High Availability Observatory - Why I'd Want It If I Were You

Presentation #126, file 2 of 2, pages 38 to 95

Inter Works/HP World - Selected slides from:

HAO Installation, Configuration, and Maintenance (DJM.02/07/01)

Site Preparation Workbook

HEWLETT-PACKARD
HIGH AVAILABILITY OBSERVATORY
SITE PREPARATION WORKBOOK
Release A.03.00.010

Company or Site Name	
Address1	
Address2	
City	
State/Province	
Zip/Postal Code	
Country	
Contact Name	
Contact Phone	
Contact E-mail	
HP Contact Name	

Introduction

See the HAO Site Preparation Reference Guide for more information.

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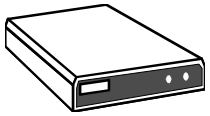
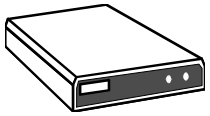


HP Support Node Router

About the Cisco Router

- Equipment
  - Cisco 801 or 802
  - Cisco 1003 or 1004
  - Cisco 1603-R or 1604-R
- MCSC System Administrator
  - Pre-configures router at the MCSC
  - Sends router to customer site
  - Configures a primary and secondary LAN
- HASE
  - Checks router functionality at customer's site
  - Works with MCSC Administrator

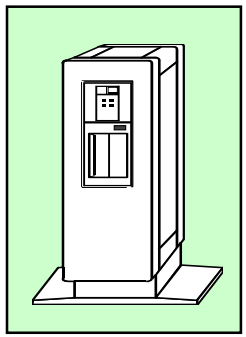


HP Support Node Router Installation

Cisco 801/802, 1003/1004 or 1603/1604 Router Configuration Information

- Expectations of HASE
  - Plug in ISDN, LAN, Laptop cables
  - Power up router
  - Work with MCSC Administrator to verify connectivity and configuration
- Custom installations may require more configuration work at the customer site

HP Support Node Workstation (HPSN)



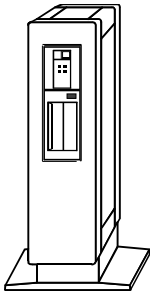
About the HP Support Node Workstation

- Equipment:
  - B180L Series 700 Workstation
- Super Region Staging Center
  - Installs HPSN with HAO software
  - Sends to MC customer
- HASE/Account Team Member
  - Completes the configuration at the customer's site
  - Performs the backup

What's on the HP Support Node?

HP Support Node is a depot for HAO Support Tools:

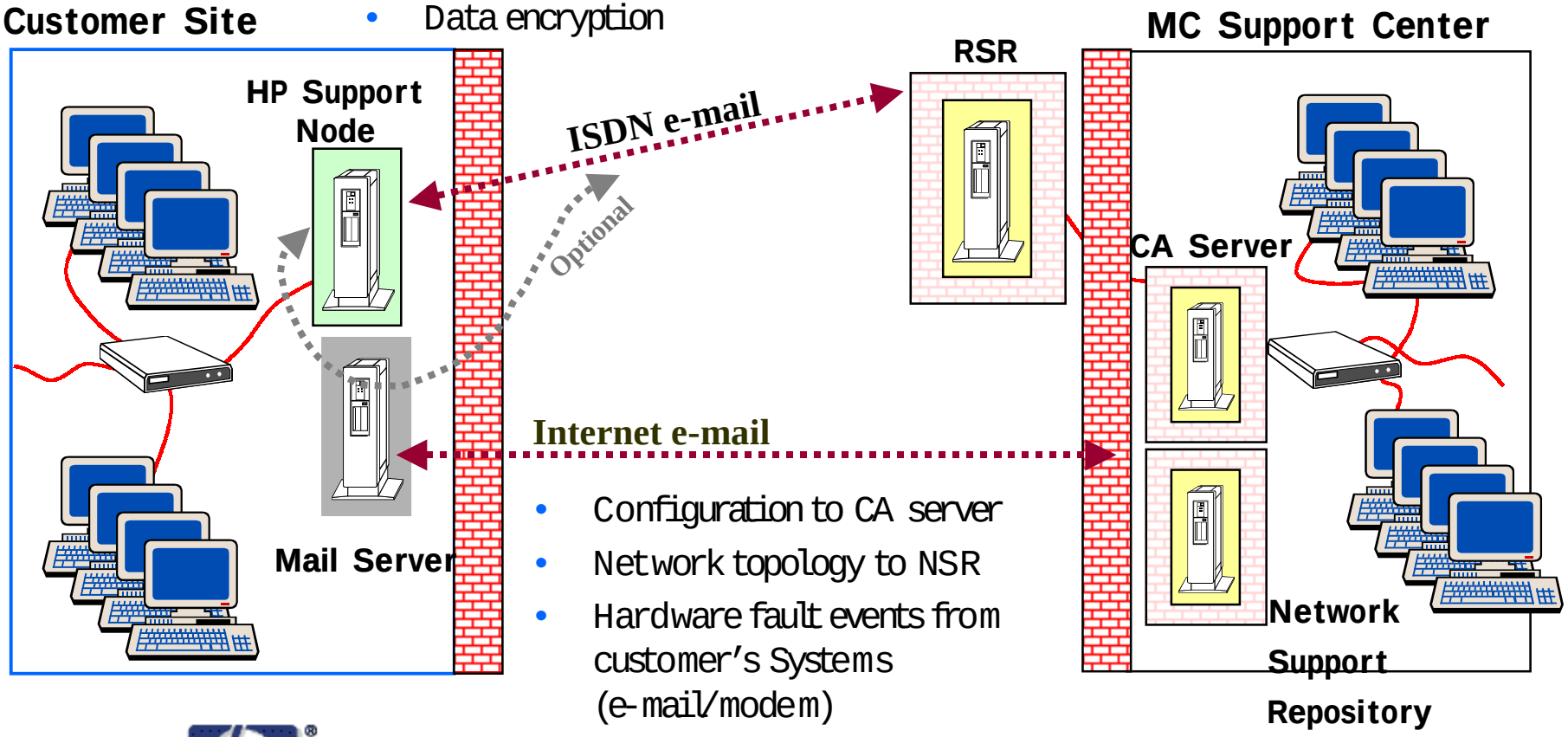
- HA Meter 2.0
- HAO Network Node Manager/ HA-NISP
- HP Configuration Tracker
- mc_connect script
- Q4 Dump Analyzer
- Remote Administration Tool Suite (RATS)
- Secure Shell (SSH)
- SharedX
- Support Tools Manager (STM)
- Transport Office Manager (TOM)
- Virtual Network Computing (VNC)



HAO Provides E-mail Transfer

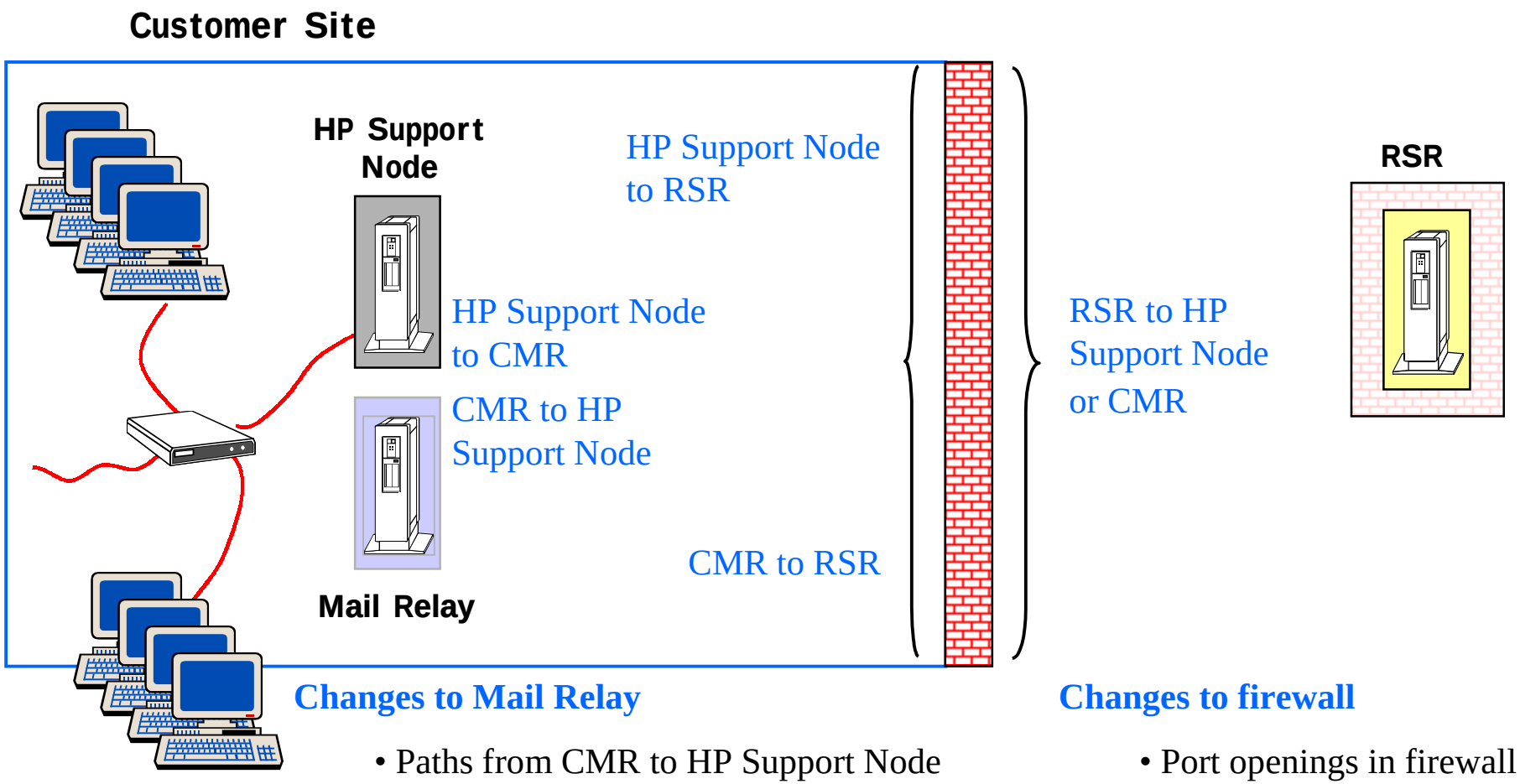
E-mail over the Internet or ISDN link

- Data from the HP Support Node to the MCSC
- Data Transport occurs nightly
- Proactive analysis at MCSC
- Data encryption



- Configuration to CA server
- Network topology to NSR
- Hardware fault events from customer's Systems (e-mail/modem)

Updates at the Customer Site (ISDN)- Firewall and MailRelay



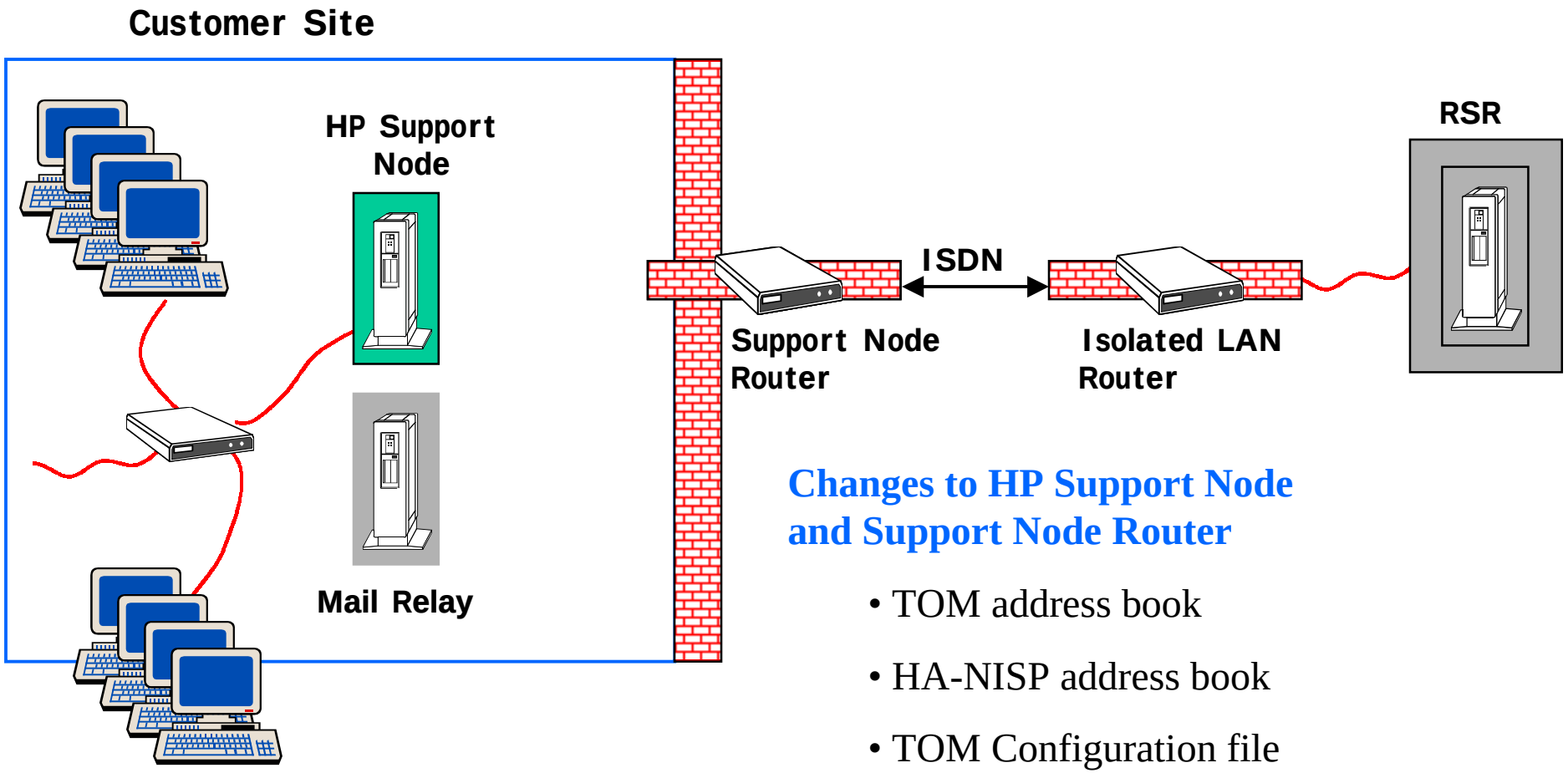
Changes to Mail Relay

- Paths from CMR to HP Support Node
- Paths from HP Support to CMR

Changes to firewall

- Port openings in firewall

Updates at the Customer Site - HP Support Node and Router



Changes to HP Support Node and Support Node Router

- TOM address book
- HA-NISP address book
- TOM Configuration file
- Access List

Transport Office Manager - Encryption

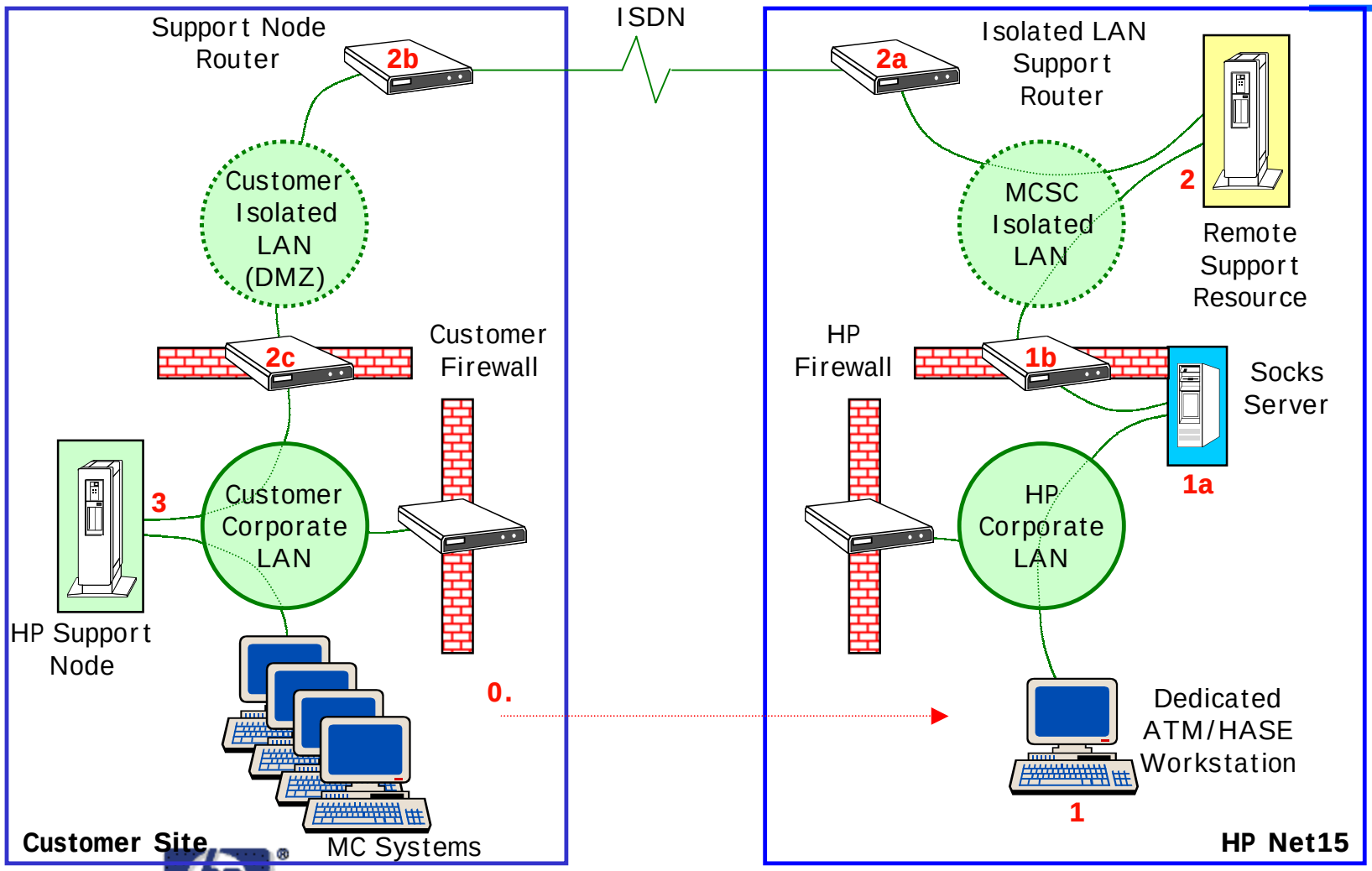
- Transport Office Manager (TOM) automatically transports and encrypts data files via e-mail (ISDN and internet).
- Transports Tracker, HA-NISP and HA Meter data to HP
- Provides 56-bit DES (data encryption standard) from the HP Support Node to the MCSC for e-mail over internet and ISDN
- Generates keys on a per-session basis
- Uses public key exchange handshake to generate private key
- Provides encryption for Tracker data only

What is Remote Connectivity in the HAO Program?

It is a method by which HP Support Engineers provide support to MC customers.

- Enables access to customer's MC machines for support purposes
  - Quicker access to diagnostic and administration tools
  - Shorter time to problem resolution
- Enables access to HP Configuration Tracker and NNM
- Provides an enabling infrastructure for more support tools or applications

Detailed Logon Procedure to Access the HP Support Node



Detailed Logon Procedure

0. **Obtain permission from customer to access their environment.**
1. **From your HASE HP-UX or Windows workstation, connect to the Remote Support Resource (RSR) and log on using your MCSC-assigned username/password.**

   1a. The Socks Server will authenticate that you are authorized to pass through.

   1b. The HP Firewall will verify that you are authorized to pass through.
2. **From the RSR, connect to the HP Support Node and log on using the same username/password you used for the RSR.**

   2a. Isolated LAN router verifies traffic coming from known RSR and destined for known customer site.

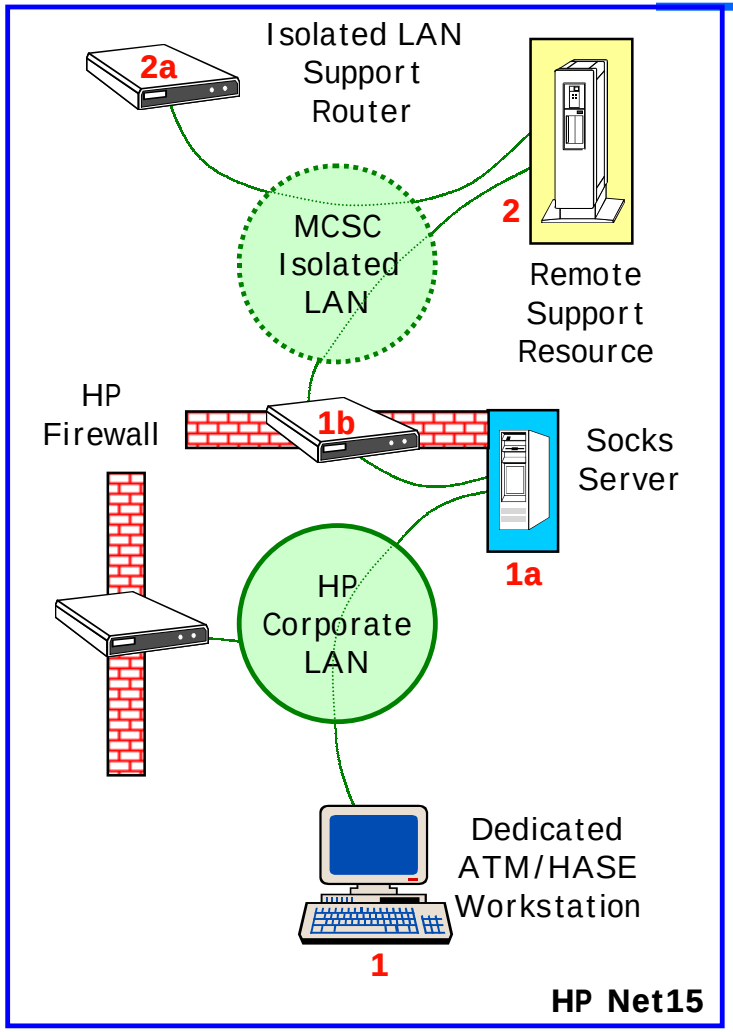
   2b. HP Support Node Router verifies traffic coming from known HP RSR and destined for the HP Support Node.

   2c. Customer firewall verifies incoming traffic meets customer security requirements.
3. **Optionally, access the HAO tools and log on to MC systems using your customer-assigned username/password. Perform support tasks.**

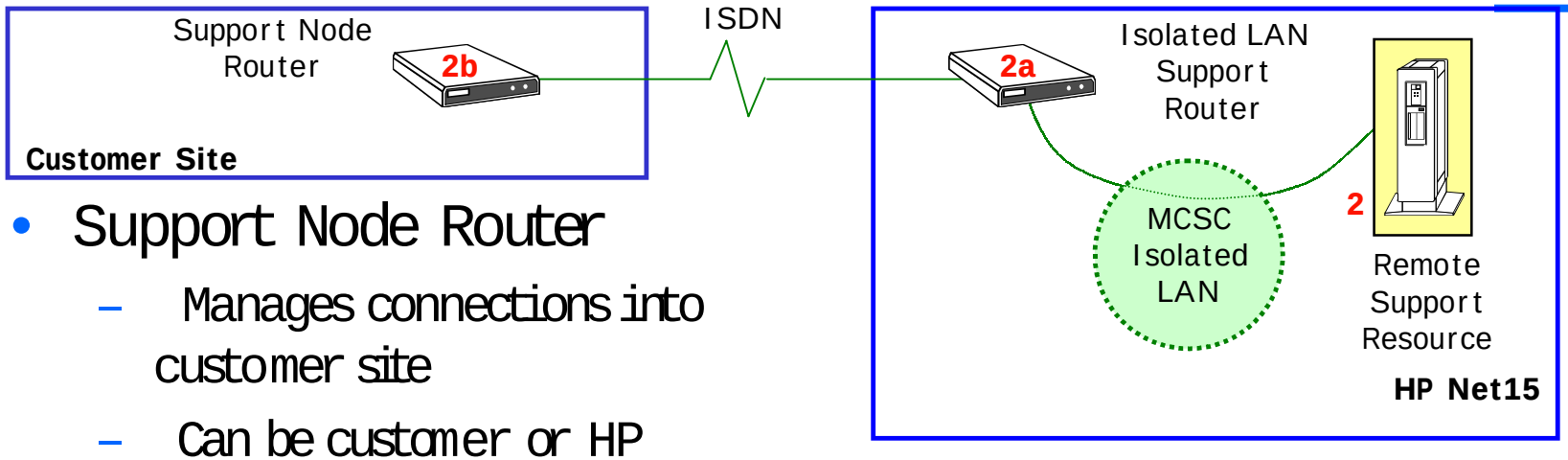
Remote Support Resource (RSR)

Provides security, data transfer, a repository for information

- Purposes
  - First "hop" for HASEs/Account Team Members
  - Tool storage to reduce ISDN traffic
  - Depot for problem-solving information
  - Directs e-mail over ISDN into HP
- Security
  - Allow only connections via the Isolated LAN Socks Server or Secure Shell
  - MCSC support engineer-specific logins with complex username / password
  - No sharing accounts; separate user space for each HASE/Account Team Member
  - Customer data handled under HP Policy
  - Highly-secured configuration
  - Login / Activity logging



Isolated LAN and Support Node Routers: Security



- Support Node Router
  - Manages connections into customer site
  - Can be customer or HP owned. If HP:
    - Installed by HASE/Account Team Member
    - Jointly configured and verified by HASE and MCSC Administrator
    - Administered by MCSC Administrator
- Isolated LAN Support Router
  - Manages connections to multiple customer sites
  - Configured and administered by MCSC Administrator

The ISDN Link

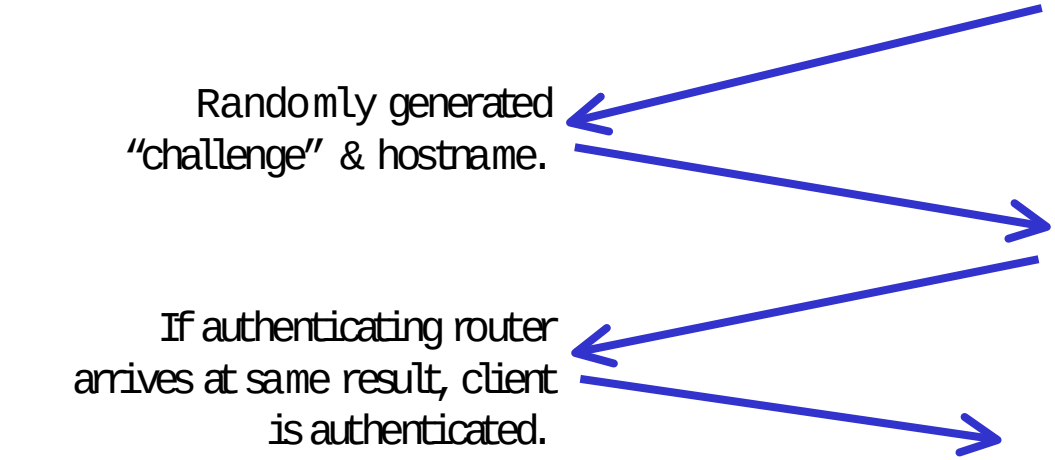
Connectivity Link to MC Customer Site

- High Availability in all regions
- PRI line with:
  - 23 simultaneous connection channels (MCSC ISDN) in Americas and Asia-Pacific
  - 30 simultaneous connection channels (MCSC ISDN) in Europe
- BRI line with 2 simultaneous connection channels (customer ISDN)

Installation at MC Customer Site

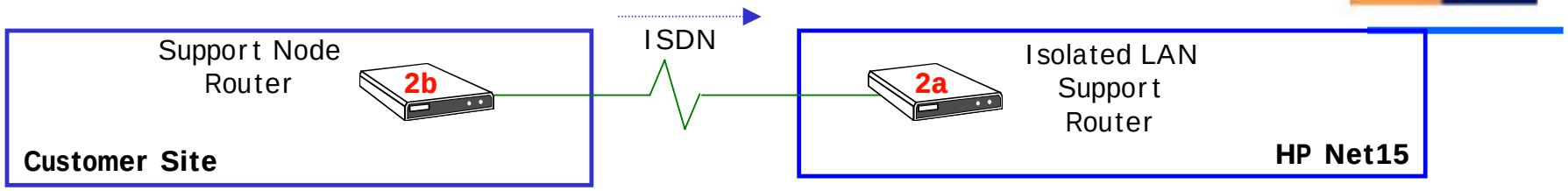
- Contact the ISDN provider
- Specify options
- Get configuration information from provider
  - Access Numbers
  - ISDN switch type (being used by provider)

Challenge Handshake Authentication Protocol (CHAP)



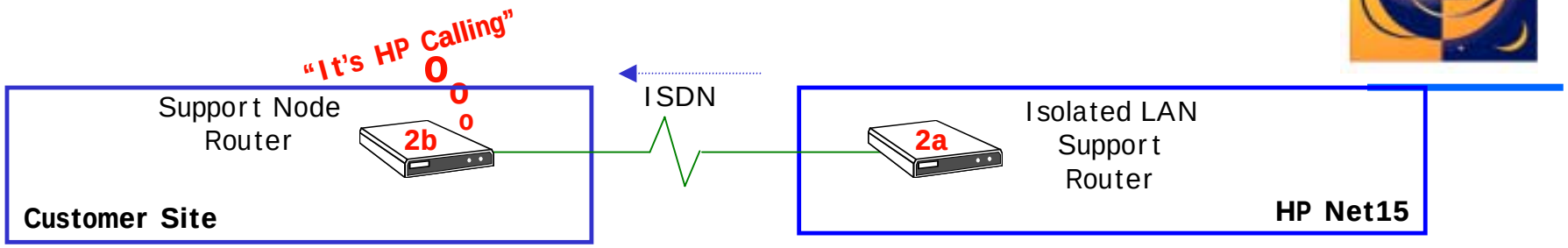
CHAP also sends challenges at regular intervals during an authenticated session to ensure that the client router has not been replaced by an intruder.

Dialback



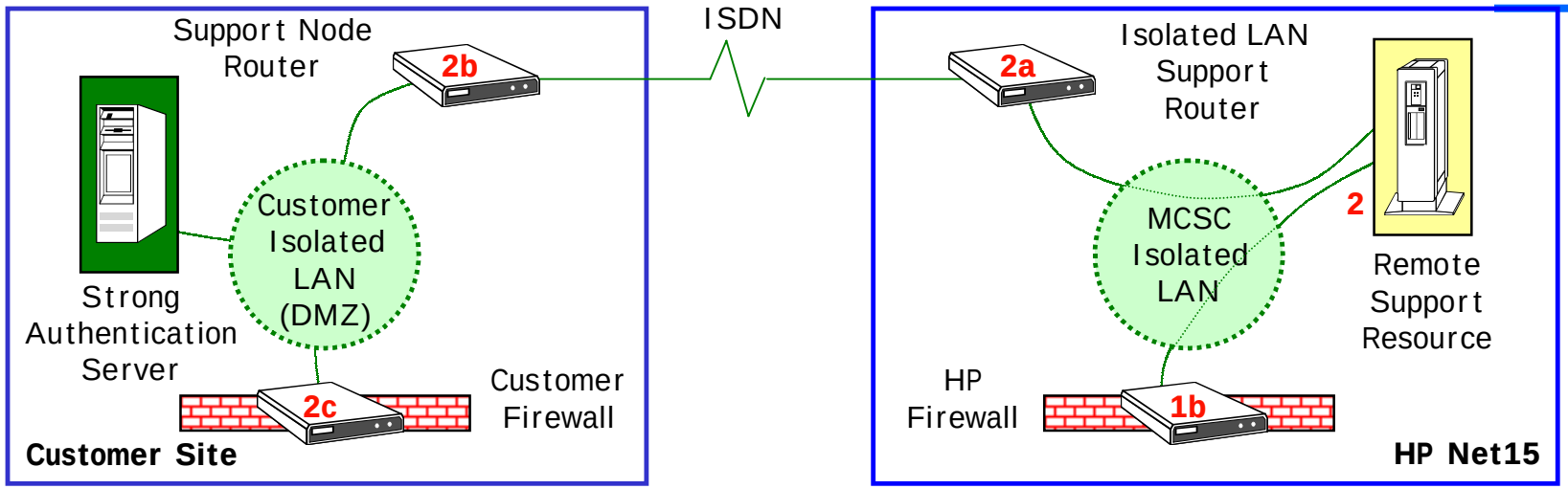
- Operation
  - MCSC router calls Support Node Router and gets authenticated
  - MCSC router requests dialback
  - Customer router hangs up
  - Customer router dials HP router and gets authenticated
  - Secure connection is established
- Advantages
  - Customer knows it was HP that called
  - Customer is assured that connection is with HP
- Disadvantages
  - Connection times are longer
  - Customer pays for call

Caller ID



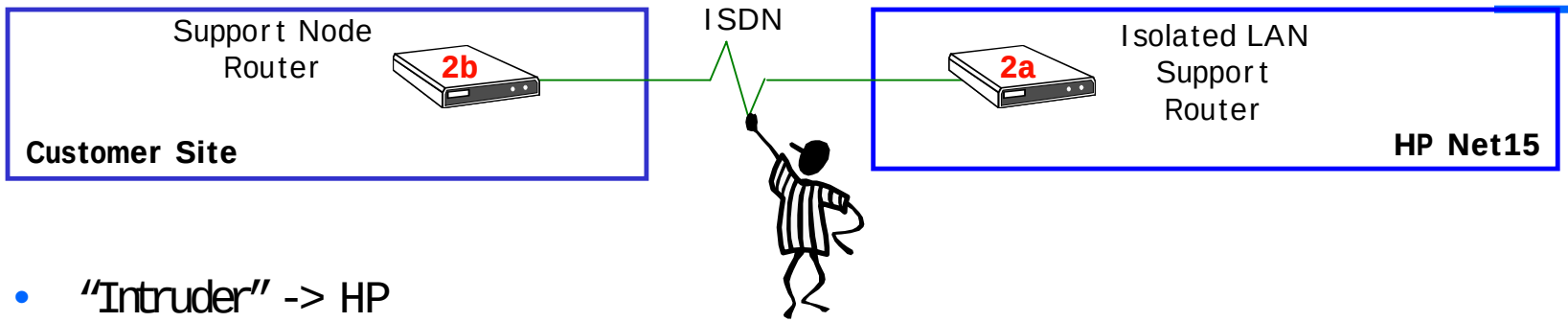
- Advantages
  - Customer router verifies calling # is HP before answering the call
- Disadvantages
  - Does not work across all telco boundaries

Strong Authentication



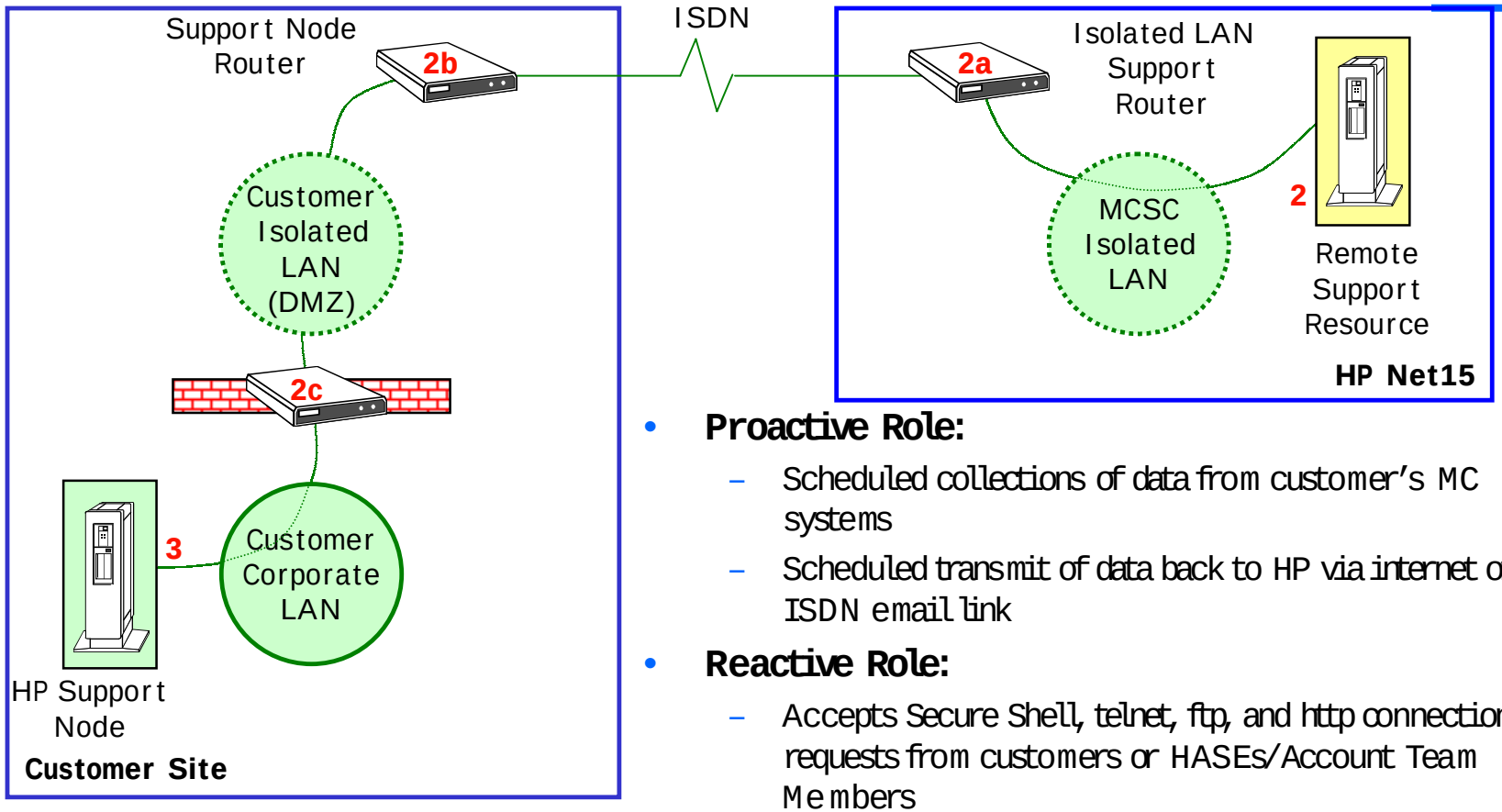
- Advantages
  - Accesses can be tracked to a specific Account Team Member
  - Increases security (token ID changes often and is impossible to guess)
- Disadvantages
  - Increases connect times
  - More software (and possibly more hardware) for the customer and HP to manage
  - Token ID cards must be managed (if supplied by the customer)

"Intruder" Precautions



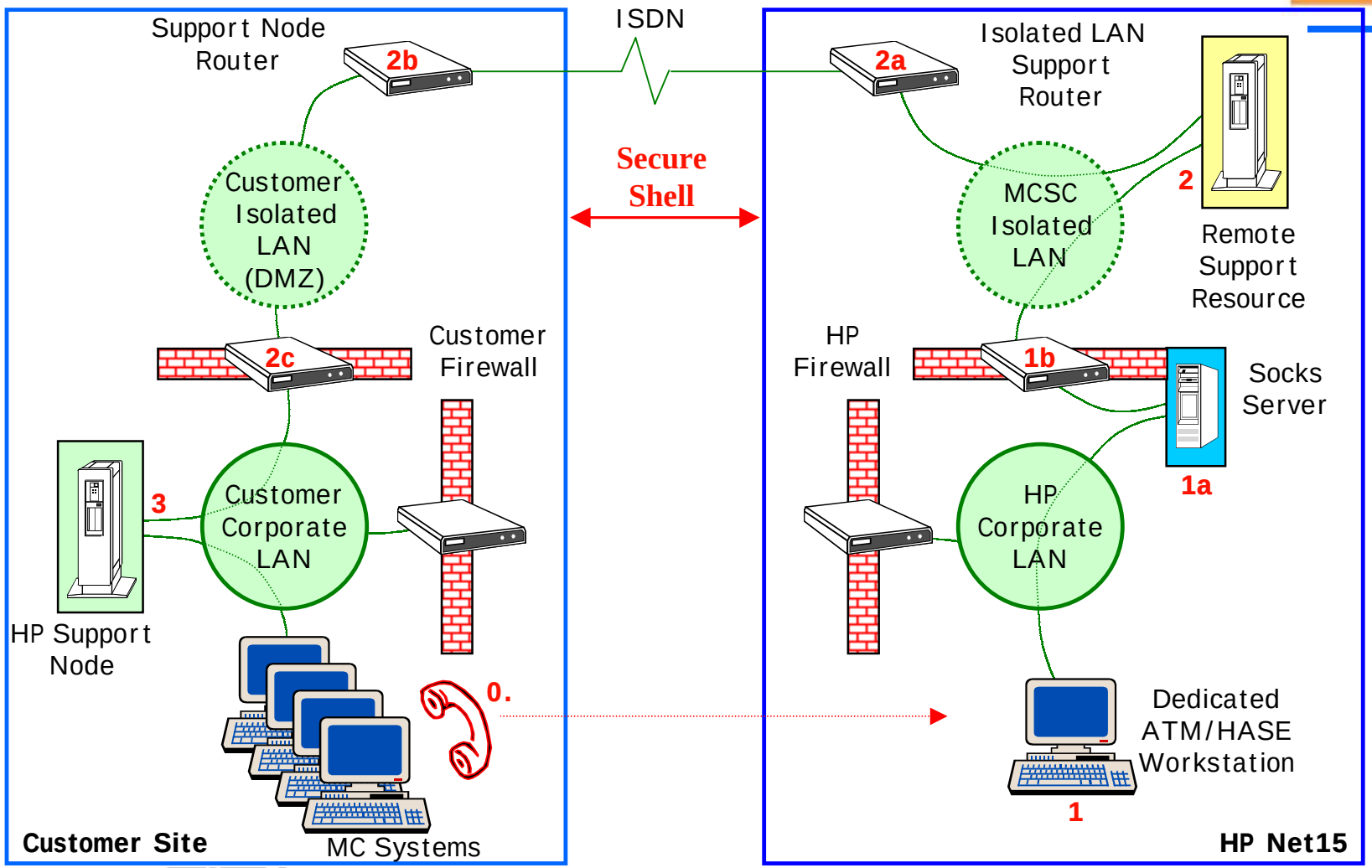
- "Intruder" -> HP
  - Router doesn't allow connections from outside
- "Intruder" -> Customer
  - Telephone number of customer router or ISDN
  - IP address of RSR
  - Router CHAP authentication information
  - IP address and username/password of HPSN
  - IP address and username/password of MC system(s)
  - Dialback -> Intruder has to physically answer callback to MCSC router
  - Additional barriers:
    - Caller ID -> ISDN telephone # of the MCSC router
    - Strong authentication -> Strong authentication username/token ID

HP Support Node Workstation (HPSN)



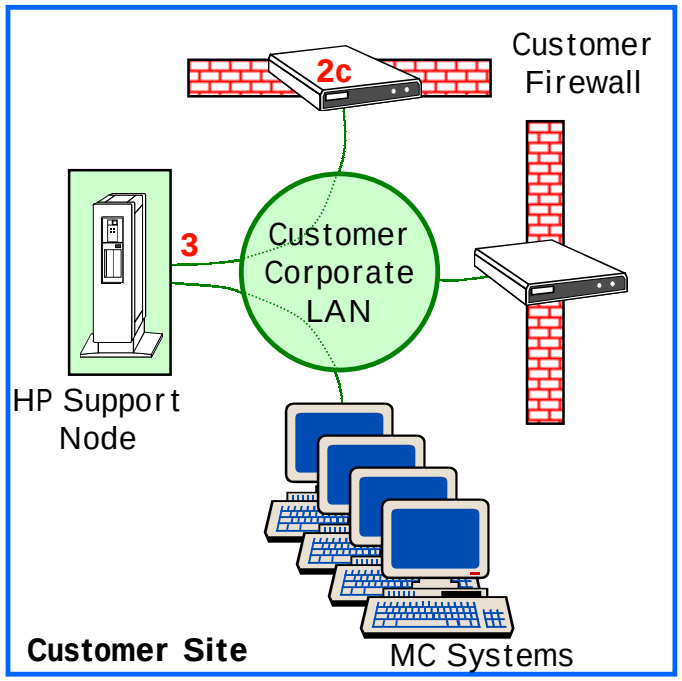
- **Proactive Role:**
  - Scheduled collections of data from customer's MC systems
  - Scheduled transmit of data back to HP via internet or ISDN email link
- **Reactive Role:**
  - Accepts Secure Shell, telnet, ftp, and http connection requests from customers or HASEs/Account Team Members
  - Central location for running support tools in the customer's MC environment
  - Facilitates HASE logins to MC machines

Connecting: Secure Shell



Devices Covered by Mission Critical Support Contracts

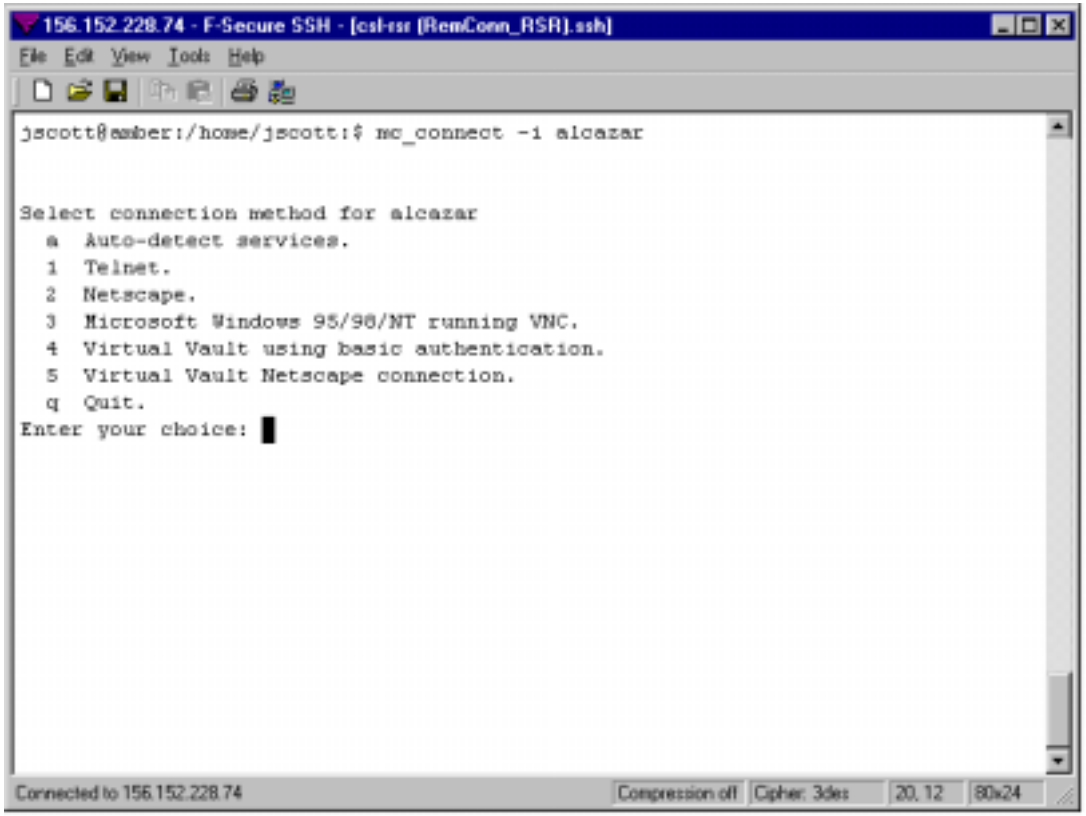
Ability to provide faster support for customers' problems



- **Access to MC systems**
  - Must come from HP Support Node
  - Only to customer authorized machines
  - No "telnets" to other machines
  - Unique HP login username/password for each HASE
  - Login and activity logging
- **System changes required:**
  - Tracker agent and HA Meter agent installation
  - Connectivity to HP Support Node (if needed)
- **No Other Changes are Necessary!**
  - No further change in security on these machines from present-day standards.
  - HASEs perform the same actions on these machines as they do today.

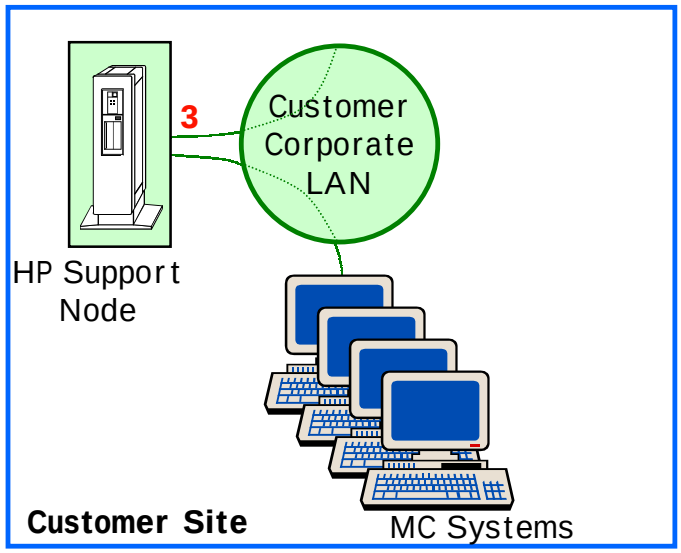
Connections: mc_connect

- Automatically determines connectivity method
- Select connectivity method
- Works with HP-UX, Windows NT/2000, VirtualVault, and network interconnect devices



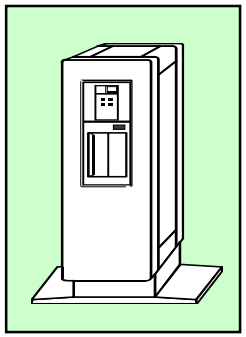
Connecting: VNC (Windows NT or 2000)

- Virtual Network Computing allows connectivity from the HP Support Node to the NT servers



Using VNC

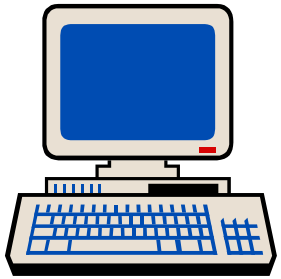
VNC Viewer



HP Support Node

VNC Protocol

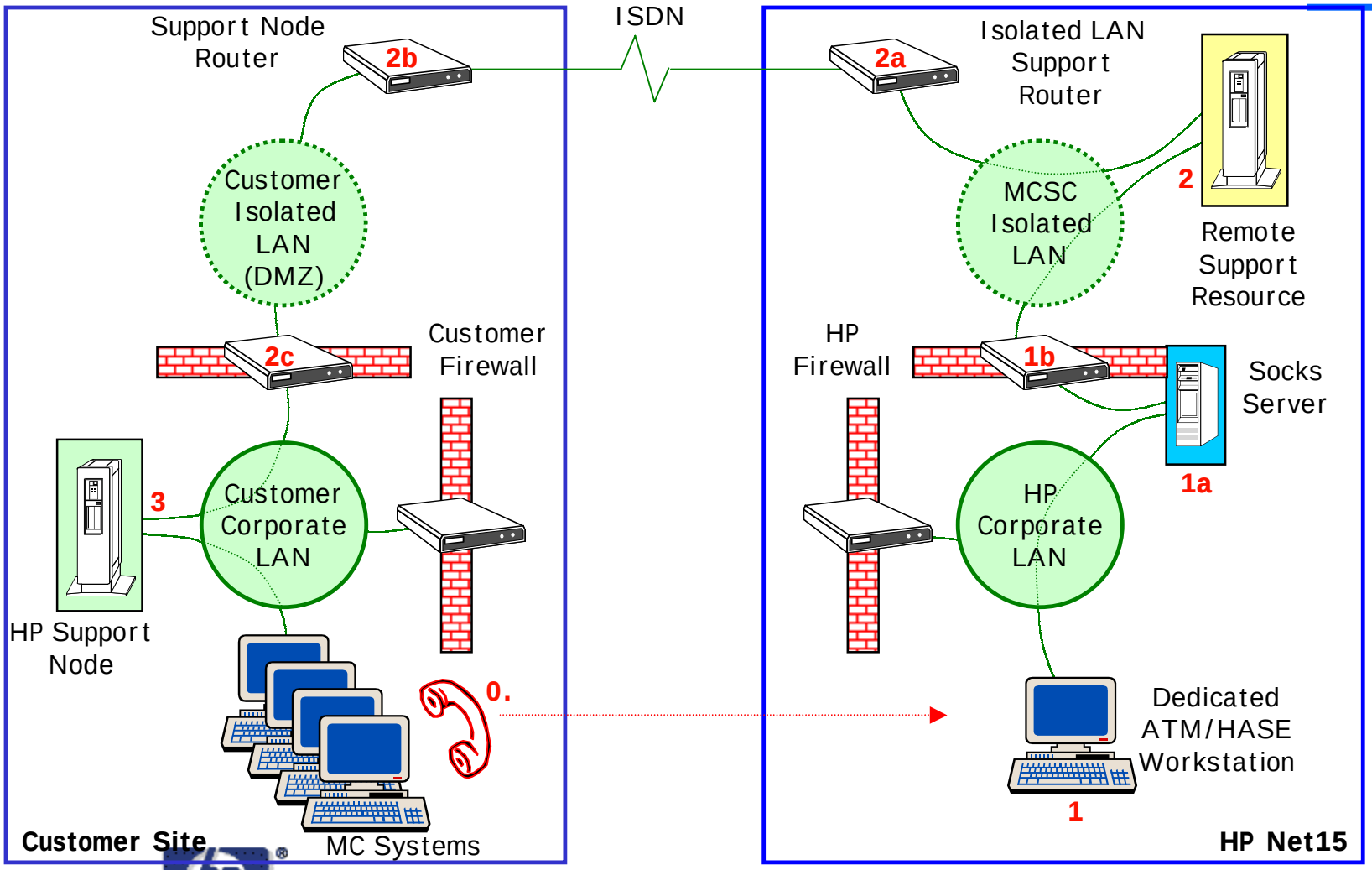
VNC Server



Mission Critical Windows NT or 2000 Server

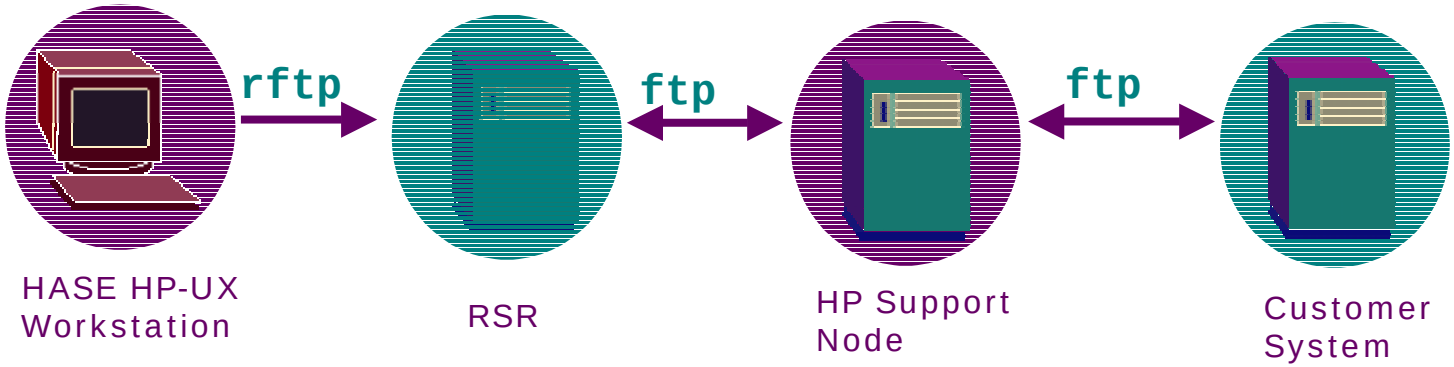
- Install VNC Server software onto Windows NT or 2000 Server using Tracker
- Initiate a session from the HP Support Node using the VNC Viewer

Remote Connectivity Review

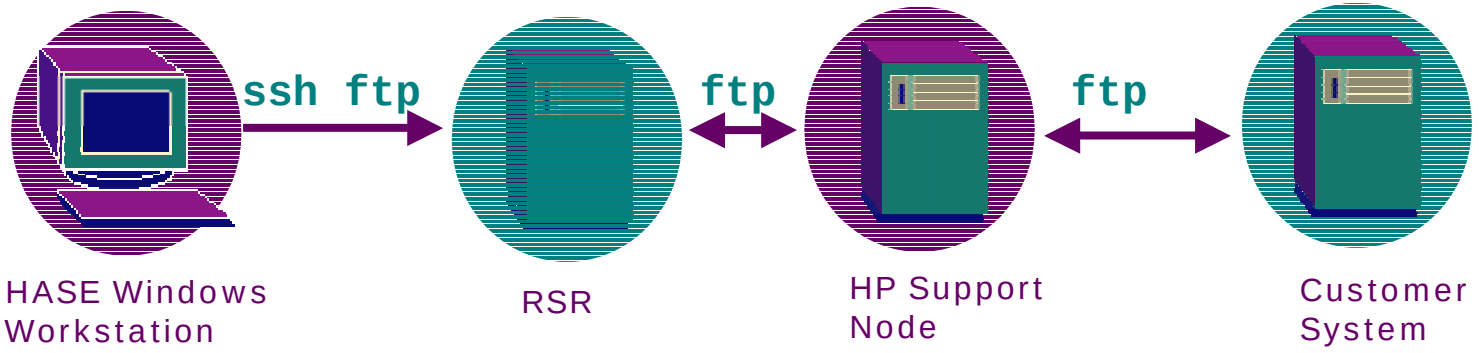


Connecting: File Transfer

Use `rftp` and `ftp` to transfer files from an HP-UX workstation.



Use `ssh ftp` and `ftp` to transfer files from a Windows workstation.



The arrows show where the transfer command must originate. However, files can be transferred in either direction.

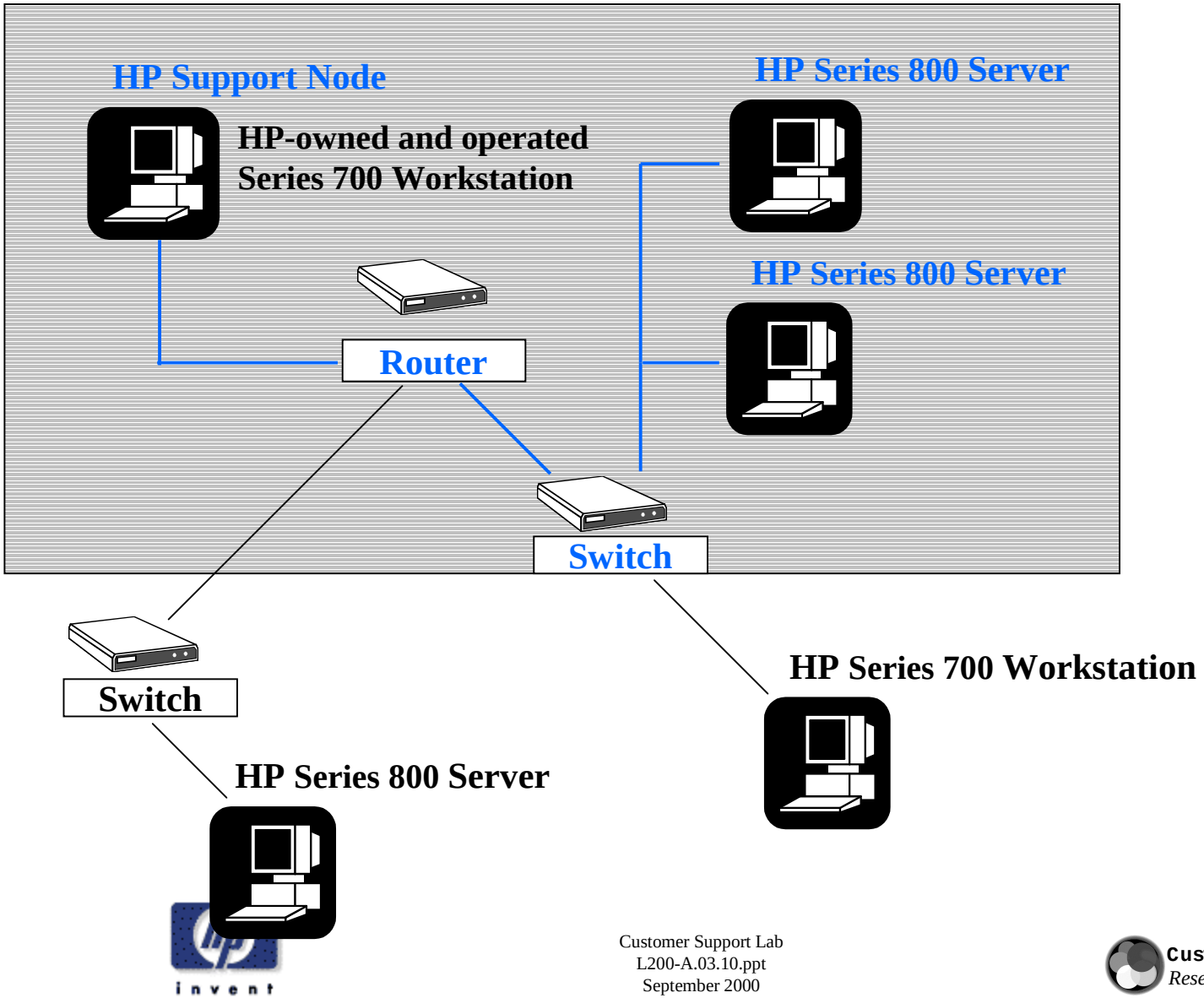
Network Node Manager

- ✓ NNM tracks device status and identifies topology changes within a specified Management Region. This enables rapid isolation of the network problem.
- Displays an up-to-date map of all servers and interconnect devices
- Collects status data and logs status changes of servers and interconnect devices
- Extends HP's view beyond the system - to the MC customer's environment
- NNM on the HP Support Node is a special version for HAO
  - It does not interfere with any installed customer copies running in the environment
  - It is for use only by HP support personnel

HAO NNM and HA-NISP

- ✓ HA-NISP collects and packages HAO NNM network topology and Tracker customer Information. It then sends this information to the MCSC via TOM.
- Network topology information available to Network Support Engineers
- Information updated once per week and loaded into the Network Support Repository residing in the MCSC
- Specialists use AutoMAP and Web NISP Manager to view topology information
- HASE/Account Team Member modifies the HP-NISP configuration file to set up data transport

Network Traffic - Example

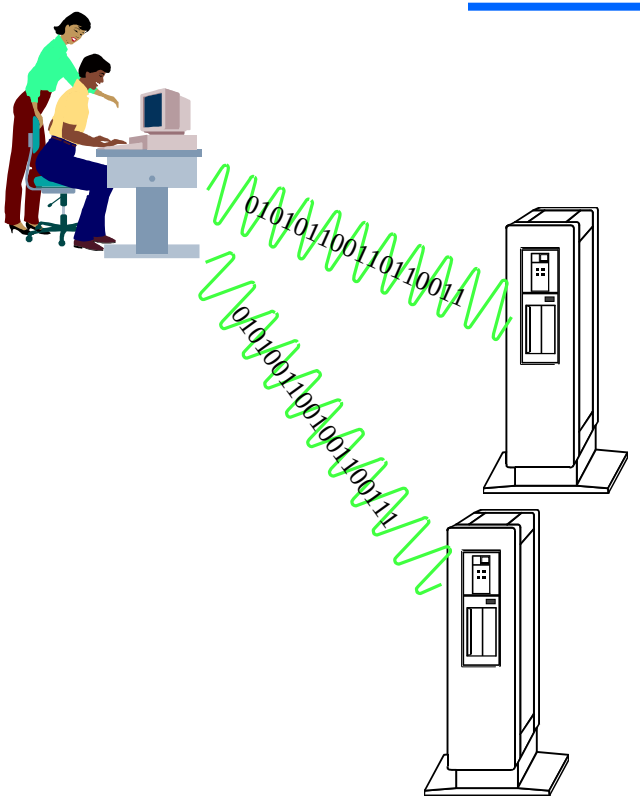


HP Configuration Tracker

- ✓ Significantly reduces time of gathering critical information
- Snapshots of critical systems configurations at daily or weekly intervals
- Differences between snapshots identified
- Hardware, software, network interconnect device configuration information transmitted to the MCSC
- Controls transport of configuration data to the MCSC

About Tracker

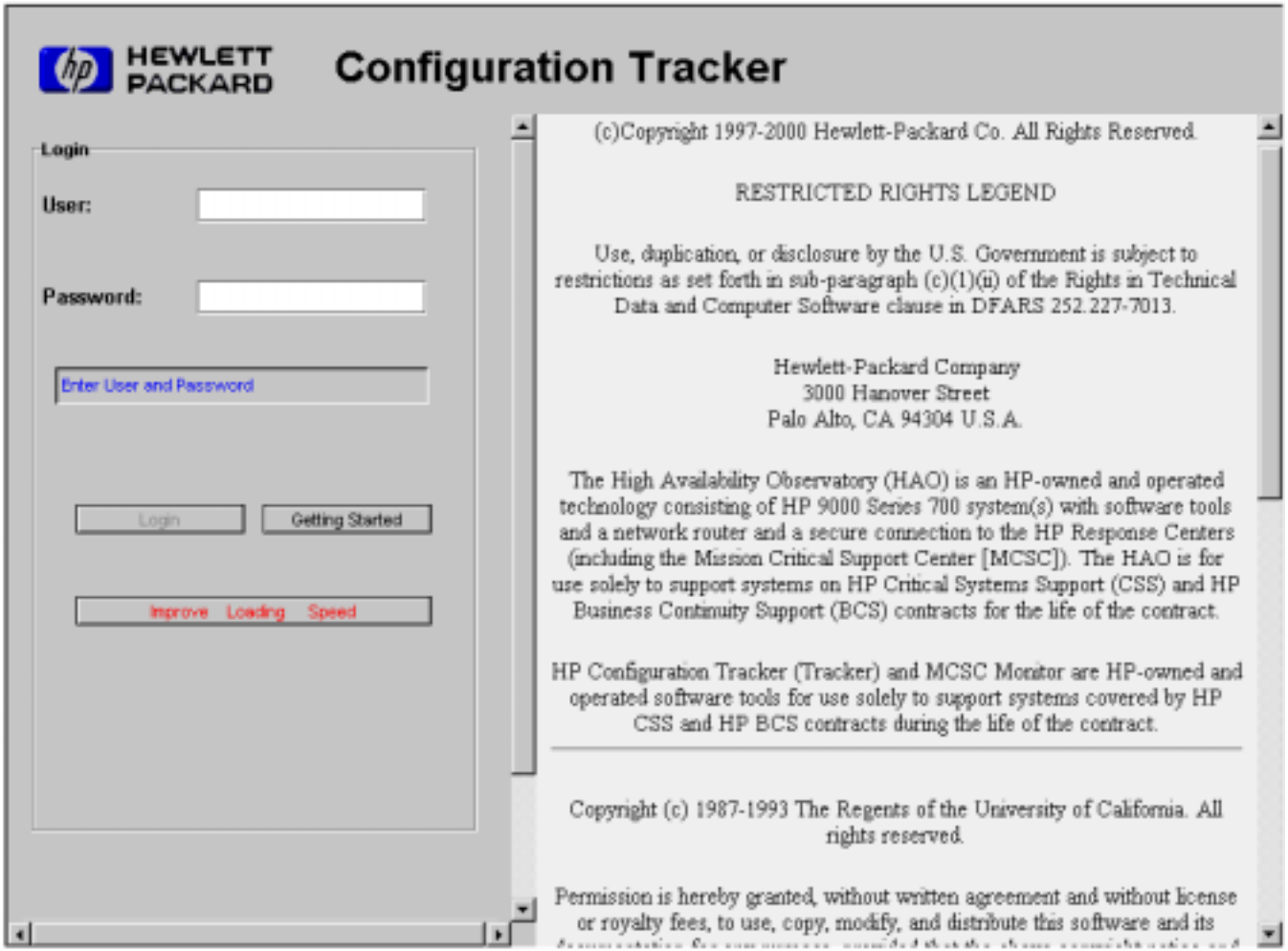
- Four Components
  - Tracker server
  - Tracked clients
  - Browser (Netscape or MS Internet Explorer)
  - Client software



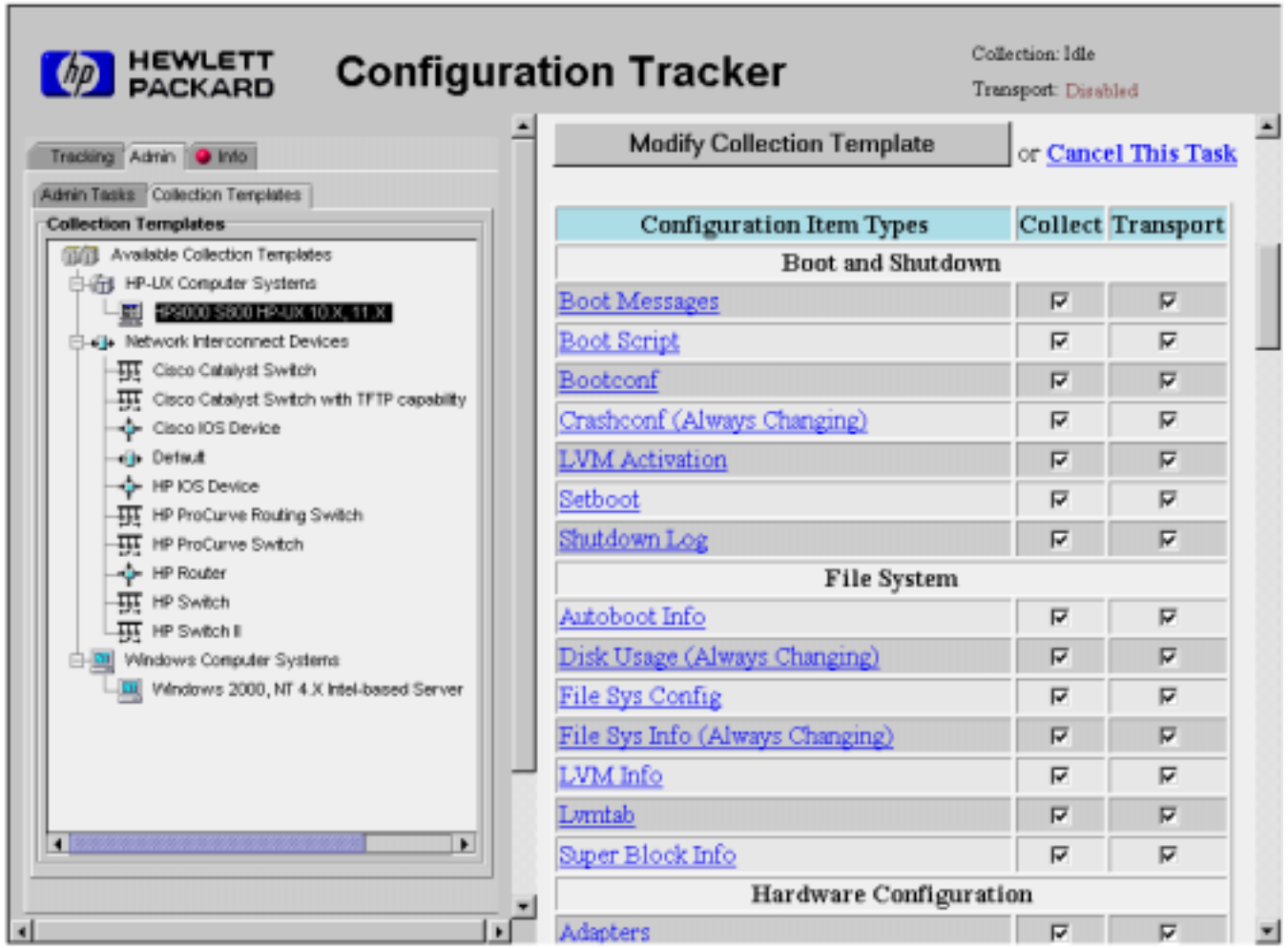
Tracker Users

- HA Support Engineer, from onsite or a remote HASE workstation, to view data and research problems
- MCSC Administrator or Account Team Member, from the Mission Critical Support Center (MCSC) at HP, to view data and research problems
- Customer System Administrator, from onsite, to view data only

Tracker Login Page



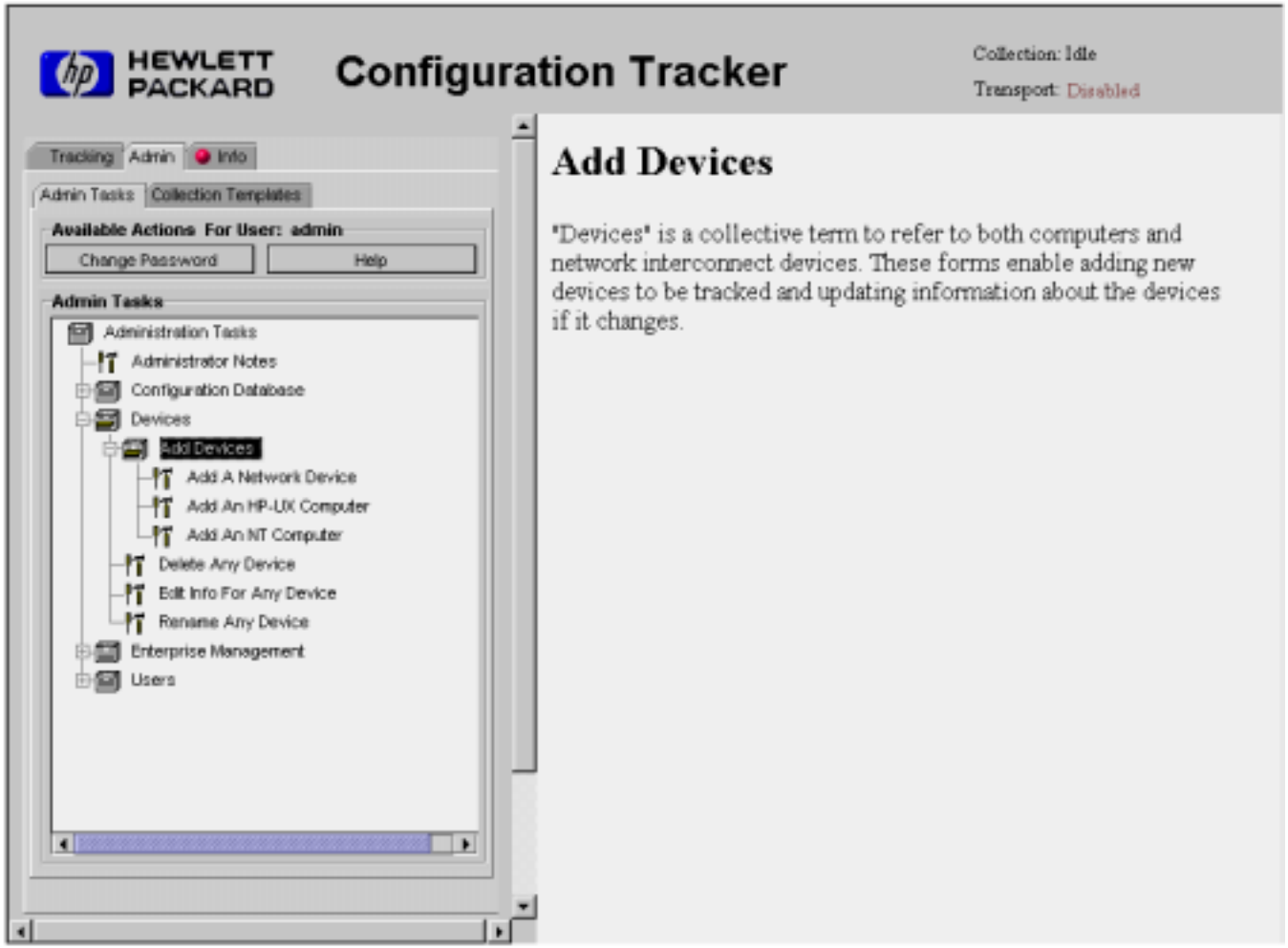
Data Collection Templates



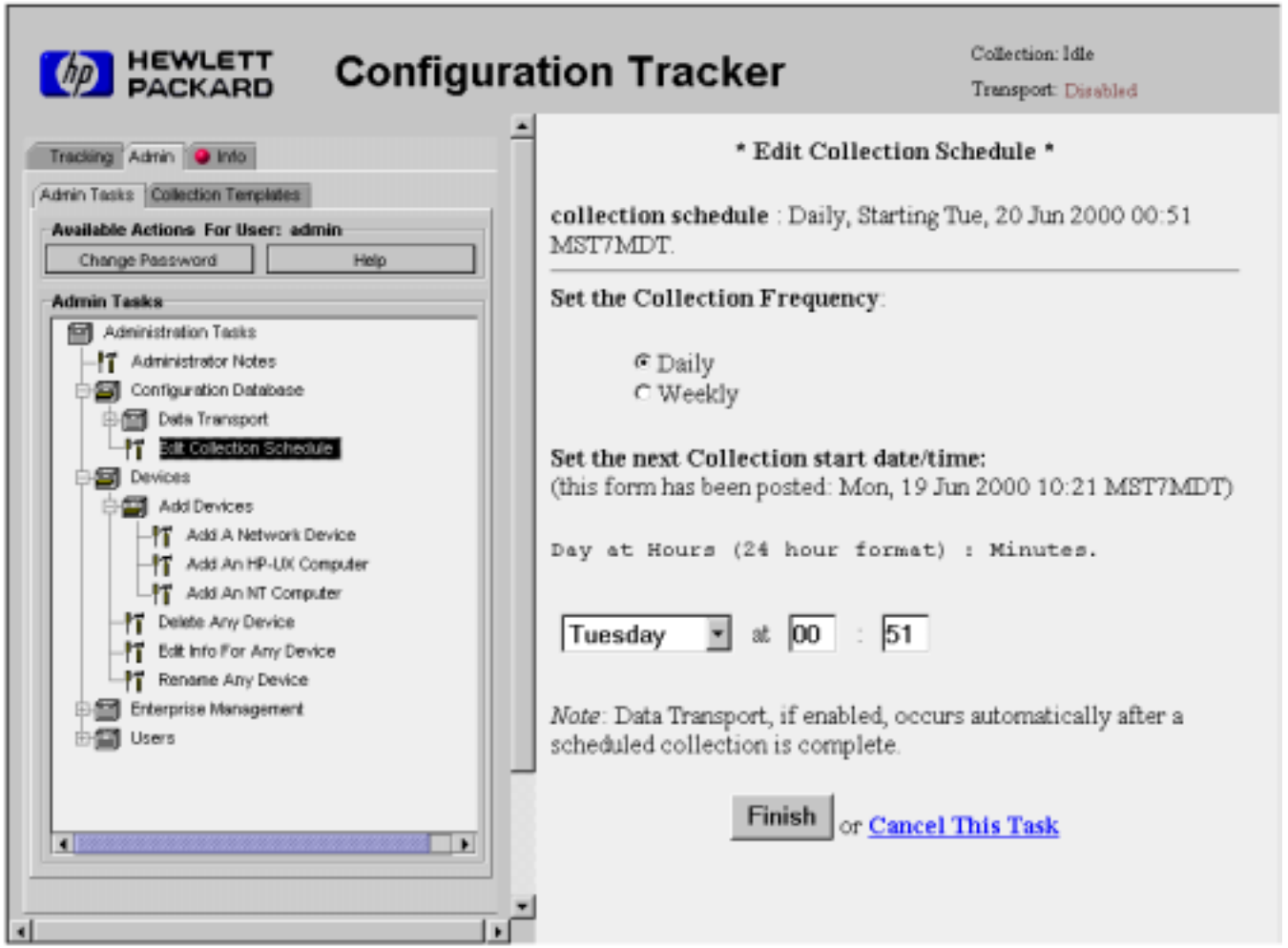
Add Devices

Add devices in Tracker to collect configuration data

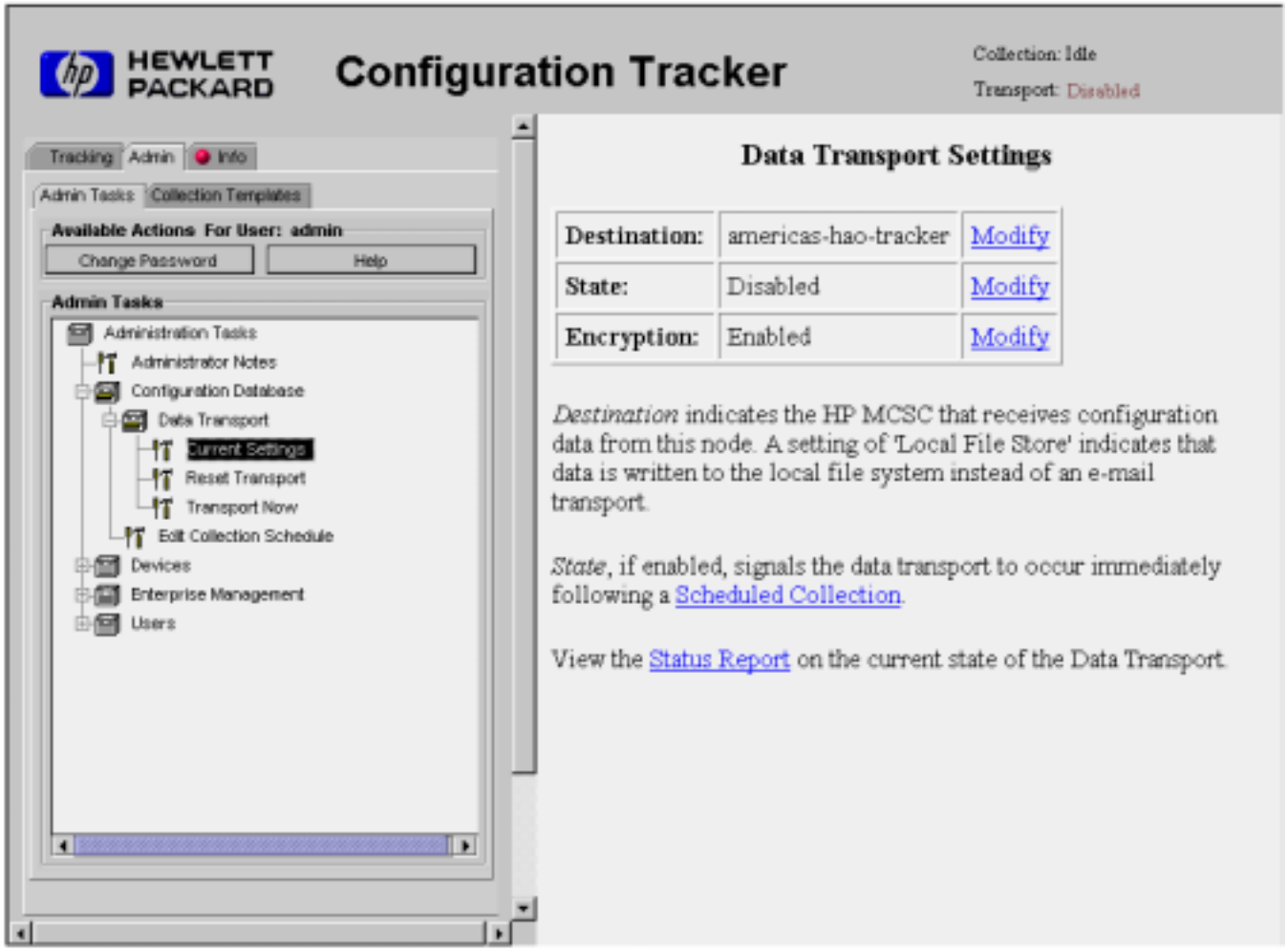
- HP-UX Servers
- NT Servers
- Windows 2000 Servers
- Network interconnect devices



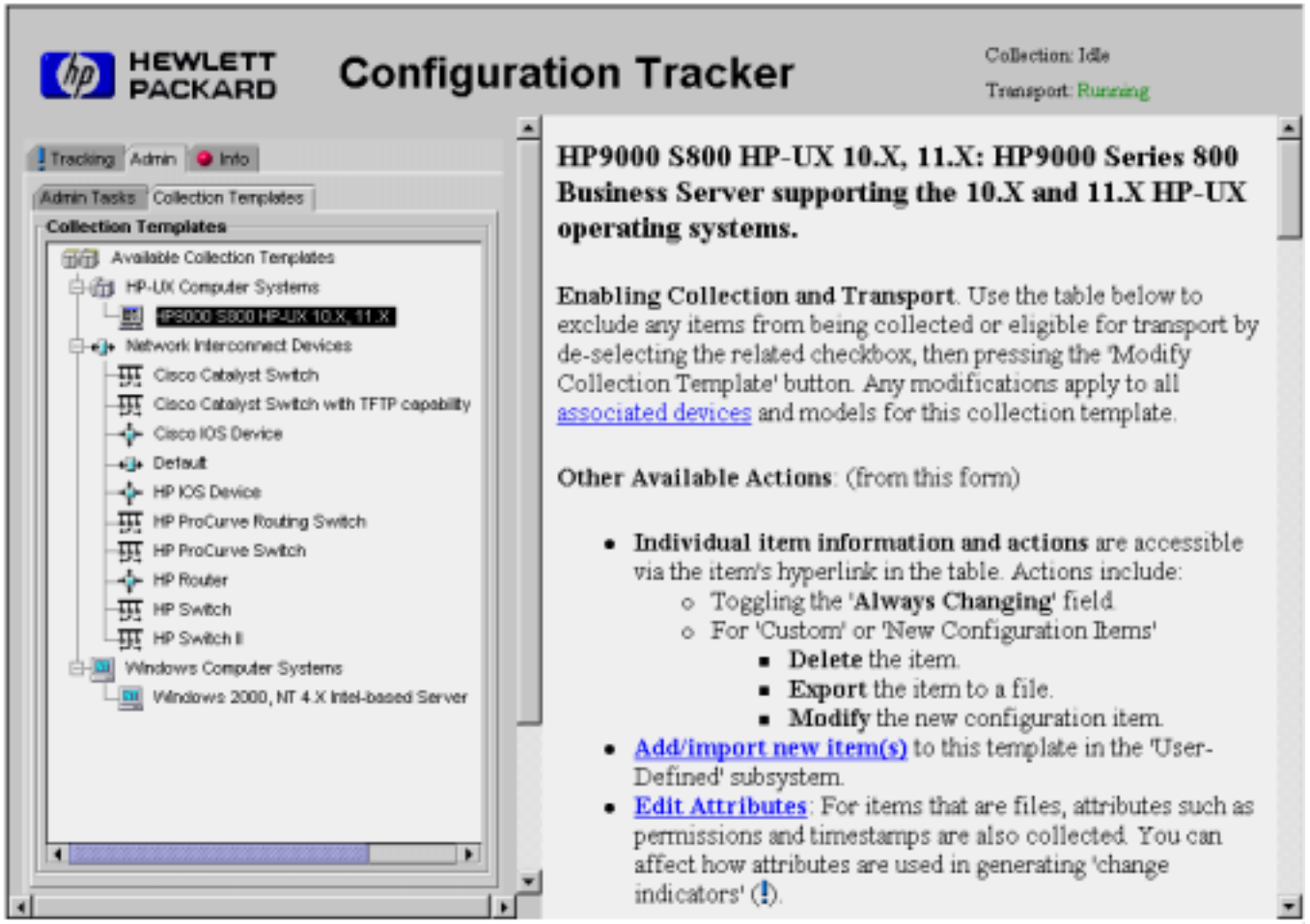
Edit Collection Schedule



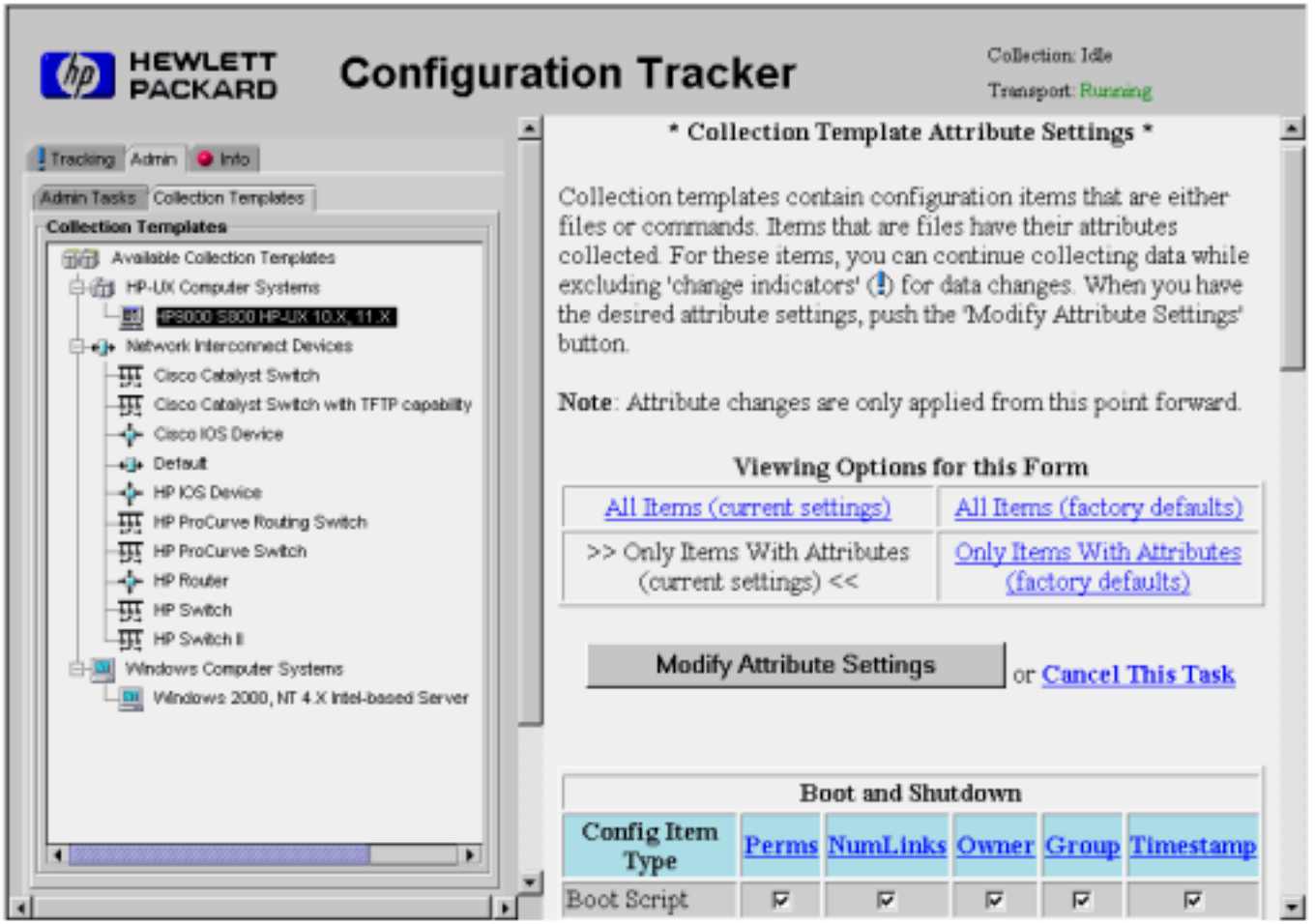
Data Transport: Data Transport Settings



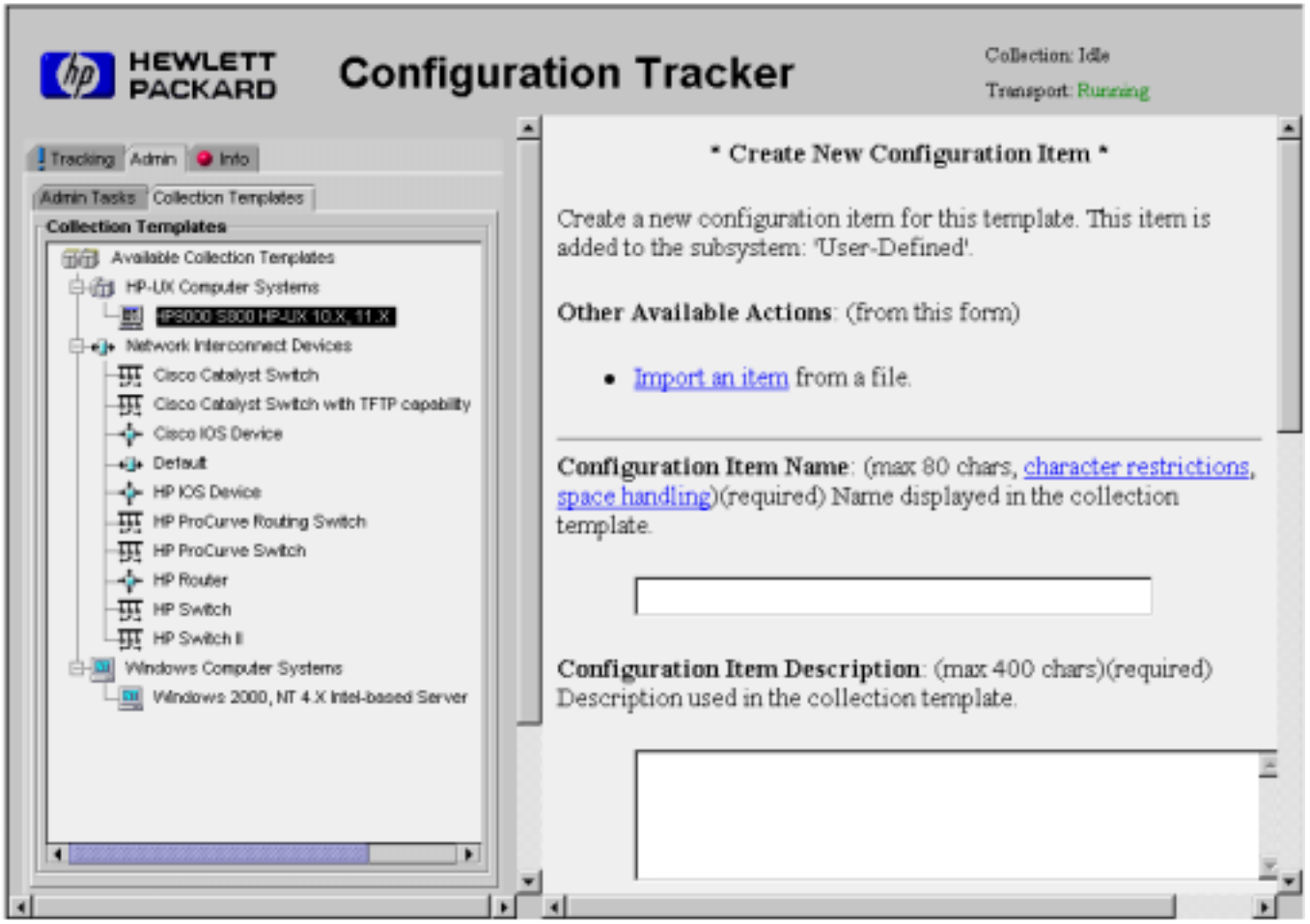
Modify Collection Templates



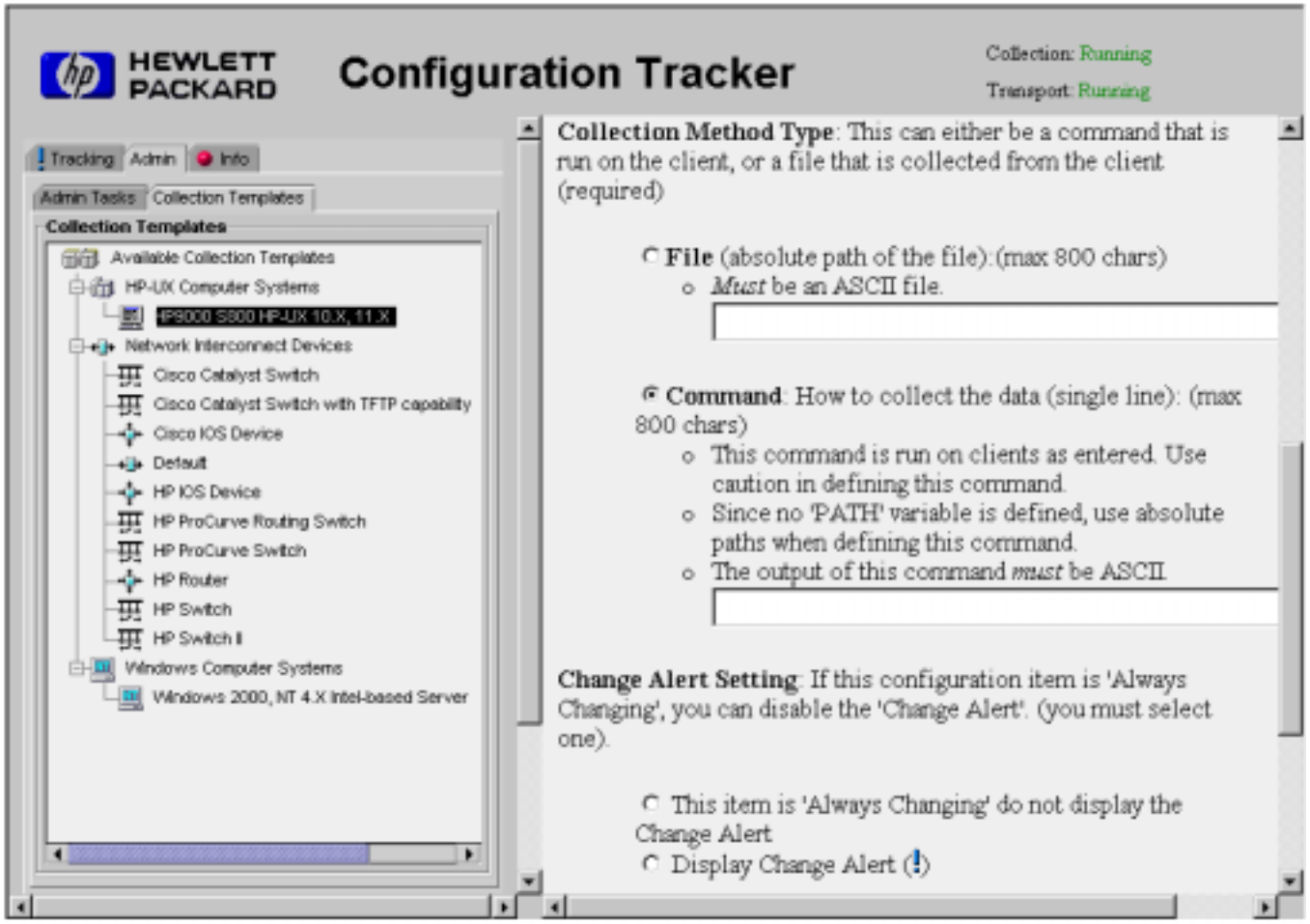
Modify Collection Templates: Attribute Settings



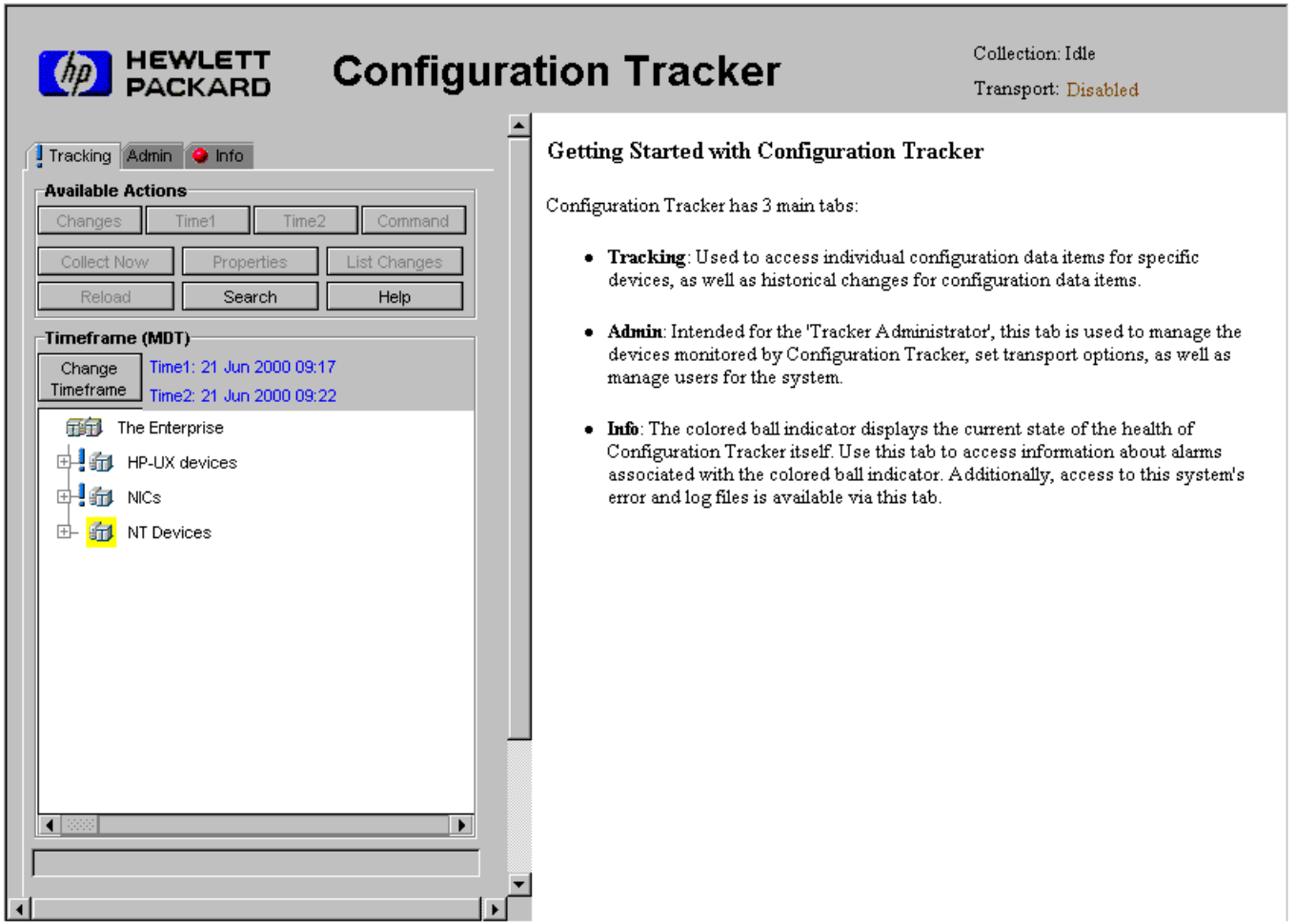
Modify Collection Templates: Create New Configuration Item



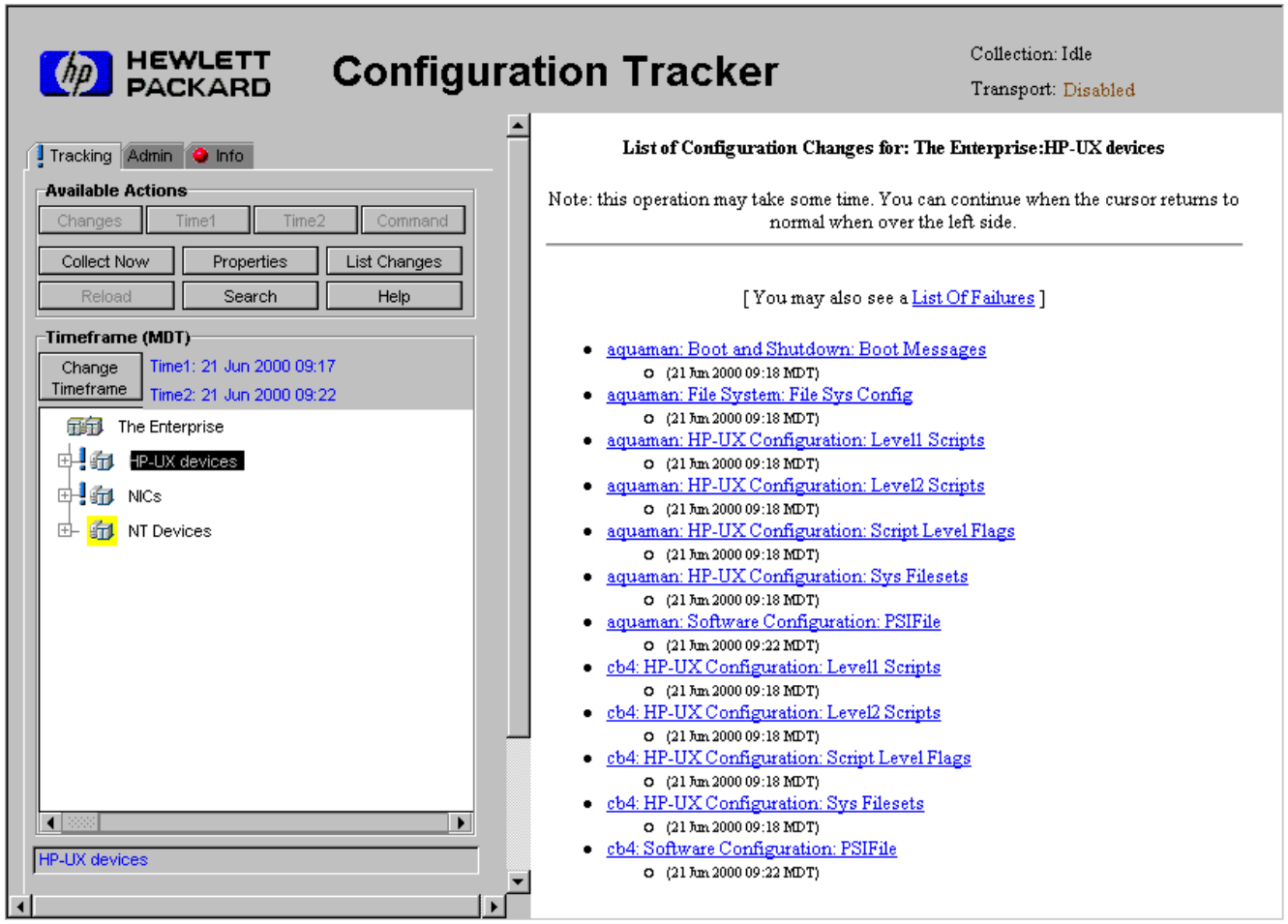
Modify Collection Templates: Create New Configuration Item



Tracking


HEWLETT PACKARD
Configuration Tracker
Collection: Idle
Transport: Disabled
Tracking
Admin
Info
Available Actions
Changes
Time1
Time2
Command
Collect Now
Properties
List Changes
Reload
Search
Help
Timeframe (MDT)
Change Timeframe
Time1: 21 Jun 2000 09:17
Time2: 21 Jun 2000 09:22
The Enterprise
HP-UX devices
NICs
NT Devices
Getting Started with Configuration Tracker
Configuration Tracker has 3 main tabs:
Tracking: Used to access individual configuration data items for specific devices, as well as historical changes for configuration data items.
Admin: Intended for the 'Tracker Administrator', this tab is used to manage the devices monitored by Configuration Tracker, set transport options, as well as manage users for the system.
Info: The colored ball indicator displays the current state of the health of Configuration Tracker itself. Use this tab to access information about alarms associated with the colored ball indicator. Additionally, access to this system's error and log files is available via this tab.

Tracking: Data Changes



Tracking: Individual Changes

HEWLETT PACKARD **Configuration Tracker**

Collection: Idle
Transport: Disabled

Tracking | Admin | Info

Available Actions

Changes | Time1 | Time2 | Command
Collect Now | Properties | List Changes
Reload | Search | Help

Timeframe (MDT)

Change Timeframe
Time1: 21 Jun 2000 09:17
Time2: 21 Jun 2000 10:22

- File System
- Hardware Configuration
- HP-UX Configuration
  - Device Drivers
  - HPUX Lib
  - Init File
  - Kernel Config
  - Kernel Version (Current)
  - Kernel Version (Previous)
  - Level1 Scripts
  - Level2 Scripts
  - Level3 Scripts

...aquaman:HP-UX Configuration:Level1 Scripts

Data changes detected between Time2 and Time1:

Line 4 of the *time1* revision:

```
lrwxr-xr-x 1 root sys 21 Apr 19 02:42 2000 K110HAMagent -> /sbin/init
```

replaced by line 4 of the *time2* revision:

```
lrwxr-xr-x 1 root sys 21 Jun 19 14:38 2000 K110HAMagent -> /sbin/init
```

Line 266 of the *time1* revision:

```
lrwxr-xr-x 1 root sys 21 Apr 19 02:42 2000 /sbin/rcl.d/K110HAMagent -
```

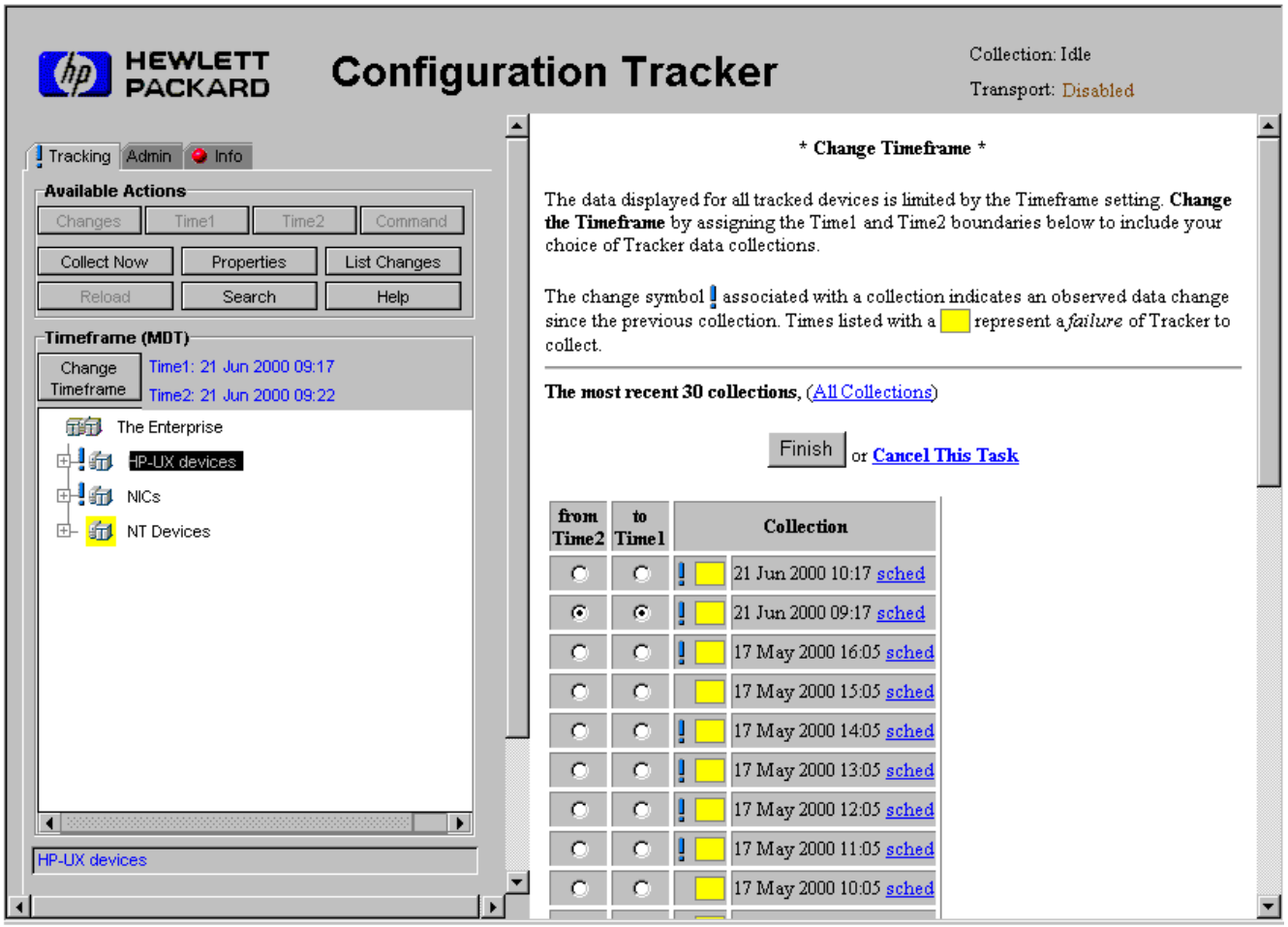
replaced by line 266 of the *time2* revision:

```
lrwxr-xr-x 1 root sys 21 Jun 19 14:38 2000 /sbin/rcl.d/K110HAMagent -
```

Event Time	Event Information
21 Jun 2000 10:22	'Time2'
21 Jun 2000 09:18	The item changed.
21 Jun 2000 09:17	'Time1'

('Always Changing' items won't have change events.)

Change the Collection Timeframe

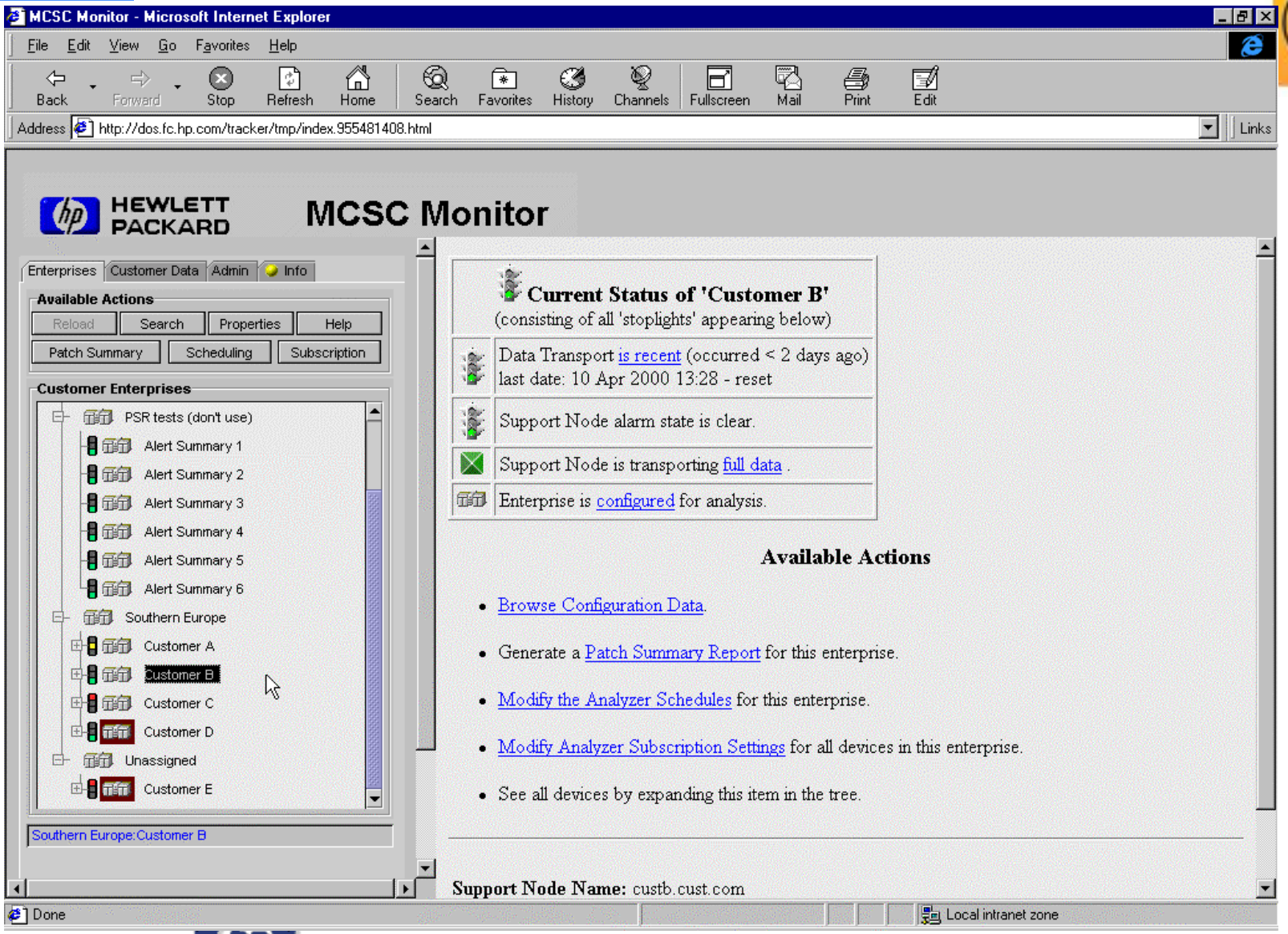


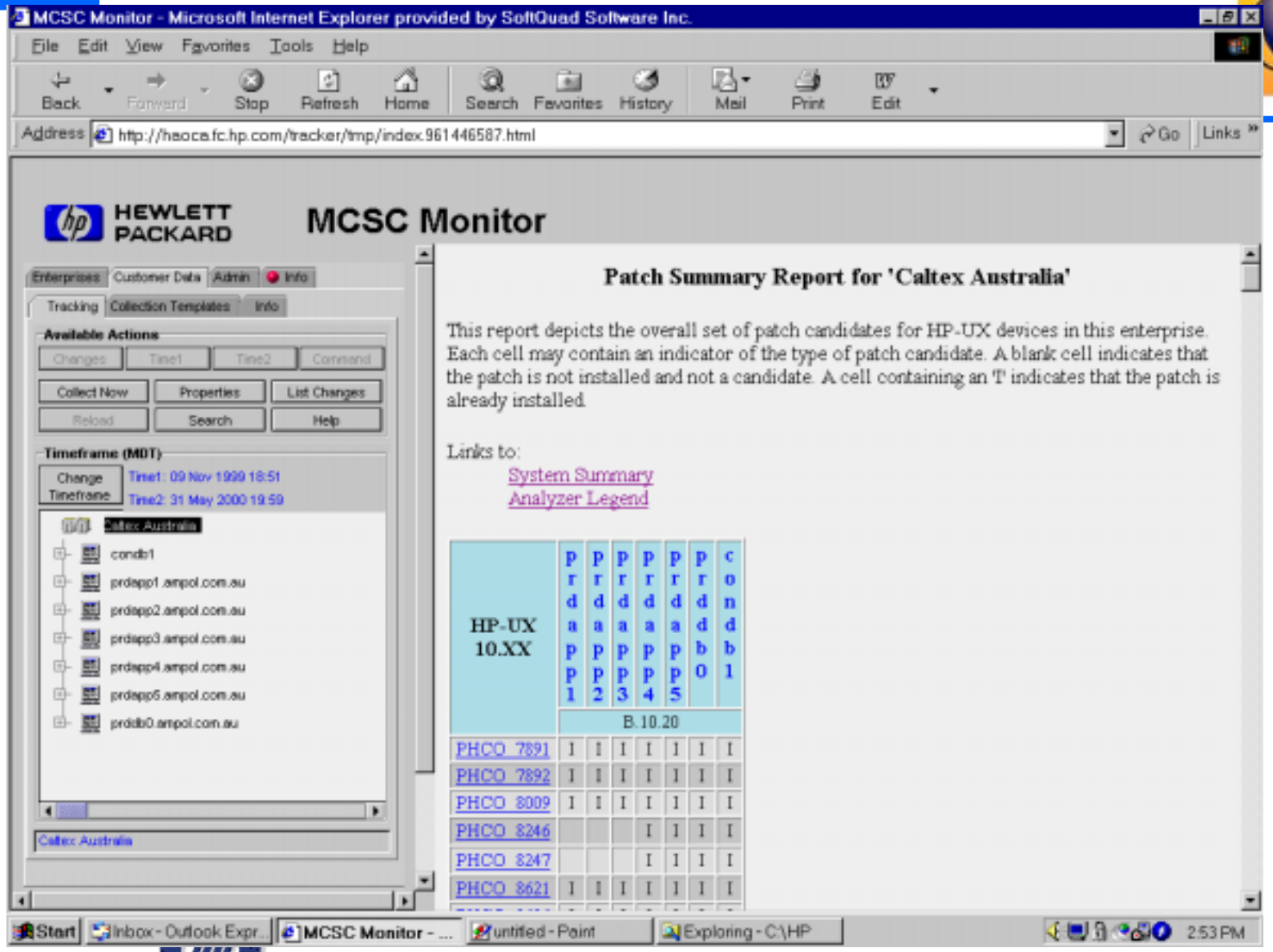
Health/Link Checker reports

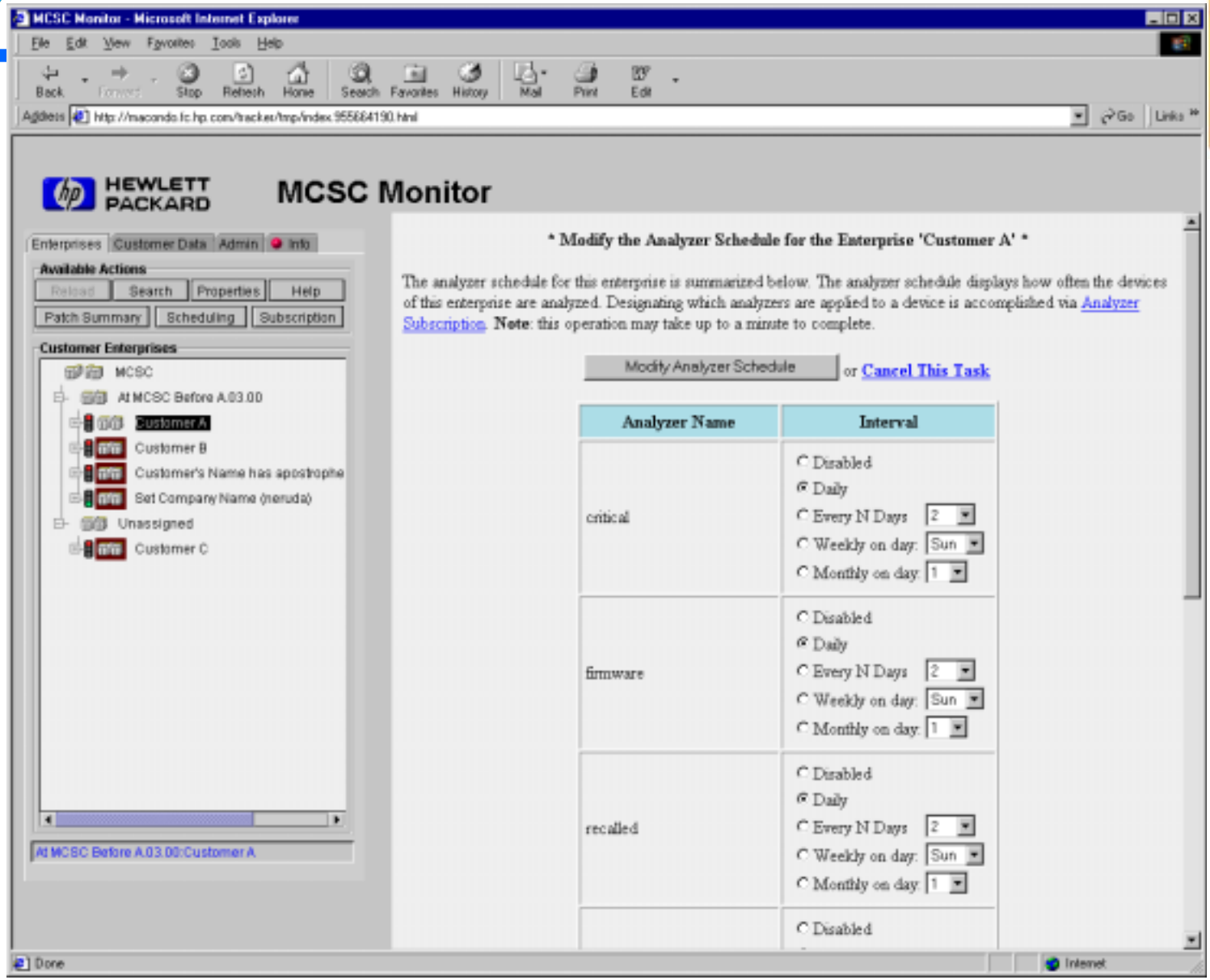
HAO Support Node
Health & ISDN Link Status Report

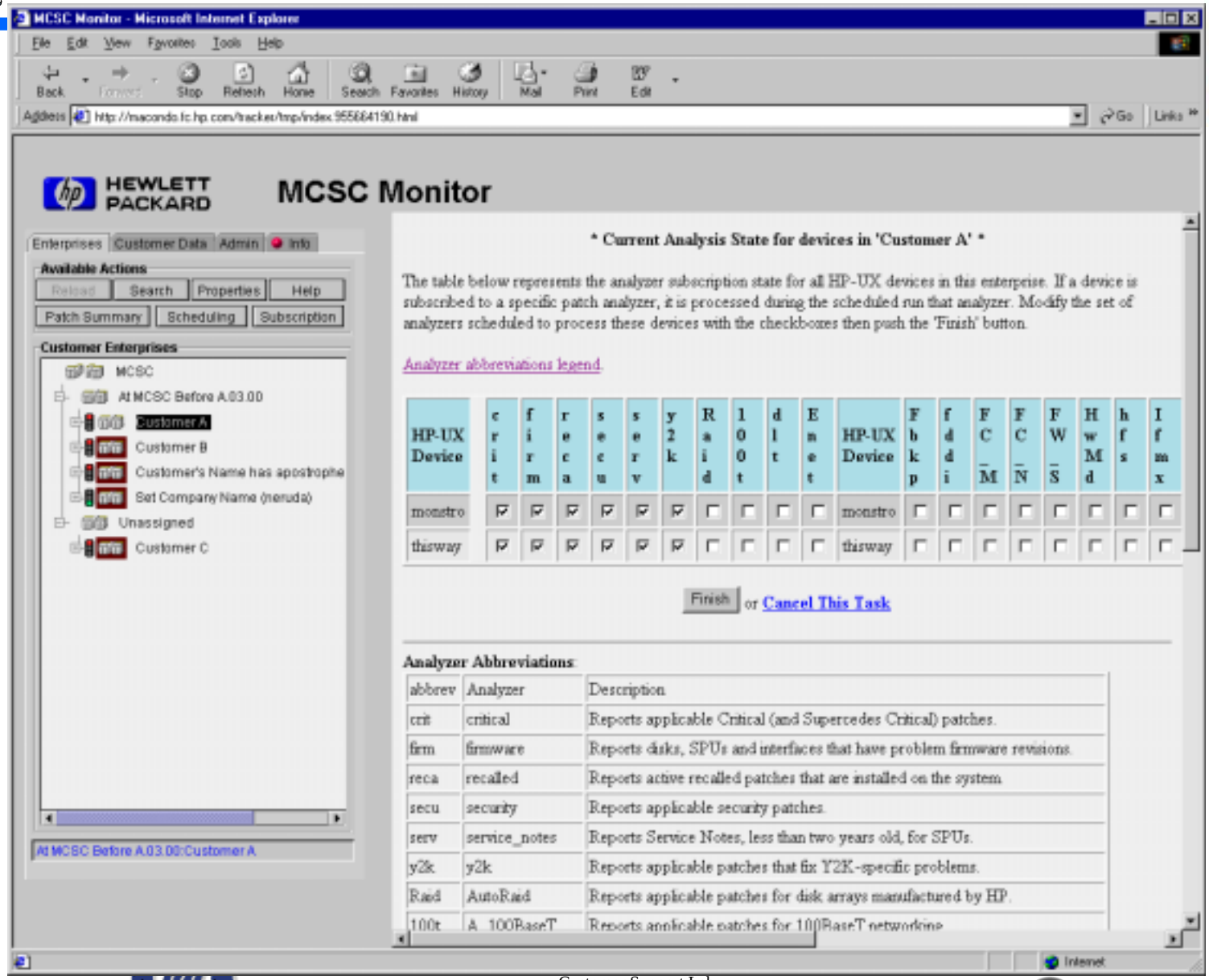
version:
created: Jul/07/2000 08:15 (UTC)
Germany, ISE, Other, Spain, UK, US,

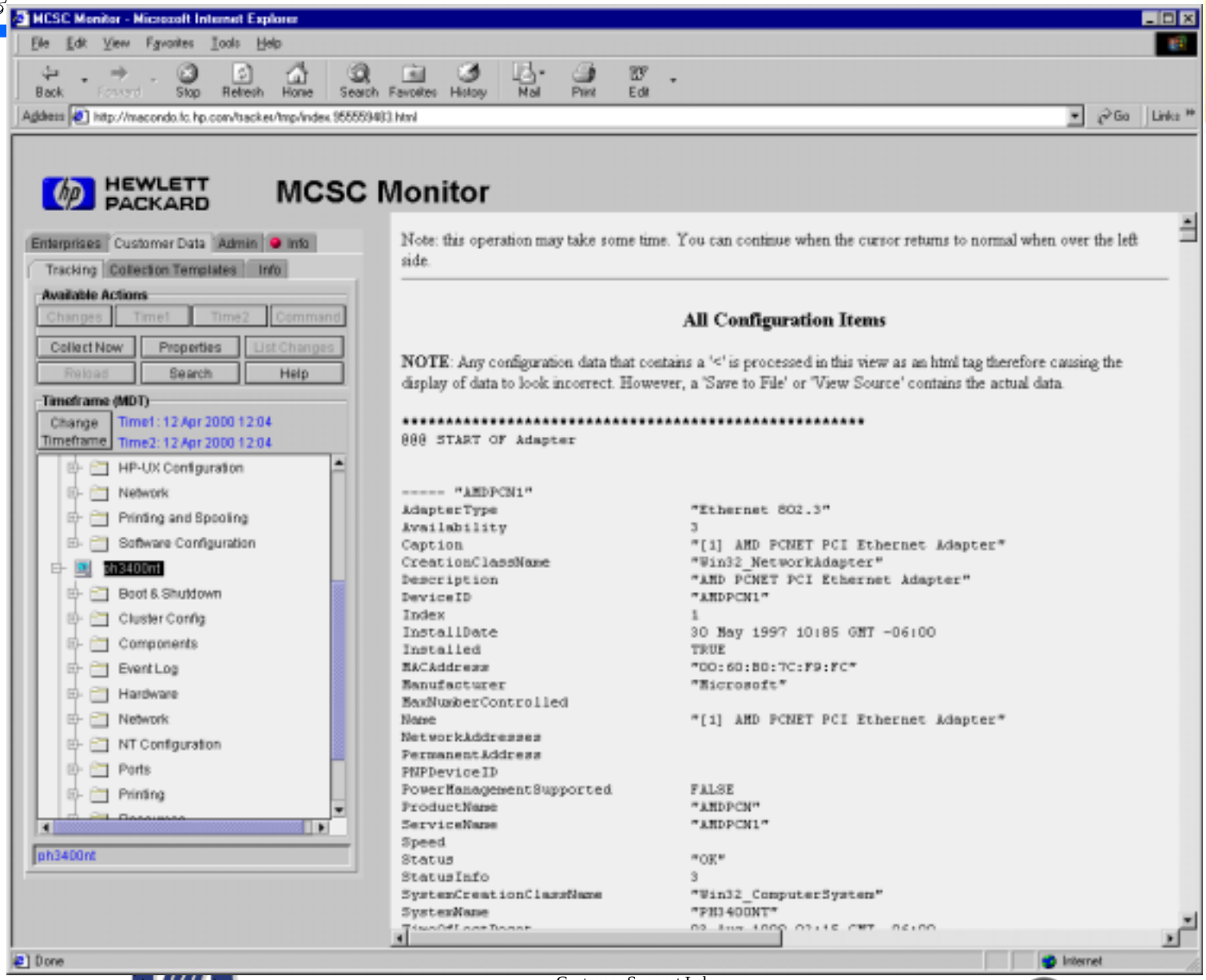
Customer	Node	Bracknell bracknell.hp.com Bra/01/2000 01:01 (UTC) Link Status (time tested)	Brussels brussels.hp.com Bru/01/2000 01:01 (UTC) Link Status (time tested)	Comment
Germany				
Company 1 (Germany) Jun/21/2000 01:01 (UTC)	1.1.1.1	OK May/14/2000 01:01 (UTC)	OK May/14/2000 01:01 (UTC)	
Company 2 (Germany) Jun/21/2000 01:02 (UTC)	1.1.1.2	data not available yet	OK May/14/2000 01:02 (UTC)	
Company 3 (Germany) Jun/21/2000 01:03 (UTC)	1.1.1.3	OK May/14/2000 01:03 (UTC)	data not available yet	
Company 6 (Germany) Jun/21/2000 01:06 (UTC)	1.1.1.6	not configured	ISDN May/14/2000 01:06 (UTC)	* no call logged yet, ...link failure in 6 report cycle is below configured limit
Company 7 (Germany) Jun/21/2000 01:07 (UTC)	1.1.1.7	OK May/14/2000 01:07 (UTC)	n/a RATS switched off	
Company 8 (Germany)	1.1.1.8	data not available yet	data not available yet	
ISE				
Company 44 (ISE) Jun/21/2000 04:04 (UTC)	1.1.4.4	OK May/14/2000 04:04 (UTC) special connection required	OK May/14/2000 04:04 (UTC) special connection required	* brussels.hp.com: no customer name configured
Other				
Company 41 (Other) Jun/21/2000 04:01 (UTC)	1.1.4.1	SNR (200.200.200.200) May/14/2000 04:01 (UTC)	SNR (200.200.200.200) May/14/2000 04:01 (UTC)	* call logged Jul/04/2000
Company 42 Jun/21/2000 04:02 (UTC)	1.1.4.2	ISDN May/14/2000 04:02 (UTC) special connection required	ISDN May/14/2000 04:02 (UTC)	* known link issue, but no call info stored
Company 43 Jun/21/2000 04:03 (UTC)	1.1.4.3	OK May/14/2000 04:03 (UTC) special connection required	OK May/14/2000 04:03 (UTC) special connection required	


MCSC Monitor - Microsoft Internet Explorer
File Edit View Go Favorites Help
Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print Edit
Address http://dos.fc.hp.com/tracker/tmp/index.955481408.html
Links
HEWLETT PACKARD
MCSC Monitor
Enterprises Customer Data Admin Info
Available Actions
Reload Search Properties Help
Patch Summary Scheduling Subscription
Customer Enterprises
PSR tests (don't use)
Alert Summary 1
Alert Summary 2
Alert Summary 3
Alert Summary 4
Alert Summary 5
Alert Summary 6
Southern Europe
Customer A
Customer B
Customer C
Customer D
Unassigned
Customer E
Southern Europe:Customer B
Current Status of 'Customer B'
(consisting of all 'stoplights' appearing below)
Data Transport is recent (occurred < 2 days ago)
last date: 10 Apr 2000 13:28 - reset
Support Node alarm state is clear.
Support Node is transporting full data .
Enterprise is configured for analysis.
Available Actions
Browse Configuration Data.
Generate a Patch Summary Report for this enterprise.
Modify the Analyzer Schedules for this enterprise.
Modify Analyzer Subscription Settings for all devices in this enterprise.
See all devices by expanding this item in the tree.
Support Node Name: custb.cust.com
Done
Local intranet zone


MCSC Monitor - Microsoft Internet Explorer provided by SoftQuad Software Inc.
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit
Address http://haoca.fc.hp.com/tracker/tmp/index.961446587.html
Go Links
HEWLETT PACKARD
MCSC Monitor
Enterprises Customer Data Admin Info
Tracking Collection Templates Info
Available Actions
Changes Time1 Time2 Command
Collect Now Properties List Changes
Reload Search Help
Timeframe (MDT)
Change Timeframe
Time1: 09 Nov 1999 18:51
Time2: 31 May 2000 19:59
Caltex Australia
condb1
prdapp1.ampol.com.au
prdapp2.ampol.com.au
prdapp3.ampol.com.au
prdapp4.ampol.com.au
prdapp5.ampol.com.au
prddb0.ampol.com.au
Caltex Australia
Patch Summary Report for 'Caltex Australia'
This report depicts the overall set of patch candidates for HP-UX devices in this enterprise. Each cell may contain an indicator of the type of patch candidate. A blank cell indicates that the patch is not installed and not a candidate. A cell containing an T indicates that the patch is already installed.
Links to:
System Summary
Analyzer Legend
HP-UX 10.XX
prdapp1 prdapp2 prdapp3 prdapp4 prdapp5 prddb0 condb1
B.10.20
PHCO_7891 I I I I I I I
PHCO_7892 I I I I I I I
PHCO_8009 I I I I I I I
PHCO_8246 I I I I
PHCO_8247 I I I I
PHCO_8621 I I I I I I I
Start
Inbox - Outlook Expr...
MCSC Monitor - ...
untitled - Paint
Exploring - C:\HP
2:53 PM


MCSC Monitor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit
Address http://macondo.fc.hp.com/tracker/tmp/index.955664190.html
Go Links
HEWLETT PACKARD
MCSC Monitor
Enterprises Customer Data Admin Info
Available Actions
Reload Search Properties Help
Patch Summary Scheduling Subscription
Customer Enterprises
MCSC
At MCSC Before A.03.00
Customer A
Customer B
Customer's Name has apostrophe
Set Company Name (neruda)
Unassigned
Customer C
At MCSC Before A.03.00:Customer A
* Modify the Analyzer Schedule for the Enterprise 'Customer A' *
The analyzer schedule for this enterprise is summarized below. The analyzer schedule displays how often the devices of this enterprise are analyzed. Designating which analyzers are applied to a device is accomplished via Analyzer Subscription. Note: this operation may take up to a minute to complete.
Modify Analyzer Schedule
or Cancel This Task
Analyzer Name
Interval
critical
firmware
recalled
Disabled
Daily
Every N Days 2
Weekly on day: Sun
Monthly on day: 1
Done
Internet


MCSC Monitor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit
Address http://macondo.lc.hp.com/tracker/tmp/index.955664190.html
Go Links
HEWLETT PACKARD
MCSC Monitor
Enterprises Customer Data Admin Info
Available Actions
Reload Search Properties Help
Patch Summary Scheduling Subscription
Customer Enterprises
MCSC
At MCSC Before A.03.00
Customer A
Customer B
Customer's Name has apostrophe
Set Company Name (neruda)
Unassigned
Customer C
At MCSC Before A.03.00:Customer A
* Current Analysis State for devices in 'Customer A' *
The table below represents the analyzer subscription state for all HP-UX devices in this enterprise. If a device is subscribed to a specific patch analyzer, it is processed during the scheduled run that analyzer. Modify the set of analyzers scheduled to process these devices with the checkboxes then push the 'Finish' button.
Analyzer abbreviations legend.
HP-UX Device crit firm reca secu serv y2k Raid 100t dlt Enet HP-UX Device Fbkp fddi FC_M FC_N FW_S HwMd hfs Ifmx
monstro
thisway
Finish or Cancel This Task
Analyzer Abbreviations:
abbrev Analyzer Description
crit critical Reports applicable Critical (and Supercedes Critical) patches.
firm firmware Reports disks, SPUs and interfaces that have problem firmware revisions.
reca recalled Reports active recalled patches that are installed on the system.
secu security Reports applicable security patches.
serv service_notes Reports Service Notes, less than two years old, for SPUs.
y2k y2k Reports applicable patches that fix Y2K-specific problems.
Raid AutoRaid Reports applicable patches for disk arrays manufactured by HP.
100t A_100BaseT Reports applicable patches for 100BaseT networking
Internet


MCSC Monitor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail Print Edit
Address http://macondo.fc.hp.com/tracker/tmp/index.95555983.html
Go Links
HEWLETT PACKARD
MCSC Monitor
Enterprises Customer Data Admin Info
Tracking Collection Templates Info
Available Actions
Changes Time1 Time2 Command
Collect Now Properties List Changes
Reload Search Help
Timeframe (MDT)
Change Timeframe
Time1: 12 Apr 2000 12:04
Time2: 12 Apr 2000 12:04
HP-UX Configuration
Network
Printing and Spooling
Software Configuration
ph3400nt
Boot & Shutdown
Cluster Config
Components
Event Log
Hardware
Network
NT Configuration
Ports
Printing
ph3400nt
Note: this operation may take some time. You can continue when the cursor returns to normal when over the left side.
All Configuration Items
NOTE: Any configuration data that contains a '<' is processed in this view as an html tag therefore causing the display of data to look incorrect. However, a 'Save to File' or 'View Source' contains the actual data.
****
@@@ START OF Adapter
----- "AMDPCN1"
AdapterType "Ethernet 802.3"
Availability 3
Caption "[1] AMD PCNET PCI Ethernet Adapter"
CreationClassName "Win32_NetworkAdapter"
Description "AMD PCNET PCI Ethernet Adapter"
DeviceID "AMDPCN1"
Index 1
InstallDate 30 May 1997 10:05 GMT -06:00
Installed TRUE
MACAddress "00:60:B0:7C:F9:FC"
Manufacturer "Microsoft"
MaxNumberControlled
Name "[1] AMD PCNET PCI Ethernet Adapter"
NetworkAddresses
PermanentAddress
PNPDeviceID
PowerManagementSupported FALSE
ProductName "AMDPCN"
ServiceName "AMDPCN1"
Speed
Status "OK"
StatusInfo 3
SystemCreationClassName "Win32_ComputerSystem"
SystemName "PH3400NT"
Done
Internet

HP Configuration Analyzer

- ✓ HP Configuration Analyzer (CA) automatically analyzes customer configurations by patch, service note, and firmware analyzers. It automatically notifies the Mission Critical Support Center by creating workflow cases.
- Proactive analysis occurs automatically once configuration data arrives at the MCSC
- Case automatically generated in Workflow Management System to notify HP Support Personnel of potential problems

Application Patch Analyzers - List of Analyzers

- AutoRaid
- A_100BaseT
- DLT
- Ethernet
- Fbackup
- FDDI
- FibreChannelMS
- FibreChannelNet
- FWSCSI
- HardwareModel
- HFS
- Informix
- JFS

Application Patch Analyzers - List of Analyzers (continued)

- LPSpooler
- LVM
- Mirroring
- NFS
- OmniBack
- OnlineJFS
- Oracle
- OS
- Predictive
- SAP
- ServiceGuard
- SESCSI
- SNA
- X25

HP High Availability Observatory Level 200 Training

Course Objectives

- Part 1 - Review the Site Prep Process
- Part 2 - Install and Configure the Support Node Router and HP Support Node
- Part 3 - Connect to the customer's MC Environment
- Part 4 - Configure and use the HAO Support Tools
- Part 5 - Use Support Tools in the MCSC
- **Completed!**

You are Here