyboard keys

An instruction to press a key on the keyboard is shown in this format:

Press the **ENTER** key.

or

Press **ENTER**.

Buttons

An instruction to click a button that appears on a dialog or window is shown in this format:

Click the **Help** button.

or

Click **Help**.

Related Documentation

This guide does not provide specific information about NetMaster for File Transfer or CONNECT:Direct. However, you may wish to reference these manuals while using NetMaster for File Transfer Agent - CONNECT:Direct:

- Management Services—the *Management Services User's Guide* and the *Management Services Administrator Guide*
- NetMaster for File Transfer—the *Unicenter NetMaster File Transfer Management Implementation, Administration, and Operations Guide* and the *Unicenter NetMaster File Transfer Management Release and Migration Guide*
- The *Unicenter Mainframe Network Management Installation and Setup Instructions*, the *Automation Services Common User Guide*, and the *Automation Services Administrator Guide*
- *CONNECT:Direct for UNIX User's Guide*
- *CONNECT:Direct for Windows NT User's Guide*
- *CONNECT:Direct for OS/400 User's Guide*
- *CONNECT:Direct for Tandem User's Guide*

Support for Customers

If you cannot find the information you need in this guide, you should:

- For the UNIX Agent, refer to the man pages installed on your system (a complete list of available man pages is found in Chapter 7, *UNIX Man Pages*).
- Phone your help desk—you might find the solution you need in your own support group.
- Contact Technical Support to record your problem.

About NetMaster for File Transfer Agent - CONNECT:Direct

1

The NetMaster for File Transfer Agent - CONNECT:Direct (also referred to as the File Transfer Agent) is an open systems agent for the mainframe application NetMaster for File Transfer (formerly known as SOLVE:Operations for File Transfer), V2.1 or later.

Overview

The File Transfer Agent performs the following functions:

- Monitors the file transfer processes of CONNECT:Direct running on the same platform as the File Transfer Agent
- Passes monitoring commands to CONNECT:Direct from NetMaster for File Transfer running on the MVS mainframe
- Forwards CONNECT:Direct events to the corresponding CONNECT:Direct manager (CDMGR) in the NetMaster for File Transfer region

Commands, responses, and event messages exchanged between the mainframe and the File Transfer Agent travel over a TCP/IP network.

The File Transfer Agent works with two products:

- CONNECT:Direct, which is a file transfer application developed and distributed by Sterling Commerce. CONNECT:Direct generates event messages that indicate the success or failure of a file transfer event.
- NetMaster for File Transfer, which acts as a management application that oversees the status of the CONNECT:Direct environment and the overall data transfer process. NetMaster for File Transfer centrally manages cross-platform file transfer systems and transmission status, issues automatic alerts to notify operators of unexpected events, and enables problem diagnosis.

Licensing

The File Transfer Agent is distributed without a license. Licensing is controlled by the mainframe application NetMaster for File Transfer, which is licensed to connect to a specific number of agents.

If you have any questions concerning your current license status, contact Technical Support.

Supported Platforms

The File Transfer Agent provides file transfer management and monitoring capabilities for the following platforms:

- UNIX
- Windows NT
- OS/400
- Tandem

Each platform runs a File Transfer Agent designed specifically for that platform. These agents are referred to as:

- The UNIX Agent
- The Windows NT Agent
- The OS/400 Agent
- The Tandem Agent

Basic Agent Components

In general, the File Transfer Agent performs the same functions on all platforms. However, due to differences in platform architecture, some components and operational specifics of each agent are necessarily different. These differences are discussed in the corresponding parts that appear later in this guide.

The components that are common to each agent are the:

- Agent Server
- Command Server
- Event Server

Additionally, event and statistics collection components are installed when the File Transfer Agent is installed. As with the basic agent components, the event and statistic collection components vary in each agent, based on platform implementation requirements.

Figure 1-1 illustrates the basic components and their relationship with NetMaster for File Transfer and CONNECT:Direct.

Agent Server

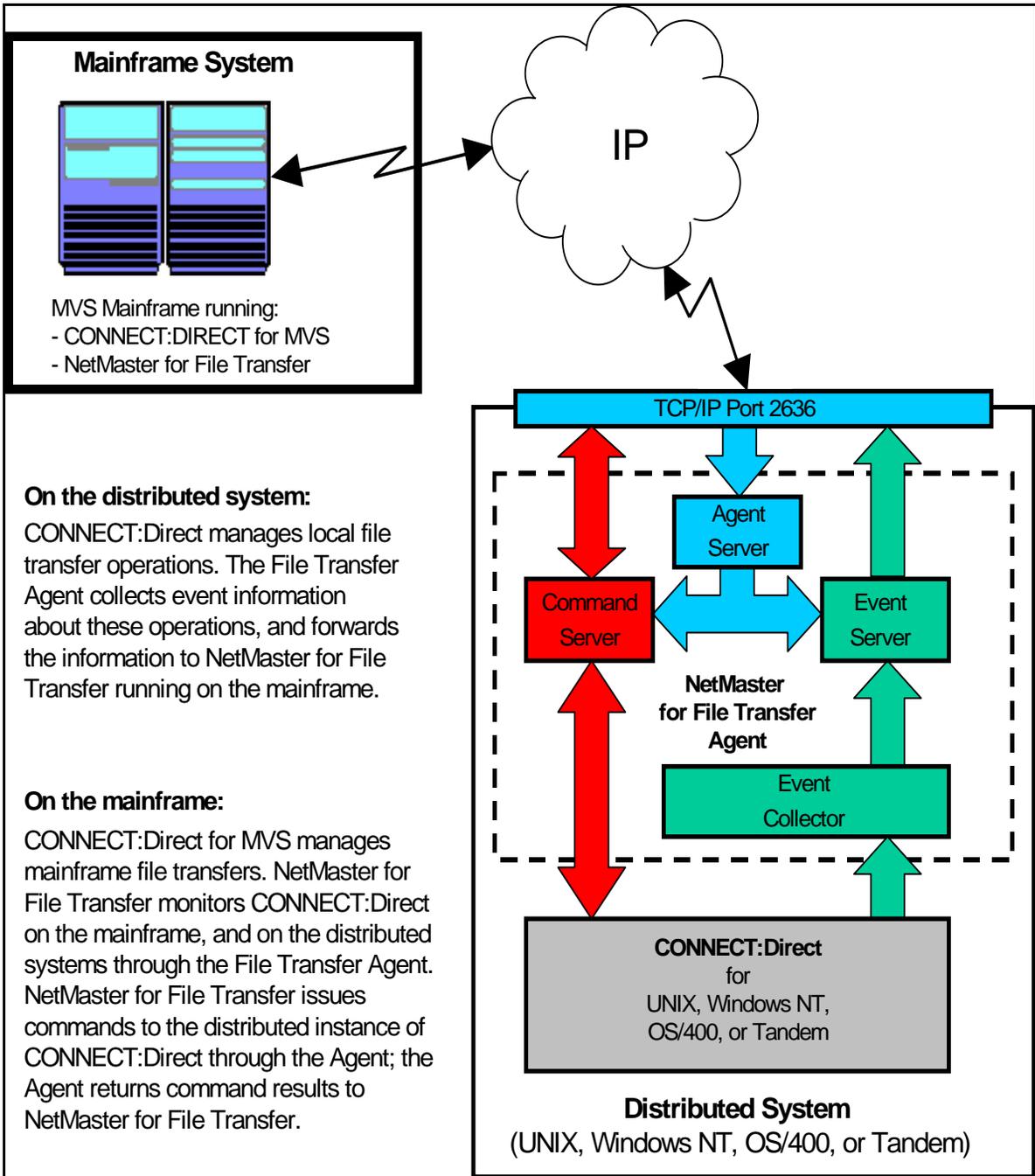
The Agent Server listens for connection requests from NetMaster for File Transfer on local port 2636. When a new connection request arrives, the Agent Server determines whether it is a command request or an event information request, and transfers the connection to either the Command Server or the Event Server. Once the connection has been transferred to the appropriate component, port 2636 is free to receive the next connection request. Connections to the mainframe remain open until terminated by the mainframe.

Command Server

The Command Server processes a command request sent by either a mainframe operator or an automatic response of NetMaster for File Transfer, and executes the command on CONNECT:Direct. When the command finishes, the Command Server passes the response back to the issuing mainframe.

There is one Command Server for each mainframe connection to the File Transfer Agent. The Command Server executes CONNECT:Direct commands one at a time, in the order received, returning the response from one command before executing the next command. As long as the connection is open, the Command Server will send CONNECT:Direct command responses to the mainframe.

Figure 1-1. NetMaster for File Transfer Agent - CONNECT:Direct Functional Diagram



Event Server

The Event Server sends file transfer events and CONNECT:Direct status events to the mainframe, acting as a bridge between CONNECT:Direct and NetMaster for File Transfer on the mainframe. The Event Server waits for CONNECT:Direct events. When an event arrives, the Event Server reformats the event and sends it to NetMaster for File Transfer on the mainframe.

There is one Event Server for each mainframe connection to the File Transfer Agent. The Event Server connection to the mainframe remains open until terminated by the mainframe. As long as the connection is open, the Event Server will send CONNECT:Direct events to the mainframe.

CONNECT:Direct Event and Statistics Collection Components

In general, CONNECT:Direct file transfer events and status events are collected and sent to the Event Server, which forwards this information to NetMaster for File Transfer on the mainframe.

For component information for a specific agent, see the corresponding part that appears later in this guide.

Part I

UNIX Agent

UNIX Agent Concepts

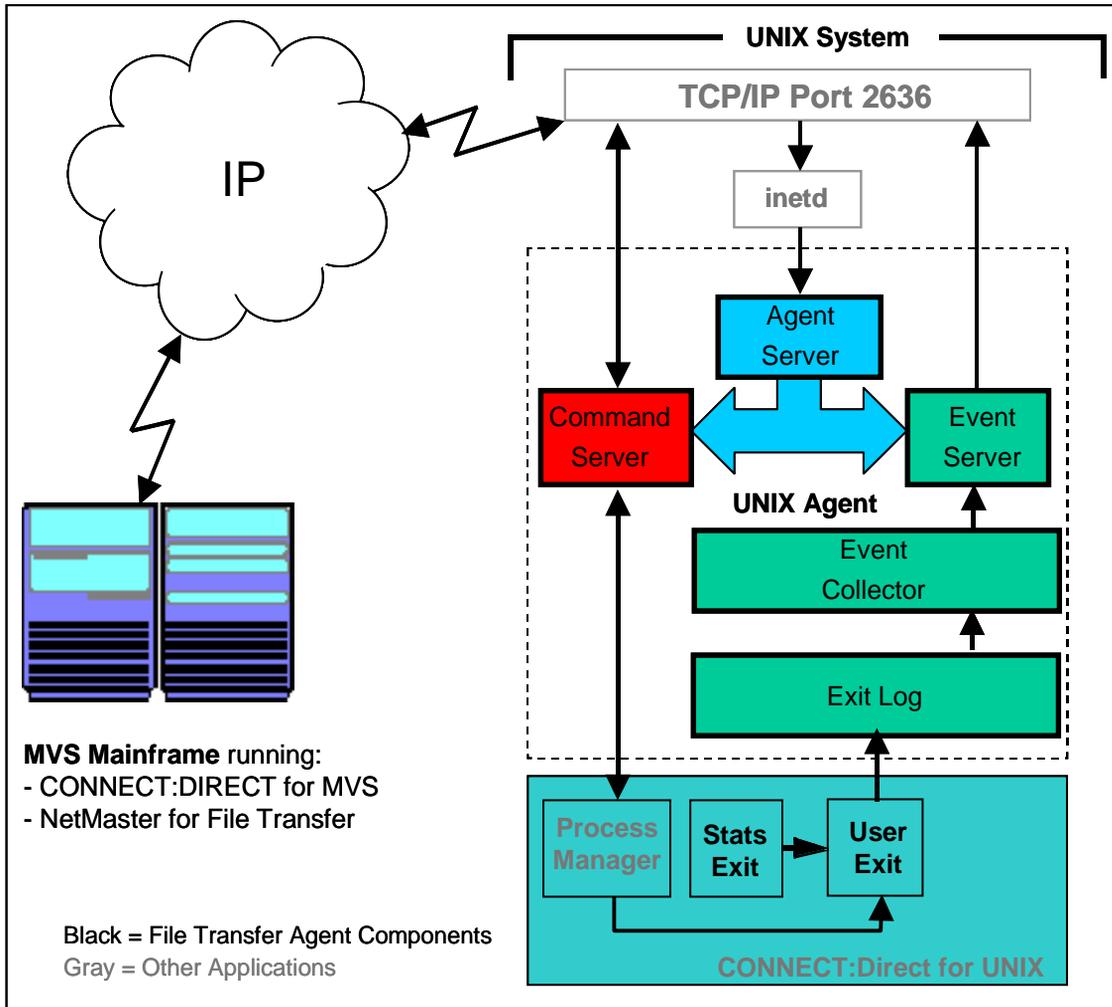
2

This chapter explains the components and operational concepts unique to the UNIX Agent. The UNIX Agent monitors the activity of CONNECT:Direct for UNIX running on the same system as the UNIX Agent. The UNIX Agent also passes management commands from NetMaster for File Transfer to CONNECT:Direct for UNIX.

UNIX Agent Components

A conceptual diagram of the internal and external operation of the UNIX Agent is shown in Figure 2-1. When a CONNECT:Direct command or event information request is initiated on the mainframe, NetMaster for File Transfer opens a connection to port 2636 on the targeted UNIX system. The following UNIX Agent components process the connection.

Figure 2-1. UNIX Agent Conceptual Diagram



Agent Server

The UNIX `inetd` daemon verifies the request and passes it to the Agent Server. Based on the type of request, the Agent Server starts either the Command Server or the Event Server.

Command Server

NetMaster for File Transfer running on the mainframe allows mainframe operators (or automatic responses) to issue commands to `CONNECT:Direct for UNIX` via the UNIX Agent.

When a command is issued from the mainframe, the Agent Server determines the connection to be an command request, creates a Command Server if one is not already running for that mainframe, and passes the command to the Command Server. The Command Server executes the `CONNECT:Direct for UNIX` command and returns the response to the mainframe. The Agent Server creates one Command Server for each mainframe connection to the UNIX Agent.

Each Command Server executes commands one at a time, in the order they are received. The Command Server returns the response from one command before executing the next command.

Event Server and Event Collector

The Event Server sends file transfer events and `CONNECT:Direct` status events to the mainframe. It acts as a bridge between the Event Collector and a mainframe. There is one Event Server for each mainframe connection to the UNIX Agent.

When an Activate request is issued from the mainframe, the Agent Server determines the connection to be an event request, and creates an Event Server if one is not already running for that mainframe.

When the Event Server is started, a companion process, the Event Collector, is also started. The Event Collector gathers file transfer information from the Exit Log, and passes this information to the Event Server, which forwards it to NetMaster for File Transfer on the mainframe.

User Exits and the Exit Log

To obtain `CONNECT:Direct for UNIX` file transfer events and statistics, the UNIX Agent installation program replaces the standard `CONNECT:Direct for UNIX` statistics exit with one supplied with the UNIX Agent. The original user exit is retained, and can be put back into use at any future time when the UNIX Agent software is uninstalled.

When you specify the replacement of the `CONNECT:Direct` for UNIX exit, the UNIX Agent installation program installs the `softCDexit` user exit and an associated shell scripts, `softCDstats`. The installation program also modifies the `CONNECT:Direct` for UNIX `initparm.cfg` file to use `softCDexit` instead of the standard `CONNECT:Direct` for UNIX statistic exit.

The `softCDstats` shell script is called by `softCDexit`; `softCDexit` also creates and manages the UNIX Agent Exit Log. The shell script takes the `CONNECT:Direct` statistics information passed to it by `softCDexit` and places the data in the UNIX Agent Exit Log.

The UNIX Agent Event Collector retrieves the data from the Exit Log, and forwards it to the Event Server, which sends it on to the mainframe.

When the Exit Log contents reach 500 records, the file is deleted and recreated. The Exit Log is updated and maintained as long as `CONNECT:Direct` for UNIX is running and the `softCDexit` is available.

Using Standard User Exits

If you want to continue to use the standard `CONNECT:Direct` for UNIX user exits, you can instruct the installation program to leave the standard user exits in place. To do this, you must modify the `CONNECT:Direct` for UNIX exits manually; instructions on how to do this are provided in Chapter 8, *Modifying Existing CONNECT:Direct Exit Files*. In most facilities, this should not be necessary, and you are advised to allow the installation program to install the replacement files.

Mainframe Connections

To have the UNIX Agent interact with NetMaster for File Transfer running on the mainframe, you must ask the mainframe system administrator to undertake the following setup procedures on the mainframe:

- Define a CDMGR manager resource for the remote UNIX system that is running the agent software
- Define CDMON monitor resources to the CDMGR resource
- Activate the manager resource

Instructions for these procedures are found in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

With the activation of the manager resource, mainframe operators have access to all of the CONNECT:Direct for UNIX monitoring and management features. This includes starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility and alert monitoring.

Multiple Connections

More than one region or mainframe may be running NetMaster for File Transfer, and may be interested in monitoring or managing CONNECT:Direct for UNIX on a given UNIX system. The UNIX Agent supports connections with multiple mainframe regions, as well as connections to multiple mainframes. Only one connection per region is allowed.

The Agent Server starts one Event Server/Collector and one Command Server for each separate region or mainframe requesting information from the UNIX system; therefore, multiple Event Servers/Collectors and Command Servers may be running at any given time. All Event Servers/Collectors gather event information from the same Exit Log.

When the mainframe connection is broken (for whatever reason), the UNIX Agent shuts down the Event Server/Collector and the Command Server that was started for that mainframe.

Installing the UNIX Agent

3

This chapter describes how to install the UNIX Agent on a UNIX workstation. Instructions for uninstalling the product are also presented. If you would like to install the UNIX Agent on additional UNIX workstations, see Chapter 4, *Distributing the UNIX Agent*.

Hardware and Software Requirements

This section describes the UNIX hardware and software requirements for the UNIX Agent.

System Requirements

The UNIX Agent requires the installation of HP-UX, Solaris, or AIX operating systems. The supported versions of each operating system are:

- HP-UX V11.00 or later
- Solaris 2.5.1 or later
- AIX V4.3 or later

Compiler Requirements

As part of the recommended installation procedure, the installation program will install the `softCDexit` user exit (see *User Exits and the Exit Log*, on page 2-3, for more information). As part of this process, the installation program first searches for a C compiler on the local system, and, if one is found, compiles the `softCDexit` user exit before installing it in the directory `$(SOLVE_FT)/lib`, where `$(SOLVE_FT)` is the directory path set by the user prior to installation.

If a C compiler is not found, the installation program installs a precompiled version of the user exit. This precompiled exit is based on CONNECT:Direct for UNIX Version 3.1, but does not include any of the Version 3.1 fixes.

Prior to installation, you are advised to install a C compiler on your system, and include it in your PATH statement.

Note: If you install any CONNECT:Direct for UNIX maintenance releases, check the instructions to see if you need to recompile the user exits after applying the maintenance release. Instructions on how to recompile the `softCDexit` user exit are in the file `$SOLVE_FT/lib/src/README`.

Cooperating Software Requirements

The UNIX Agent is designed to interact with the following products:

- CONNECT:Direct for UNIX V3.1 or V3.3

CONNECT:Direct for UNIX must be installed and running on each UNIX system on which the UNIX Agent will be installed. This requirement ensures that necessary CONNECT:Direct information is available to the UNIX Agent installation program.

- NetMaster for File Transfer (formerly known as SOLVE:Operations for File Transfer) 3.3 or later

While not directly related to the installation and distribution of the UNIX Agent, NetMaster for File Transfer must be installed, properly configured, and running on the mainframe. This requirement ensures you can issue file transfer event and command requests from the mainframe to communicate with the UNIX Agent.

See *Mainframe Connections*, on page 2-4, for additional information about these procedures.

TCP/IP Connectivity Requirements

You must be able to establish TCP/IP connections between the mainframe(s) running NetMaster for File Transfer and the UNIX workstation(s) running the UNIX Agent.

On the mainframe, TCP/IP connectivity requires TCPaccess or IBM TCP/IP.

NetMaster for File Transfer 3.3 or later supports TCPaccess, Communications Server, and IBM TCP/IP for MVS. For more information, see its *Installation and Setup Instructions*.

Pre-installation Checklist

Before installing the UNIX Agent, review the following checklist:

Items to Check Before Installing	Done?
1. Is the target workstation running HP-UX V11.00 or later, Solaris 2.5.1 or later, or AIX V4.3 or later?	<input type="checkbox"/>
2. Is CONNECT:Direct for UNIX V3.1 or V3.3 installed and running on the UNIX workstations on which the UNIX Agent is to be installed?	<input type="checkbox"/>
3. Have you determined the directory where the UNIX Agent software is to be installed? The UNIX Agent can be installed to any user-specified location in the file system.	<input type="checkbox"/>
4. Is adequate free space available in the intended destination (5 MB for HP-UX and AIX; 5.5 MB for Solaris)? Does your system have adequate recommended memory resources (500 KB)?	<input type="checkbox"/>
5. Is the UNIX workstation that is receiving the UNIX Agent software able to establish a TCP/IP connection with the mainframe? Use the <code>ping</code> command to check the connection status.	<input type="checkbox"/>
6. Does the installer have root privileges? You must have the proper UNIX permissions to access the directories specified in this installation procedure; generally, this means that root or super-user authority is required to install and configure the UNIX Agent.	<input type="checkbox"/>
7. What is the CD drive device name and location in the file system? This information is required during the installation procedure.	<input type="checkbox"/>
8. Have you decided if you want the installation program to replace the CONNECT:Direct for UNIX statistics user exit? For more information about the user exits, see <i>User Exits and the Exit Log</i> , on page 2-3.	<input type="checkbox"/>

Items to Check Before Installing (Continued)

Done?

9. Is NetMaster for File Transfer V3.3 or later installed, properly configured, and running on the mainframe?
- See *Mainframe Connections*, on page 2-4 for more information.
10. Do you have a C compiler installed on your system, and entered in your PATH statement?
- See *Compiler Requirements*, on page 3-1, for more information.
- If you are running the UNIX agent on an HP or Sun Solaris system, then update your `/etc/hosts` file with the IP address and host name of the NetMaster for File Transfer region.
- For example, if the NetMaster for File Transfer region is running on a system with an IP address of 111.222.333.44 `host.name.com`, then add this entry to the `/etc/hosts` file.

Installing the UNIX Agent

This section describes the steps necessary to install and configure the UNIX Agent on a workstation, with a description of the function of each command and, where appropriate, the expected results of performing that command.

The UNIX Agent is distributed on a CD-ROM. These installation instructions are for installing the UNIX Agent from a CD-ROM. If you must install the UNIX Agent from tape, contact Technical Support. Installation instructions are included with the tape.

The following instructions are common for HP-UX, Solaris, and AIX, unless otherwise stated.

Step 1 - Review the Pre-installation Checklist

Ensure that you have addressed all the items in the pre-installation checklist starting on page 3-3.

Step 2 - Define an Installation Directory

Log on as user `root`— *all installation procedures must be performed as user root.*

You must first specify the directory in which you want the UNIX Agent to be installed. This directory is represented by the variable `$SOLVE_FT`.

1. Define the installation directory by issuing the following command:

```
export SOLVE_FT=pathname
```

where *pathname* is the directory path you want to use.

2. Create the installation directory and then go to that directory by issuing the following commands:

```
mkdir $SOLVE_FT  
cd $SOLVE_FT
```

For example, to define the installation directory as `/usr/SSWFT`, issue the following commands:

```
export SOLVE_FT=/usr/SSWFT  
mkdir $SOLVE_FT  
cd $SOLVE_FT
```

Step 3 - Install the Required Installation Components

1. Insert the NetMaster for File Transfer Agent - CONNECT:Direct CD-ROM into the CD drive. Note that CD drive device names may differ from system to system. If you are not sure of the name of the CD drive device you are using, consult a qualified UNIX technician or engineer.
2. Mount the CD drive and load the installation components using the following commands appropriate for your operating system:

HP-UX

```
/etc/mount /cdrom
```

where */cdrom* is an existing directory for the CD drive.

Open and read the README file in the root directory for general information on the CD-ROM.

To install the UNIX Agent program files while in the $\$SOLVE_FT$ directory, issue the following UNIX command:

```
tar xpf /cdrom/UNIX/OS/SOFTAU34.TAR
```

where *OS* is the operating system designator, as follows:

For HP11.00 use `HP_UX_1100`

For example, to install to an HP11.00 operating system in the $\$SOLVE_FT$ directory, issue the following command:

```
tar xpf /cdrom/UNIX/HP_UX_1100/SOFTAU34.TAR
```

When the required components are installed, proceed to *Step 4 - Run the UNIX Agent Installation Script*, on page 3-7.

Solaris

On Solaris systems, the CD drive is automounting. The contents of the CD-ROM are displayed as the directory */cdrom/cdrom0*.

Open and read the README file in the root directory for general information about the CD-ROM.

To install the UNIX Agent program files while in the $\$SOLVE_FT$ directory, issue the following UNIX command:

```
tar xpf /cdrom/cdrom0/UNIX/solaris/softau34.tar
```

When the required components are installed, proceed to *Step 4 - Run the UNIX Agent Installation Script*, on page 3-7.

AIX

```
/etc/mount -v cdrfs -r /dev/cd0 /cdrom
```

where `/dev/cd0` is the device file, and `/cdrom` is an existing directory for the CD drive.

Open and read the README file in the root directory for general information on the CD-ROM.

To install the UNIX Agent program files while in the `$SOLVE_FT` directory, issue the following UNIX command:

```
tar xpf /cdrom/UNIX/aix/softau34.tar
```

When the required components are installed, proceed to *Step 4 - Run the UNIX Agent Installation Script*, on page 3-7.

Step 4 - Run the UNIX Agent Installation Script

1. Go to the `$SOLVE_FT/bin` directory:

```
cd $SOLVE_FT/bin
```

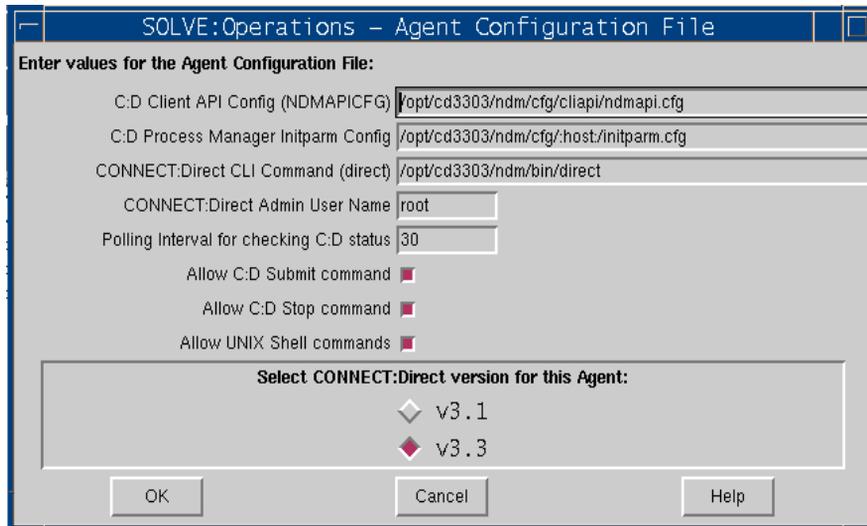
2. Run the installation script by issuing the `./soft_install` command specifying the `-f` option, as described below:
 - ❑ Manually edit your `CONNECT:Direct` statistics exit to include a call to the `softCDexit` user exit included with the UNIX Agent software. Instructions on how to edit the `CONNECT:Direct` statistics exit to add the shell script calls are contained in the man page `softCDstats(1)` (reproduced in Chapter 8, *Modifying Existing CONNECT:Direct Exit Files*).
 - ❑ Specify the `-f` option if you want to send the log to another file. By default, the `./soft_install` command writes the output of the install process to a log file named `$SOLVE_FT/soft_install.log`.

For example, to install the UNIX Agent, replace your existing `CONNECT:Direct` user exits, and send the log to the file `/tmp/SOLVE:agent.install.log`, use the following command:

```
./soft_install -g -f /tmp/SOLVE:agent.install.log
```

3. The installation program writes output to the screen and to the specified log file.
4. During the installation process, the **Agent Configuration File** dialog box appears (Figure 3-1), asking you to enter or accept information required to create the Agent Configuration file.

Figure 3-1. Agent Configuration File Dialog Box



For most installations, in the first three fields of the dialog box display the CONNECT:Direct configuration file and command paths currently in use on the system on which you are installing the UNIX Agent. If you make no changes to the initial values, the UNIX Agent is installed using these values. If you want to install the UNIX Agent and configure it with different directory paths for the various CONNECT:Direct for UNIX components, enter the changes on this dialog box.

In certain circumstances, these fields may be blank. For example, the installation script may be unable to determine these directory paths, or you may be installing the UNIX Agent before you install CONNECT:Direct. In the first case, you must determine the directory paths yourself, and then enter them in the fields; in the second case, finish installing the UNIX Agent, then install CONNECT:Direct, determine the directory paths and enter them here.

Note: If you want to update or change any of the parameters on the Agent Configuration File dialog box at a later time, you can access the dialog box directly from the UNIX command line, using the command:

```
$SOLVE_FT/bin/soft_config
```

5. In the **Agent Configuration File** dialog, change or accept the values in the following fields. When you are finished, click **OK** to save the parameters and close the dialog box:

C:D Client API Config (NDMAPICFG)

Specifies the full path name for the CONNECT:Direct Client API configuration file. This is the value that is normally assigned to the environment variable `NDMAPICFG`. Accept the default value or enter an alternate path.

C:D Process Manager Initparm Config

Specifies the full path name for the CONNECT:Direct Process Manager `initparm.cfg` configuration file. Accept the default value or enter an alternate path.

CONNECT:Direct Command

Specifies the full path name for the CONNECT:Direct `direct` command. For example:

```
/usr/cdunix/ndm/bin/direct.
```

Accept the default value or enter an alternate path.

CONNECT:Direct Admin User Name

Specifies the user name under which the Event Server and Command Server will run. This user name requires CONNECT:Direct Admin authority. The default user name is `root`. Accept the default value or enter an alternate user name.

Polling Interval for checking C:D status

Specifies the interval (in seconds) at which the Event Server checks the status of the CONNECT:Direct Process Manager to make sure it is still running. The default polling interval value is 300. Accept the default value or enter an alternate polling interval.

Allow C:D Submit command

Specifies whether mainframe users can issue the CONNECT:Direct `submit` command to start file transfers. By default the check box is selected to allow the command. To prevent users from issuing the `submit` command, clear this check box.

Allow C:D Stop command

Specifies whether mainframe users can issue the CONNECT:Direct `stop` command to terminate the CONNECT:Direct Process Manager. By default, the check box is cleared to prevent users from issuing the `stop` command. To allow users to issue the `stop` command, select the check box.

Allow UNIX Shell commands

Specifies whether mainframe users can issue UNIX shell commands. By default, commands are not allowed.

Mainframe users issue UNIX commands by prefixing the UNIX command with `sys`, for example: `sys ps -ef`. The command permissions are those attached to the `CONNECT:Direct Admin User Name` specified above.

Caution: If the `CONNECT:Direct Admin User Name` is `root` and this option is selected, mainframe users should be informed of their responsibilities as the `root` user. You may wish to coordinate the setting of this option with the mainframe system administrator.

Select CONNECT:Direct version for this Agent

Select one of the options displayed:

- V3.1 if you are running `CONNECT:Direct Version 3.1`
 - V3.3 if you are running `CONNECT:Direct Version 3.3`
6. When the installation script is finished running, refer to the `install.log` file and check to see if any errors were noted. Examine the Configuration File Processing section of the log to see if there are any additional installation tasks that must be done manually.

Step 5 - Set HOSTNAME Variable

Perform this step if the UNIX hostname of the system on which you installed the UNIX Agent contains:

- More than eight characters
- Special UNIX characters, such as `$`, `\`, and `< >`

or if there is any other reason you do not want to use the actual host name as the `CDMGR` name.

If these conditions do not apply to your installation, proceed to Step 6.

To set the `HOSTNAME` variable:

1. Open the configuration file (`$SOLVE_FT/etc/softCD.conf`) with a text editor.
2. At the end of file definitions, add the following definition:

```
HOSTNAME=alternate
```

where *alternate* is the substitute host name you want to use.

For example, if you change your local host name from alpha to beta, but do not want to reconfigure NetMaster for File Transfer on the mainframe, you can use this variable to set the HOSTNAME variable to the old host name:

```
HOSTNAME=alpha
```

3. Save the file.

Step 6 - Set CD_NODENAME Variable

Perform this step only if the name of the UNIX system on which CONNECT:Direct for UNIX is running is not the same as the UNIX system on which the UNIX Agent is running. This is typically the case when using shared files in a "high availability" environment, running under a software package such as Hewlett-Packard's MC ServiceGuard. If this condition does not apply to your installation, proceed to Step 7.

To set the CD_NODENAME variable:

1. Open the configuration file (`$SOLVE_FT/etc/softCD.conf`) with a text editor.
2. At the end of file definitions, add the following definition:

```
CD_NODENAME=other_node_name
```

where *other_node_name* is the name of the system running CONNECT:Direct for UNIX.

3. Save the file.

Step 7 - Stop and Start CONNECT:Direct for UNIX

At this point, you must stop and start CONNECT:Direct for UNIX. From the UNIX command line, issue the following command:

```
$SOLVE_FT/bin/cdreset
```

where `$SOLVE_FT` is the directory path set by the user prior to installation. This command will stop and then restart the CONNECT:Direct Process Manager, `cdpmgr`.

Step 8 - Configure Mainframe Resources

The UNIX Agent receives commands from the mainframe, and sends information to NetMaster for File Transfer running on the mainframe.

Before a NetMaster for File Transfer region running on the mainframe can recognize and communicate with the UNIX Agent software, some configuration tasks must be completed within the NetMaster for File Transfer region. These tasks include defining rules,

schedules, and resources to manage a CONNECT:Direct file transfer service on a UNIX system.

To interact with the UNIX Agent, the mainframe system administrator must undertake the following setup procedures on the mainframe:

Note: Specific instructions for the following procedures are explained in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

1. Define a CONNECT:Direct Manager (CDMGR) resource (manager type is UNIX) for the remote UNIX system that is running the UNIX Agent software.

The CDMGR manager name must match the host name of the remote UNIX system that is running the UNIX Agent software, or the alternate host name specified with the CD_HOSTNAME variable. To determine the host name:

- a. On the remote UNIX system, open a terminal session.
- b. Enter the following command:

```
hostname
```

The host name of the UNIX system is returned.

2. Optionally define CONNECT:Direct Monitor (CDMON) resources for the CDMGR resource you defined in item 1, above.
3. Activate the CONNECT:Direct Manager resource.

After the manager resource is activated, mainframe operators have access to all of the CONNECT:Direct for UNIX monitoring and management features described in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*. These features include starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility, and alert monitoring.

Completion

This completes the installation of the UNIX Agent. If you have not yet installed CONNECT:Direct for UNIX, remember to return to the **Agent Configuration File** dialog box and enter the CONNECT:Direct directory paths after you install CONNECT:Direct for UNIX, as described on page 3-7.

Once properly installed and configured, the UNIX Agent is essentially self-operating, needing little or no operator attention.

Note: It is not possible to manually start the UNIX Agent from the UNIX system. As explained in Chapter 2, *UNIX Agent Concepts*, the UNIX Agent is inactive until a connection is initiated from the mainframe. At that time, the UNIX Agent is automatically activated upon receipt of a valid TCP/IP connection request from the mainframe, and is deactivated when the mainframe connection is terminated.

If you want to verify operation of the UNIX Agent, start a simple file transfer using `CONNECT:Direct` running on the same UNIX system on which the UNIX Agent is installed. Then monitor the file transfer events as they appear in the File Transfer log in NetMaster for File Transfer on the mainframe.

- If you want to distribute the UNIX Agent to other UNIX systems, see Chapter 4, *Distributing the UNIX Agent*.
- To read about how the UNIX Agent operates, see Chapter 2, *UNIX Agent Concepts*.
- To read about how to manage the UNIX Agent components, see Chapter 5, *Managing the UNIX Agent*.

Uninstalling the UNIX Agent

To uninstall the UNIX Agent, issue the `soft_install` command, specifying the `-u` option to uninstall all components of the UNIX Agent. These instructions are common for HP-UX, AIX, and Solaris.

The output of the uninstall procedure is written to the screen, and to the default log file `$$SOLVE_FT/soft_uninstall.log`.

1. Log in as user `root` on the system on which you want to uninstall the UNIX Agent.
2. Change to the UNIX Agent installation directory:

```
cd $$SOLVE_FT/bin
```

where `$$SOLVE_FT` is the directory path variable defined by the user prior to installation.

3. Uninstall the UNIX Agent by issuing the `soft_install` command specifying the `-u` option:

```
./soft_install -u
```

A log file is created as `$SOLVE_FT/soft_install.log`. If you want to send the log to another file, specify the `-f` option. For example, to send the log to the file `/tmp/SOLVE:Operations.soft_uninstall.log`, issue the following command:

```
./soft_install -u -f /tmp/SOLVE:Operations.soft_uninstall.log
```

4. When the uninstall procedure is complete, refer to the `soft_uninstall.log` file and check to see if any errors were noted. Examine the Configuration File Processing section of the log to see if there are any additional uninstall tasks that must be done manually.

You may also want to delete the file system hierarchy that contained the product after it is uninstalled.

5. If you manually modified the `CONNECT:Direct` statistics exit instead of using the supplied user exit (as described on page 3-7), you must manually remove the code you added to the exit before restarting `CONNECT:Direct` for UNIX.

This completes the uninstall procedure.

Distributing the UNIX Agent

4

As an agent for the mainframe application NetMaster for File Transfer V2.1 or later, the UNIX Agent will most likely be installed on a number of UNIX systems in a given enterprise. This chapter explains how to use the SOLVE Distribution Utility (installed with the UNIX Agent) to distribute the UNIX Agent software from its original installation system to multiple UNIX systems that use the same operating system.

The SOLVE Distribution Utility can be run using a graphical user interface, or directly from the UNIX command line. This chapter covers operation of the graphical user interface; for information about the command line mode, refer to the `solvedist(1)` man page.

Method of Distribution

Distributing software to multiple systems is a complex task, primarily because of the many variables encountered, such as different hardware, operating systems, system procedures, and security policies. The SOLVE Distribution Utility (`solvedist`) packaged with the UNIX Agent addresses this complexity by using standard File Transfer Protocol (FTP) to distribute the UNIX Agent software. The utility can also be used to distribute any file hierarchy.

Distribution Overview

To distribute the UNIX Agent software, you must start the SOLVE Distribution Utility, and then enter information required to complete the distribution, such as the target system names, target directories, and user names. After you enter this information and click **Start**, the distribution utility will:

- `ftp` to each selected system in turn.
- Open a connection using the supplied user name and password.
- Copy each file from the source directory into the target directory.
- Abort the file transfer to the current target if any errors are encountered.
- Generate a log file on the source system.
- Invoke the UNIX Agent installation script.

At any point during the process, you are able to abort the file transfer.

Distribution Requirements

The distribution process has the following requirements, which must be met before the UNIX Agent can be successfully distributed:

- The person distributing the software must do so as the root user on the source system.
- The person distributing the software must have a root (or root equivalent) user account on each of the destination systems.
- The target directory into which the distributed software is to be placed must *not* exist on the target system.

Distribution must be between matching operating systems. In other words, to distribute the HP-UX 10.20 version of the UNIX Agent, the UNIX Agent software must be installed on an HP-UX 10.20 system, and from there it can be distributed to other HP-UX 10.20 systems. Distributing the AIX or Solaris version of the UNIX Agent software likewise requires first installing it on an AIX or Solaris system, and then distributing it to machines with like operating systems.

You should also note the following operational attributes:

- Only directories and normal files are copied during distribution. Special files such as links, block and character special files, named pipes, network special files, and sockets are ignored.
- File permissions are preserved if both the local and remote FTP programs support the SITE (non-standard) `chmod` command. If not, normal FTP rules for setting file permissions apply. Miscellaneous mode bits (Set-user-id, Set-group-id and Set Sticky bit) are not preserved.
- The owner and group ID of the copied files will be those of the user account used to log on to the remote host.

Security Considerations

The SOLVE Distribution Utility uses FTP to copy files from one host to another. The FTP protocol requires that a user name and password be supplied when logging on to each remote host. For convenience, the installer/distributor can use the SOLVE Distribution Utility to create a temporary list that specifies a user name and password for each target system. The list is created with the **User Names and Passwords** dialog box (see page 4-9).

File Permissions

Many implementations of FTP support non-standard extensions, called SITE commands. These extensions are used to extend the capabilities of FTP. One common extension is the support of the `chmod` command, which can be used to set the permissions of a remote file after it has been copied from the local host. This command is used by the SOLVE Distribution Utility where available. If the command is not available, normal file permissions are applied to the file. That is, directories have file permissions of `777` and files have permissions of `666`, subject to the user's `umask (1)` setting.

A warning message is written to the `solvedist.log` file in the user's home directory on the source system if the `chmod` command is not supported on a given host. If this message appears, you must log in to the remote host and manually set the file permissions to executable for `$SOLVE_FT/bin/soft_install` after the copy process has completed. If you copy the SOLVE Distribution Utility as part of your distribution, you must also assign executable permission to the contents of `$SOLVE_FT/solvedist/bin`.

The `chmod` command is supported in the FTP program that is supplied with the HP-UX and AIX operating systems, but not with the Solaris operating systems.

Logging

A log file, `soft_install.log`, is created in the `$SOLVE_FT` directory of the distributing system each time the distribution utility is run (the `$SOLVE_FT` directory is specified by the user at the time of installation; see *Step 2 - Define an Installation Directory*, on page 3-5).

If the file is already present, the SOLVE Distribution Utility overwrites it. This log file contains information about the progress and success or failure of the operation.

The contents of the log are also displayed in the Messages section of the SOLVE Distribution Utility dialog box where they are color-coded according to severity. Each message is prefixed with `solvedist-S`, where `S` indicates the severity of the message and may be one of the following letters:

- I Informational (black)
- W Warning (brown)
- E Error (red)
- C Critical (red inverse)

General Distribution of Software and Other Information

The SOLVE Distribution Utility is provided to distribute the UNIX Agent, but can be used to transfer other files and directories. Information about using the SOLVE Distribution Utility for general file distribution is contained in the online help files provided with the SOLVE Distribution Utility. Click the **Help** button on any dialog box to view the associated help file.

The SOLVE Distribution Utility process can also be invoked directly from the UNIX command line, without the SOLVE Distribution Utility graphical interface. Detailed information on the technical aspects of the SOLVE Distribution Utility and its command line operation are available in the `solvedist(1)` man page, distributed with the UNIX Agent.

This man page also contains information concerning the use of the SOLVE Distribution Utility for general distribution.

Pre-distribution Checklist

Before beginning distribution, complete the following tasks:

Items to Check Before Distributing	Done?
1. For each system that will receive the distributed software, check items 1-8 from the Pre-installation Checklist on page 3-3.	<input type="checkbox"/>
2. Determine the exact operating system version for each targeted system.	<input type="checkbox"/>
3. For each targeted system, determine and record: <ul style="list-style-type: none">- The full path for the <code>CONNECT:Direct</code> command used to start the Command Line Interface- The full path name of the <code>CONNECT:Direct</code> Client API configuration file (<code>NDMAPICFG</code>)- The full path name of the <code>CONNECT:Direct</code> Process Manager configuration file (<code>initparm.cfg</code>)	<input type="checkbox"/>
4. Make sure you have a valid <code>root</code> (or <code>root</code> equivalent) user account on each machine on which you intend to distribute the UNIX Agent. If you have different user names and passwords on different systems, the SOLVE Distribution Utility graphical interface allows you to create a temporary list of user names and passwords for the target systems you have selected prior to running the distribution process.	<input type="checkbox"/>
5. Verify that parent directories exist for the target directory you will create on each system when you distribute the UNIX Agent. For consistency and convenience, use the same directory path that is used in the source system.	<input type="checkbox"/>

Items to Check Before Distributing (Continued)

Done?

6. Ensure that FTP is working on all targeted systems, and that your user name and password are accepted for FTP transfers.

Distributing the UNIX Agent Software

The SOLVE Distribution Utility copies files from the source system to the target system(s) using standard File Transfer Protocol (FTP). For example, if you have your UNIX Agent files in a source directory called `/usr/SOFT_FT`, and specify a target directory of `/usr`, the `SOFT_FT` source directory (and all of the files in it) will be copied into the `/usr` target directory.

1. From the UNIX command line, start the SOLVE Distribution Utility graphical user interface with the command:

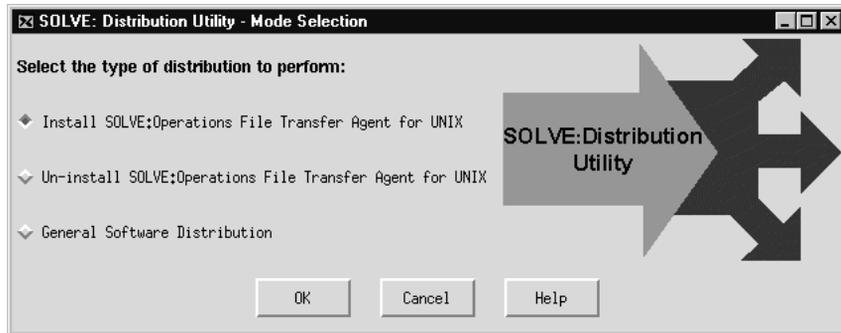
```
$SOLVE_FT/solvedist/bin/solvedist
```

where `$SOLVE_FT` is the directory path defined at the time of installation (see *Step 2 - Define an Installation Directory*, on page 3-5).

Note: A debug log can be created by adding the `-debug` option to the command; this causes a detailed transcript of the distribution operations to be written to a file called `$HOME/solvedist.debug`. See the `solvedist(1)` man page for complete command information.

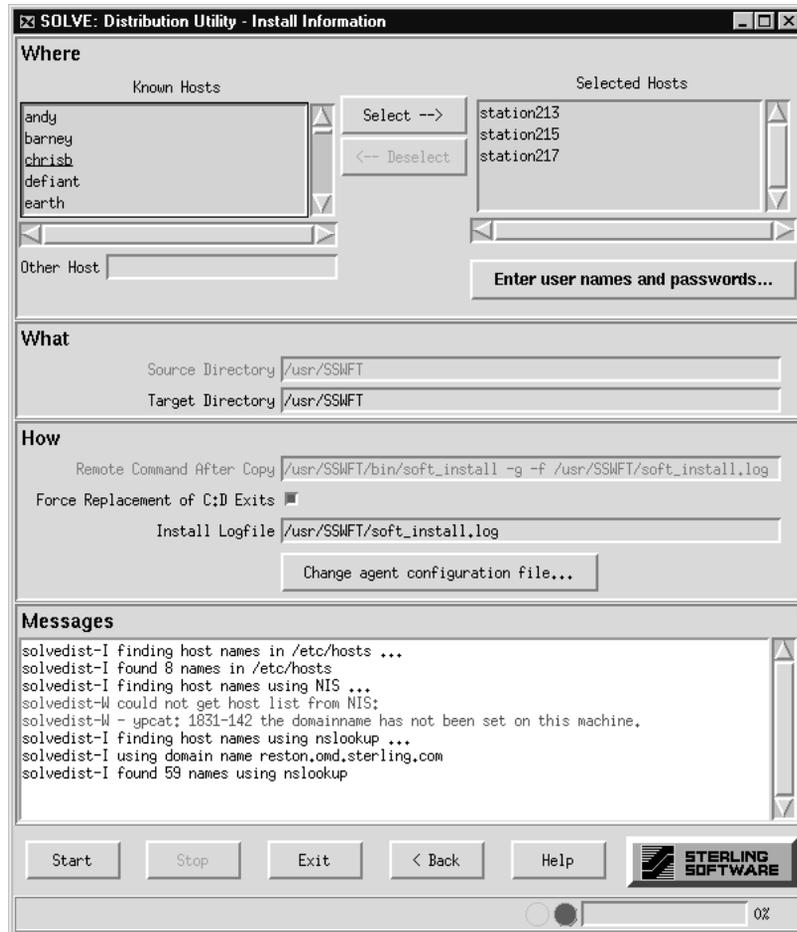
The **Mode Selection** dialog box appears, as shown in Figure 4-1.

Figure 4-1. Mode Selection Dialog Box



2. From the **Mode Selection** dialog box, click Install SOLVE:Operations for File Transfer Agent for UNIX. Then click **OK**.
To view information about the other selections on the dialog box, click the **Help** button.
3. The **Install Information** dialog box appears, as shown in Figure 4-2. Click the **Help** button at the bottom of the dialog box for an explanation of the fields, buttons and other controls on this dialog box.

Figure 4-2. Install Information Dialog Box



4. On the **Install Information** dialog box, select one or more targeted hosts from the Known Hosts list and place the host name(s) in the Selected Hosts list by clicking the **Select** button.

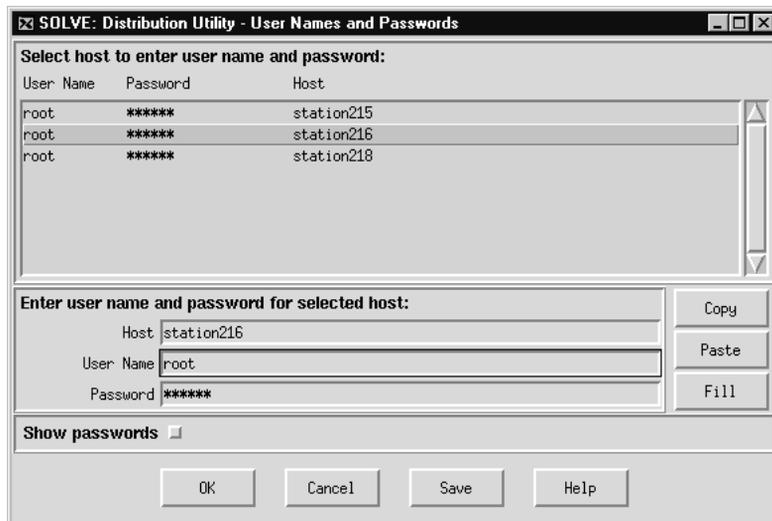
Caution: UNIX Agent software must be distributed between matching operating systems. The SOLVE Distribution Utility does not discriminate between the operating systems of each Known Host, but simply lists all available hosts. Therefore, when selecting a target host, *you must ensure that the operating system of the selected machine is the same as the machine you are distributing from.*

5. If a target system is not listed in the Known Hosts list, enter the host name in the **Other Host** field, and press the **Tab** key on your keyboard to activate the **Select** button. Click the **Select** button to move the host name from the **Other Host** field to the **Selected Hosts** list.

To remove a host name from the **Selected Hosts** list, select the host name and click the **Deselect** button; the host name moves to the **Known Hosts** list. (Other **Host** entries can also be moved to the **Known Hosts** list in this way).

6. When you have finished selecting target hosts, click the **Enter user names and passwords** button. The **User Names and Passwords** dialog box appears, as shown in Figure 4-3. Click the **Help** button at the bottom of the dialog box for an explanation of the fields, buttons and other controls on this dialog box.

Figure 4-3. *User Names and Passwords Dialog Box*



7. From the **User Names and Passwords** dialog, select a target host from the **Host** list, and enter a valid user name and password for the selected host. The user name and password must be valid and must have root level privileges on the target system, or the distribution process will fail.

Continue to enter user names and passwords for any remaining target hosts, using the **Copy**, **Paste**, and **Fill** buttons if you want to apply a user name and password to multiple hosts.

Click the **OK** button on the **User Names and Passwords** dialog box when you are done to close the dialog box and return to the **Install Information** dialog.

8. In the **Target Directory** field, enter the path name of the target system directory to which you are distributing the UNIX Agent. By default, this field displays the same value as the **Source Directory** field. This directory must not exist on the remote UNIX system prior to distribution, but its parent directory must exist. For example, for a directory path of `/a/b/c`, `/a/b` must exist, but `/c` must not.

If you want to place the UNIX Agent in a different directory on the remote UNIX system, change the directory name here.

9. Click the **Force Replacement of C:D Exits** check box to have the SOLVE Distribution Utility automatically replace your existing **CONNECT:Direct** user exits on the target system(s) with user exits supplied with the UNIX Agent. The existing exits remain in place but are no longer used. This is the recommended installation method. If this check box is not selected, existing user exits are not replaced, and the UNIX Agent software will not function properly on the target system(s).

If you do not want to replace your existing **CONNECT:Direct** user exits with the modified user exits supplied with the UNIX Agent, you must edit your **CONNECT:Direct** file open exit and statistics exit to include a call to shell scripts included with the UNIX Agent. See *User Exits and the Exit Log*, on page 2-3, for more information.

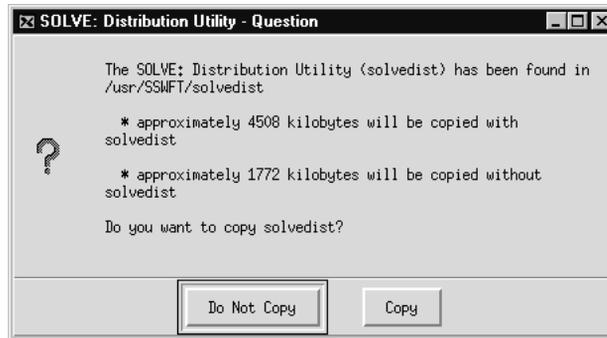
Instructions on how to edit the existing exits to add the shell script calls are contained in the man pages `softCDfile(1)` and `softCDstats(1)` (reproduced in Chapter 7, *UNIX Man Pages*).

Selecting this check box adds the `-g` option to the install procedure command shown in the **Remote Command After Copy** field.

10. In the **Install Logfile** field, accept the default path name for the log file that is written to by the installation procedure, or enter an alternate file name and full path definition. Any changes are reflected in the install procedure command shown in the **Remote Command After Copy** field.
11. If you need to enter new configuration information for the **CONNECT:Direct** configuration files on the target hosts you have selected, click the **Change agent configuration file** button. Otherwise, the configuration information that is in effect on your source system will be copied to the target systems. Click the **Help** button at the bottom of the dialog box for an explanation of the fields, buttons and other controls on this dialog box.
12. Click the **OK** button when you have finished entering information on the **Agent Configuration File** dialog box.
13. When all information has been entered and the list of target hosts completed, click the **Start** button to begin the distribution process.

14. The **Question** dialog box (Figure 4-4) appears, asking if you want to copy the SOLVE Distribution Utility to the target systems. The SOLVE Distribution Utility is not necessary to the proper operation of the UNIX Agent. However, if you wish to run the SOLVE Distribution Utility on the remote system, you may want to include it in the file transfer. Otherwise, you can save some room in the remote file system by omitting it.

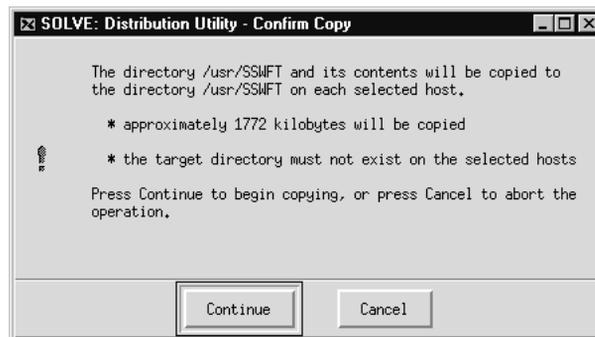
Figure 4-4. Question Dialog Box



To omit the SOLVE Distribution Utility from the file transfer, click **Do Not Copy**; to include the SOLVE Distribution Utility in the file transfer, click **Copy**.

15. The **Confirm Copy** dialog box appears, as shown in Figure 4-5.

Figure 4-5. SOLVE:Operations - Confirm Copy Dialog Box



To proceed, click **Continue** or click **Cancel** to stop the distribution process and return to the **Install Information** dialog box.

Any discrepancies in the entered information (a non-valid user name or password, for example) cause the distribution process to stop, and an error message is written to the **Messages** area and to the `solvedist.log` file in the user's home directory. Any files that have been written to the targeted system remain in place.

16. If the distribution process fails, check the log file, correct the identified fault and click the **Start** button again.

If you wish to stop the distribution process, click the **Stop** button.

Once the UNIX Agent software is successfully installed, distributed, and configured, it is ready to operate as described in Chapter 2, *UNIX Agent Concepts*, and can be administered as described in Chapter 5, *Managing the UNIX Agent*.

Note: The SOLVE Distribution Utility uses the `chmod` command to set file permissions, where available. Some systems do not support the `chmod` command. In this case, you must set the file permissions manually after the agent software has been distributed. See *File Permissions*, on page 4-3, for additional information.

Remotely Uninstalling the UNIX Agent

The SOLVE Distribution Utility includes the ability to uninstall the UNIX Agent on targeted systems.

Uninstallation is a straightforward operation; other than the default settings, no parameters, commands or options need to be specified.

Because the uninstallation process is executed by the `soft_install` script that resides on the remote system, the `uninstall` command can be simultaneously directed to any combination of the supported operating systems, HP-UX, AIX and Solaris. It is not necessary to send the command to grouped operating systems, as required by the distribution process.

The user name that you specify on the **Uninstall Information** dialog box must be authorized to execute the uninstall procedure on the remote system, or the uninstall attempt will fail (that is, `root` or super-user access is required).

To uninstall the UNIX Agent software on a remote system:

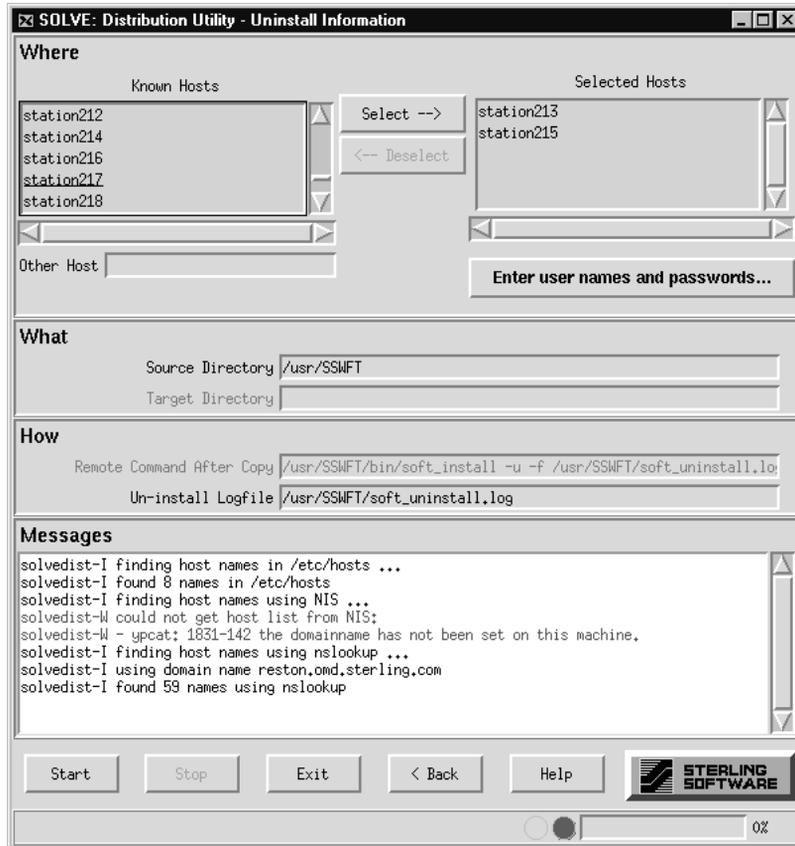
1. On the local system, start the SOLVE Distribution Utility by issuing the following command from the command line:

```
$SOLVE_FT/solvedist/bin/solvedist
```

The **Mode Selection** dialog box appears.

2. On the **Mode Selection** dialog box, click the Uninstall SOLVE:Operations File Transfer Agent for UNIX radio button, and then click the **OK** button.
3. On the **Uninstall Information** dialog box (Figure 4-6), select one or more targeted hosts from the Known Hosts list and place the host name(s) in the Selected Hosts list by clicking the **Select** button.

Figure 4-6. Uninstall Information Dialog Box



4. When you have finished selecting target hosts, click the **Enter user names and passwords** button to access the **User Names and Passwords** dialog box.
5. Select a target host from the **Host** list, and enter a valid user name and password for the selected host. The user name and password must be valid on the remote UNIX system, or the uninstall process will fail. Continue to enter user names and passwords for any remaining target hosts, using the **Copy**, **Paste**, and **Fill** buttons if you want to apply a user name and password to multiple hosts. Click the **OK** button on the **User Names and Passwords** dialog box when you are done.

6. Ensure that the **Source Directory** field entry reflects the parent directory path for the agent software on the remote system. For example, for a directory path of `/a/b/c`, where directory `/c` is the directory containing the agent software, specify `/a/b`.
7. Click the **Start** button to run the uninstall process on the remote system(s). Command results are displayed in the **Messages** area, and are written to the `soft_uninstall.log` file in `$SOLVE_FT` directory on the source system.

When the uninstall process is complete, click the **Exit** button on the **Uninstall Information** dialog box to exit the SOLVE Distribution Utility.

Note: If you manually modified the CONNECT:Direct statistics and file open exits instead of using the supplied user exits (as described in Step 9, on page 4-10), you must manually remove the code you added to the exits before re-starting CONNECT:Direct for UNIX.

Managing the UNIX Agent

5

After the UNIX Agent is properly installed and configured it is essentially self-operating, needing little or no operator attention. However, you may need to monitor the jobs associated with the UNIX Agent in the event there is a problem.

This chapter discusses:

- Modifying the UNIX Agent configuration file
- Shutting down UNIX Agent components
- Deactivating the UNIX Agent
- Determining the status of the UNIX Agent
- Activating UNIX Agent debug message logging
- Issuing CONNECT:Direct for UNIX control commands

Modifying the UNIX Agent Configuration File

The UNIX Agent uses a configuration file to define information needed by its various components. The file is created as `$SOLVE_FT/etc/softCD.conf`, where `$SOLVE_FT` is the installation directory variable set by the user prior to installation.

During the installation process, the installer enters configuration information into the configuration file with the **Agent Configuration File** dialog box, as described in Step 4 on page 3-7. This dialog box appears automatically during the installation and distribution processes.

To modify the configuration file after the installation and distribution process is complete:

1. Start the **Agent Configuration File** dialog box with the command:
`$SOLVE_FT/bin/soft_config`
2. Enter the new information in the proper fields, and click **OK** to update the configuration file.
3. Click **Cancel** to close the dialog box.

The changes will not be put into effect until all components of the UNIX Agent are stopped and restarted.

Note: In certain instances, it may be necessary for the installer to define the `HOSTNAME` and `CD_NODENAME` variables in the configuration file. To create or modify these entries, you must open the configuration file with a text editor and make the changes manually. See page 3-10 for instructions.

Shutting Down UNIX Agent Components

UNIX Agent components are started and stopped automatically, as described in *UNIX Agent Components*, on page 2-2. However, you may want to shut down the components manually. To do so, use standard UNIX system administration methods to determine the Process Identification (PID) number and issue the `kill` command.

The processes of interest are:

- `SOLVEd` — Agent Server
- `softCDesd` — Event Server
- `softCDec` — Event Collector
- `softCDcsd` — Command Server

Shut down any Event Servers, Event Collectors, and Command Servers first, and then shut down the Agent Server. The following example shows finding and shutting down the Agent Server:

```
#:/usr/SSWFT/bin>ps -ef|grep SOLVEd
    root 29169 27703  2 09:42:46 ttyp2      0:00 grep SOLVEd
    root 29138      1  0 09:41:59 ttyp2      0:00 SOLVEd
#:/usr/SSWFT/bin>kill 29138
```

Remember that multiple Event Servers and Command Servers can be running simultaneously, depending on the number of mainframe regions being served.

Deactivating the UNIX Agent

You may want to deactivate the UNIX Agent for purposes such as maintenance or trouble shooting. Depending on your reason for deactivating the UNIX Agent, there are two methods you can use, each with a different purpose.

Disabling the UNIX Agent on the UNIX System

This method of deactivating the UNIX Agent ensures that it cannot be reactivated from the mainframe (for example, by issuing an ACTIVATE command).

1. Shut down any UNIX Agent components that are running (as described on page 5-2).
2. Open the `/etc/inetd.conf` configuration file with a text editor.
3. Locate the following lines (they should be at or near the end of the file):

```
# SOLVE dispatcher daemon (Sterling Software, Inc.)
solve stream tcp nowait root /usr/SSWFT/lib/SOLVED SOLVED -c
    /usr/SSWFT/etc/SOLVED.conf
```

4. Type a number sign (#) at the beginning of the second line to disable the UNIX Agent. For example:

```
# SOLVE dispatcher daemon (Sterling Software, Inc.)
# solve stream tcp nowait root /usr/SSWFT/lib/SOLVED SOLVED -c
    /usr/SSWFT/etc/SOLVED.conf
```

5. Save the file.

If NetMaster for File Transfer continues to run on any partner mainframes, be sure to notify the mainframe system administrator that the UNIX Agent has been deactivated, as commands and event requests directed to the UNIX Agent will be ignored.

To reactivate the UNIX Agent, remove the number sign and save the file.

Terminating the UNIX Agent CDMGR on the Mainframe

This method terminates all UNIX Agent processes on the specified UNIX system.

To do so, from the mainframe, issue a `TERMINATE` command against the CDMGR resource defined for the UNIX Agent.

To reactivate the UNIX Agent, issue an `ACTIVATE` command from the mainframe.

Determining the Status of the UNIX Agent

During the normal operation of the UNIX Agent, you may want to find out which mainframe regions are currently connected to the UNIX Agent, or, in the case of multiple mainframe connections, which Event Server or Command Server is associated with which mainframe region.

Determining Mainframe Connection Status

To determine which mainframe regions are currently connected to the UNIX Agent, issue the command:

```
$SOLVE_FT/bin/soft_sessions
```

where `$SOLVE_FT` is the installation directory variable set by the user prior to installation.

Add the `-d` option to the command to obtain a detailed listing of Event Server and Command Server processes.

Determining Command Server and Event Server Connection Status

You can determine connection information for an individual Command Server or Event Server by sending a HUP signal to the server of interest. This creates an entry in the syslog file `/var/adm/user.log` that includes the mainframe domain name, the time the last event or command was sent, and (when applicable) the name of the last command sent.

To send a HUP signal:

1. Issue the following command:

```
$SOLVE_FT/bin/soft_sessions -d
```

2. From the command output, find the process id (PID) for the Command Server or Event Server of interest.
3. Issue the HUP signal by issuing the following command:

```
kill -HUP pid
```

where *pid* is the process id from step 2.

4. Check the syslog file `/var/adm/user.log` for information about Command Server or Event Server.

Activating UNIX Agent Debug Message Logging

It is possible to log debugging messages from the Event Server and the Command Server. These messages are directed to the UNIX syslog daemon, and to the file `/var/adm/user.log`.

Note: The actual name of the `user.log` file may vary. For a description of the syslog daemon and its configuration file, see the `syslogd` manpage.

To activate debug message logging:

1. Open the file `$SOLVE_FT/etc/SOLVED.conf` with a text editor. The general format of the file is as follows:

```
SOLVE:Operations for File Transfer server configuration file created
by soft_install on Tue Jul 28 at 11:08:53 EDT
```

```
[protocols]
```

```
FTEVENT          =          /usr/SSWFT/lib/softCDesd
```

```
FTCMND           =          /usr/SSWFT/lib/softCDcsd
```

2. Add the `-d` option to the command entry for the Event Server or Command Server, as desired. For example:

```
FTEVENT          =          /usr/SSWFT/lib/softCDesd -d
```

```
FTCMND           =          /usr/SSWFT/lib/softCDcsd -d
```

In this example, these entries activate debug message logging for both the Event and Command Servers.

3. Save the file.

Debug message logging begins with the next Event Server or Command Server that is started.

To deactivate debug message logging:

1. Open the file `$SOLVE_FT/etc/SOLVED.conf` with a text editor.
2. Remove the `-d` option from the server of interest.
3. Save the file.

Any UNIX Agent servers that were started with the `-d` option in place will continue to generate messages until they are shut down.

Issuing CONNECT:Direct for UNIX Control Commands

The UNIX Agent provides several commands for controlling CONNECT:Direct for UNIX. These commands are normally used internally by the UNIX Agent, but they can be issued from the command line as well:

Use this command

To do this

`$SOLVE_FT/bin/cdstop`

Stops the CONNECT:Direct Process Manager, `cdpmgr`. This command can also be executed from the NetMaster for File Transfer mainframe product, if authorized during the UNIX Agent installation, by issuing the command:

```
sys $SOLVE_FT/bin/cdstop
```

`$SOLVE_FT/bin/cdstart`

Starts the CONNECT:Direct Process Manager, `cdpmgr`. This command can also be executed from the NetMaster for File Transfer mainframe product, if authorized during the UNIX Agent installation, by issuing the command:

```
sys $SOLVE_FT/bin/cdstart
```

`$SOLVE_FT/bin/cdreset`

Stops and starts the CONNECT:Direct Process Manager, `cdpmgr`. This command can also be executed from the NetMaster for File Transfer mainframe product, if authorized during the UNIX Agent installation, by issuing the command:

```
sys $SOLVE_FT/bin/cdreset
```

`$SOLVE_FT/bin/cdutility`
`[stepname nnn]`

Provides status information on the CONNECT:Direct Process Manager, `cdpmgr`. The `stepname` parameter returns the `stepname` from the specified process `nnn`, if the process is currently executing.

Troubleshooting the UNIX Agent

6

This chapter describes some of the problems you might encounter when using the UNIX Agent, and offers some possible solutions.

Problem Category	Page
1. Distribution	6-2
2. Failure	6-4

1. Distribution

Problem 1: Distribution of files is aborted due to an error

There are several preliminary requirements that must be satisfied before successful file transfer can take place. If any of these requirements are not met, the transfer process will fail.

Solution:

Ensure that the following conditions are met:

- FTP is present and operating correctly on both the source and target systems.
- The correct source directory is specified.
- The specified target directory does not exist on the target system(s).
- The user name and password being used are valid on the target system(s).
- The user name and password being used have write access to the target directory.
- The target system is currently accessible via your network (use the `/etc/ping` command to verify the path).

Problem 2: Desired host does not appear in the Known Hosts list on the Installation Information dialog box

A list of known hosts is compiled using information obtained from the `/etc/hosts` file, the NIS server and from the output of `nslookup`. If the desired host is not present in any of these locations, the host name will not appear in the Known Hosts list.

Solution:

Enter the host name of the desired host in the **Other Host** field, and click on the **Select** button to add the host name to the **Selected Hosts** list.

Problem 3: The installation script does not run after files are transferred

The **Remote Command After Copy** field on the **Installation Information** dialog box allows you to enter the name of a command that is to be invoked on each target host after all files have been successfully copied. The output from the command will be included in the log file and displayed in the **Messages** area. By default, this field displays to the NetMaster for File Transfer installation command (`soft_install`) if the Source Directory is the `$SOLVE_FT` directory.

Solution:

- Ensure that the directory path described in the **Remote Command After Copy** field matches that entered in the **Source Directory** field, followed by:

```
/bin/soft_install
```

See the example shown in Figure 4-2, *Install Information Dialog Box*, on page 4-8.

- Ensure that you have distributed the correct format of the UNIX Agent to the target system; distribution must be between matching operating systems. In other words, to distribute the HP-UX 10.20 version of the UNIX Agent, the agent software must be installed on an HP-UX 10.20 system, from there it can be distributed to other HP-UX 10.20 systems. Distributing the AIX or Solaris version of the UNIX Agent likewise requires first installing it on an AIX or Solaris system, and then distributing it to machines with like operating systems.

2. Failure

Problem 1: The UNIX Agent fails

The UNIX Agent has been found to fail at certain fix levels of CONNECT:Direct for UNIX. This failure is not due to any anomalies in the UNIX Agent. The failure has been noted on the following platform, and at the following fix level:

- Sun 2.51 running CONNECT:Direct 3.1 for UNIX at fix level 01/19/98

There may be other platforms and other fix levels where this problem is experienced.

The symptom appears in the CONNECT:Direct log:

On HP 10.20:

```
XSMG612I -> FailReason = SMGR failed to send a FMH71 during process exec
```

On Sun 2.5.1

```
"Message sent to File Open User exit program. Message type:source file open".
```

Solution:

Contact your Sterling Commerce customer support representative and request the latest fix level for your version of CONNECT:Direct for UNIX.

Problem 2: XSMG612I CONNECT:Direct for UNIX message

The UNIX Agent activates but CONNECT:Direct for UNIX processes fail with error message XSMG612I. Additionally, the following messages may appear in the `file_exit.log` file:

```
recv_msg failed sanity check
ddd mmm-dd hh:mm:ss 1999: Error receiving message from
recv_exit_msg
```

Solution:

The CONNECT:Direct for UNIX user exit version does not match the CONNECT:Direct software version; that is, the user exit may be for CONNECT:Direct V3.1 or V3.3 base maintenance, while the CONNECT:Direct software that is running on this UNIX system has the August 1999 maintenance patch.

Recompile the CONNECT:Direct user exit with the correct version of the CONNECT:Direct software (see *Compiler Requirements*, on page 3-1).

UNIX Man Pages

7

Table 7-1 lists the manual, or man, pages that are available for the UNIX components used by UNIX Agent and provides a brief description of each component.

To view these pages use the UNIX `man(1)` utility. For example, to view the man page for `solvedist`, enter the following command:

```
man solvedist
```

Table 7-1. UNIX Agent Man Pages

Man Page	Component Description
<code>cdreset(1)</code>	Shell script that stops and restarts the CONNECT:Direct for UNIX Process Manager (<code>cdpmgr</code>).
<code>cdstart(1)</code>	Shell script that starts the CONNECT:Direct for UNIX Process Manager (<code>cdpmgr</code>).
<code>cdstop(1)</code>	Shell script that stops the CONNECT:Direct for UNIX Process Manager (<code>cdpmgr</code>).
<code>cdutility(1)</code>	A utility program that queries the status of the CONNECT:Direct for UNIX Process Manager (<code>cdpmgr</code>) and makes this information available to other components of the UNIX Agent.

Table 7-1. UNIX Agent Man Pages (Continued)

Man Page	Component Description
<code>soft_config(1)</code>	Shell script that creates and manages the Agent Configuration File dialog box.
<code>soft_install(1)</code>	Shell script that installs and uninstalls the UNIX Agent.
<code>soft_sessions(1)</code>	Shell script that reports the mainframe regions currently connected to the UNIX Agent.
<code>softCD.conf(5)</code>	Configuration file that defines information needed by other components of the UNIX Agent; built during the installation process. This file can be modified with the Agent Configuration File dialog box.
<code>softCDcsd(8)</code>	This is the Command Server component of the UNIX Agent. It brokers commands issued from the mainframe agent to the local instance of CONNECT:Direct for UNIX.
<code>softCDesd(8)</code>	This is the Event Server component of the UNIX Agent. It sends file transfer events to the mainframe agent.
<code>softCDexec(1)</code>	Shell script that assists in executing commands issued from the mainframe to components in the local system.
<code>softCDexit(8)</code>	Sterling Software daemon that manages communication between the CONNECT:Direct for UNIX file open and statistics exits, the <code>softCDstats(1)</code> and <code>softCDfile(1)</code> shell scripts, and the exit log file. If instructed to do so by the user, <code>softCDexit(8)</code> is defined to be the file open and statistics exits at the time of installation of the agent software.
<code>softCDfile(1)</code>	Shell script that takes file open parameters passed to it by <code>softCDexit(8)</code> and writes them to the exit log.
<code>softCDstats(1)</code>	Shell script that takes statistics parameters passed to it by <code>softCDexit(8)</code> and writes them to the exit log.

Table 7-1. UNIX Agent Man Pages (Continued)

Man Page	Component Description
<code>SOLVED(8)</code>	This is the Agent Server component of the agent software; it handles initial communications with the mainframe agent (NetMaster for File Transfer).
<code>SOLVED.conf(5)</code>	Configuration file for the UNIX Agent; built during the installation process.
<code>solvedist(1)</code>	The SOLVE Distribution Utility distributed with the UNIX Agent; distributes specified directories and files to multiple UNIX systems via File Transfer Protocol.

Modifying Existing CONNECT:Direct Exit Files

8

To interact properly with CONNECT:Direct for UNIX, the UNIX Agent requires a statistics exit that differs from the standard exits used by CONNECT:Direct. During the installation process, you can select an option to force replacement of the CONNECT:Direct exit. This is the recommended installation method.

Selecting the replacement option causes the install program to install a new user exit provided with the UNIX Agent, and to modify the CONNECT:Direct `initparm.cfg` file so that it uses the new exit; the existing exit itself is not changed, overwritten, or deleted.

If you want to continue using the existing exit file, you must modify it manually to include a call to a UNIX Agent software shell script. Because you may want to see how this is done prior to installing the UNIX Agent software, the man page that contains information for the modifications is reproduced in this chapter.

If the CONNECT:Direct exit is not replaced or modified, the UNIX Agent will not operate properly.

SOFTCDSTATS(1) Man Page Listing

SOFTCDSTATS(1) Sterling Software, Inc. (99/09/28) SOFTCDSTATS(1)
NAME

softCDstats \- Statistics Exit Shell Script

SYNOPSIS

```
  $SOLVE_FT/bin/softCDstats stats_record
```

The \$SOLVE_FT directory is the base directory where the UNIX Agent is installed.

PARAMETERS

stats_record

is the statistics record passed to the exit by CONNECT:Direct. It is a required parameter.

DESCRIPTION

This shell script takes the statistics record passed to it and writes it to the Exit Log File, if the record contains a CONNECT:Direct process number which indicates that this record concerns a file transfer. It is called by the statistics exit installed with the UNIX Agent software.

Records indicating CONNECT:Direct initialization or termination are also written to the Exit Log File.

This shell script maintains the maximum size of the Exit Log File at 500 records. When this limit is reached, the Exit Log File is deleted and recreated.

HOW TO CALL FROM EXISTING USER EXIT

If the user wants to continue using the existing CONNECT:Direct statistics exit, he must include a call to this shell script for proper operation of the UNIX Agent. This requires modifying the existing C code, recompiling, and copying the new module to the proper location (as defined in the CONNECT:Direct initparm.cfg file.

The following sample code shows where to insert these lines:

```

:::
> char softCDmsg[4096];
:::
case STATISTICS_LOG_MSG :
:::
>     sprintf(softCDmsg,
              "/usr/SSWFT/bin/softCDstats \"%s\"",
              rcv_msg.stat_msg.stat_log);
>     system(softCDmsg);
    break;
:::
```

Notes about the sample code:

- * 3 new lines must be inserted in the existing user exit source. They are marked with a '>'.
- * Invoking 'softCDstats' must include the full pathname. In this sample, '/usr/SSWFT' is the base directory for the UNIX Agent.
- * The variable 'rcv_msg.stat_msg.stat_log' is taken from the CONNECT:Direct sample user exit 'exit_skeleton.c'.

UNINSTALL NOTE

If you un-install UNIX Agent, remember to remove the above code from your user exit. The call to 'softCDstats' will no longer work.

SEE ALSO

softCDfile (1), softCDexit (8)

AUTHOR

softCDstats was developed by Sterling Software, Inc.

Part II

Windows NT Agent

Windows NT Agent Concepts

9

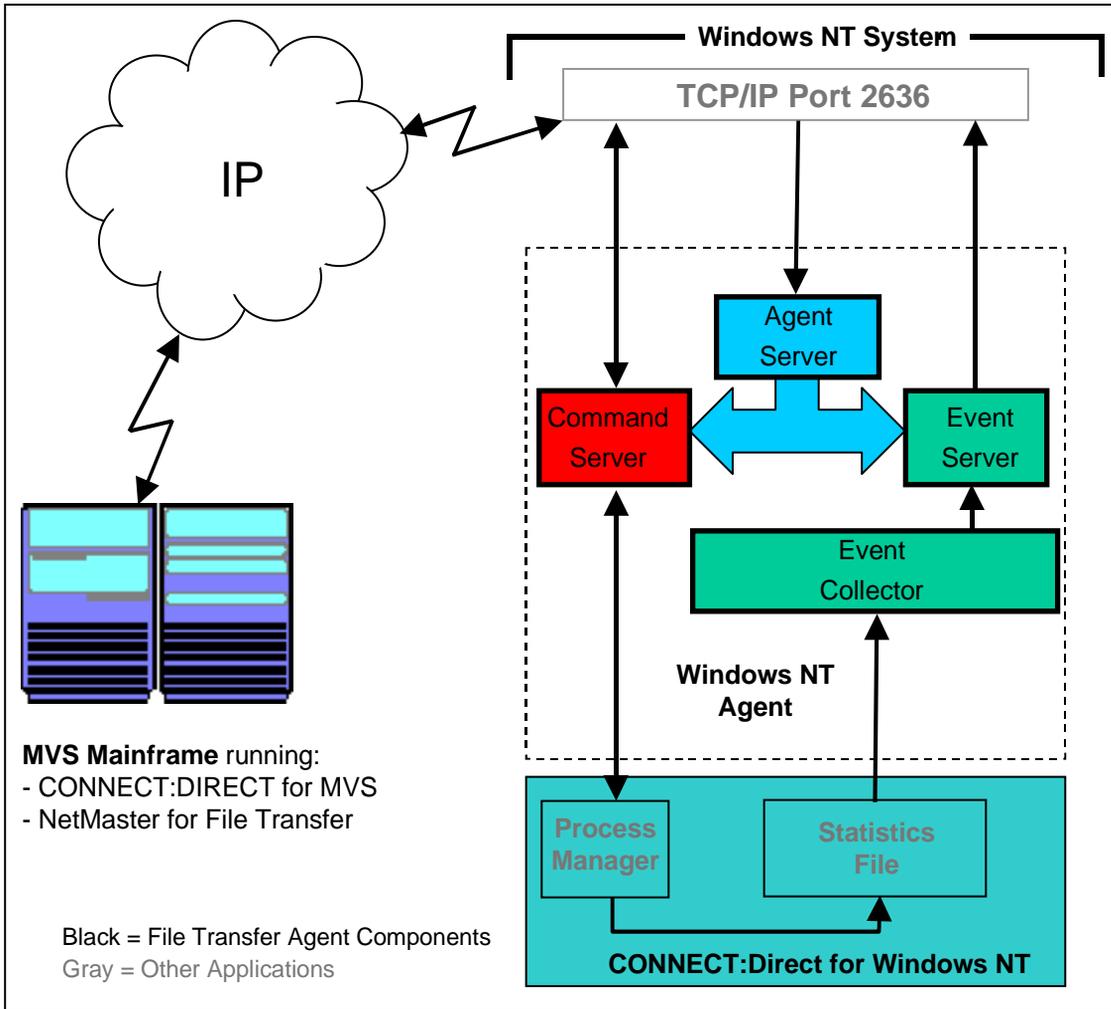
The Windows NT Agent monitors the activity of `CONNECT:Direct` for Windows NT running on the same system as the Windows NT Agent. The Windows NT Agent also passes management commands from NetMaster for File Transfer to `CONNECT:Direct` for Windows NT.

This chapter explains the components and operational concepts unique to the Windows NT Agent.

Windows NT Agent Components

The Windows NT Agent is made up of several different components. These components are discussed in this section. Figure 9-1 shows how the components work together.

Figure 9-1. Windows NT Agent Conceptual Diagram



Agent Server

The Agent Server listens for connection requests from NetMaster for File Transfer on the mainframe on local port 2636. The Agent Server creates a Command Server and Event Server for each mainframe connecting to this instance of the Windows NT Agent. When a new connection request arrives, the Agent Server passes the request to either the Command Server or the Event Server, depending on the connection request type.

Connections to the mainframe remain open until terminated by the mainframe. The Agent Server runs until it is shut down manually, or until Windows NT is shut down.

Command Server

NetMaster for File Transfer running on the mainframe allows mainframe operators (or automatic responses) to issue commands to CONNECT:Direct for Windows NT via the Windows NT Agent.

When a command is issued from the mainframe, the Agent Server passes the command to the Command Server. The Command Server executes the CONNECT:Direct for Windows NT command and returns the response to the mainframe.

The Command Server connection to the mainframe remains open until terminated by the mainframe. Commands are executed one at a time, in the order received. The Command Server returns the response from one command before executing the next command.

Event Server

The Event Server sends file transfer events and status events to the mainframe, acting as a bridge between the Event Collector and NetMaster for File Transfer running on the mainframe.

NetMaster for File Transfer on the mainframe sends an event connection request to port 2636 on the targeted Windows NT system. The Agent Server determines the connection to be an event request, and creates an Event Server.

The Event Server receives events from the Event Collector. When an event arrives, the Event Server reformats it and sends it to the mainframe.

The Event Server connection to the mainframe remains open until terminated by the mainframe. As long as it is open, the Event Collector sends new CONNECT:Direct events to the Event Server, which then sends them to the mainframe.

Event Collector

The Event Collector monitors CONNECT:Direct for Windows NT. It runs as a Windows NT service and starts automatically when the Windows NT system is started when the service is in Automatic mode. When CONNECT:Direct file transfer events and status events occur, the Event Collector sends these events to the Event Server. The Event Collector sends the following events:

- One event for each file transfer: a file transfer stop event (either SUCCESS or FAILURE)
- A single event to indicate the status of CONNECT:Direct for Windows NT (either UP or DOWN)

The Event Collector runs until Windows NT is shutdown, or until it is shut down manually.

Mainframe Connections

To have the Windows NT Agent interact with NetMaster for File Transfer running on the mainframe, you must ask the mainframe system administrator to undertake the following setup procedures on the mainframe:

- Define a CDMGR manager resource for the remote Windows NT system that is running the agent software
- Define CDMON monitor resources to the CDMGR resource
- Activate the manager resource

Instructions for these procedures are found in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

With the activation of the manager resource, mainframe operators have access to all of the CONNECT:Direct for Windows NT monitoring and management features, including starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility and alert monitoring.

Multiple Connections

More than one region or mainframe may be running NetMaster for File Transfer, and may be interested in monitoring or managing CONNECT:Direct for Windows NT on a given Windows NT system. The Windows NT Agent can connect with multiple mainframes and multiple mainframe regions. For connections to mainframe regions, only one connection per region is allowed.

The Agent Server starts one Event Server or one Command Server for each separate region or mainframe request received by the Windows NT system; therefore, multiple Event Servers and Command Servers may be running at any given time. Only one Event Collector is needed, regardless of the number of Event Servers that are running.

When the mainframe connection is broken (for whatever reason), the Windows NT Agent shuts down the Event Servers and the Command Servers that were started for that mainframe.

Installing the Windows NT Agent

10

This chapter describes how to install the Windows NT Agent on a Windows NT system. Instructions for uninstalling the product are also presented.

Hardware and Software Requirements

This section describes the Windows NT hardware and software requirements for the Windows NT Agent.

System Requirements

The Windows NT Agent requires:

- Intel Pentium processor, or better
- Microsoft Windows NT, Version 4.0, Service Pack 3, or later
- Enough free disk space, depending on the type of installation:
 - If you plan to distribute the Windows NT Agent to other Windows NT systems, 13 MB free space is required for the Windows NT Agent software and distribution files.
 - If you plan to run the Windows NT Agent on a single Windows NT system, 8 MB free space is required for the Windows NT Agent software.
- 64 MB RAM
- CD drive for initial installation

Cooperating Software Requirements

The Windows NT Agent is designed to interact with the following products:

- CONNECT:Direct for Windows NT Version 1.3.0 or CONNECT:Direct for Windows NT Workstation and Server Version 3.3.0

CONNECT:Direct for Windows NT must be installed and running on each Windows NT system on which the Windows NT Agent will be installed. This requirement ensures that necessary CONNECT:Direct information is available to the Windows NT Agent installation program.

Note: We recommend that you apply CONNECT:Direct maintenance dated 08NOV2000 or later for more reliable operation of CONNECT:Direct for Windows NT.

- NetMaster for File Transfer (formerly known as SOLVE:Operations for File Transfer) Version 4.0 or later

While not directly related to the installation and distribution of the Windows NT Agent, NetMaster for File Transfer must be installed, properly configured, and running on the mainframe. This requirement ensures you can issue file transfer event and command requests from the mainframe to communicate with the Windows NT Agent.

See *Step 5 - Configure Mainframe Resources*, on page 10-9, for additional information about these procedures.

TCP/IP Connectivity Requirements

You must be able to establish TCP/IP connections between the mainframe(s) running NetMaster for File Transfer and the Windows NT system(s) running the Windows NT Agent.

On the mainframe, TCP/IP connectivity requires TCPaccess or IBM TCP/IP.

NetMaster for File Transfer 3.3 or later supports TCPaccess, Communications Server, and IBM TCP/IP for MVS. For more information, see its *Installation and Setup Instructions*.

Pre-installation Checklist

Before installing the Windows NT Agent, review the following checklist:

Items to Check Before Installing	Done?
1. Is the target system running Microsoft Windows NT Version 4.0, Service Pack 3, or later?	<input type="checkbox"/>
2. Have you determined the directory where the Windows NT Agent software is to be installed? The Windows NT Agent can be installed to any user-specified location in the file system.	<input type="checkbox"/>
3. Is adequate free space available in the intended destination (13 MB), along with recommended memory resources (64 MB)?	<input type="checkbox"/>
4. Is the Windows NT system that is receiving the Windows NT Agent software able to establish a TCP/IP connection with the mainframe? Use the <code>ping</code> command to check the connection status.	<input type="checkbox"/>
5. Does the installer have the correct permissions? The Windows NT Agent must be installed by the userid that is defined as the default <code>CONNECT:Direct SDK Client Connection</code> userid. Otherwise, the Windows NT Agent will not activate.	<input type="checkbox"/>
6. Is <code>CONNECT:Direct</code> for Windows NT installed and running on the same Windows NT system on which the Windows NT Agent is to be installed? The <code>CONNECT:Direct</code> for Windows NT server must be running so that the Windows NT Agent installation program can obtain the <code>CONNECT:Direct</code> service name.	<input type="checkbox"/>
7. Is NetMaster for File Transfer installed, properly configured, and running on the mainframe? See <i>Mainframe Connections</i> , on page 9-4 for more information.	<input type="checkbox"/>

Installing the Windows NT Agent

This section describes the steps required to install the Windows NT Agent on a single Windows NT system.

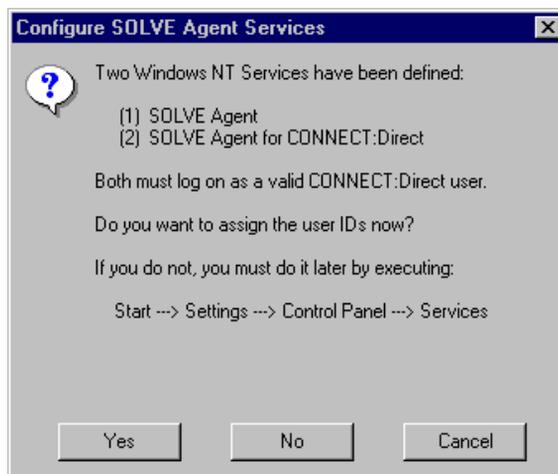
Step 1 - Review the Pre-installation Checklist

Ensure that you have addressed all the items in the pre-installation checklist on page 10-3.

Step 2 - Install the Windows NT Agent Software

To install the Windows NT Agent software from the CD-ROM:

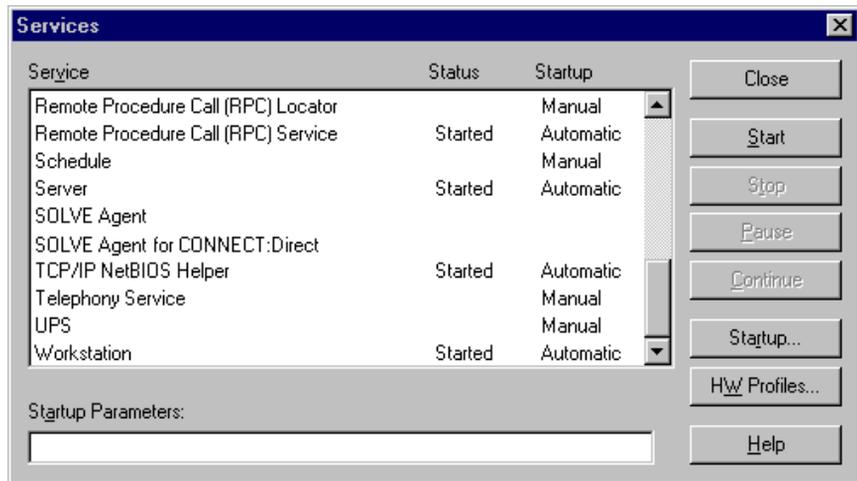
1. If Windows NT is not running, start it now. Close any open applications.
2. Insert the NetMaster for File Transfer Agent - CONNECT:Direct CD-ROM into the CD drive.
3. From the Windows NT **Start** menu, choose **Run**. From the **Run** dialog box, click **Browse** and navigate to the \WINNT directory on the CD drive. Double-click the `install.exe` file.
4. Respond to the prompts during the installation program, modifying the defaults if needed.
5. The installation program copies the Windows NT Agent program files to the specified destination location and then prompts you to configure the Windows NT Agent software:



In this step, you assign a valid user ID and password to the SOLVE Agent service and the SOLVE Agent for CONNECT:Direct service. Because these services communicate with CONNECT:Direct, the user ID must be a valid CONNECT:Direct user ID.

You can use the same user ID for each of the services, although it is not required.

- a. Click **Yes** to assign the user IDs now. The Windows NT **Services** window appears. Scroll down the list of services until you find the SOLVE Agent and the SOLVE Agent for CONNECT:Direct services:



Note: To assign the user IDs at a later time, click **No**. The installation program continues (see step 5).

Before using the Windows NT Agent, you must assign CONNECT:Direct for Windows NT user IDs to the SOLVE Agent and the SOLVE Agent for CONNECT:Direct services.

To assign the user IDs, select **Start-Settings-Control Panel-Services**.

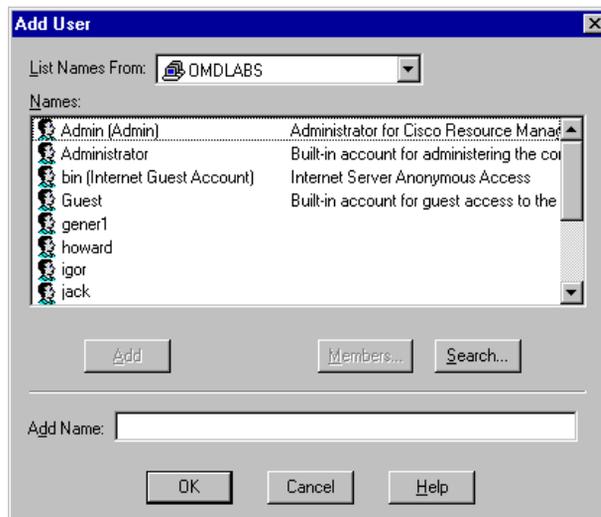
- b. In the **Service** column, select the SOLVE Agent for CONNECT:Direct service. Then click **Startup**. The **Service** dialog box appears:



- c. Under **Startup Type**, select **Automatic**.

This setting automatically starts the Windows NT Agent at system startup, and is the recommended setting. If you select **Manual**, the Windows NT Agent will have to be manually started each time it is to be used.

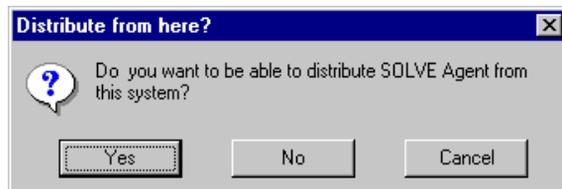
- d. Under **Log On As**, select **This Account**, then click the browse (...) button. The **Add User** dialog box appears:



- e. Select a user ID from the **Names** column and then click **Add**. The name appears in the **Add Name** field.

Note: The user ID must be a valid **CONNECT:Direct** for Windows NT user ID.

- f. Click **OK** to return to the **Service** dialog box. The name you selected appears in the **This Account** field.
 - g. In the **Password** and **Confirm Password** fields, enter the password associated with the user ID shown in the **This Account** field. Remember, passwords are case-sensitive. Click **OK** to return to the Windows NT **Services** window.
 - h. In the **Service** column, click on the SOLVE Agent service. Then click **Startup**. The **Service** dialog box appears.
 - i. Repeat steps c through h to configure the SOLVE Agent service.
 - j. After configuring the SOLVE Agent service, from the **Services** windows, click **Start** to start the SOLVE Agent service. Starting the SOLVE Agent service automatically starts the SOLVE Agent for **CONNECT:Direct** service.
 - k. Click **Close** to close the Windows NT **Services** window.
6. The installation program saves the configuration settings and then prompts you if you want to be able to distribute the Windows NT Agent software to other Windows NT systems:



- ❑ Click **Yes** if you want to distribute the Windows NT Agent to other Windows NT systems. The installation program copies some additional files to the installation directory and then exits.
- ❑ Click **No** if this is the only system on which you want to run the Windows NT Agent. The installation program exits.

The Windows NT Agent is now installed.

Step 3 - Set HOSTNAME Parameter

Perform this step only if the host name of the Windows NT system on which you installed the Windows NT Agent contains:

- More than eight characters
- Special characters, such as:
 - Double quotes ["]
 - Single quotes [']
 - Brackets [()]
 - Commas [,]
 - Periods [.]
 - Underscores [_]
 - Spaces []

or if there is any other reason you do not want to use the actual host name as the CDMGR name.

If these conditions do not apply to your installation, proceed to Step 4.

To set the HOSTNAME parameter:

1. In the `SOLVEagent\bin` directory, open the `SOLVEagent.ini` file with a text editor.
2. Change the `HOSTNAME` parameter to specify the host name of the Windows NT system on which `CONNECT:Direct` for Windows NT is installed:

```
HOSTNAME=alternate
```

where *alternate* is the substitute host name you want to use.

For example, if you change your local host name from `alpha` to `beta`, but do not want to reconfigure NetMaster for File Transfer on the mainframe, you can use this parameter to set the `HOSTNAME` parameter to the old host name:

```
HOSTNAME=alpha
```

3. Save the file and exit the text editor.

Step 5 - Configure Mainframe Resources

The Windows NT Agent receives commands from the mainframe, and sends information to NetMaster for File Transfer running on the mainframe.

Before a NetMaster for File Transfer region running on the mainframe can recognize and communicate with the Windows NT Agent software, some configuration tasks must be completed within the NetMaster for File Transfer region. These tasks include defining rules, schedules, and resources to manage a CONNECT:Direct file transfer service on a Windows NT system.

To interact with the Windows NT Agent, the mainframe system administrator must undertake the following setup procedures on the mainframe:

Note: Detailed instructions for these procedures are explained in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

1. Define a CONNECT:Direct Manager (CDMGR) resource (manager type is NT) for the remote Windows NT system that is running the Windows NT Agent software.

The CDMGR manager name must match the host name of the remote Windows NT system that is running the Windows NT Agent software, or the alternate host name specified with the `HOSTNAME` parameter in the `SOLVEagent.ini` file. To determine the host name:

- a. On the remote Windows NT system, open a Command Prompt window.
- b. Enter the following command:

```
hostname
```

The host name of the Windows NT system is returned.

2. Optionally define CONNECT:Direct Monitor (CDMON) resources for the CDMGR resource you defined in step 1, above.
3. Activate the CONNECT:Direct Manager resource.

After the manager resource is activated, mainframe operators have access to all of the CONNECT:Direct for Windows NT monitoring and management features described in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*. These features include starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility, and alert monitoring.

Completion

This completes the installation and configuration of the Windows NT Agent.

To verify operation of the Windows NT Agent, start a simple file transfer using `CONNECT:Direct` running on the same Windows NT system on which the Windows NT Agent is installed. Then monitor the file transfer events as they appear in the File Transfer log in NetMaster for File Transfer on the mainframe.

- If you want to distribute the Windows NT Agent to other Windows NT systems, see Chapter 11, *Distributing the Windows NT Agent*.
- To read about how to manage the Windows NT Agent components, see Chapter 12, *Managing the Windows NT Agent*.

Uninstalling the Windows NT Agent

When you uninstall the Windows NT Agent software, all associated program files and the installation directory are deleted from your system. However, if any file within the installation directory or any of its subdirectories is open when uninstalling the software, the installation directory and any open file remains on your system.

To uninstall the Windows NT Agent software:

1. Log on to the system from which you want to uninstall the Windows NT Agent software.
2. Close any files within the Windows NT Agent installation directory (or any of its subdirectories) that are open.
3. Click **Start-Programs-Control Panel-Add/Remove Programs**.
The **Add/Remove Programs Properties** dialog box appears.
4. Select SOLVE Agent from the list and then click **Add/Remove**.

Distributing the Windows NT Agent

11

As an agent for the NetMaster for File Transfer mainframe application, the Windows NT Agent will most likely be installed on a number of Windows NT systems where the CONNECT:Direct for Windows NT server is running in a given enterprise.

This chapter explains how to distribute the Windows NT Agent software from its original installation system to additional Windows NT systems.

Pre-distribution Checklist

After initial installation is complete, you can distribute the Windows NT Agent software to other Windows NT systems. Before beginning distribution, complete the following:

Items to Check Before Distributing	Done?
1. For each system that will receive the distributed software, check items 1 through 6 from the Pre-installation Checklist on page 10-3.	<input type="checkbox"/>
2. Does the installer have access to a valid user account with administrator privileges on the target system(s)?	<input type="checkbox"/>
3. Do you have the following information for each target system: <ul style="list-style-type: none"><li data-bbox="357 598 1142 772">- The user ID and password that the SOLVE Agent services will run under on the remote Windows NT system. The user ID must be the user ID that is defined as the default CONNECT:Direct SDK Client Connection user ID. Otherwise, the Windows NT Agent will not activate.<li data-bbox="357 781 1142 815">- The domain for the user ID.<li data-bbox="357 824 1142 963">- The directory path where the Windows NT Agent software will be installed on the remote Windows NT system. For consistency and convenience, you should use the same directory path that you used during the initial installation on the source system.<li data-bbox="357 972 1142 1041">- The host name of the Windows NT system on which you will distribute the Windows NT Agent software.<li data-bbox="357 1050 1142 1085">- The path for the <code>Distribute</code> subdirectory on the local system.<li data-bbox="357 1093 1142 1163">- The directory on the remote Windows NT system to which the installation program will be copied. The default directory is: <code>c:\temp</code>	<input type="checkbox"/>
4. Is CONNECT:Direct for Windows NT installed and running on the local system and on all target systems?	<input type="checkbox"/>

Distributing the Windows NT Agent

During the initial installation procedure you were prompted with the **Distribute from here?** dialog box. If you answered **Yes**, a subdirectory named `Distribute` was created in the `SOLVEagent` directory, containing the following files:

- `install.exe` - the Windows NT Agent installation program
- `install.ini` - the configuration file for remote installation
- `install.cdp` - the skeleton of a `CONNECT:Direct` Process File to distribute and install the Windows NT Agent software on a remote Windows NT system

To distribute the Windows NT Agent software, you must first edit the information in two of the above files and then submit them to Windows NT.

To distribute the Windows NT Agent software to other Windows NT systems:

1. Log on to the Windows NT system on which you initially installed the Windows NT Agent.
2. Use a text editor to open the `install.ini` file (see sample file on page 11-4) and make the following changes:

- a. Change the `SOLVEAGENT=` record to specify the NT domain, user ID, and password that the SOLVE Agent services will run under on the remote Windows NT system. The user ID must be a valid `CONNECT:Direct` user ID on the remote system.

For example, to specify that the SOLVE Agent services will run on NT domain `NTAREA1`, under user ID `SysAdmin` whose password is `12C95`, enter:

```
SOLVEAGENT=NTAREA1\SysAdmin 12C95
```

- b. By default, the Windows NT Agent will be installed on the remote system at this location:

```
c:\Program Files\SOLVEagent
```

If you want to install the Windows NT Agent in a different directory, change the `INSTALLDIR=` record to specify the directory path where the Windows NT Agent software is to be installed on the remote Windows NT system. For example, to install the Windows NT Agent at the root level directory, enter:

```
INSTALLDIR=c:\SOLVEagent
```

- c. Save the file.
3. Edit the `install.cdp` file (see the bold entries in the sample file on page 11-5) and make the following changes:

- a. Change the `REMOTE=` record to specify the node name of the `CONNECT:Direct` server on the Windows NT system on which you are going to distribute the Windows NT Agent software:

```
REMOTE=remote_C:D_node_name
```

- b. The `&HOME=` record specifies the path for the `Distribute` subdirectory on the local system:
 - If you are using the default installation directory, you do not need to change this record.
 - If you are using an installation directory different than the default, change the `&HOME=` record to specify that directory.
- c. Change the `&TARGET=` record to specify the directory on the remote Windows NT system to which the installation program will be copied. The default directory is `c:\temp`.

The directory you specify must exist on the target system.

- d. Save the file and exit the text editor.
4. Using `CONNECT:Direct` for Windows NT, submit the `install.cdp` file. This process copies the installation program and the configuration file to the remote Windows NT system. The installation program is then executed in automatic mode so that no operator interaction is required.

To use `CONNECT:Direct` for Windows NT to submit the `install.cdp` file:

- a. If the `SOLVE` Agent for `CONNECT:Direct` service is not started, start it using either the Admin Tools feature in `CONNECT:Direct` or the instructions in *Starting the Windows NT Agent*, on page 12-5.
- b. Start the `CONNECT:Direct` Requester.
- c. From the Requester, select **File-Open**. Navigate to the `Distribute` directory and then select `install.cdp`.
- d. Submit the file.
5. Repeat steps 1 through 4 for each remote Windows NT system on which you want to distribute the Windows NT Agent software.

Sample install.ini File

```
[Distribute]
INSTALLDIR=C:\SOLVEAgent
SOLVEAGENT=NTAREA1\SysAdmin 12C95
```

Sample install.cdp File

```
SAinst PROCESS
    REMOTE=SYSTEM1 /*$Windows NT$*/
    HOLD=NO
    CLASS=1
    PRTY=10
    EXECPTY=10
    RETAIN=NO
    &HOME="c:\agent1\distribute"
    &TARGET="c:\temp"
    /*Distribute and remote install SOLVEagent for Windows NT*/

CopyFile COPY FROM (
    FILE="&HOME\REMOTE~1.EXE"
    LOCAL /*$Windows NT$*/
    TO (
        REMOTE /*$Windows NT$*/
        FILE="&TARGET\remoteinstall.exe"
        DISP=(RPL,<default>))
    IF (CopyFile EQ 0)

CopyIni COPY FROM (
    FILE="&HOME\REMOTE~1.INI"
    LOCAL /*$Windows NT$*/
    TO (
        REMOTE /*$Windows NT$*/
        FILE="&TARGET\remoteinstall.ini"
        DISP=(RPL,<default>))
    IF (CopyIni EQ 0)

Install RUN TASK REMOTE (PGM=WINNT)
    SYSOPTS="pgm(&TARGET\remoteinstall.exe)
args(/s)
desktop(yes)"
    EIF
    EIF
PEND
```


Managing the Windows NT Agent

12

The Windows NT Agent runs as a Windows NT service and is essentially self-operating. However, you may need to monitor the processes that are associated with the Windows NT Agent if there is a problem.

This chapter discusses:

- The Windows NT Agent processes and how to view their status
- Stopping and starting the Windows NT Agent
- Using the log files
- Modifying the Windows NT Agent configuration file

Processes

The Windows NT Agent uses the following processes.

Table 12-1. Windows NT Agent Processes

Process	What it does
<code>SOLVEagent.exe</code>	<p>This process provides an interface between the Agent Server (<code>jrew.exe</code>) and the Windows NT Service Control Manager (SCM). The Windows NT SCM tells <code>SOLVEagent.exe</code> to start or stop, which, in turn starts or stops the Agent Server.</p> <p><code>SOLVEagent.exe</code> is installed as a Windows NT service under the name SOLVE Agent. It is normally installed in Automatic mode, meaning that it is started whenever the Windows NT system is started.</p>
<code>jrew.exe</code>	<p>This process is the Agent Server, which is the actual agent that handles connections from the mainframes and creates Command Servers and Event Servers. It is a Java application executing under the Java run-time environment, not a Windows NT service.</p> <p>This is the process started or stopped by <code>SOLVEagent.exe</code>.</p>
<code>SOLVEagentCD.exe</code>	<p>This process is the Event Collector.</p> <p><code>SOLVEagentCD.exe</code> is installed as a Windows NT service under the name SOLVE Agent for CONNECT:Direct. It is installed in Automatic mode, meaning that it is started whenever the Windows NT system is started.</p>

The Windows NT Agent also uses the following CONNECT:Direct for Windows NT processes.

Table 12-2. *CONNECT:Direct for Windows NT Processes*

Process	What it does
<code>cdnt.exe</code>	This process is the CONNECT:Direct for Windows NT server process. It is installed as a Windows NT service under the name <code>CONNECT:Direct - nodename</code> , where <code>nodename</code> is the name of the CONNECT:Direct node.
<code>direct.exe</code>	This process is the CONNECT:Direct for Windows NT command line interface program. The Agent Server uses this program to issue commands to CONNECT:Direct for Windows NT.

Viewing Process and Service Status

Use a combination of the following Windows NT tools to manage the processes and services associated with the Windows NT Agent and CONNECT:Direct for Windows NT.

■ Task Manager

When the Windows NT Agent is functioning properly, the following processes are listed on the **Processes** tab in the **Image Name** column.

- `cdnt.exe`
- `jrew.exe`
- `SOLVEagent.exe`
- `SOLVEagentCD.exe`

To access the Task Manager, position the cursor over the Windows NT task bar, and then click the right mouse button. From the pop-up menu, select **Task Manager**. The Windows NT **Task Manager** window appears.

■ Event Viewer

CONNECT:Direct for Windows NT writes significant events to the Windows NT Event Log. You can use the Event Viewer to view these events.

To access the Event Viewer, click **Start-Programs-Administrative Tools (Common)-Event Viewer**. The **Event Viewer** window appears.

■ Services

When the Windows NT Agent is functioning properly, the following services are listed in the **Services** window. Their status and how they are started is also listed:

- `CONNECT:Direct - nodename`
- `SOLVE Agent`
- `SOLVE Agent for CONNECT:Direct`

To access the **Services** window, click **Start-Settings-Control Panel**. From the **Control Panel** window, double-click **Services**. The **Services** window appears.

Stopping and Starting the Windows NT Agent

After the Windows NT Agent is properly installed and configured, it is essentially self-operating, needing little or no operator attention. However, there may be times when you need to manually stop or start the Windows NT Agent.

Stopping and starting the Windows NT Agent involves stopping and starting the `SOLVE Agent` service and the `SOLVE Agent for CONNECT:Direct` service.

Stopping the Windows NT Agent

Because the `SOLVE Agent` service will always try to start the `SOLVE Agent for CONNECT:Direct` service when it has stopped, you should always stop the `SOLVE Agent` service first.

To stop the Windows NT Agent:

1. Click **Start-Settings-Control Panel-Services**.
The **Services** window appear.
2. Select the `SOLVE Agent` service. Then click **Stop**.
3. Select the `SOLVE Agent for CONNECT:Direct` service. Then click **Stop**.

Starting the Windows NT Agent

Normally, the Windows NT Agent starts automatically at system startup. However, if the Windows NT Agent is configured to be started manually, or if you have manually stopped the Windows NT Agent, use the following instructions to restart it:

1. Click **Start-Settings-Control Panel-Services**.
The **Services** window appears.
2. Select the SOLVE Agent service. Then click **Start**.
3. After the SOLVE Agent service starts, it automatically starts the SOLVE Agent for CONNECT:Direct service.
4. Both services should display a status of Started in the **Status** column of the **Services** window. If they do not, refer to Chapter 13, *Troubleshooting the Windows NT Agent*.

Windows NT Agent Log Files

The Windows NT Agent uses two log files to record important information about the operation of the agent services:

- SOLVEagent.log is the log file containing events generated by the SOLVE Agent service.
- SOLVEagentCD.log is the log file containing events generated by the SOLVE Agent for CONNECT:Direct service.

To view the log files, open them with a text editor.

By default, the log files reside in the SOLVEagent\log directory. You can specify another directory for the log files by changing the LOGPATH parameter in the Windows NT Agent configuration file.

Note: The Windows NT Agent does not manage the size of the log files. These files can grow in size very quickly (especially when debug mode is set to on in the Windows NT Agent configuration file) and should be renamed and archived regularly. When the log files are archived, the Windows NT Agent detects that the log files do not exist and creates new files as necessary.

Modifying the Windows NT Agent Configuration File

The Windows NT Agent uses a configuration file to define information needed by its various components. The file is named `SOLVEagent.ini` and is located in the `bin` directory of the Windows NT Agent installation directory. The file's contents consist of functional groups and within each of these groups there are parameter and value pairs:

```
[groupname]
parameter=value
```

To modify the configuration file:

1. In the `SOLVEagent\bin` directory, open the `SOLVEagent.ini` file with a text editor.
2. Make changes to the parameters as described in *Group and Parameter Descriptions*, on page 12-7.
3. Save the file and exit the text editor.

Default Configuration File

The default configuration file that is shipped with the Windows NT Agent is as follows:

```
[SOLVEagent]
DEBUG=0
DUMP=0
LOGPATH=D:\Program Files\SOLVEagent\log
HELPPATH=D:\Program Files\SOLVEagent\doc
# HOSTNAME=alternate_hostname

[Tasks]
ProcessMonitor=1

[ProcessMonitor]
POLLING=180

[Services]
Control=2630
FTService=2636

[FTService]
EVENTS_PORT=2636
EVENTS_ADDR=224.199.0.229
CD_SERVICENAME=CONNECT Direct v1.3.0 - nodename

[SOLVEagentCD]
POLLING=120
```

Group and Parameter Descriptions

[SOLVEagent]

This group specifies initialization values for the Windows NT Agent.

DEBUG

Turns the Windows NT Agent debugging facility off and on. Values can be 0 (off) or 1 (on). The default value is 0 (off). When debugging is on (`DEBUG=1`), the Windows NT Agent logs additional detailed messages in the log files in verbose mode. See the description of the `LOGPATH` parameter below for additional information about the log files.

DUMP

Turns the Windows NT Agent dumping facility off and on. Values can be 0 (off) or 1 (on). When the dumping facility is on (`DUMP=1`), the Windows NT Agent dumps all sent and received data in hex and character formats. The default value is 0 (off).

LOGPATH

Specifies the directory path where the Windows NT Agent log files reside. This value is relative to the path where the Windows NT Agent software resides. The default value `LOGPATH=log` creates log files in the `SOLVEagent\log` directory.

HELPPATH

Not used with this version of the Windows NT Agent.

HOSTNAME

Specifies an override value for the host name (for example, `HOSTNAME=CD400`). If the value is blank, then the system uses the host name assigned to the local host. By default, this parameter is commented out. To set this parameter, remove the comment (`#`) and specify an alternate host name.

Set this parameter only if the host name of the Windows NT system on which you installed the Windows NT Agent contains:

- More than eight characters
- Special characters, such as `$`, `\` and `<>`

or if there is any other reason you do not want to use the actual host name as the `CDMGR` name.

For example, if you change your local host name but do not want to reconfigure NetMaster for File Transfer on the mainframe, use the `HOSTNAME` parameter to set the host name to old host name.

[Tasks]

This group specifies additional tasks the Windows NT Agent should start at start-up time. Currently, there is only one task, which is the Process Monitor.

ProcessMonitor

Specifies whether the Process Monitor is to be started. Values can be 0 (do not start Process Monitor) or 1 (start Process Monitor). The default value is 1.

[ProcessMonitor]

This group specifies attributes relating to the Process Monitor task.

POLLING

Specifies the interval, in seconds, at which the Process Monitor checks on CONNECT:Direct and the Event Collector. The default value is 180.

[Services]

This group specifies initialization values for the services provided by the Windows NT Agent.

Control

Specifies a TCP/IP port used internally by the Windows NT Agent. The default value is 2630, which is recommended when only one copy of the Windows NT Agent is installed on the Windows NT system. When multiple Windows NT Agents are installed on the same Windows NT system, ensure each Windows NT Agent uses a different value for the server port. Examples of valid values are 26301, 26302, although any free port can be used.

FTService

Specifies the TCP/IP port on which the Windows NT Agent accepts connections from mainframe clients. The default value is 2636, which is recommended when only one copy of the Windows NT Agent is installed on the Windows NT system. When multiple Windows NT Agents are installed on the same Windows NT system, ensure each Windows NT Agent uses a different value for the server port. Examples of other valid values are 26361, 26362, although any free port can be used.

[FTService]

This group specifies attributes relating to the FTService service.

EVENTS_PORT

Specifies the port that the Windows NT Agent uses to receive CONNECT:Direct file transfer statistics. It is used by the Windows NT Agent in conjunction with EVENTS_ADDR (see below). The default value is 2636. Make this value always equal to that of the FTService parameter in the [Services] group.

EVENTS_ADDR

Specifies the address that the Windows NT Agent uses to receive CONNECT:Direct file transfer statistics. It is used by the Windows NT Agent in conjunction with EVENTS_PORT (see above). Specify the address using the dotted form, for example:

```
EVENTS_ADDR=224.199.0.229
```

Note: The EVENTS_ADDR value *must* be a multicast socket designation and *must* start with 224. Do not change this address to that of the Windows NT system you are working on.

CD_SERVICENAME

Specifies the CONNECT:Direct for Windows NT server process. This value is set during installation of the Windows NT Agent.

[SOLVEAgentCD]

This group specifies attributes relating to the Windows NT Agent Events Collector that collects CONNECT:Direct file transfer statistics.

POLLING

Specifies the frequency, in seconds, at which the Event Collector checks for new events. The default value is 120.

Troubleshooting the Windows NT Agent

13

This appendix describes some of the problems you might encounter when using the Windows NT Agent, and offers some possible solutions.

Problem Category	Page
1. Initial Installation	13-2
2. Operation	13-2

1. Initial Installation

Problem: During installation, the installation program detects that CONNECT:Direct is not installed on the Windows NT system

This is indicated by the following warning:



Solution:

Cancel the installation program and install CONNECT:Direct for Windows NT on the Windows NT system on which you are installing the Windows NT Agent. Then begin the Windows NT Agent installation procedure again.

To cancel the installation:

- a. From the **Warning** dialog, click **OK**.
- b. On the **Configure SOLVE Agent Services** dialog, click **Cancel**.
- c. On the **Install** dialog, click **Exit Setup**.
- d. On the **Perform Rollback** dialog, click **Yes**. The uninstall program removes any files that were copied.

2. Operation

Problem 1: The Windows NT Agent will not start

This is indicated by the following:

- A message appears that says the indicated service could not be started. Typically this message is associated with error 1069, indicating the service did not start due to a logon failure.

- The **Task Manager** window does not display either the `SOLVEagent.exe` process or the `SOLVEagentCD.exe` process.
- The **Services** window shows the `SOLVE Agent` service and/or the `SOLVE Agent for CONNECT:Direct` service status as **Stopped**.

Solution:

- Verify that the user ID assigned to the `SOLVE Agent` service and the `SOLVE Agent for CONNECT:Direct` service is a valid `CONNECT:Direct` user ID.
- Verify that the password assigned to the `SOLVE Agent` service and the `SOLVE Agent for CONNECT:Direct` service is valid. Remember, passwords are case-sensitive.

To verify this information:

1. Click **Start-Settings-Control Panel-Services**.
2. From the **Services** window, select the `SOLVE Agent` service or the `SOLVE Agent for CONNECT:Direct` service.
3. Click **Startup**.
4. Make any necessary changes to the user ID and password.

Problem 2: NetMaster for File Transfer on the mainframe is not receiving events from `CONNECT:Direct` for Windows NT

While viewing the NetMaster for File Transfer CDMGR File Transfer Log, no `CONNECT:Direct` for Windows NT events are displayed. For example, when you initiate a file transfer on the Windows NT system, you should see file transfer status stop events displayed in the mainframe file transfer log.

Solution:

On the Windows NT system:

- Ensure that the `SOLVE Agent` service and the `SOLVE Agent for CONNECT:Direct` service are running. These services should be listed in the Windows NT **Services** window with a status of **Started**. If the services are stopped, start them. See *Stopping and Starting the Windows NT Agent*, on page 12-4 for additional information about starting the services.

- Also check the log files for the SOLVE Agent service and the SOLVE Agent for CONNECT:Direct service for messages that would give an indication to the why the services are not started. The log files are in the SOLVEagent\log directory and are named SOLVEagent.log and SOLVEagentCD.log.

Contact Technical Support if the solutions above do not solve the problem.

Problem 3: The Application log is full

The Application log is part of the Windows NT Event Viewer and records events logged by applications. In some releases of Windows NT running Service Pack 3.0, the Application log becomes flooded with PERFLIB events when the Windows NT Agent is installed and running.

Solution:

Depending on the requirements of your system, consider the following solutions:

- If you are running Microsoft Windows NT with Service Pack 3, you may want to upgrade to Service Pack 4.
- Change the log settings in the Event Viewer so that older entries are overwritten, thus preventing the log from filling.

Open the Event Viewer and select **Log-Log Settings**. In the **Event Log Settings** dialog box, change the event log wrapping to **Override Events as Needed**.

Problem 4: You shut down CONNECT:Direct for Windows NT, but it starts again

The SOLVE Agent service is responsible for automatically starting the SOLVE Agent for CONNECT:Direct service when the SOLVE Agent for CONNECT:Direct service is not running.

Solution:

Stop the SOLVE Agent service first. Then stop the SOLVE Agent for CONNECT:Direct service. Check the NetMaster for File Transfer CDMGR File Transfer Log for a message indicating the SOLVE Agent for CONNECT:Direct service is not running.

Problem 5: The SOLVE Agent for CONNECT:Direct service is not responding

While trying to perform a CONNECT:Direct for Windows NT function (for example, trying to stop CONNECT:Direct for Windows NT), the function is not performed.

Solution:

Use the Windows NT Agent `sapid` utility to reset the CONNECT:Direct for Windows NT server process (`cdnt.exe`).

To use the utility, enter the following command from a Command Prompt window or the Run command line:

```
sapid cdnt.exe kill
```

The `cdnt.exe` processes disappears from the **Task Manager** window.

If the SOLVE Agent service and the SOLVE Agent for CONNECT:Direct service are running, they will restart `cdnt.exe`. After the SOLVE Agent for CONNECT:Direct service is restarted, a message stating that the SOLVE Agent for CONNECT:Direct service is running is displayed in the NetMaster for File Transfer CDMGR File Transfer Log.

Part III

OS/400 Agent

OS/400 Agent Concepts

14

The OS/400 Agent and its components run as OS/400 jobs and form part of an OS/400 subsystem. The OS/400 Agent:

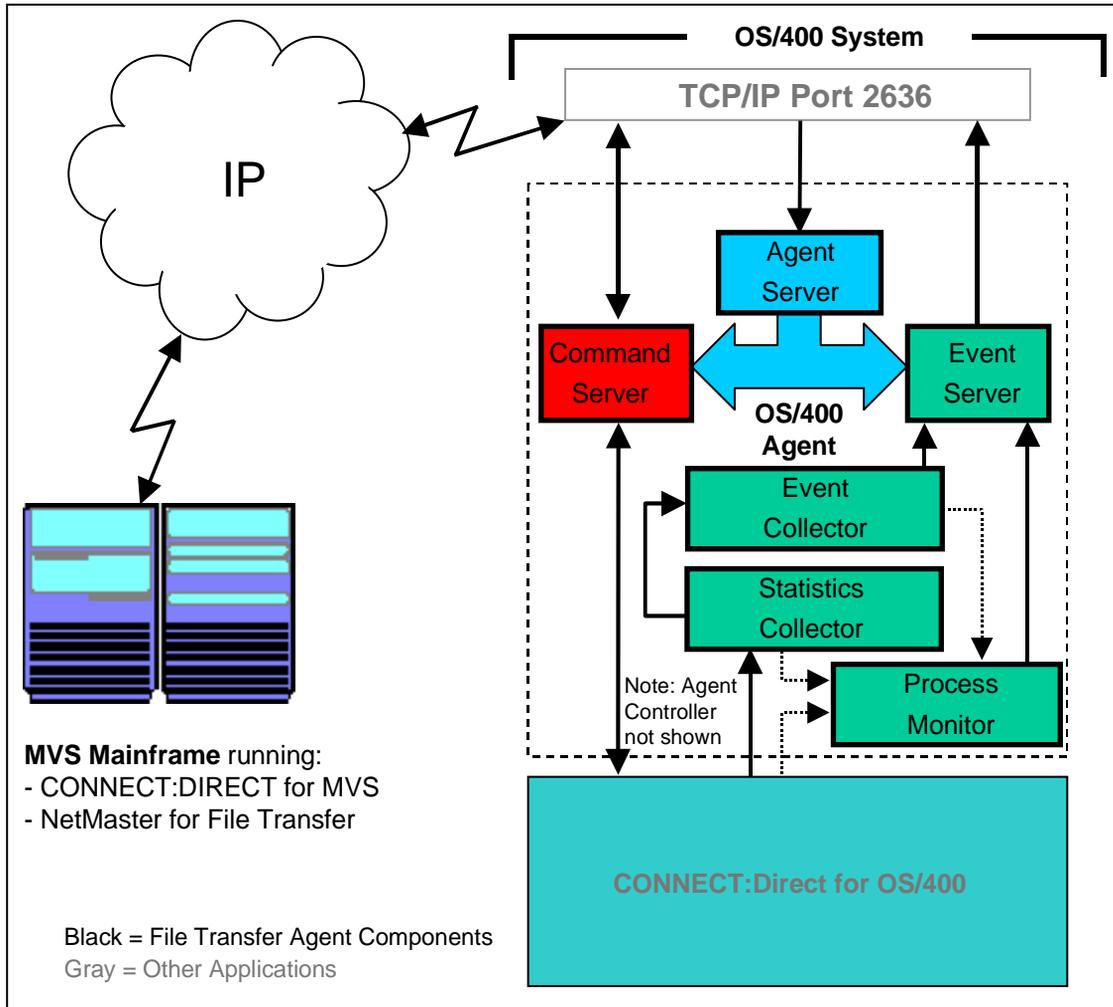
- Monitors the file transfer processes of `CONNECT:Direct` running on the same AS/400 computer system as the OS/400 Agent.
- Passes monitoring commands to `CONNECT:Direct` from NetMaster for File Transfer running on the mainframe.
- Periodically checks with `CONNECT:Direct` for new events, filters any new events, and passes the events to NetMaster for File Transfer running on the mainframe.

Figure 14-1 displays an overview of the OS/400 Agent and how it relates to `CONNECT:Direct` running on an AS/400 system and NetMaster for File Transfer running on the mainframe.

OS/400 Agent Components

The OS/400 Agent is made up of several different components. Figure 14-1 shows how the components work together. The components are described below.

Figure 14-1. OS/400 Agent Conceptual Diagram



Agent Server

The Agent Server manages Event Servers, Command Servers, and the Process Monitor. The Agent Server listens for connection requests from the mainframe client on an agreed port, usually port 2636. See *Changing the OS/400 Agent Parameters*, on page 16-7 for information on configuring the local port.

Based on the type of connection request, the Agent Server starts either a Command Server or an Event Server. The connection remains open until terminated by the mainframe.

The Agent Server and its related processes run together in an OS/400 job, called SARUNAG, which controls another OS/400 job, called QJVACMDSRV.

Command Server

NetMaster for File Transfer running on the mainframe allows mainframe operators (or automatic responses) to issue commands to CONNECT:Direct for OS/400 via the OS/400 Agent.

When a command is issued from the mainframe, the Agent Server determines the connection to be a command request, creates a Command Server if one is not already running for that mainframe, and passes the command to the Command Server. The Command Server executes the CONNECT:Direct for OS/400 command and returns the response to the mainframe. The Agent Server creates one Command Server for each mainframe connection to the OS/400 Agent.

Each Command Server executes commands one at a time, in the order they are received. The Command Server returns the response from one command before executing the next command.

Event Server

The Event Server sends file transfer events and CONNECT:Direct status events to the mainframe. It acts as a bridge between the Event Collector and a mainframe. There is one Event Server for each mainframe connection to the OS/400 Agent.

NetMaster for File Transfer on the mainframe sends an event connection request to port 2636 on the targeted OS/400 system. The Agent Server determines the connection to be an event request, and creates an Event Server if one is not already running for that mainframe.

The Event Servers receives events from the Event Collector. When the Event Collector sends an event, each Event Server receives it, reformats it and sends it to the corresponding mainframe.

Process Monitor

The Process Monitor checks the state of CONNECT:Direct for OS/400, the Event Collector, and the Statistics Collector every 20 seconds. Every time one of these processes changes state (from running to not running, or from not running to running), the Process Monitor sends a status event to the mainframe. The polling interval can be varied by changing the OS/400 Agent parameters. For further information see *Changing the OS/400 Agent Parameters*, on page 16-7.

Agent Controller

When the OS/400 Agent subsystem starts, the first OS/400 Agent job started is the Agent Controller, which is responsible for starting all other components of the OS/400 Agent. It is also responsible for shutting down the components in response to requests to end the OS/400 Agent, the subsystem, or the whole AS/400 system.

The SOLVE Agent Controller runs as a single OS/400 job, called SARUNSA.

Statistics Collector

The Statistics Collector requests file transfer and status statistics from CONNECT:Direct for OS/400 and sends them to the Event Collector.

The Statistics Collector runs as a single OS/400 job called SARUNSC.

Event Collector

Every 30 seconds, the Event Collector checks for new events that may have taken place in CONNECT:Direct for OS/400. When new file transfer events and status events are detected, the Event Collector forwards them to the Event Servers. The interval between Event Collector new event checks can be varied by changing the OS/400 Agent parameters. For further information see *Changing the OS/400 Agent Parameters*, on page 16-7.

The Event Collector sends the following event types:

- File transfer START events
- File transfer end events—either END or FAILURE
- CONNECT:Direct status events—either UP or DOWN

The Event Collector runs as an OS/400 job, called SARUNEC, which controls another OS/400 job, called QJVACMDSRV.

Mainframe Connections

To have the OS/400 Agent interact with NetMaster for File Transfer running on the mainframe, you must ask the mainframe system administrator to undertake the following setup procedures on the mainframe:

- Define a CDMGR manager resource for the remote AS/400 system that is running the agent software
- Define CDMON monitor resources to the CDMGR resource you defined
- Activate the manager resource

Instructions for these procedures are found in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

With the activation of the manager resource, mainframe operators have access to all of the CONNECT:Direct for OS/400 monitoring and management features, including starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility and alert monitoring.

More than one region or mainframe may be running NetMaster for File Transfer, and may be interested in monitoring or managing CONNECT:Direct for OS/400 on a given AS/400 system. The OS/400 Agent can connect with multiple mainframes and multiple mainframe regions. For connections to mainframe regions, only one connection per region is allowed.

The Agent Server starts one Event Server or one Command Server for each separate region or mainframe request received by the AS/400 system; therefore, multiple Event Servers and Command Servers may be running at any given time. Only one Event Collector is needed, regardless of the number of Event Servers that are running.

When the mainframe connection is broken (for whatever reason), the OS/400 Agent shuts down the Event Servers and the Command Servers that were started for that mainframe.

Mainframe Connections to and from the OS/400 Agent

For clarity, Figure 14-1 shows only one instance of a mainframe connected to one OS/400 Agent. In this case, the OS/400 Agent sends commands to, and receives responses from, a single instance of CONNECT:Direct for OS/400. However, there are other connection variations. For example:

- Multiple OS/400 Agents can be connected to the same instance of CONNECT:Direct for OS/400.

In this case, each OS/400 Agent must have a unique port number.

- Multiple instances of NetMaster for File Transfer can be connected to the same OS/400 Agent.

- Multiple OS/400 Agents can be connected to multiple instances of CONNECT:Direct for OS/400 on the same AS/400 system.

In this case, each OS/400 Agent must have a unique port number.

Additionally, each OS/400 Agent must operate with a different library list. The OS/400 Agent contacts the first instance of CONNECT:Direct that it finds in the library list.

Note: A NetMaster for File Transfer region can monitor only one instance of CONNECT:Direct for OS/400 on any one OS/400 system.

To have the OS/400 Agent interact with NetMaster for File Transfer running on the mainframe, you must ask the mainframe system administrator to undertake the following setup procedures on the mainframe:

- Define a CDMGR manager resource for the remote OS/400 system that is running the agent software
- Define CDMON monitor resources for the CDMGR resource you defined
- Activate the manager resource

Instructions for these procedures are found in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

With the activation of the manager resource, mainframe operators have access to all of the CONNECT:Direct for OS/400 monitoring and management features, including starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility and alert monitoring.

Installing the OS/400 Agent

15

This chapter describes how to install and uninstall the OS/400 Agent.

Hardware and Software Requirements

This section describes the OS/400 hardware and software requirements for the OS/400 Agent.

System Requirements

The OS/400 Agent requires:

- An AS/400 system based on 64-bit RISC PowerPC AS processors
- OS/400 V4 R2, or later, installed
 - If OS/400 V4 R2 is installed, you also need PTF 5769999 MF18555 installed
- AS/400 Developer Kit for Java (licensed program 5769JV1) installed
- TC1 Product (TCP/IP Connectivity Utilities for AS/400) installed and configured
- Host Servers option of OS/400 installed
- 4 MB disk space
- CD drive

Cooperating Software Requirements

The OS/400 Agent is designed to interact with the following products:

- CONNECT:Direct for OS/400 Version 3.1.00 (Accumulative Maintenance is 3.1.00 with Fix D3100F902A) or Version 3.3.00.

CONNECT:Direct for OS/400 must be installed, configured, and running on the OS/400 system where the OS/400 Agent is running to receive commands from, and send responses to, the mainframe, and to generate file transfer events.

- Netmaster for File Transfer (formerly known as SOLVE:Operations for File Transfer) Version 3.3 or later.

Netmaster for File Transfer must be installed, started, and configured to send commands to, and receive responses from, CONNECT:Direct for OS/400, and to receive event messages from the OS/400 Agent. For information on defining a CONNECT:Direct resource on the mainframe see the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

TCP/IP Connectivity Requirements

You must be able to establish TCP/IP connections between the mainframe(s) running Netmaster for File Transfer and the AS/400 systems running the OS/400 Agent.

On the mainframe, TCP/IP connectivity requires TCPaccess or IBM TCP/IP.

Netmaster for File Transfer 3.3 or later supports TCPaccess, Communications Server, and IBM TCP/IP for MVS. For more information, see its *Installation and Setup Instructions*.

Pre-installation Checklist

Before installing the OS/400 Agent, review the following checklist:

Items to Check Before Installing	Done?
1. Check that the user profile to be used by the installer has the special authorities *SECADM (security administrator) and *ALLOBJ (all objects).	<input type="checkbox"/>
2. Check that CONNECT:Direct for OS/400 is installed on the AS/400.	<input type="checkbox"/>
3. Use the ping command to check the connection status and ensure that the AS/400 is able to establish a TCP/IP connection with the mainframe.	<input type="checkbox"/>
4. Determine the host name of the AS/400 system that will run the OS/400 Agent using the CHGTCPDMN command. You will need the host name to complete <i>Step 5 - Customize Initial OS/400 Agent Parameter Settings</i> .	<input type="checkbox"/>
5. Check that Netmaster for File Transfer (V3.3 or later) is installed, properly configured, and running on the mainframe.	<input type="checkbox"/>

Items to Check Before Installing (Continued)

Done?

6. Determine the library name for the OS/400 Agent. For example, SAPRD, which represents SOLVE Agent: Production.

Note: In the following commands SAPRD is an example only.

The library name you choose must meet the following criteria:

- Up to six (6) characters long.
- Must be a valid OS/400 library name.
- Must be a unique library or subsystem. That is, it cannot be the same as an existing library or subsystem on the AS/400. You can check this with the commands:

```
WRKLIB LIB(SAPRD)
```

and

```
WRKSBSD SBSD(SAPRD)
```

- If suffixed with `USR` or `OWN` (for example, `SAPRDUSR`, `SAPRDOWN`) it cannot be the name of an existing user profile. You can check this with the command:

```
WRKUSRPRF USRPRF(SAPRD*)
```

- If suffixed with `APP`, `DTAU`, or `DTAC` (for example `SAPRDAPP`, `SAPRDDTAU`, `SAPRDDTAC`) it cannot be the name of an existing authorization list. You can check this with the command:

```
WRKAUTL AUTL(SAPRD*)
```

- If prefixed with `/usr/SOLVEagent/` (for example `/usr/SOLVEagent/SAPRD`) it cannot be the name of an existing directory. You can check this with the command:

```
WRKLNK OBJ('/usr/SOLVEagent/SAPRD')
```

Note: Do not create the library, subsystem, user profile, authorization list, or directory. They are created automatically by the installation procedure that follows.

7. Determine the library name of the `CONNECT:Direct` instance you intend the OS/400 Agent to monitor.

Installing the OS/400 Agent

This section describes the steps required to install the OS/400 Agent.

Step 1 - Review the Pre-installation Checklist

Ensure that you have addressed all the items in the pre-installation checklist on page 15-3.

Step 2 - Create an Administrator Profile

An OS/400 Agent administrator user profile is required on each OS/400 system on which the OS/400 Agent will be installed. It must be called SAADMIN.

To create user profile SAADMIN:

1. Sign on to the AS/400 system with the security officer user profile, QSECOFR, or the profile used to create user profiles on your system.
2. Enter the following OS/400 command:

```
CRTUSRPRF USRPRF(SAADMIN) SPCAUT(*ALLOBJ *SAVSYS *SPLCTL
*SECADM *JOBCTL) PWDEXPIV(*NOMAX) LMTDEVSSN(*NO)
```

The default password is SAADMIN because no password was specified.

3. Sign off the AS/400.

Step 3 - Install the OS/400 Agent Software

To install the OS/400 Agent software:

1. Load the distribution media:
 - ❑ If installing from CD-ROM, insert the NetMaster for File Transfer Agent - CONNECT:Direct CD-ROM into the CD drive.
 - ❑ If installing from tape, mount the SOLVE:Agent for OS/400 distribution tape on the tape drive.
2. Sign on to the AS/400 system as user SAADMIN.
3. Load and run the installation program:

- ❑ If installing from CD-ROM, enter the following OS/400 command:

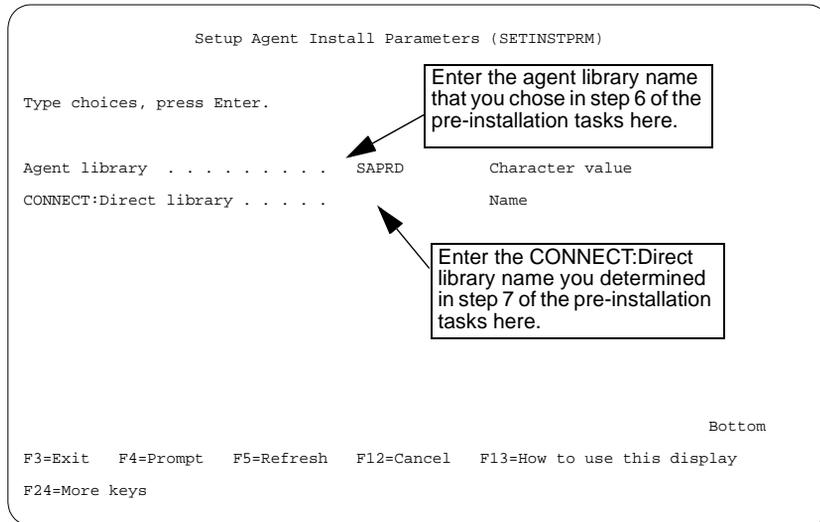
```
LODRUN DEV(*OPT) DIR('/OS400')
```

- If installing from tape, enter the following OS/400 command:

```
LODRUN DEV(*TAP)
```

Wait for the Setup Agent Install Parameters command prompt to appear (see Figure 15-1).

Figure 15-1. Setup Agent Install Parameters Panel



4. Enter the OS/400 Agent library name in the Agent library field.
5. Enter the CONNECT:Direct library name in the CONNECT:Direct library field.

The installation may take up to 30 minutes. The following message may be displayed for as long as 20 minutes:

```
Optimizing SOLVE Agent Java programs
```

When the installation is finished the following message appears:

```
SOLVE Agent instance SAPRD has been installed successfully
```

Note: You can abort the installation procedure by pressing F12, skipping the remainder of these instructions, and following the instructions in the section *Uninstalling the OS/400 Agent*, on page 15-14.

6. Sign off the AS/400.

Step 4 - Update CONNECT:Direct Users List

This step grants CONNECT:Direct administration and statistics rights to the OS/400 Agent owner (the OS/400 Agent owner user profile was created in *Step 3 - Install the OS/400 Agent Software*). The name of the owner is the same as the name of the OS/400 Agent library, suffixed with OWN. For example, if the name of the OS/400 Agent library is SAPRD, then the name of the agent owner is SAPRDOWN.

This step also sets the authorities for an OS/400 special user, QUSER. Much of the OS/400 Agent's work is performed by OS/400 server jobs that automatically run with the QUSER user profile. This step allows those server jobs to work with CONNECT:Direct on behalf of the OS/400 Agent, but prevents QUSER from using CONNECT:Direct under any other circumstances.

Step 4.1 - Add the Agent Owner and QUSER to the CONNECT:Direct Users List

1. Sign on to the AS/400 as the CONNECT:Direct Administrator, CDADMIN.
2. Change the current library to the CONNECT:Direct library you specified in step 5 on page 15-6, by using the following command:

```
CHGCURLIB LIB(cd_library)
```

where *cd_library* is the name of the CONNECT:Direct library.

3. Display a list of all existing CONNECT:Direct users by using the following command:

```
WRKCDUSR
```

4. Add the OS/400 Agent owner to the list of CONNECT:Direct users by using the following command:

```
ADDCDUSR USER(agent_owner) USRTYPE(*LCL) AUTH(*ADM)  
SELSTATS(*ALL)
```

where *agent_owner* is the agent owner user ID, for example SAPRDOWN.

Alternatively, press F6 to be prompted.

5. Press F5 to refresh the list.

The OS/400 Agent owner is displayed in the list.

6. Add QUSER to the list of CONNECT:Direct users by using the following command:

```
ADDCDUSR USER(QUSER) USRATYPE(*LCL) AUTH(*ADM) SELSTATS(*ALL)
```

Alternatively, press F6 to be prompted.
If QUSER is already in the user list, ensure that the correct attributes are set by using the following command:

```
CHGCDUSR USER(QUSER) USRATYPE(*LCL) AUTH(*ADM) SELSTATS(*ALL)
```
7. Press F5 to refresh the list.
QUSER is displayed in the list.

Step 4.2 - Set Authorities for QUSER

1. Display a list of users and their authorities to the CONNECT:Direct library by using the following command:

```
EDTOBJAUT OBJ(cd_library) OBJTYPE(*LIB)
```

where *cd_library* is the name of the CONNECT:Direct library.
2. Check the use list for user QUSER:
 - ❑ If QUSER is not in the user list, press F6 and add QUSER with object authority *EXCLUDE.
 - ❑ If QUSER is in the list, ensure that it has object authority *EXCLUDE.
3. Sign off the AS/400.

Step 5 - Customize Initial OS/400 Agent Parameter Settings

In this step, the initial user customizes the initial settings for the OS/400 Agent. The installation process creates an OS/400 Agent initial user profile. The name of the initial user is the same as the name of the OS/400 Agent library suffixed with USR. For example, if the name of the OS/400 Agent library is SAPRD then the name of the initial user is SAPRDUSR.

You can change the initial settings made during the installation process to specify:

- The user to receive messages
- The instance of CONNECT:Direct to be monitored
- An alternative host name
- The server port
- The control port

To change the OS/400 Agent parameters, use the CHGSAPARM command:

1. Sign on to the AS/400 as the OS/400 Agent initial user.
2. Enter the following command and press F4:

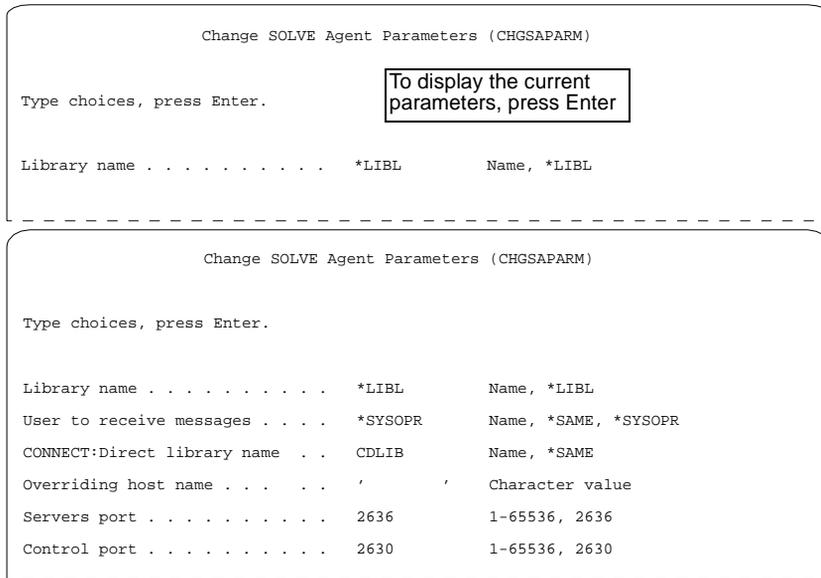
```
CHGSAPARM
```

The Change SOLVE Agent Parameters (CHGSAPARM) command prompt appears (see Figure 15-2).

3. Change the parameters as required.

You can change additional OS/400 Agent parameters by editing the OS/400 Agent initialization file. For further information, see *Changing the OS/400 Agent Parameters*, on page 16-7.

Figure 15-2. Change SOLVE Agent Parameters Panel



The OS/400 Agent parameters are described below.

User to receive messages

Specifies the user to receive operational messages generated by the OS/400 Agent. These messages are generated when the OS/400 Agent starts and ends, and when jobs within the OS/400 Agent end unexpectedly.

CONNECT:Direct library name

Specifies which instance of CONNECT:Direct is to be monitored by the OS/400 Agent. There may be more than one instance of CONNECT:Direct on the AS/400.

Overriding host name

Specifies an alternative host name by which the OS/400 Agent identifies itself to the client mainframe. If blank, the OS/400 Agent identifies itself with the TCP/IP host name of the AS/400 system.

Use this parameter if the first segment of the AS/400 TCP/IP host name is greater than eight characters in length (up to but not including the first period (.)), or includes special characters. The following special characters cannot be included:

- Double quotes ["]
- Single quotes [']
- Brackets [()]
- Commas [,]
- Periods [.]
- Underscores [_]
- Spaces []

For example, if the first segment of the AS/400 TCP/IP host name is MY_AS_400.mybusiness, use this parameter to override it to a host name such as MYAS400. Correspondingly, in the Netmaster for File Transfer region running on the mainframe, define the CONNECT:Direct manager as MYAS400.

Servers port

Specifies the TCP/IP port on which the OS/400 Agent accepts connections from mainframe clients. The default value is 2636, which is recommended when only one copy of the OS/400 Agent is installed on the AS/400. When multiple OS/400 Agents are installed on the same AS/400, ensure each OS/400 Agent uses a different value for the server port. Examples of other valid values are 26361, 26362, although any free port can be used.

Control port

Specifies a TCP/IP port used internally by the OS/400 Agent. The default value is 2630, which is recommended when only one copy of the OS/400 Agent is installed on the AS/400. When multiple OS/400 Agents are installed on the same AS/400, ensure each OS/400 Agent uses a different value for the server port. Examples of valid values are 26301, 26302, although any free port can be used.

Step 6 - Configure Mainframe Resources

Before a Netmaster for File Transfer region can recognize and communicate with the OS/400 Agent, the mainframe system administrator must complete configuration tasks within the Netmaster for File Transfer region.

To configure the mainframe resources the mainframe system administrator must complete the following setup procedures on the mainframe:

1. Define a CONNECT:Direct Manager (CDMGR) resource for the AS/400 system that is running the OS/400 Agent.

The CDMGR name must match the host name of the AS/400 system, or the overriding host name specified with the CHGSAPARM command. For further information on determining the host name of the AS/400 system see *Pre-installation Checklist*, on page 15-3.

2. Optionally, define CONNECT:Direct Monitor (CDMON) resources for the CDMGR resource you defined in step 1.

For detailed instructions for defining a CONNECT:Direct Manager and a CONNECT:Direct Monitor, see the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

Post-installation Tasks

To verify the operation of the OS/400 Agent:

1. Start the OS/400 Agent (see *Starting the OS/400 Agent*, on page 16-2).
2. Start a simple file transfer using CONNECT:Direct, then monitor the file transfer events as they appear in the File Transfer log in Netmaster for File Transfer on the mainframe.

After the installation is complete, you may need to do the following:

1. Grant other users authority to manage the OS/400 Agent. See *Granting Users Authority to Manage the OS/400 Agent*, on page 16-1.
2. Set up an auto-start procedure for the OS/400 Agent. See *Setting Up Automatic Startup*, on page 16-2.
3. Issue the following command to prevent some system jobs from filling message queues and then terminating:

```
CHGJOB JOB(QSYS/QZBSJOB) JOBMSGQFL(*WRAP)
```

What You Have Installed

The following objects were installed on your system:

Note: *agent_library* represents the OS/400 Agent library name chosen on page 15-6.

- Two user profiles and their message queues of the same name:
 - *agent_library*OWN that owns all the installed objects. This user profile does not have a password so it cannot be used to sign on to the AS/400.
 - *agent_library*USR that is provided as an initial user with the authority to manage the OS/400 Agent.
- Three authorization lists:
 - *agent_library*DTAU and *agent_lib*DTAC that secure all data objects and should not be changed.
 - *agent_library*APP that secures the OS/400 Agent commands and programs.
- A directory called `/usr/SOLVEagent/agent_library` that contains most of the runtime objects, including all Java classes and their log files.
- A library called *agent_library* that contains the remaining runtime objects, including all commands, programs, and the subsystem description and job descriptions that provide the OS/400 Agent run-time environment.

What You Can Modify

You can modify the user profile, authorization list, log files, and the class, as described below:

Note: *agent_library* represents the OS/400 Agent library name chosen on page 15-6.

- The user profile called *agent_library*USR.
This user profile can be disabled or deleted, and provides an initial user that can manage the OS/400 Agent. It also serves as an example on which other profiles can be based (see *Granting Users Authority to Manage the OS/400 Agent*, on page 16-1).
- The authorization list called *agent_library*APP.
This authorization list secures the OS/400 Agent commands and programs. Initially, it excludes all users except *agent_library*USR from using the OS/400 Agent commands and programs. Users can be added to it (*Granting Users Authority to Manage the OS/400 Agent*, on page 16-1).
- The log files *SOLVEagent.log* and *SOLVEagentCD.log*.
These files are in the `/usr/SOLVEagent/agent_library/log` directory and can be renamed or deleted any time, regardless of whether the OS/400 Agent is running. The OS/400 Agent creates new log files as needed.
- The class called SA in *agent_library* library.
This class can be modified to suit your system requirements. Changes to this class affect the OS/400 Agent jobs that run in the *agent_library* subsystem.

Uninstalling the OS/400 Agent

To uninstall the OS/400 Agent software:

1. Sign on to the AS/400 as the OS/400 Agent administrator, SAADMIN.

Note: If the OS/400 Agent has never been started, skip to step 4.

2. End the OS/400 Agent by entering the following command:

```
ENDSA LIB(agent_library)
```

3. Display the OS/400 Agent jobs by entering the following command:

```
WRKSAJOB LIB(agent_library) OPTION(*SBS)
```

If you cannot display the jobs because the subsystem is not active, continue to the next step. Otherwise, wait for all the jobs to end before continuing to the next step. You can refresh the display by pressing F5.

4. Uninstall the OS/400 Agent by entering the following command:

```
SAUNINST LIB(agent_library)
```

5. Remove any OS/400 Agent autostart commands from the startup program.

For further information see *Setting Up Automatic Startup*, on page 16-2.

6. Sign off the AS/400.

Managing the OS/400 Agent

16

After the OS/400 Agent is properly installed and configured it is essentially self-operating, needing little or no operator attention. However, you may need to monitor the jobs associated with the OS/400 Agent in the event there is a problem.

This chapter discusses:

- Granting authority to manage the OS/400 Agent
- Starting the OS/400 Agent
- Ending the OS/400 Agent
- Displaying information about the OS/400 Agent
- Changing the OS/400 Agent parameters

Granting Users Authority to Manage the OS/400 Agent

Authority to manage the OS/400 Agent is controlled by an OS/400 authorization list. The authorization list specifies which users can use the OS/400 Agent commands.

The name of the authorization list is the same as the name of the OS/400 Agent library, suffixed with APP. For example, if the name of the OS/400 Agent library is SAPRD, then the name of the authorization list is SAPRDAPP.

To change which users have authority to manage the OS/400 Agent:

1. Sign on to the AS/400 as security officer, QSECOFR, or as the OS/400 Agent administrator, SAADMIN.

2. Enter the following command:

```
EDTAUTL AUTL(authorization_list)
```

3. Grant a user authority to manage the OS/400 Agent by giving that user *USE rights. Modify the list as required.
4. Sign off the AS/400.

Starting the OS/400 Agent

Normally, the OS/400 Agent starts automatically at system startup. However, if OS/400 is not configured to start the OS/400 Agent automatically, or if you have ended the OS/400 Agent manually, you need to manually start the OS/400 Agent.

Note: After you install the OS/400 Agent you need to start it manually for the first time.

To start the OS/400 Agent:

1. Sign on to the AS/400 as a user who has authority to manage the OS/400 Agent.
2. Enter the following command:

```
STRSA LIB(agent_library)
```

The OS/400 Agent starts.

Setting Up Automatic Startup

To enable the OS/400 Agent to start each time the system is started, you need to modify the startup program for the AS/400. This task should be performed by a system administrator, as knowledge of your startup procedure and other information (such as which job queue to specify for the SBMJOB command), is required. The program name and library can be found by displaying the system value QSTRUPPGM.

Modify the startup program by adding the following CL commands. Add these commands to the end of your existing startup program. In particular, the OS/400 Agent needs to be started after TCP/IP has been started:

- ADDLIB LIB(*agent_library*)
- SBMJOB CMD(*agent_library*/STRSA) JOB(STRSA)

Note: When you uninstall the OS/400 Agent software, remove these entries from your startup program.

Ending the OS/400 Agent

To end the OS/400 Agent:

1. Sign on to the AS/400 as a user who has authority to manage the OS/400 Agent.
2. Enter the following command:

```
ENDSA LIB(agent_library)
```

The OS/400 Agent ends.

The two jobs called QJVACMDSRV send a notification message to the specified user, specifying that the OS/400 Agent ended abnormally.

Displaying Information About the OS/400 Agent

Each instance of the OS/400 Agent runs as six OS/400 jobs in a dedicated OS/400 subsystem. (See Table 16-1.) This section describes how to display the subsystem and its jobs. This information appears in two views: the OS/400 Work With Active Jobs panel, and the OS/400 Work With Subsystem Jobs panel.

Table 16-1. OS/400 Agent Component Job Definitions

OS/400 Agent Component	Job Name	Description
Agent Server	SARUNAG	Runs the Command Server, Event Server, and the Process Monitor. This job also controls the OS/400 job QJVACMDSRV.
Agent Controller	SARUNSA	Controls components of the OS/400 Agent.
Statistics Collector	SARUNSC	Requests CONNECT:Direct for OS/400 events and statistics.
Event Collector	SARUNEC	Checks for CONNECT:Direct for OS/400 events. This job also controls the OS/400 job QJVACMDSRV.
Agent Server/Event Collector	QJVACMDSRV	Is actually two jobs: one job is the Agent Server and the other job is the Event Collector.

Active Jobs

To display the active OS/400 Agent subsystem jobs:

1. Sign on to the AS/400 as a user who has authority to manage the OS/400 Agent.
2. Enter the following command:

```
WRKSAJOB LIB(agent_library) OPTION(*ACTIVE)
```

- The Work With Active Jobs panel appears, showing only the OS/400 Agent subsystem and jobs.

If the OS/400 Agent is not running, no jobs are displayed.

Table 16-2 shows the active jobs and the status values to expect.

Table 16-2. Active Jobs View Showing OS/400 Agent Jobs and Status Values

Subsystem/Job	Status - expected values
Subsystem-name	DEQW
QJVACMSRV	JVAW, RUN, MTXW
QJVACMSRV	JVAW, RUN, MTXW
SARUNSA	MSGW, RUN
SARUNAG	TIMW, RUN
SARUNEC	TIMW, DEQA, DEQW, RUN
SARUNSC	TIMW, DEQA, DEQW, RUN

When the OS/400 Agent has ended, you do not see the subsystem or any jobs.

If the Work With Active Jobs panel does not contain the jobs described above, or if the status of a job does not match those shown above, refer to Chapter 17, *Troubleshooting the OS/400 Agent*.

Subsystem Jobs

To display the jobs in the OS/400 Agent subsystem:

- Sign on to the AS/400 as a user who has authority to manage the OS/400 Agent.
- Enter the following command:

```
WRKSAJOB LIB(agent_library) OPTION(*SBS)
```

If the OS/400 Agent subsystem is active, the Work With Subsystem Jobs panel appears, showing only the OS/400 Agent subsystem and jobs.

Figure 16-1 shows a typical OS/400 Agent subsystem and its jobs. It is normal for job SARUNSA to have status MSGW (message wait).

Figure 16-1. OS/400 Agent Work with Subsystem Jobs Panel

```
Work with Subsystem Jobs                                MYAS400
                                                    06/07/99 12:21:30
Subsystem . . . . . : SAPRD

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

Opt Job      User      Type      -----Status-----  Function
  QJVACMSRV  SAPRD4OWN  BATCHI    ACTIVE
  QJVACMSRV  SAPRD4OWN  BATCHI    ACTIVE
  SARUNAG    SAPRD4OWN  BATCH     ACTIVE                PGM-SARUNAG
  SARUNEC    SAPRD4OWN  BATCH     ACTIVE                PGM-SARUNEC
  SARUNSA    SAPRD4OWN  AUTO      MSGW                  PGM-SARUNSA
  SARUNSC    SAPRD4OWN  BATCH     ACTIVE                PGM-SARUNSC

                                                    Bottom

Parameters or command
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F11=Display schedule data
F12=Cancel
```

Table 16-3 shows the OS/400 Agent subsystem jobs and the status values to expect. Note that the status value may vary depending on the function the job is performing.

Table 16-3. Subsystem Jobs View Showing OS/400 Agent Jobs and Status Values

Job	Status - expected values
QJVACMDSRV	JVAW
QJVACMDSRV	JVAW
SARUNSA	MSGW, ACTIVE
SARUNAG	TIMW
SARUNEC	TIMW
SARUNSC	DEQW

When the OS/400 Agent ends, no jobs are displayed.

If the Work with Subsystem Jobs panel does not contain the jobs described above, or if the status of a job does not match those shown above, refer to Chapter 17, *Troubleshooting the OS/400 Agent*.

Changing the OS/400 Agent Parameters

In response to other changes on your AS/400, you may need to change the OS/400 Agent parameters. Parameters that you can change include the user you want to receive messages, the CONNECT:Direct library to monitor, and the host name by which the OS/400 Agent identifies itself to the mainframe clients. The OS/400 Agent parameters can be changed by using the CHGSAPARM command, or by changing the OS/400 Agent initialization file.

For information on changing parameters using the CHGSAPARM command see the section *Step 5 - Customize Initial OS/400 Agent Parameter Settings*, on page 15-8.

Changing the Initialization File

This initialization file is used by the OS/400 Agent components to set up the running environment. The file's contents consist of functional groups and within each of these groups there are parameter and value pairs:

```
[groupname ]  
parameter=value
```

The initialization file resides in the root file system of the OS/400 Agent software. Its path is `/usr/SOLVEagent/agent_instance_name/`.

The default initialization file that is shipped with the OS/400 Agent is as follows:

```
[ SOLVEagent ]  
DEBUG=0  
DUMP=0  
LOGPATH=log  
HELPPATH=  
HOSTNAME=  
  
[ Services ]  
com.sterling.sa.core.agent.Control=2630  
com.sterling.sa.core.svc.FTService=2636  
  
[ Tasks ]  
com.sterling.sa.mon.ProcessMonitor=1  
  
[ FTService ]  
EVENTS_PORT=2636  
EVENTS_ADDR=224.199.0.229  
CDSERVICENAME=CONNECT Direct v1.3.0 - nodeNameForNTOnly  
  
[ SOLVEagentCD ]  
DEBUG=0  
POLLING=30  
STATSCOLLECTORTIMEOUT=60  
STATSCOLLECTORRETRIES=4  
  
[ ProcessMonitor ]  
POLLING=20  
AUTORESTARTEC=0  
AUTORESTARTCD=0  
  
[ Sam ]  
AGENTCONTROLADDRESS=
```

The initialization groups are described below:

[SOLVEagent]

This group specifies initialization values for the OS/400 Agent.

DEBUG

Turns the OS/400 Agent debugging facility off and on. Values can be 0 (off) or 1 (on). When debugging is on (DEBUG=1), the OS/400 Agent logs messages in verbose mode. When in verbose mode, the OS/400 Agent writes detailed messages into the log file. The log file is named `SOLVEagent.log` in the OS/400 Agent `log` directory. See the description of the LOGPATH parameter below. The default value is 0 (off).

DUMP

Turns the OS/400 Agent dumping facility off and on. Values can be 0 (off) or 1 (on). When the dumping facility is on (DUMP=1), the OS/400 Agent dumps all sent and received data in hex and character formats. The default value is 0 (off).

LOGPATH

Specifies the directory path where the OS/400 Agent log files reside. This value is relative to the path where the OS/400 Agent software resides, for example, the default value LOGPATH=log creates log files in `/usr/SOLVEagent/agent_instance_name/log` directory.

Note: The OS/400 Agent does not manage the size of the log files. These files can grow in size very quickly, especially when debug mode is set to on, and should be renamed and archived regularly. When archiving is done, the OS/400 Agent detects that the log files do not exist and creates new files as necessary.

HELPPATH

Not used with this version of the OS/400 Agent.

HOSTNAME

Specifies an override value for the host name (for example, HOSTNAME=CD400). If the value is blank, the system uses the TCP/IP name assigned to the local host. This value can also be changed using the CHGSAPARM command.

[Services]

This group specifies initialization values for the services provided by the OS/400 Agent.

com.sterling.sa.core.agent.Control

Specifies a TCP/IP port used internally by the OS/400 Agent. The default value is 2630, which is recommended when only one copy of the OS/400 Agent is installed on the AS/400. When multiple OS/400 Agents are installed on the same AS/400, ensure each OS/400 Agent uses a different value for the server port. Examples of valid values are 26301, 26302, although any free port can be used. This value can also be changed by using the CHGSAPARM command.

com.sterling.sa.core.svc.FTService

Specifies the TCP/IP port on which the OS/400 Agent accepts connections from mainframe clients. The default value is 2636, which is recommended when only one copy of the OS/400 Agent is installed on the AS/400. When multiple OS/400 Agents are installed on the same AS/400, ensure each OS/400 Agent uses a different value for the server port. Examples of other valid values are 26361, 26362, although any free port can be used. This value can also be changed by using the CHGSAPARM command.

[Tasks]

This group specifies additional tasks the OS/400 Agent should start at start-up time. Currently, there is only one task, which is the Process Monitor.

com.sterling.sa.mon.ProcessMonitor

Specifies whether the Process Monitor is to be started. Values can be 0 (do not start Process Monitor) or 1 (start Process Monitor). The default value is 1.

[FTService]

This group specifies attributes relating to OS/400 Agent services.

EVENTS_PORT

Specifies the port that the OS/400 Agent uses to receive CONNECT:Direct file transfer statistics. Used by the OS/400 Agent in conjunction with EVENTS_ADDR (see below). The default value is 2636. Make this value always equal to that of the `com.sterling.sa.core.svc.FTService` variable in the [Services] group.

If the value of `com.sterling.sa.core.svc.FTService` is changed using CHGSAPARM command, the value for EVENTS_PORT changes to the new value of `com.sterling.sa.core.svc.FTService`.

EVENTS_ADDR

Specifies the address that the OS/400 Agent uses to receive CONNECT:Direct file transfer statistics. Used by the OS/400 Agent in conjunction with EVENTS_PORT (see above).

CDSERVICENAME

Not used with this version of the OS/400 Agent.

[SOLVEAgentCD]

This group specifies attributes relating to the OS/400 Agent Events Collector that collects CONNECT:Direct file transfer statistics.

DEBUG

Turns the Event Collector debugging facility off and on. Values can be 0 (off) or 1 (on). When set to on (DEBUG=1), the Event Collector will go into verbose mode where detailed messages are written to the log files. The log file is named SOLVEagentCD.log in the OS/400 Agent log directory. See the LOGPATH variable above. The default value is 0 (off).

POLLING

Specifies the frequency, in seconds, at which the Event Collector checks for new events. The default value is 0 (off).

STATSCOLLECTORTIMEOUT

Specifies the maximum amount of time, in seconds, the Event Collector waits on each attempt to get statistics from the Statistics Collector.

STATSCOLLECTORRETRIES

Specifies the maximum number of attempts the Event Collector makes to get statistics from the Statistics Collector. If this limit is reached without a response from the Statistics Collector, the Event Collector fails.

[ProcessMonitor]

This group specifies attributes relating to the Process Monitor task.

POLLING

Specifies the interval, in seconds, at which the Process Monitor checks on CONNECT:Direct, the Statistics Collector, and the Event Collector. The default value is 20.

AUTOSTARTEC

Specifies the action taken by the Process Monitor if the Event Collector is not running. Values can be 0 (do not restart), or 1 (restart). The default value is 0.

AUTOSTARTCD

Specifies the action taken by the Process Monitor if CONNECT:Direct is not running. Values can be 0 (do not restart), or 1 (restart). The default value is 0.

[Sam]

Not used with the current version of the OS/400 Agent.

Troubleshooting the OS/400 Agent

17

This appendix describes how to troubleshoot problems that may arise while using the OS/400 Agent. It discusses:

- What information to gather before contacting Technical Support
- Problems and solutions

Before Contacting Technical Support

If you encounter a problem using the OS/400 Agent that you are unable to solve, contact Technical Support. You will be asked to provide information about the problem. This includes:

- Software

- ❑ OS/400 operating system version number (for example, V4R3M0)
- ❑ OS/400 Agent version number
- ❑ CONNECT:Direct for OS/400 version number
- ❑ NetMaster for File Transfer (or SOLVE:Operations for File Transfer) version number
- ❑ TCP/IP type and version number

- Hardware

- ❑ AS/400 model number
- ❑ Disk space available
- ❑ Memory available

- Files

- ❑ Are job logs available?
- ❑ Are the OS/400 Agent logs available?

Look for the following files in the
`/usr/SOLVEagent/agent_library/log/` directory:

- `SOLVEagent.log`
- `SOLVEagentCD.log`

- Other information

- ❑ System date and time that problem occurred
- ❑ Severity (for example, OS/400 Agent ended abnormally, OS/400 Agent continued processing)
- ❑ Frequency (for example, occurred once, occurs every day, occurs at a certain time each day)
- ❑ Regularity (for example, occurs regularly, occurs intermittently)
- ❑ Messages generated. Use the `CHGSAPARM` command to determine which user receives messages. Check that user's message queue and the message queue of the system operator.

- ❑ Commands issued at the time of the problem.
- ❑ Could you recover after the problem?
- ❑ Can you reproduce the problem?
- ❑ What was happening on the OS/400 system before the problem and at the time of the problem?
- ❑ Anything else you think is relevant to solve the problem.

Problems and Solutions

This section describes problems you might encounter and their solutions.

Problem 1: The mainframe is not receiving events from CONNECT:Direct for OS/400

While viewing the NetMaster for File Transfer region and viewing the CDMGR File Transfer Log, no CONNECT:Direct for OS/400 events are displayed. For example, when you initiate a file transfer, you should see file transfer events (start/end/failure) displayed in the file transfer log.

Solution:

- Ensure that CONNECT:Direct for OS/400 is installed and running.
- Ensure that the OS/400 Agent is installed and running.

The OS/400 Agent subsystem and jobs should be visible using the WRKSAJOB command. Refer to Chapter 16, *Managing the OS/400 Agent* for additional information about starting the OS/400 Agent and displaying information about the agent.

- Ensure that the OS/400 Agent is able to see CONNECT:Direct for OS/400.

Display each job to check that its library list includes a CONNECT:Direct for OS/400 library. Ensure that all the jobs in the subsystem have the same CONNECT:Direct for OS/400 library in their library lists.

- Ensure that the TCP/IP connection between the mainframe and the OS/400 Agent is started and correctly configured.

- Check the OS/400 Agent logs for messages. The messages may provide an indication of problems with the OS/400 Agent.

The log files are in the directory `/usr/SOLVEagent/agent_library/log` and are named `SOLVEagent.log` and `SOLVEagentCD.log`.

Contact Technical Support if the solutions above do not solve the problem.

Problem 2: The OS/400 Agent ended abnormally

This is indicated by the following message that is sent to the user specified in the OS/400 Agent parameters:

```
Message SAF1101 "SOLVE Agent job ... ended unexpectedly"
```

Solution:

- Check the job log of the job that has ended in error for messages. The messages may provide an indication of problems with the OS/400 Agent.
- Check the OS/400 Agent logs for messages. The messages may provide an indication of problems with the OS/400 Agent.

The log files are in directory `/usr/SOLVEagent/agent_library/log` and are named `SOLVEagent.log` and `SOLVEagentCD.log`.

Contact Technical Support if the solutions above do not solve the problem.

Part IV

Tandem Agent

Tandem Agent Concepts

18

The Tandem Agent enables a NetMaster for File Transfer region connected over a TCP/IP network to communicate with CONNECT:Direct for Tandem. The Tandem Agent monitors the file transfer operations of CONNECT:Direct for Tandem, running on the same Tandem computer system as the Tandem Agent.

The Tandem Agent:

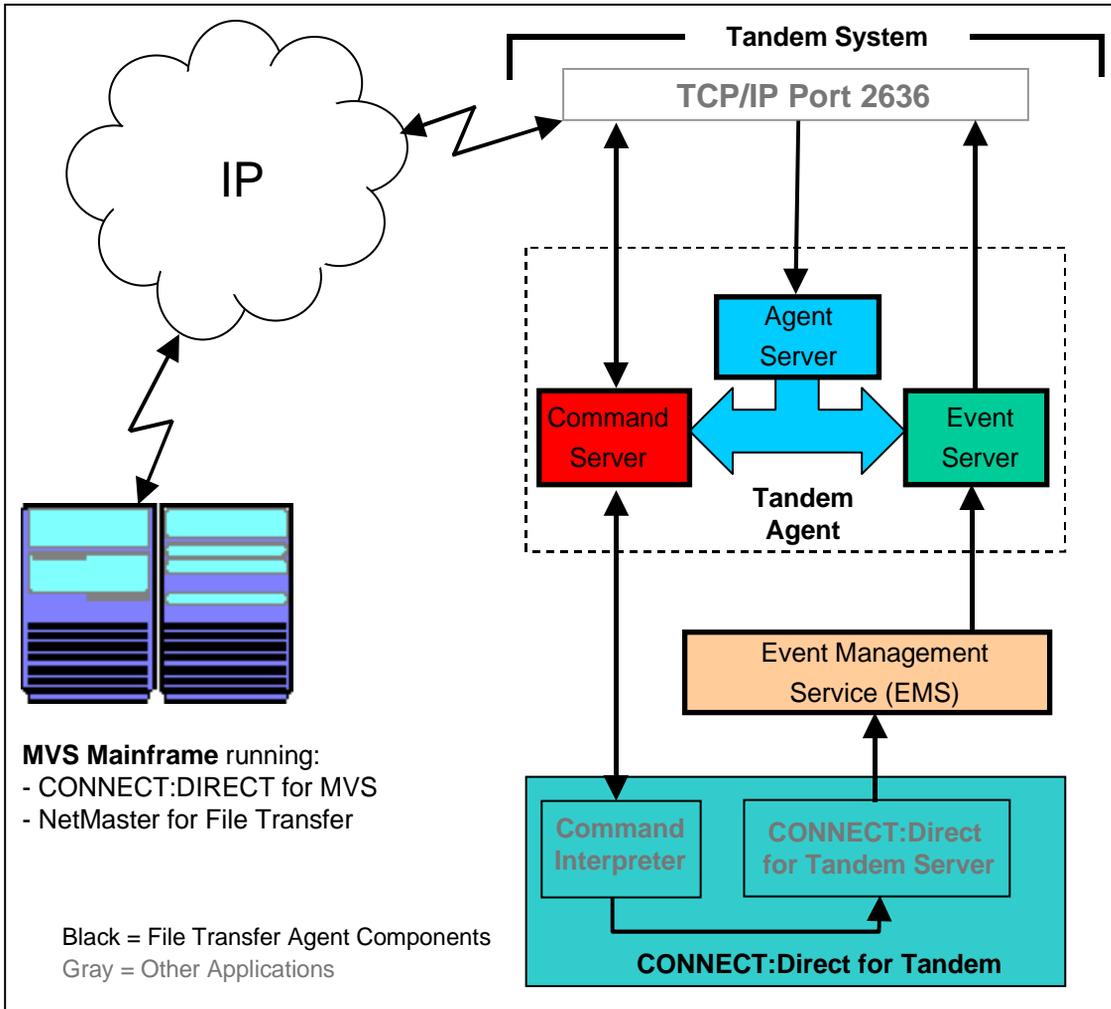
- Passes commands from the mainframe to CONNECT:Direct for Tandem
- Returns responses from CONNECT:Direct for Tandem to the mainframe
- Internally processes some special commands from the mainframe and returns responses to the mainframe

CONNECT:Direct for Tandem generates event messages that indicate the success or failure of a file transfer event. The event messages are filtered and forwarded by an EMS distributor to the Tandem Agent which then sends them to the mainframe.

Tandem Agent Components

The Tandem Agent is made up of several different components. Figure 18-1 shows how the components work together.

Figure 18-1. Tandem Agent Conceptual Overview



Agent Server

The Agent Server listens for connections from a mainframe on the local port. The default for the local port is 2636. See *Tandem Agent Startup Syntax*, on page 20-2, for information on specifying the local port. When a new connection arrives, it is processed and the Agent Server resumes listening on the local port. The Agent Server creates a new Command Server component or new Event Server component for each incoming connection. Connections remain open until terminated by the mainframe.

Command Server

The Tandem Agent enables a mainframe to send commands to CONNECT:Direct for Tandem and to receive responses from CONNECT:Direct for Tandem. The Tandem Agent enables mainframe operators to monitor and manage CONNECT:Direct for Tandem.

Commands are sent from the mainframe to the Command Server on the targeted Tandem system. The Command Server executes CONNECT:Direct for Tandem commands and returns the responses to the mainframe. There is one Command Server for each mainframe connecting to a Tandem Agent.

Commands are executed one at a time, in the order received. The Command Server returns the response from one command before executing the next command.

Event Server

The Event Server sends file transfer events and status events to the mainframe, acting as a bridge between EMS and the mainframe.

The Event Server waits for EMS events. When an event arrives, the Event Server reformats it and sends it to the mainframe. There is one Event Server for each mainframe connecting to this Tandem Agent.

Event Management Service Collector and Distributor

CONNECT:Direct for Tandem sends file transfer event messages to an Event Management Service (EMS) collector (the default is \$0). An EMS distributor filters and forwards these event messages to the Tandem Agent. An EMS distributor filter table is distributed, installed, and started with the Tandem Agent.

Mainframe Connections

To have the Tandem Agent interact with NetMaster for File Transfer running on the mainframe, you must ask the mainframe system administrator to undertake the following setup procedures on the mainframe:

- Define a CDMGR manager resource for the remote Tandem system that is running the agent software
- Define CDMON monitor resources to the CDMGR resource
- Activate the manager resource

Instructions for these procedures are found in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

With the activation of the manager resource, mainframe operators have access to all of the CONNECT:Direct for Tandem monitoring and management features, including starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility and alert monitoring.

Multiple Connections to and From the Tandem Agent

For convenience, Figure 1-1 shows one instance of a mainframe connected to one Tandem Agent. In this case, the Tandem Agent sends commands to and receives responses from one instance of CONNECT:Direct for Tandem. CONNECT:Direct for Tandem sends event messages to one EMS collector. However, there are other connection variations. For example:

- Multiple Tandem Agents connected to the same instance of CONNECT:Direct for Tandem.

In this case, each Tandem Agent must have a unique port number.

- Multiple Tandem Agents connected to multiple instances of CONNECT:Direct for Tandem on the same Tandem system.

In this case, each Tandem Agent must have a unique port number.

Additionally, each CONNECT:Direct for Tandem must send event messages to a different EMS collector. This enables the Tandem Agent to determine the instance of CONNECT:Direct for Tandem that is sending the event messages. Note that this means only one instance of CONNECT:Direct for Tandem can use the default EMS collector (\$0); other instances of CONNECT:Direct for Tandem must use alternate collectors.

Note: A NetMaster for File Transfer region can monitor only one instance of CONNECT:Direct for Tandem on any one Tandem system.

- Multiple instances of NetMaster for File Transfer connected to the same Tandem Agent.

Installing the Tandem Agent

19

This chapter describes how to install and uninstall the Tandem Agent. Instructions are provided for installing from CD-ROM and tape.

Hardware and Software Requirements

This section describes the Tandem hardware and software requirements for the Tandem Agent.

System Requirements

The Tandem Agent requires:

- NonStop Kernel (Guardian) operating system version D20 or later
- TCP/IP
- 3 MB disk space
- CD drive, if installing from CD-ROM
- Tape drive, if installing from tape

Cooperating Software Requirements

The Tandem Agent is designed to interact with the following products (see *Post-installation Tasks*, on page 19-9):

- CONNECT:Direct for Tandem 3.1.01 (with additional maintenance - NDMSMGR Level as at - 31AUG99 14:59:32)

CONNECT:Direct for Tandem must be installed, configured, and running on the Tandem system where the Tandem Agent is running to receive commands from and send responses to the mainframe, and to send file transfer event messages to EMS.

- Event Management Service (EMS)

EMS must be installed, started, and configured to receive file transfer event messages from CONNECT:Direct for Tandem and to forward those event messages to the Tandem Agent.

- TCP/IP

TCP/IP must be installed, started, and configured to establish connections between NetMaster for File Transfer and the Tandem system running the Tandem Agent.

On the mainframe, TCP/IP connectivity requires TCPaccess or IBM TCP/IP.

- NetMaster for File Transfer (formerly known as SOLVE:Operations for File Transfer) 3.3 or later

NetMaster for File Transfer must be installed, started, and configured to send commands to and receive responses from CONNECT:Direct for Tandem, and to receive event messages from the Tandem Agent.

Tandem SNMP Agent Subsystem

NetMaster for File Transfer supports monitoring of the CONNECT:Direct listener port (TCP/IP Listener Task Monitor). This facility requires an active Tandem SNMP Agent subsystem.

To allow SNMP inquiry on the status of TCP/IP on the Tandem system:

1. Start the SNMP Agent using the command:

```
>SNMPAGT /NAME $ZSNMP, NOWAIT/
```

This command starts the SNMP Agent allowing read-only requests containing the community name *public* via any subnet associated with the TCP/IP process \$ZTC0.

To use a different TCP/IP process name, enter

```
PARAM TCPIP PROCESS NAME
```

 before running the SNMPAGT command.

2. Start the TCP/IP sub-agent using the command:

```
>TCPIPSA /NAME $TCPSA, NOWAIT/
```

This command starts the sub-agent that provides the TCP/IP information included in MIB-2 get responses. By default, the sub-agent communicates with the SNMP agent using process name \$ZSNMP. To display the syntax for specifying a different agent process name, enter:

```
TCPIPSA ?
```

Pre-installation Tasks

Before installing the Tandem Agent, complete the following tasks:

1. Start the target Tandem system, running the NonStop Kernel (Guardian) operating system version D20 or later.
2. Determine the volume and subvolume where the Tandem Agent software is to be installed.
3. Determine that there is adequate free space available on the target Tandem volume (at least 3 MB disk space).
4. Ensure that CONNECT:Direct for Tandem is installed on the Tandem system on which the Tandem Agent will be installed.

Installing the Tandem Agent from CD-ROM

These instructions assume that you will transfer the Tandem Agent files from the workstation by using FTP from a DOS command prompt. If you want to use FTP from a graphical user interface or use another file transfer protocol, consult the appropriate documentation.

Hardware and Software Requirements for Installation From CD

Workstation System Requirements

- IBM-compatible PC with a CD-ROM drive
- Windows 3.11, Windows 95, Windows 98, or Windows NT

Tandem System Requirements

FTP must be installed, configured, and running on the target Tandem system.

Workstation/Tandem Connection

The workstation from which you are installing the Tandem Agent must be connected to the target Tandem system.

Step 1 - Complete the Pre-installation Tasks

Complete the pre-installation tasks listed on page 19-3.

Step 2 - Transfer the Tandem Agent Files from CD-ROM to the Tandem System

Perform the following steps from the workstation:

1. Insert the NetMaster for File Transfer Agent - CONNECT:Direct CD-ROM into the workstation's CD drive.
2. Locate the following Tandem Agent files in the `\tandem` directory on the CD-ROM:
 - ❑ `STAFILT`—filter table source file, used by the EMS distributor to filter messages sent to the Tandem Agent
 - ❑ `CDREACH`—CONNECT:Direct process, used when checking whether another CONNECT:Direct is currently connected
 - ❑ `SOFTAGNT`—Tandem Agent program object file
 - ❑ `NULL`—program object file, used when checking whether another CONNECT:Direct is currently connected

These are the files you will transfer to the target Tandem system.

3. Open a Command Prompt (MS-DOS) window. To access the Command Prompt window, click **Start-Programs-Command Prompt**. By default, the first prompt at which you type commands is `C:\>`.
4. Start FTP, specifying the IP address of the target Tandem system. For example, to start FTP for the Tandem system at IP address 123.45.67.8, enter:

```
ftp 123.45.67.8
```

5. Log on using a valid Tandem user name with sufficient authority to install the Tandem Agent on the Tandem system, for example:

```
super.operator
```

6. At the Password request, enter the corresponding password.
7. Move to the installation volume and subvolume name on the Tandem system. For example, to move to volume and subvolume `$data.soft`, enter:

```
cd $data.soft
```

8. Transfer the files `STAFILT` and `CDREACH` from the CD-ROM to the installation volume and subvolume on the Tandem system. These files must be transferred as ASCII files. (These instructions assume that the CD drive letter is E):

- a. Specify that the files you are about to transfer are text files with the following command:

```
ascii
```

- b. Transfer the `CDREACH` file with the command:

```
put e:\tandem\cdreach
```

- c. Transfer the `STAFILT` file with the command:

```
put e:\tandem\stafilt
```

9. Transfer the files `SOFTAGNT` and `NULL` from the CD-ROM to the installation volume and subvolume on the Tandem system. These files must be transferred as binary files. (These instructions assume that the CD drive letter is E):

- a. Specify that the files you are about to transfer are binary files with the following command:

```
binary
```

- b. Transfer the `SOFTAGNT` file with the command:

```
put e:\tandem\softagnt
```

- c. Transfer the `NULL` file with the command:

```
put e:\tandem\null
```

10. Exit from FTP with the command:

```
bye
```

You can now remove the CD-ROM from the CD drive.

Sample File Transfer Session

The following example shows a file transfer sequence using FTP from the command prompt (**bold** type indicates user entries):

(C) Copyright 1985-1996 Microsoft Corp.

```
C:\ftp 123.45.67.8
Connected to 123.45.67.8
220 MYSYS.COM.AU FTP SERVER T9552D40 (Version 3.a TANDEM 15MAR96) ready.
User (123.45.67.8(none)): super.operator
331 Password required for SUPER.OPERATOR.
Password:
230 User SUPER.OPERATOR logged in.  GUARDIAN API enabled
ftp> cd $data.soft
250 CWD command successful.
ftp> ascii
200 Type set to A.
ftp> put e:\tandem\cdreach
200 PORT command successful.
150 Opening data connection for CDREACH (192.168.0.77,1229d).
226 Transfer complete.
73 bytes sent in 0.01 seconds (7.30 Kbytes/sec)
ftp> put e:\tandem\stafilt
200 PORT command successful.
150 Opening data connection for STAFILT (192.168.0.77,1230d).
226 Transfer complete.
1697 bytes sent in 0.03 seconds (56.57 Kbytes/sec)
ftp> binary
200 Type set to I.
ftp> put e:\tandem\softagnt
200 PORT command successful.
150 Opening data connection for SOFTAGNT (192.168.0.77,1231d).
226 Transfer complete.
1103872 bytes sent in 3.75 seconds (294.76 Kbytes/sec)
ftp> put e:\tandem\null
200 PORT command successful.
150 Opening data connection for NULL (192.168.0.77,1232d).
226 Transfer complete.
17278 bytes sent in 0.09 seconds (191.98 Kbytes/sec)
ftp> bye
C:\
```

Step 3 - Assign File Attributes to the Tandem Agent Files

On the Tandem system, follow these steps to give the Tandem Agent files the correct file code, security setting, and owner:

1. Log on to the target Tandem system.
2. Change to the subvolume to which you transferred the Tandem Agent files, for example:

```
volume $data.soft
```

3. Use the FUP ALTER command to change the attributes of the binary files SOFTAGNT and NULL so that their file code is 100; for example:

```
fup alter softagnt, code 100
```

```
fup alter null, code 100
```

You do not have to change the attributes of the text files (CDREACH and STAFILT) because they already have the correct file code (101).

4. Use FUP to secure the files and to give ownership of the files to a user ID as appropriate for your installation.

You do not need to use the FUP LICENSE command to license any files.

Step 4 - Complete the Post-installation Tasks

Complete all post-installation tasks listed on page 19-9.

Installing the Tandem Agent from Tape

This section describes the steps required to install the Tandem Agent from tape.

Step 1 - Complete the Pre-installation Tasks

Complete the pre-installation tasks listed on page 19-3.

Step 2 - Install the Tandem Agent Software

To install the Tandem Agent software from tape:

1. Load the tape in the tape drive.

2. Restore the following files from the tape to an appropriate subvolume on disk:
 - ❑ SOFTAGNT—Tandem Agent program object file
 - ❑ STAFILT—filter table source file, used by the EMS distributor to filter messages sent to the Tandem Agent
 - ❑ CDREACH—CONNECT:Direct process, used when checking whether another CONNECT:Direct is currently connected
 - ❑ NULL—program object file, used when checking whether another CONNECT:Direct is currently connected
3. Use FUP to secure the files and to give ownership of the files to a user ID as appropriate for your installation.

You do not need to use the FUP LICENSE command to license any files.

You can now remove the tape from the tape drive.

Step 3 - Configure Mainframe Resources

The Tandem Agent receives commands from the mainframe, and sends information to NetMaster for File Transfer running on the mainframe.

Before a NetMaster for File Transfer region running on the mainframe can recognize and communicate with the Tandem Agent software, some configuration tasks must be completed within the NetMaster for File Transfer region. These tasks include defining rules, schedules, and resources to manage a CONNECT:Direct file transfer service on a Tandem system.

To interact with the Tandem Agent, the mainframe system administrator must undertake the following setup procedures on the mainframe:

Note: Specific instructions for the following procedures are explained in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*.

1. Define a CONNECT:Direct Manager (CDMGR) resource for the remote Tandem system that is running the Tandem Agent software.
2. Optionally define CONNECT:Direct Monitor (CDMON) resources for the CDMGR resource you defined in step 1, above.
3. Activate the CONNECT:Direct Manager resource.

After the manager resource is activated, mainframe operators have access to all of the CONNECT:Direct for Tandem monitoring and management features described in the *NetMaster for File Transfer Implementation, Administration, and Operations Guide*. These features include starting and stopping the link to the remote system, control of queued CONNECT:Direct processes, message visibility, and alert monitoring.

Step 4 - Complete the Post-installation Tasks

Complete all post-installation tasks as outlined in the following section.

Post-installation Tasks

After installing the Tandem Agent and before starting the Tandem Agent, complete the following tasks:

1. Start CONNECT:Direct for Tandem at least once.

CONNECT:Direct for Tandem does not need to be running when you start the Tandem Agent, but it must be running to send event messages to the Tandem Agent.

2. Log on to NDMCOM (the CONNECT:Direct for Tandem command interpreter) using the user ID that you use when you start the Tandem Agent. If the password for this user ID changes or you want to use a different user ID to start the Tandem Agent, you must log on to NDMCOM again (using the new password or different user ID) before you start the Tandem Agent. You must log on to NDMCOM prior to starting the agent for the first time in order to save the password in CONNECT:Direct.

The user ID must be a valid CONNECT:Direct user ID and have the required CONNECT:Direct authority level, that is, authority to write events to the configured event collector.

3. Configure CONNECT:Direct for Tandem to send events and statistics to the EMS collector.

You can configure this when you start CONNECT:Direct for Tandem, or after you start CONNECT:Direct for Tandem issuing the following NDMCOM command:

```
UPDATE LOGGING EMS=ON COLLECTOR=$0
```

4. Ensure EMS is installed, started, and configured.
5. Install, start, and configure TCP/IP on the Tandem system.
6. Ensure TCP/IP is configured on the mainframe.
7. Install, start, and configure NetMaster for File Transfer.

8. Start the Tandem Agent as described in Chapter 20, *Managing the Tandem Agent*.
9. To verify operation of the Tandem Agent, start a simple file transfer using `CONNECT:Direct` running on the same Tandem system on which the Tandem Agent is installed. Then monitor the file transfer events as they appear in the File Transfer log in NetMaster for File Transfer on the mainframe.

Uninstalling the Tandem Agent

To uninstall the Tandem Agent software:

1. Log on to the Tandem system by using a user ID with the authority to stop the Tandem Agent and delete the Tandem Agent files. It does not have to be the user ID that you used to start the Tandem Agent.
2. Stop the Tandem Agent. For example, use the following command from a TACL prompt:
`STOP $SFTA.`
3. Delete the Tandem Agent files from the subvolume where they were installed (see *Step 2 - Install the Tandem Agent Software*, on page 19-7).

Managing the Tandem Agent

20

After the Tandem Agent is properly installed and configured it is essentially self-operating, needing little or no operator attention. However, you may need to start or stop the Tandem Agent if there is a problem. This chapter discusses:

- Mapping logical names to physical names
- Tandem Agent startup syntax
- Starting the Tandem Agent
- Stopping the Tandem Agent
- Displaying information about the Tandem Agent

Mapping Logical Names

Before you start the Tandem Agent, you may need to map logical names to physical names if the TCP/IP process name, or NDMCOM object file, are different than the Tandem Agent default values. To do this, issue the ADD DEFINE command and then start the Tandem Agent. To permanently map the values so that the mapping is set when the Tandem Agent starts, use an OBEY file.

The Tandem Agent default values are:

- \$ZTC0—TCP/IP process name
- NDMCOM object file—the same subvolume as the server object file running the CONNECT:Direct for Tandem server process, for example \$STANDEM.\$STANDEM.NDMCOM

Examples

- To map a TCP/IP process name called \$ZTC1, enter the following command at the command prompt:

```
ADD DEFINE =TCPIP^PROCESS^NAME, CLASS MAP, FILE $ZTC1
```

- To map an object file called \$MYVOL.MYSVOL.NDMCOM, enter the following command at the command prompt:

```
ADD DEFINE =SOFT^NDMCOM^FILE, CLASS MAP, FILE  
$MYVOL.MYSVOL.NDMCOM
```

Tandem Agent Startup Syntax

Use the following syntax of the TACL RUN command to start the Tandem Agent:

```
RUN $vol.subvol.SOFTAGNT / run_option [, run_option ] /...  
    backup_cpu [$server ] [port_number ] [-hostname ]...  
    [-ttraceflags ]
```

For example:

```
RUN $vol.subvol.SOFTAGNT / name $name, nowait, CPU X/X $NDMS 2636  
-hNODENAME
```

Parameters

\$vol.subvol

Specifies the location of the Tandem Agent program object file (SOFTAGNT).

run_option

Specifies a TACL RUN command option (described in the TACL Reference Manual). The following options are of particular importance:

CPU *cpu*

Specifies the CPU number for the primary process of the Tandem Agent. You must specify a CPU number.

NAME *\$name*

Specifies the Guardian process name of the Tandem Agent. You must specify a name.

NOWAIT

Specifies the standard NOWAIT option. You would normally specify this option to enable the process to run in the background.

backup_cpu

Specifies the CPU number for the backup process of the Tandem Agent. If you specify the same CPU number as the primary process, no backup process is started.

\$server

Specifies the Guardian process name of the CONNECT:Direct for Tandem server, which is passed to NDMCOM. The default Guardian process name is \$NDMS.

port_number

Specifies the TCP/IP port number on which the Tandem Agent listens. The default TCP/IP port number is 2636. If the port is not available, the Tandem Agent attempts to open the port every 30 seconds.

-hhostname

Tells the Tandem Agent to report a given host name to the client. The default is the TCP/IP host name. Use this parameter if the first segment of the host name, up to but not including the full point (.), is greater than eight characters in length or includes special characters.

The following special characters cannot be included:

- Double quotes ["]
- Single quotes [']
- Brackets [()]

- Commas [,]
- Periods [.]
- Underscores [_]
- Spaces []

For example, if the first segment of your host name is MY_TANDEM.mybusiness, use this parameter to override it to a host name such as MYTANDEM.

Correspondingly, in the NetMaster for File Transfer region running on the mainframe, define the CONNECT:Direct manager as MYTANDEM.

-ttraceflags

Starts the Tandem Agent with trace flags set. For more information about trace flags, see *Tracing the Tandem Agent*, on page 21-6.

Starting the Tandem Agent

Start the Tandem Agent from a TACL prompt independently from other software products with which it cooperates (for a list of cooperating software, see page 19-2). However, these products must be installed, configured, and running for the Tandem Agent to successfully perform its functions.

To start the Tandem Agent:

1. Log on to TACL by using a user ID that has run the CONNECT:Direct for Tandem command interpreter (NDMCOM).
2. If necessary, map any logical names to physical names.
3. Run the Tandem Agent program object file (SOFTAGNT).

For example, the following command starts the Tandem Agent using the SOFTAGNT program object file located in \$MYVOL.MYSVOL. The command specifies a process name of \$SFTA, uses the NOWAIT option, and specifies a primary process in CPU 0 and backup process in CPU 1. The command explicitly specifies the CONNECT:Direct for Tandem process name of \$NDMS and a TCP/IP port number of 2636:

```
RUN $MYVOL.MYSVOL.SOFTAGNT /NAME $SFTA, NOWAIT, CPU 0/1 $NDMS
2636
```

Stopping the Tandem Agent

You can stop the Tandem Agent by using the TACL STOP command, or the PROCESS_STOP_Guardian procedure call. Stopping the Tandem Agent stops both the primary and backup processes.

For example, if the process name of the Tandem Agent is \$SFTA, enter the following TACL STOP command to stop the Tandem Agent:

```
STOP $SFTA
```

Displaying Information About the Tandem Agent

Use the STATUS command from a TACL prompt to display information about the Tandem Agent. For example, if the process name of the Tandem Agent is \$SFTA, the following command displays summary information about the process:

```
STATUS $SFTA
```

The following command displays detailed information about the process:

```
STATUS $SFTA, DETAIL
```


Troubleshooting the Tandem Agent

21

This appendix describes how to troubleshoot problems that may arise while using the Tandem Agent. It discusses:

- What information to gather before contacting Technical Support
- Problems and solutions
- Event messages
- Other messages
- Tracing the Tandem Agent

Before Contacting Technical Support

If you encounter a problem using the Tandem Agent that you are unable to solve, contact Technical Support. You will be asked to provide information about the problem. This includes:

- Software
 - Tandem NonStop Kernel operating system version number
 - Tandem Agent version number
 - CONNECT:Direct for Tandem version number
 - NetMaster for File Transfer (or SOLVE:Operations for File Transfer) version number
 - TCP/IP version number
- Hardware
 - Tandem computer processor type
 - Disk space available
 - Memory available
- Files
 - Is a saveabend file available?
 - Is an EMS log file available?
 - Is a trace file available?
- Other information
 - System date and time that problem occurred
 - Severity (for example, Tandem Agent abends or Tandem Agent continues processing)
 - Frequency (for example, occurred once, occurs every day, or occurs at a certain time each day)
 - Regularity (for example, occurs regularly, or occurs intermittently)
 - Messages generated (for example, EMS events or other messages)
 - Were any commands issued at the time of the problem?
 - Could you recover after the problem?
 - Can you reproduce the problem?
 - What was happening on the Tandem system before the problem and at the time of the problem?
- Anything else you think is relevant to solve the problem

Problems and Solutions

This section describes problems you might encounter and their solutions.

Problem 1: The mainframe is not receiving events from CONNECT:Direct for Tandem

Solution:

- Ensure that CONNECT:Direct for Tandem is installed and running. Ensure that the user ID that was used to start the Tandem Agent has run the CONNECT:Direct for Tandem command interpreter (NDMCOM).
- Ensure that you configured CONNECT:Direct for Tandem to send events and statistics to the correct EMS collector. Ensure that the correct EMS distributor is forwarding the events.
- Ensure that the Tandem Agent is running. Ensure that you correctly map logical names to physical names before starting the Tandem Agent. See *Mapping Logical Names*, on page 20-2 for instructions to map logical names.
- Ensure that the TCP/IP connection between the mainframe and the Tandem Agent is started and correctly configured.

Problem 2: The Tandem Agent abends and creates a saveabend file.

Solution:

Contact Technical Support.

Event Messages

The Tandem Agent outputs EMS events to the EMS collector, \$0, both at startup and whenever problems occur.

Message 7 Error exit: *more_information*

Cause: Possible causes are incorrectly entered parameters or an unsupported operating system version. The Tandem Agent is unable to start.

Reponse: Use the message information to determine the cause of the problem. For example, check you have entered parameters correctly, and that you are running a supported operating system version.

Message 8 STA abending, trap=trap_number, file=file_name [line_number]

Cause: The Tandem Agent has had an internal failure. A saveabend file is produced. The backup process takes over. The Tandem Agent continues processing.

Reponse: Contact Technical Support.

Message 9 STA socket error error_number (function function_name), TCP/IP function temporarily disabled, retry in 30 seconds

Cause: The port may already be in use by another process or the port may have just been closed and TCP/IP has not yet made it available. This situation can often occur after a takeover by the backup process. The Tandem Agent was unable to successfully open the specified port.

Reponse: The Tandem Agent attempts to open the specified port every 30 seconds. If the port is in use by another process, either stop the Tandem Agent and restart it with a different port number, or stop the other process.

Message 10 STA can't allocate timer, TCP/IP function permanently disabled

Cause: The Tandem Agent cannot allocate a timer to retry opening the port (after event 9). The Tandem Agent cannot continue processing.

Reponse: Allocate more timers using SYSGEN.

Message 11 STA socket error error_number (function function_name) on application socket

Cause: The Tandem Agent received an error on a socket being used for mainframe/agent traffic. Possible causes are the mainframe terminating or a network failure. The Tandem Agent continues processing further connections.

Reponse: Investigate why the error occurred.

**Message 12 SOLVE:Operations for File Transfer Tandem Agent, version *version*,
CONNECT:Direct server *\$server*, TCP/IP process *process_name*, port *port_number*.
Copyright (1999), Sterling Software, Inc. ALL RIGHTS RESERVED.**

Cause: The Tandem Agent has started.

Reponse: None.

Message 15 Error *error_number* starting trace to *file_name*, tracing disabled

Cause: The Tandem Agent was unable to open the specified file for tracing during startup. A file system error number was returned. The Tandem Agent continues with tracing disabled.

Reponse: Use the file system error number to determine why the Tandem Agent was unable to open the specified file for tracing. When you have resolved the problem, stop and restart the Tandem Agent.

Message 20 Process *process_name* (*file_name*) terminated unexpectedly

Cause: A process terminated unexpectedly. Possible causes are a CPU failure, a failure by the process, or stopping the process externally. The Tandem Agent continues processing further connections.

Reponse: Investigate why the process terminated unexpectedly.

Message 23 Protocol failure: *more_information*

Cause: The connection protocol between the Tandem Agent and the mainframe has failed. Possible causes are a network failure or an incorrect mainframe tried to connect. The Tandem Agent continues processing further connections.

Reponse: Use the message information to determine the cause of the problem.

Other Messages

The Tandem Agent returns some error messages to the mainframe. These error messages refer to an error number (for example, 0, 1, 2), and the name of a procedure call (for example, PROCESS_NAME_CREATE_, PROCESS_CREATE_, FILE_OPEN_). Use the error number associated with the procedure call to determine the cause of the problem.

For more information about error numbers and procedure calls, refer to the *Guardian Procedure Calls Reference* manual and the *Guardian Procedure Errors and Messages* manual.

Error *error_number* on PROCESS_NAME_CREATE_

Cause: A process name could not be created when trying to start a process from the Tandem Agent.

Error *error_number/error_number* on PROCESS_CREATE_ *file_name*

Cause: A process could not be created.

Error *error_number* on FILE_OPEN_ *process_name (file_name)*

Cause: A process could not be opened to pass its startup message.

Error *error_number* on WRITEX *process_name (file_name)*

Cause: The startup message could not be written to the process.

Error *error_number* on PROCESS_GETPAIRINFO_ for *\$server*

Cause: An unexpected error occurred when trying to obtain information about the CONNECT:Direct for Tandem server.

Error *error_number/error_number* on PROCESS_GETINFO_ for *\$server*

Cause: An unexpected error occurred when trying to obtain information about the CONNECT:Direct for Tandem server.

***** Process has failed *****

Cause: The process used by the mainframe has failed. EMS event message 20 is also produced.

Tracing the Tandem Agent

You can use tracing to help resolve Tandem Agent problems. Tracing adversely affects the performance of the Tandem Agent, therefore it should be used only when directed by Technical Support.

Starting a Trace

Use the following syntax to start the Tandem Agent with trace flags set:

```
RUN $vol.subvol.SOFTAGNT / run_option [ , run_option ] ... / backup_cpu  
    [ $server ]  
    [ port_number ]  
    -ttraceflags
```

Specifying Trace Flags

Trace flags are specified as a hex number. Available trace flags are:

Trace Flag	Meaning
1	Traces the data sent between the Tandem Agent and the mainframe, in both hex and ASCII.
4	Traces socket interaction in detail, excluding data.
8	Traces data transfer on socket (similar to 1).
40	Traces Guardian process interaction, including data to/from the process.
80	Traces internal conversation processing.
100	Traces some more conversation processing.
1000	Traces internal heap processing, especially heap expansion.
2000	Performs consistency checks on memory allocation. Using this flag will impact very heavily on performance, and will result in abends if inconsistencies are found.

If any trace flags are set, any EMS events generated are traced.

In normal tracing circumstances, trace flags are specified as either 1, ffe or fff.

To specify more than one trace flag value, add trace flag values together. For example, to specify trace flags 1 and 4, specify 5; to specify all trace flags, specify 3233.

The following example starts the Tandem Agent and specifies trace flags 1 and 4:

```
RUN SOFTAGNT /NAME $SFTA, NOWAIT, CPU 0/1 $NDMS 2636 -T5
```

This example starts the Tandem Agent and specifies all trace flags:

```
RUN SOFTAGNT /NAME $SFTA, NOWAIT, CPU 0/1 $NDMS 2636 -T3233
```

Directing Trace Output

By default, trace output is sent to the home terminal. However, you may want to redirect the trace output to a file or the spooler. To specify the trace output file, you must define the file before starting the Tandem Agent.

The following example specifies a spooler location called `$$.#TRACE`:

```
ADD DEFINE =SOFT^TRACE^FILE, CLASS MAP, FILE $$.#TRACE
```

The following example specifies an entry-sequenced (sequential) disk file called `SOFTRACE`:

```
ADD DEFINE =SOFT^TRACE^FILE, CLASS MAP, FILE $vol.subvol.SOFTRACE
```

If the file does not exist, the Tandem Agent creates it. If the file exists, the trace output is appended to it.

Symbols

`$SOLVE_FT` definition (UX) 3-5

A

abends (TN) 21-3

activating debug message logging (UX) 5-6

active jobs (OS)

 displaying 16-4

 status values 16-5

ADD DEFINE command (TN) 20-2

Add User dialog box (NT) 10-6

Admin user name, CONNECT:Direct (UX) 3-9

administrator profile, creating (OS) 15-5

Agent Configuration File (UX)

 updating 3-8

Agent Configuration File dialog box (UX) 3-8

 Allow C:D Stop command 3-9

 Allow C:D Submit command 3-9

 Allow UNIX Shell commands 3-10

 C:D Client API Config (NDMAPICFG) 3-9

 C:D Process Manager Initparm Config 3-9

 opening from the command line 3-8

 Polling Interval for checking C:D status 3-9

Agent Controller overview

 (OS) 14-4

Agent Server overview

 (NT) 9-3

 (OS) 14-3

 (TN) 18-3

 (UX) 2-3

authoring users to manage OS/400 Agent 16-1

authorization list, modifying in OS/400 Agent 15-13

automatic startup (OS) 16-2

AUTOSTARTCD parameter (OS) 16-12

AUTOSTARTEC parameter (OS) 16-11

C

C compiler requirements (UN) 3-1

C message prefix (UX) 4-4

CD_SERVICENAME parameter (NT) 12-9

CDMGR resource, configuring

 (NT) 10-9

 (OS) 15-11

 (TN) 19-8

 (UX) 3-12

CDMON resource, configuring

 (NT) 10-9

 (OS) 15-11

 (TN) 19-8

 (UX) 3-12

cdnt . exe process (NT)

 about 12-3

 resetting 13-5

cdpmgr, starting and stopping (UX) 5-7

cdreset command (UX) 5-7

- cdstart command (UX) 5-7
- cdstop command (UX) 5-7
- cdutility command (UX) 5-7
- changing file attributes (TN) 19-7
- checklist, pre-distribution
 - (NT) 11-2
 - (UX) 4-5
- checklist, pre-installation
 - (NT) 10-3
 - (OS) 15-3
 - (TN) 19-3
 - (UX) 3-3
- CHGSAPARM command (OS) 15-9
- CHGTCPDMN command (OS) 15-3
- chmod command (UX) 4-3
- class, modifying in OS/400 Agent 15-13
- command line, using to invoke the UNIX Agent (UX) 4-5
- Command Server connection status (UX) 5-4, 5-5
- Command Server overview
 - (NT) 9-3
 - (OS) 14-3
 - (TN) 18-3
 - (UX) 2-3
- commands (OS)
 - CHGSAPARM 15-9
 - CHGTCPDMN 15-3
- commands (TN)
 - ADD DEFINE 20-2
 - FUP ALTER 19-7
 - RUN 20-4
 - STATUS 20-5
 - STOP 19-10
- commands (UX) 6-2
 - cdreset 5-7
 - cdstart 5-7
 - cdstop 5-7
 - cdutility 5-7
 - chmod 4-3
 - CONNECT:Direct for UNIX 5-7
 - SITE 4-3
 - submit 3-9
- components, agent
 - (NT) 9-2
 - (OS) 14-2
 - (TN) 18-2
 - (UX) 2-2
- configuration file
 - OS/400 Agent, modifying 12-6
 - See also* initialization file (OS)
 - UNIX Agent, modifying 5-1
 - Windows NT Agent
 - modifying 12-6
- Configure SOLVE Agent Services dialog (NT) 10-5
- configuring mainframe resources
 - (NT) 10-9
 - (OS) 15-11
 - (TN) 19-8
 - (UX) 3-11
- configuring user IDs (NT) 10-4
- Confirm Copy dialog box (UX) 4-11
- CONNECT:Direct for UNIX
 - control commands 5-7
- CONNECT:Direct library name (OS)
 - specifying 15-4, 15-10
- CONNECT:Direct users list, updating (OS) 15-7
- connection status of mainframe region (UX) 5-4
- control port, specifying
 - (NT) 12-8
 - (OS) 15-10, 16-10
- conventions, manual xviii
- cooperating software requirements 19-2
- customer support xxi
- customizing the agent
 - (NT) 12-6
 - (OS) 15-8, 16-8
 - (UX) 5-1

D

- deactivating debug message logging (UX) 5-6
- deactivating the UNIX Agent 5-3
- debug logging
 - for agent (UX) 5-6
 - for distribution (UX) 4-6

- DEBUG parameter
 - (NT) for the agent 12-7
 - (OS)
 - for the agent 16-9
 - for the Event Collector 16-11
- dialog box
 - Add User (NT) 10-6
 - Agent Configuration File (UX) 3-8
 - Configure SOLVE Agent Services (NT) 10-5
 - Confirm Copy (UX) 4-11
 - Install Information (UX) 4-8
 - Mode Selection (UX) 4-7
 - Question (UX) 4-11
 - Service (NT) 10-5
 - User Names and Passwords (UX) 4-9
- direct command (UX) 3-9
- direct.exe process (NT) 12-3
- directory path definition (UX) 3-5
- distribution (NT) 11-1
- distribution (UX)
 - Confirm Copy dialog box 4-11
 - debug log 4-6
 - differing systems 4-3
 - file permissions 4-3
 - how to use 4-6
 - Install Information dialog box 4-8
 - Known Hosts list 4-8
 - log file 4-4
 - message definition 4-4
 - Mode Selection dialog box 4-7
 - operational attributes 4-3
 - overview 4-2
 - preliminary tasks 4-5
 - Question dialog box 4-11
 - requirements 4-2
 - security considerations 3-10, 4-3
 - starting 4-6
 - User Names and Passwords dialog box 4-9
- documentation, related xx
- dump facility, setting
 - (NT) 12-7
 - (OS) 16-9
- DUMP parameter
 - (NT) 12-7
 - (OS) 16-9

E

- E message prefix (UX) 4-4
- EMS (TN)
 - collector 18-3
 - distributor 18-3
 - distributor filter table 18-3
- ending the OS/400 Agent 16-3
- error messages
 - (TN) 21-5
 - See also* message definitions (UX)
- event address, specifying
 - (NT) 12-9
 - (OS) 16-11
- Event Collector
 - overview
 - (NT) 9-4
 - (OS) 14-4
 - set polling frequency (NT) 12-9
 - settings (OS)
 - debug 16-11
 - polling frequency 16-11
 - statistics collection retry value 16-11
 - statistics collection timeout value 16-11
- Event Management Service. *See* EMS (TN)
- event messages (TN) 21-4
- Event Server
 - connection status (UX) 5-5
 - overview
 - (NT) 9-3
 - (OS) 14-3
 - (TN) 18-3
 - (UX) 2-3
 - polling interval (UX) 3-9
- Event Viewer (NT) 12-3
- events port, specifying
 - (NT) 12-8
 - (OS) 16-10
- EVENTS_ADDR parameter
 - (NT) 12-9
 - (OS) 16-11
- EVENTS_PORT parameter
 - (NT) 12-8
 - (OS) 16-10

Exit Log
(UX) 2-4
exits, modifying (UX) 2-3, 8-1

F

file attributes (TN) 19-7
file permissions (UX)
 distribution 4-3
 umask setting 4-3
Force Replacement of C:D Exits check box, Install
 Information dialog box (UX) 4-10
FTService parameter group
 (NT) 12-8
 (OS) 16-10
FTService port, specifying
 (NT) 12-8
FUP ALTER command (TN) 19-7

H

hardware requirements
 (NT) 10-1
 (OS) 15-1
 (TN) 19-1
 (UX) 3-1
host name, specifying alternate
 (NT) 10-8, 12-7
 (OS) 15-10, 16-9
HOSTNAME parameter
 (NT) 10-8, 12-7
 (OS) 16-9
hosts, selecting for distribution (UX) 4-8
HUP signal (UX) 5-5

I

I message prefix (UX) 4-4
inetd.conf file, editing (UX) 5-3
initialization file (OS)
 changing 16-7
 default 16-8
initparm.cfg file (UX) 2-4, 3-9, 8-1
Install Information dialog box (UX) 4-8
install.cdp file (NT)
 editing for distribution 11-3
 sample 11-5
 submitting to CONNECT:Direct 11-4
install.exe file (NT)
 editing for distribution 11-3
install.ini file (NT)
 sample 11-4
install.log file (UX) 3-10
installation procedures
 (NT) 10-4
 pre-installation checklist 10-3
 (OS) 15-5
 pre-installation checklist 15-3
 (TN) 19-7
 pre-installation checklist 19-3
 (UX) 3-5
 pre-installation checklist 3-3
 directory definition (UX) 3-5
 See also distribution
 troubleshooting (NT) 13-2
 troubleshooting (UX) 6-3

J

job definitions (OS) 16-4
jrew.exe process (NT) 12-2

K

Known Hosts list (UX) 4-8

L

library name, specifying

CONNECT:Direct for OS/400 15-4

OS/400 Agent 15-4

licensing information 1-2

log file path, specifying

(NT) 12-7

(OS) 16-9

log file, distribution (UX)

debug log 4-6

message definition 4-4

log files (NT) 13-4

debug 12-7

managing 12-5

specifying path 12-7

log files (OS)

debug 16-9, 16-11

modifying 15-13

object logs 15-12

specifying path 16-8, 16-9

log files (UX)

activating debug message logging 5-6

deactivating debug message logging 5-6

distribution log 4-4

exit log 2-4, 8-2

install log 3-7

uninstall log 3-13

logging, activating (UX) 5-6

logical names, mapping to physical names (TN) 20-2

LOGPATH parameter

(NT) 12-7

(OS) 16-9

M

mainframe application

definition of term xix

mainframe commands (UX)

stop command 3-9

submit command 3-9

UNIX commands 3-10

mainframe connections

(NT) 9-5

configuring mainframe resources 10-9

overview 9-4

(OS)

configuring mainframe resources 15-11

overview 14-5

(TN) 18-4

configuring mainframe resources 19-8

(UX)

configuring mainframe resources 3-11

overview 2-4

status of 5-4

mainframe, setup procedures 3-11, 10-9, 19-8

man pages (UX) 7-1

managing the OS/400 Agent

automatic startup 16-2

changing agent parameters 16-7

displaying active jobs 16-4

displaying subsystem jobs 16-5

ending 16-3

granting authority 16-1

initialization file 16-8

starting 16-2

status information 16-4

managing the Tandem Agent

mapping logical names 20-2

starting 20-4

startup command syntax 20-2

status information 20-5

stopping 20-5

- managing the UNIX Agent 5-1
 - activating debug message logging 5-6
 - activating the agent 5-3
 - deactivating debug message logging 5-6
 - deactivating the agent 5-3
 - modifying the configuration file 5-1
 - shutting down agent components 5-2
 - status information 5-4
- managing the Windows NT Agent 12-1
 - processes 12-2
 - starting the agent 12-5
 - stopping the agent 12-4
 - viewing process and service status 12-3
- manual conventions xviii
- mapping (TN)
 - logical names to physical names 20-2
 - NDMCOM object file 20-2
 - TCP/IP process name 20-2
- memory requirements
 - (NT) 10-1
 - (OS) 15-1
 - (TN) 19-3
 - (UX) 3-3
- message logging (UX) 5-6
 - definitions 4-4
- Mode Selection dialog box (UX) 4-7

N

- NDMAPICFG variable (UX) 3-9
- NDMCOM object file, mapping (TN) 20-2

O

- operating system requirements
 - (NT) 10-1
 - (OS) 15-1
 - (TN) 19-1
 - (UX) 3-1

P

- parameters
 - AUTOSTARTCD (OS) 16-12
 - AUTOSTARTEC (OS) 16-11
 - CD_SERVICENAME (NT) 12-9
 - changing
 - (OS) 16-7
 - (UX) 3-8
 - LOGPATH (NT) 12-7
 - LOGPATH (OS) 16-9
 - POLLING parameter, Event Collector
 - (NT) 12-9
 - (OS) 16-11
 - POLLING parameter, Process Monitor
 - (NT) 12-8
 - (OS) 16-11
 - STATSCOLLECTORRETRY (OS) 16-11
 - STATSCOLLECTORTIMEOUT (OS) 16-11
- password (UX)
 - specifying for distribution 4-9
 - specifying for remote uninstallation 4-13
- path definition (UX) 3-5
- permissions
 - distribution (NT) 11-2
 - distribution (UX) 4-2
 - installation (NT) 10-3
 - installation (OS) 15-3
 - installation (UX) 3-3
- ping command (UX) 6-2
- polling interval, for Event Server (UX) 3-9
- POLLING parameter
 - Event Collector (NT) 12-9
 - Event Collector (OS) 16-11
 - Process Monitor (NT) 12-8
 - Process Monitor (OS) 16-11
- polling, specifying
 - Event Collector (NT) 12-9
 - Event Collector (OS) 16-11
 - Process Monitor (NT) 12-8
 - Process Monitor (OS) 16-11

- port to mainframe connection
 - (NT) 9-3
 - (TN) 18-3
- port, TCP/IP
 - specifying (TN) 20-3
- post-installation tasks
 - (OS) 15-11
 - (TN) 19-9
- pre-distribution checklist
 - (NT) 11-2
 - (UX) 4-5
- pre-installation checklist
 - (NT) 10-3
 - (OS) 15-3
 - (TN) 19-3
 - (UX) 3-3
- pre-installation tasks (TN) 19-3
- procedure call in error messages (TN) 21-5
- Process Monitor (NT)
 - polling interval 12-8
 - specifying startup 12-8
- Process Monitor (OS)
 - action when CONNECT:Direct for OS/400 not running 16-12
 - action when Event Collector not running 16-11
 - overview 14-4
 - parameter group 16-11
 - polling interval 16-11
 - specifying startup 16-10
- Process Monitor parameter group (NT) 12-8
- processes
 - viewing status (NT) 12-3
 - Windows NT Agent (NT) 12-2
- processes, CONNECT:Direct
 - cdnt.exe (NT)
 - about 12-3
 - resetting 13-5
 - direct.exe (NT) 12-3
- processes, Windows NT Agent
 - jrew.exe (NT) 12-2
 - SOLVEagent.exe (NT) 12-2
 - SOLVEagentCD.exe (NT) 12-2

Q

- QJVACMDSRV job (OS) 16-4
- Question dialog box (UX) 4-11
- QUSER user profile (OS) 15-7

R

- reactivating the UNIX Agent 5-3
- README file, for softCDexit user exit (UX) 3-2
- recompiling the softCDexit user exit (UX) 3-2
- remote uninstallation of agent software (UX) 4-12
- requirements, installation (NT)
 - hardware 10-1
 - memory 10-1
 - operating system 10-1
 - software 10-1
 - space 10-1
 - TCP/IP connectivity 10-2
- requirements, installation (OS)
 - software 15-2
 - system 15-1
 - TCP/IP connectivity 15-2
- requirements, installation (TN)
 - cooperating software 19-2
 - hardware 19-1
 - software 19-1
 - system 19-1
- RUN command (TN) 20-4

S

- SAADMIN user profile (OS) 15-5
- sapid utility (NT) 13-5
- SARUNAG job (OS) 16-4
- SARUNEC job (OS) 16-4
- SARUNSA job (OS) 16-4
- SARUNSC job (OS) 16-4
- saveabend file (TN) 21-3

- script, installation
 - does not run after installation (UX) 6-3
- script, installation (UX) 3-7
- security considerations (UX)
 - distribution 4-3
 - installation 3-10
- Selected Hosts list, Install Information dialog box (UX) 4-9
- servers port, specifying (OS) 15-10, 16-10
- Service dialog box (NT) 10-5
- Services parameter group (NT) 12-8 (OS) 16-10
- Services window (NT)
 - example 10-5
 - viewing agent service status 12-4
- services, viewing status (NT) 12-3
- Setup Agent Install Parameters panel (OS) 15-6
- shutting down UNIX Agent components (UX) 5-2
- SITE commands (UX) 4-3
- SNMP Agent subsystem (TN) 19-2
- soft_install.log file (UX) 4-4
- soft_sessions (UX) 5-4
- softCDcsd, shutting down (UX) 5-2
- softCDdec, shutting down (UX) 5-2
- softCDesd, shutting down (UX) 5-2
- softCDexit (UX)
 - overview 2-4
 - README file 3-2
 - recompiling 3-2
- softCDstats (UX) 2-4
- softCDstats(1) man page (UX) 3-7, 8-2
- software requirements (NT) 10-1 (OS) 15-2 (TN) 19-1 (UX) 3-1
- SOLVE Agent for CONNECT:Direct service
 - configuring (NT) 10-5
- SOLVE Agent service
 - configuring (NT) 10-7
- SOLVE Distribution Utility (UX)
 - Confirm Copy dialog box 4-11
 - Install Information dialog box 4-8
 - Known Hosts list 4-8
 - Mode Selection dialog box 4-7
 - Question dialog box 4-11
 - starting 4-6
 - Uninstall Information dialog box 4-13
 - uninstalling (remote) 4-12
 - User Names and Passwords dialog box 4-9
- SOLVEagent parameter group (NT) 12-7 (OS) 16-9
- SOLVEagent.exe process (NT) 12-2
- SOLVEagent.log file (NT) 12-5, 13-4
- SOLVEagentCD parameter group (NT) 12-9 (OS) 16-11
- SOLVEagentCD.exe process (NT) 12-2
- SOLVEagentCD.log file (NT) 12-5, 13-4
- SOLVED, shutting down (UX) 5-2
- SOLVED.conf file
 - editing (UX) 5-6
- solvedist utility (UX) 4-2
- solvedist(1) man page (UX) 4-1, 4-5
- solvedist.log file (UX) 4-4, 4-11
- starting the agent (NT) 12-5
 - setting startup type for Windows NT Agent services 10-6 (OS) 16-2 (TN) 20-4
 - startup syntax 20-2 (UX) 3-13
- Statistics Collector (OS)
 - collection attempt retry value 16-11
 - collection attempt timeout value 16-11
 - overview 14-4
- statistics user exit (UX)
 - overview 2-3
 - replacing 3-7

STATSCOLLECTORRETRY parameter (OS) 16-11
 STATSCOLLECTORTIMEOUT parameter (OS)
 16-11
 status
 active jobs (OS) 16-4
 subsystem jobs (OS) 16-5
 STATUS command 20-5
 status information, displaying
 (OS) 16-4
 (TN) 20-5
 (UN) 5-4
 STOP command (TN) 19-10
 stop command (UX) 3-9
 stopping the agent
 (NT) 12-4
 (OS) 16-3
 (TN) 20-5
 (UX) 5-2, 5-3
 submit command (UX) 3-9
 subsystem jobs (OS)
 displaying 16-5
 status values 16-7
 support, customer xxi
 sys prefix for UNIX commands (UX) 3-10
 system requirements
 (NT) 10-1
 (OS) 15-1
 (TN) 19-1
 (UX) 3-1

T

Tandem SNMP Agent subsystem (TN) 19-2
 Target Directory field, Install Information dialog box
 (UX) 4-10
 Task Manager (NT) 12-3
 Tasks parameter group
 (NT) 12-8
 (OS) 16-10
 TCP/IP connectivity requirements
 (NT) 10-2
 (OS) 15-2
 (TN) 19-2
 (UX) 3-2

TCP/IP port, specifying (TN) 20-3
 TCP/IP process name, mapping (TN) 20-2
 technical support xxi
 text conventions xviii
 tracing (TN)
 directing output 21-8
 starting a trace 21-7
 trace flags 21-7
 troubleshooting
 (NT) 13-1
 (OS) 17-1
 (TN) 21-1
 (UX) 6-1

U

umask setting (UX) 4-3
 Uninstall Information dialog box (UX) 4-13
 uninstalling agent software
 (NT) 10-10
 (OS) 15-14
 (TN) 19-10
 (UX)
 locally 3-13
 remotely 4-12
 UNIX Agent
 hardware requirements 3-1
 how to distribute 4-6
 installation script 3-7
 man pages 7-1
 on the workstation 3-7
 operating system requirements 3-1
 software requirements 3-1
 starting/stopping 3-13
 uninstalling (local) 3-13
 UNIX shell commands, enabling from mainframe
 (UX) 3-10
 user exits (UX)
 overview 2-3
 recompiling 3-2
 user ID and password, setting for services (NT) 10-7
 user ID to receive agent messages, specifying
 (OS) 15-9

- User Name, specifying (UX)
 - distribution 4-9
 - remote uninstallation 4-13
- User Names and Passwords dialog box (UX) 4-9
- user profile (OS)
 - administrator 15-5
 - modifying 15-13
 - QUSER 15-7
- utilities
 - sapid (NT) 13-5

V

- variables
 - NDMAPICFG 3-9
- verifying agent operation
 - (NT) 10-10
 - (OS) 15-11
 - (TN) 19-10
 - (UN) 3-13

W

- W message prefix (UX) 4-4