



# Command Console Agent for Windows NT®

User Guide



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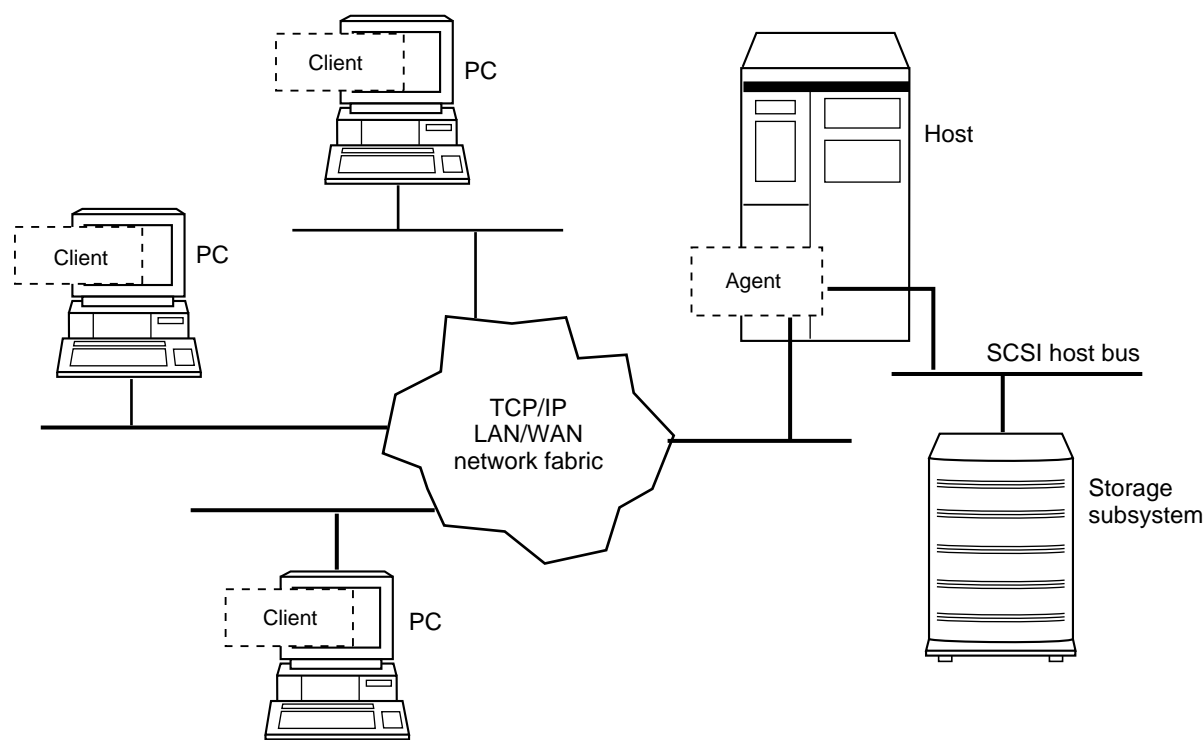
# Command Console Agent for Windows NT<sup>®</sup>

*This guide describes Command Console Agent for Windows NT. It includes a product description, minimum system requirements, and installation and configuration instructions.*

## Product Description

Command Console Agent for Windows NT<sup>®</sup> is a companion application to the Command Console Client graphical user interface (GUI) program. Agent serves as Command Console Client's assistant in configuring, operating, and monitoring your host's storage subsystems. Agent runs on your host system as a server application. It connects to Command Console Client sessions via the TCP/IP network protocol, as shown in Figure 1.

**Figure 1 Command Console Client/Agent Connection**



CXO-5415A-MC

Command Console Agent provides a network connection between a host storage subsystem and any number of Command Console Client sessions running on either the host or remote systems. Agent provides access protection on a network address-by-network address basis. You can configure Agent to allow, for instance, one Client session complete configuration access to the storage subsystem, while another Client session might only be allowed monitoring capability.

You can also use Agent for asynchronous fault notification. The program monitors your host's storage subsystems and sends notification messages to all Client sessions connected to it when a fault occurs. You can configure Agent to use TCP notification to Client and SNMP notification to an SNMP-compatible monitoring application.

## Minimum System Requirements

Agent requires the minimum host system resources shown in Table 1. The program is designed to operate with Command Console Client Version 1.1 for Windows NT<sup>®</sup> and Windows 95<sup>®</sup>.

**Table 1 Minimum System Requirements**

Host Feature	Requirement
Architecture	Intel <sup>®</sup> 486, 66 MHz, 16 MB memory, 1 MB free disk space, CD-ROM drive  OR Windows NT-compatible Digital Equipment Corporation Alpha <sup>®</sup> system, 1 MB free disk space, CD-ROM drive
Operating System	Windows NT version 3.51 (build 1057 or later) or version 4.0
Network Connection	TCP/IP-compatible network card
Controller Compatibility	StorageWorks 2 or 6-port controller running operating firmware Version 3.0 or higher.

### NOTE

There are two, different Windows NT Agent programs. There is a unique program for Intel platforms, and one for Digital Alpha platforms. You must choose the proper Agent in the Agent installation program.

## Installing Command Console Agent

Agent is Client's network assistant. You'll need one Agent program running on each host system you wish to connect to Client over the network. The Agent installation program installs the Agent program of your choice at the host system of your choice.

### NOTES

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You can install a Windows NT Agent only on a host system on which you can run the CD-ROM.

You can run the Agent installation program on either Intel® or Digital Equipment Corporation Alpha® Windows NT platforms.

### *Installing an Agent*

Here's how to install an Agent in one of your host systems:

1. Your host's system resources must meet the minimum requirements to run the Agent program you wish to install. The minimum system requirements for each Agent type are listed in its user guide on the accompanying CD-ROM. Before going on, verify that each of your host systems will support the Agent you wish to install.
2. Before you can install an Agent, at least one logical volume must exist on each storage subsystem you wish to connect to. If your subsystems do not each contain at least one volume, use your operating system utilities to connect to your controller's command line interpreter (CLI) interface to create one. Subsystems without at least one logical volume are invisible to Agent and the host operating system.
3. Place the Command Console CD-ROM in your local system's CD-ROM drive.
4. Open the \AGENTS subdirectory in File Manager.
5. Double click the *INSTALL.BAT* file.

The installation program begins, displaying a series of windows in which you must enter configuration information for your Agent.

6. Enter the appropriate information in each window, until you have completed the installation of your Agent.

Click the *Info* button on any window for helpful information on its use.

Be sure to read the "Special Windows NT Agent Installation Instructions" below for more information.



### ***Special Windows NT Installation Instructions***

If you installed an Agent with a *Service Startup Type* of *Manual*, you'll need to restart Agent manually each time you boot its host system. If you selected the *Automatic* type, your agent starts automatically when you boot the host system.

In either case, you must manually start Agent after you first install it.

To manually restart Agent, perform the following actions:

1. Click on the Control Panel icon to open it.
2. Click the *Services* icon.
3. Click *Steam*.
4. Click *Start*.

Your Windows NT Agent starts and executes as a background task.

### ***Installing Additional Agents***

You may want to install Agents on your other host systems. To install more Agent programs, simply repeat the procedure above, using the appropriate host system name and Agent type for each session.

### ***Agent Documentation for Alpha® Platforms***

If you're running the Agent installation programs on a Digital Equipment Corporation Alpha® Windows NT platform, you cannot install the Acrobat Reader. The *\DOCS* subdirectory on the CD-ROM contains Agent user guides in Word for Windows format for use in this situation.

## Running Command Console Agent

If you installed an Agent with the *Service Startup Type* set to *Manual*, you'll need to restart Agent manually each time you boot its host system. If you selected the *Automatic* type, your agent starts automatically when you boot the host system.

In either case, you must manually start Agent after you first install it.

To manually restart Agent, perform the following actions:

1. Click on the Control Panel icon to open it.
2. Click on the *Services* icon.
3. Click on *Steam*.
4. Click on *Start*.

Agent starts and executes as a background task.

## Reconfiguring Command Console Agent

You can reconfigure previously-installed Agents using the configuration program. To reconfigure an Agent, double click the *CONFIG.BAT* file in the \AGENTS subdirectory on the CD-ROM and follow the prompts.

You can run the Agent configuration program on an Intel® or Digital Equipment Corporation Alpha® Windows NT platform.

Note that, after you reconfigure Agent, you must stop it and restart it for your changes to take affect.

To manually stop and restart Agent, perform the following actions:

1. Click on the Control Panel icon to open it.
2. Click on the *Services* icon.
3. Click on *Steam*.
4. Click on *Stop*.
5. Click on *Start*.

## Uninstalling Command Console Agent

You can remove any Agent program using the uninstall program. To remove an Agent, double click the *UNINSTAL.BAT* file in the *\AGENTS* subdirectory on the CD-ROM and follow the prompts.

You can run the Agent uninstall program on an Intel<sup>®</sup> or Digital Equipment Corporation Alpha<sup>®</sup> Windows NT platform.

## For Advanced Users

You can manually configure any Agent by editing the Agent's configuration files with a text editor on the Agent's host system. To configure Command Console Agent for access protection and proper connection with your subsystems, you must edit four, ASCII files.

- Services file
- Agent Configuration file
- Client Access file
- Subsystem Identification file

The following sections describe the function of each file, along with the process of editing it.

## ***Editing the Services File***

Agent uses Windows sockets (sometimes called “network ports”) to communicate with its Clients. Agent uses an even/odd number pair for the port numbers. The socket numbers at the Client and Agent ends must match for network communication to occur.

In Windows NT, the socket numbers are assigned in the *services* file in the `\winnt35\system32\drivers\etc` subdirectory. In the unlikely event that you experience a conflict with the socket numbers, you may edit the *services* file manually.

The default socket numbers for Command Console are "4998" and "4999". If you are installing Agent and these numbers are already taken by another application, the installation program prompts to warn you that you must choose another 4-digit, even/odd pair.

To select another pair for Agent, open the *services* file in an ASCII editor. Pick two numbers above 1023 that are not already used in the file, and add the following two lines:

```
spgui          even_number/tcp # StorageWorks® Command Console
spagent        odd_number/tcp # StorageWorks® Command Console
```

Note that the port numbers that you select must match the port numbers used by all of the Clients to which you wish to connect your Agent.

## Editing the Agent Configuration File

The agent configuration file, *steam.cfg*, configures Command Console Agent within its operating system. The file contains five lines of ASCII text, formatted as follows:

### *device\_special\_file\_path*

In Windows NT, this line must be blank.

### *agent\_executable\_file\_path*

The full path to the *steam.exe*, *client.ini*, and *storage.ini* files..

### *encrypted\_password*

The 4–16-character, encrypted password from the password generation program.

### *manufacturer\_name*

Your manufacturer name. The default is "Digital Equipment Corporation" You can use up to 80 characters.

### *snmp\_enterprise\_assignment*

Your SNMP enterprise assignment number. The default is "36.2.15.21.". (Note that this parameter is *not* your numerical TCP/IP address.) If you are unsure about this parameter, use the default or contact your network administrator.

## Editing the File

Edit the *steam.cfg* file by performing the following actions:

1. Run the password generation program by changing to the directory that the *steam.exe*, *client.ini*, and *storage.ini* files are installed in and entering the following at a command prompt:

```
sp_passwd "yourpassword"
```

where "yourpassword" is an 4 to 16-character text string of your choosing.

The program generates a 4 to 16-character, encrypted password string and displays it on the screen.

2. Use an ASCII editor to modify the *steam.cfg* file you copied during the installation process. Use the encrypted password from Step 1 as line 3 in the file.

Following is a sample *steam.cfg* file for Windows NT:

```
(Reserved. Must be blank)
e:\nt_agent
Q1</Sn_k
Digital Equipment Corporation
36.2.15.21.
```

## Editing the Client Access File

The client access file, *client.ini*, configures Network Manager for proper operation with its Command Console Clients.

Use an ASCII editor to modify the *client.ini* file you copied during the installation process. Add a separate line in the file for each system that you wish to grant access to this host system. Use vertical bars (sometimes called the “pipe” character) to delimit the three fields. You may add comment lines as long as they start in very first position and begin with the exclamation point character, "!".

---

### NOTE

Blank lines are not allowed in the *client.ini* file. A blank line may interfere with Agent execution.

The line for each client system must be in the following format:

*system\_network\_address|notification\_method|access\_allowed*

where:

*system\_network\_address*

The network name, including the domain information if appropriate, of the remote system to which you wish to grant access. The address must be alphanumeric and not a numeric IP address. The address can be up to 128 characters long, including periods. If you are unsure of this address, consult your network administrator.

*notification\_method*

The mechanism you wish Agent to use to notify Client sessions of a fault, where:

- 0 = no notification
- 1 = notify via TCP
- 2 = notify via SNMP
- 3 = notify via both TCP and SNMP

If you are unsure of which mechanism to use, use "1" for this parameter.

*access\_allowed*

You can configure Agent for three levels of subsystem access:

- High-level monitoring—Good/Bad indication at the host and storage subsystem levels. Good/Bad indication of Client/Agent communication link. Client notified of subsystem faults as they occur.
- Low-level monitoring—All detailed information about the status of the storage subsystem available, in addition to high-level monitoring capabilities.
- Configuration—Capability of changing the configuration of the storage subsystem, in addition to high and low-level monitoring capability.

The *access\_allowed* parameter sets the level of access you are granting to this remote system, where:



- 0 = High-level monitoring only. No low-level monitoring or configuration changes allowed.
- 1 = High and low-level monitoring. No storage subsystem configuration changes allowed.
- 2 = High and low level storage subsystem monitoring and configuration access.

Following is a sample *client.ini* file. This file enables full access for the remote Client system at network address *dreamon.your.company.com*, and sends fault notifications to Client using the TCP mechanism. It also disables any low-level monitoring or configuration access by Client running on the system at network address *wanderlust.your.company.com*, but still enables high-level monitoring and asynchronous fault notification via the TCP mechanism.

```
! Access list for system HOST123:  
dreamon.your.company.com|1|2  
wanderlust.your.company.com|1|1
```

## Editing the Subsystem Identification File

The subsystem identification file, *storage.ini*, configures Agent to communicate with the storage subsystems on the host on which Agent is running.

Use an ASCII editor to modify the *storage.ini* file you copied during the installation process. Add a separate line to the file for each storage subsystem on this host that you wish to connect to. Use vertical bars (sometimes called the “pipe” character) to delimit the three fields. You can add comment lines as long as they start in very first position and begin with the exclamation point character, "!".

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### NOTE

Blank lines are not allowed in the *storage.ini* file. A blank line may interfere with Agent execution.

The line for each system must have the following format:

*subsystem\_name*|*driveID*|*monitor\_interval*

where:

*subsystem\_name*

The name you wish to refer to the subsystem by when using the Client GUI. The name must be alphanumeric and can consist of up to 32 characters.

*driveID*

There must be at least one volume configured on any subsystem you wish to add to Agent. This subsystem volume is represented by a drive letter in Windows NT Disk Administrator. Enter the drive letter for the subsystem you wish to add as its *driveID*.

*monitor\_interval*

The time interval, in seconds, between Agent’s periodic status checks on this subsystem. The range of intervals is from 1 to 99,999 seconds. If you set this parameter to 0, Agent does not perform periodic status checks on the subsystem.

Following is a sample *storage.ini* file. This file configures Agent to communicate with and to periodically monitor subsystems *sw300* on drive *D:*, and *mini\_b* on drive *E:*. Agent will check *sw300* at 20-second intervals, and *mini\_b* at 300-second intervals (that is, every 5 minutes).

```
! Storage subsystems for HOST123
sw300|D|20
mini_b|E|300
```

## SNMP Trap Information

Agent sends out an SNMP trap (that is, an asynchronous event notification) to any hosts that are listed in the CLIENT.INI file with this option enabled. (See “Editing the Client Access File” in this document for more information.) This section describes the format of the SNMP trap.

### Information Fields

An Agent SNMP trap consists of the following information fields:

- Source IP address
- GENERIC = 6 (6 = ENTERPRISE SPECIFIC VALUE TO FOLLOW)
- SPECIFIC = 0 or 1, where:
  - “0” indicates that the field-replacable unit (FRU) transitioned from a bad to a good state
  - “1” indicates that the FRU transitioned from a good to a bad state
- OID Variable of the offending FRU
- OCTET STRING Value returning the name of the storage subsystem containing the FRU specified by the OID Variable

### OID Variables

Each object ID (OID) is prefixed by a base enterprise number (BEN) for the Command Console product. The default BEN for Command Console Agents is as follows:

1.3.6.1.4.1.36.2.15.21  
(iso.org.dod.internet.private.enterprises.dec.ema.sysobjects.raidmanager)

Following are the OID values used by Command Console:

- Disk Status = BEN + .3.2.1.4  
(BEN + .subsys.ssStatusTable.ssEntry.ssDiskStatus)
- Power Supply Status = BEN + .3.2.1.5  
(BEN + .subsys.ssStatusTable.ssEntry.ssPowerStatus)
- Cooling Status = BEN + .3.2.1.6  
(BEN + .subsys.ssStatusTable.ssEntry.ssFanStatus)
- Cache Battery Charge Status = BEN + .3.2.1.7  
(BEN + .subsys.ssStatusTable.ssEntry.ssCacheBatteryStatus)
- OverTemperature Status = BEN + .3.2.1.8  
(BEN + .subsys.ssStatusTable.ssEntry.ssTemperatureStatus)
- Communication Status = BEN + .3.2.1.9  
(BEN + .subsys.ssStatusTable.ssEntry.ssCommStatus)

- Controller 1 Status = BEN + .3.2.1.12  
(BEN + .subsys.ssStatusTable.ssEntry.ssController1Status)
- Controller 2 Status = BEN + .3.2.1.19  
(BEN + .subsys.ssStatusTable.ssEntry.ssController2Status)

If your SNMP Management Utility has the Agent MIB compiled, the utility should display the character string values in parentheses above.

### ***Trap Example***

An example SNMP trap for storage subsystem “subsys1” with a failing power supply on an Agent at IP address “16.82.16.01”, would contain the following information:

Source address = 16.82.16.01  
 GENERIC = 6  
 SPECIFIC = 1  
 OID Value = 1.3.6.1.4.1.36.2.15.21.3.2.1.5  
 (iso.org.dod.internet.private.enterprises.dec.ema.sysobjects.raidmanager.subsys.ssStatusTable.ssEntry.ssPowerStatus)  
 OCTET STRING = subsys1