Security and Administration

Overview

This section describes the security and administration for the Centrex IP Client Manager (CICM) component, it describes tools and utilities and provides administration and security procedures.

Administration

Centrex IP Client Manager administration consists of CS2K administration and CICM administration.

Administration for the Centrex IP Client Manager can be done from either the Element Manager hosted web pages or from the Administration PC that allows access to the CICM. The Centrex IP Client Manager does not come equipped with a display or keyboard.

CS2K administration

CS2K administration is undertaken upon installation, with the datafill of hardware data tables to specify connections. Once datafilled, there should be no reason to alter the datafill. Refer to the *Configuration Management* section of this document, and the CS2K documentation.

Centrex IP Client Manager administration

An Administration PC is attached to the service provider's Administration LAN. An Administration PC accesses the CICM Element Manager (EM) via a web interface and the Terminal Services Client.

Most administration functions can be done from the Element Manager Web Interface. However, for configuration of the Element Manager, use the Terminal Services Client to remotely control the Element Manager. The Terminal Services Client provides access to the complete Element Manager desktop.

The functions of the Centrex IP Client Manager administration interface are to:

- Display the status of the CentrexIP service
- Start or stop the CentrexIP service
- Configure the CICM and clients
- Collect event logs from the CICM
- Backup and restore the CICM configuration

Device administration

A CentrexIP line can be made busy (BSY), installation busy (INB) or returned to service (RTS) in the same manner as a conventional line. Refer to the CS2K documentation suite for complete procedures.

For information regarding configuration and administration of i200x and m6350 SoftClient, refer to the *Centrex IP Client Manager Series 2.5 i200x User Guide* and the *Centrex IP Client Manager m6350 SoftClient User Guide*.

Terminal Handover

The Terminal Handover feature provides a mechanism for terminals on one CICM node to be transferred to the mate node with little or no service interruption. Refer to the *Perform Terminal Handover* procedure in this document.

Terminal Handover overview

When software or hardware maintenance or upgrades are being performed on a CICM node, the node is taken out of service. Terminals on the node to be shut down may be moved to the mate node prior to node shutdown. The mate node is still available to provide service during the node outage (although at a reduced capacity).

The Terminal Handover feature allows the CICM node to shut down in a controlled manner, as follows:

- The administrator selects a shutdown timeout interval (between 5 and 60 minutes, in 5 minute intervals) and initiates the terminal handover.
- Terminals attempting to register new sessions with the CICM node will be automatically redirected to the mate node.
- Terminals with no active user login session are transferred to the mate node immediately when the terminal handover is initiated.

- For terminals with an active user login session:
  - users are presented with a dialog screen informing them that maintenance is being performed, and requesting permission to perform a terminal reboot.
  - Users have the choice to defer the terminal reboot. If they defer the terminal reboot, after several minutes they will again be presented with a dialog screen requesting permission to perform a terminal reboot.
  - Users that repetitively defer the terminal reboot until the end of the shutdown timeout interval will be forced out. The active call is dropped and transferred to the mate node.
  - When a terminal is transferred, the terminal loses service for a few seconds.
  - The user login session is automatically restored when connectivity is restored on the mate node.
- If all terminals have been moved to the mate node before the timeout occurs, the shutdown will complete at that time instead of waiting for the timeout expiration.

Terminal Handover -- client terminals
This feature applies to both i200x Etherset and m6350 clients. The handover process is basically the same for both i200x and m6350 types of terminals. The differences are primarily in the user interface.

For detailed information on the user interface for i200x terminals, refer to the *NN10027-113 CICM Series 2.5 Etherset Installation Guide*. For information on the user interface for the m6350 SoftClient, refer to the *User Manual NN10182-113 CICM Series 2.5 m6350 Client Installation Guide*.

Limitations and restrictions of Terminal Handover
This section provides the limitations and restrictions of the Terminal Handover feature.

Cross-hosted call processing Cross-hosted calls that have terminals with active user sessions on the mate node and are using call processing resources on the node that is shut down, will lose active calls without notice when the node hosting the call processing resources is taken out of service.

Network addressing To move the terminal from one node to the other, the Unistim SwitchServer command is used.

When a terminal connects to the CICM, the CICM queries the terminal's server configuration (which is configured manually on the terminal or via DHCP). The CICM identifies which of the server entries corresponds to its own host address (the client LAN address on the CICM node).

The CICM then identifies which is the failover server. If the failover server is not configured correctly to be the mate node, the terminal transfer will fail. The terminal will eventually reconnect to the node being taken out of service when that node is brought back into service. The CICM does not reprogram the terminal's server configuration.

Example
Failover terminal: If a terminal connected to node B has node A configured for server S0, and node B configured for server S1, then node A is the failover server.

Note: If a static NAT bind is being used to publish private CICM client LAN addresses on a public network, the CICM will be unable to match its own address to either of the addresses configured on the terminal. This will cause unpredictable results when using the Terminal Handover feature.

Terminal server configuration Terminals with S1 and S2 configured as the same server (e.g. both configured with the address of node A) are not candidates for handover to the mate node. In this case, when a terminal handover is being performed, a log is generated for these terminals and the terminal is left connected to the node until the node shuts down completely, at which point it loses service.

Security

The security model for the Centrex IP Client Manager mandates two separate networks: the Administration network (Admin LAN) and the Client network.

Admin and Client LAN security

The Admin LAN is a secure environment owned and managed by the Telco. It is used for carrying operation and administration data and does not carry call control data or media streams. No voice services are available from the Admin LAN.

The Client network also belongs to the Telco customer. The Client LAN is a non-secure network not under the control and management of the Telco. It carries call control and bearer traffic.

For security purposes, the Admin LAN and Client LAN are physically isolated from each other within each CICM cabinet. Routing directly between the Admin and Client LAN is disabled in the CICM. Only the basic services needed for call control are available from the Client LAN connections to the CICM.

Because of the separation between Admin LAN and Client LAN, an administrator would have to do the following to test whether a client PC or i200x is visible on the client LAN:

- Use **Telnet** to log into the CICM on which the user is registered, or
- Use **ping** or **tracert** command from the Telnet command line to try the reach of the IP address of the client.

Note: **Ping** and **Tracert** commands may not be used for deployment where the CICM and its clients are separated by firewalls and NATs because **Ping** and **Tracert** messages are not able to traverse firewall/NAT.

Access privileges and restrictions

The following access privileges are protected by user names and/or passwords:

- Access to the CICM and Element Manager via the Admin LAN.
- Access to the administration web pages on the Element Manager.
- Login to terminals on the Client LAN.

To access the Element Manager web pages, a user must be a member of the CentrexIP administrators group, which is configured as part of the installation process. As a member of the administrators group, the administrator password can be used for access to the Administration PC, the Element Manager web pages, and for Telnet access.

Refer to the *User Administration Procedures* section of this document for detailed instruction on setting up user and administrator groups and setting privileges.

Element Manager security

Access to the Element Manager is controlled by the Internet Information Server (IIS). For security purposes, authentication is required to obtain access to the EM (by IIS default configuration).

The following options may also be configured for extra security:

- Secure Sockets Layer (SSL) encryption may be configured to provide privacy of sensitive information
- Certificates may be configured for additional authentication
- Auditing may be configured to monitor security activities to prevent unauthorized access

IIS filter access

Internet Information Services (IIS) can filter access to web services based on selected IP addresses or domain names. Having only a small set of client addresses in the filter minimizes the chance of infraction.

Read-only shared resources

The Element Manager is initially configured with three shared directories, one for firmware, one for backup, and one for patching. All of these should be read-only. If directories are created for other purposes, ensure these are made writable for the minimum required period of time.

Authenticated web access

The web server can be configured to only permit access to authenticated NT users within the CICM domain or other domains where trust relationships have been established.

Secure web access

The web server supports secure web access using Secure Sockets Layer (SSL) when provided with a signed Certificate. This requires the administrator to obtain a Certificate from a provider. IIS supports client certificates that are manually distributed to trusted clients and entered into the browser. SSL can be configured using the Internet Service Manager.

Firewall and NAT traversal

Firewalls and Network Address Translation (NAT) devices are widely used by enterprises to maintain their network security and integrity.

A firewall is a system designed to prevent unauthorized access to or from a private network. Firewalls can be implemented in hardware or software, or a combination of both. All messages entering or leaving the private network pass through the firewall, which examines each message and blocks those that do not meet the specified security criteria.

A NAT needs to be deployed to translate from a private IP address to a public IP address and vice versa (if an enterprise uses private IP

addresses internally and public IP addresses externally). A NAT is a software capability residing on a firewall. A NAT essentially hides an enterprise internal private IP address domain and makes it non-reachable from external points of origin, hence providing an additional layer of security.

In a typical deployment where the carrier provides IP Centrex as a carrier-hosted Centrex solution to its various enterprise customers, the CICM is normally located in the carrier Central Office LAN (CO-LAN), in the carrier's managed IP network and the carrier's IP address space. The IP phones reside on the enterprise LAN in the enterprise private IP address space behind the enterprise firewall and NAT. The IP phones communicate with the CICM over the carrier's managed IP network. The firewalling and NAT functions may be provided via software residing on an enterprise edge router, or a separate device linked to the edge router.

To enable CS2Kto provide Centrex IP as the Succession-hosted Centrex solution to its various enterprise customers, it is critical that the CS2K Centrex IP services are able to traverse enterprise firewalls and NAT devices.

Nortel Networks has developed a comprehensive firewall and NAT traversal solution for CS2K-based Centrex IP Solution utilizing the CICM Series 6.12 and above.

NAT traversal
Nortel Networks' Centrex IP supports all types of NATs regardless if it is a full cone NAT, restricted cone NAT, port-restricted NAT or symmetric NAT. There is no change needed on existing NAT functions or NAT devices of enterprises.

UNIStim signaling NAT traversal Centrex IP UNIStim signaling messages can traverse any type of NAT as UNIStim messages are always initiated by Centrex IP clients from the private side of the enterprise NAT. That initial UNIStim message creates a binding on the NAT to allow UNIStim message traversal from the CICM from the public side of the NAT.

Keep NAT binding alive for UNIStim signaling Each i200x is configured with the IP address of its hosting CICM. When the i200x powers on, it sends a Resume Connection message to the CICM. A path through the NAT device is set up for UNIStim signaling.

Once the initial connection has been made, the i200x starts the Watch Dog timer, with a default value of 2.5 minutes.

To keep the firewall pinhole open for the UNIStim signaling path throughout the user's logon session, the CICM has a built-in global terminal Watch Dog timer that has a default value of 2 minutes.

Every one minute, the CICM sends a UNIStim Reset Watchdog message to the client (i.e. terminal) to reset the Watch Dog timer on the client, and the client responds with an ACK message. This ACK message goes through the firewall and resets the firewall (NAT) timer, hence keeping the firewall pinhole open and the NAT binding alive.

The configurable NAT binding (firewall) timer value is recommended to be 3 minutes. The guideline is to set the Watch Dog timer about 30 seconds smaller than the firewall timer.

RTP media NAT traversal Two uni-directional RTP media streams are needed to set up a VoIP call. The outgoing RTP media stream from Centrex IP clients to the CICM can traverse the NAT since it is initiated from the private side of the NAT. However, the incoming RTP media stream initiated at the CICM (on the public side of the NAT) and destined to the clients can not traverse the NAT since there is no address binding established at the NAT. Therefore, the call fails.

The real challenge of a NAT on any VoIP application, therefore, is how the incoming RTP media stream traverses the NAT.

Nortel Networks NAT traversal solution
The Nortel Network NAT traversal solution is summarized by the following four factors, which are discussed below.

- CS2K-routed calls
- Intraswitched calls behind a single NAT
- Calls between two enterprises
- Keeping NAT open for RTP media

Tools and utilities

The Web Interface is the primary user interface to the Centrex IP Client Manager. The CS2K Line Maintenance Manager (LMM) Interface may be used to perform administration and maintenance of the CS2K components that relate to the CICM.

A number of standard administration tools, such as SNMP and WMI, can be used on the Administration PC, in addition to the Web Interface, for remote management of the CICMs.

Web Interface

The Element Manager Web Interface is designed for use with Microsoft Internet Explorer 5.0 or higher and uses standard Microsoft navigation techniques.

> ***Note:*** For the Web Interface to be correctly displayed, a PC with a resolution of at least 800x600 and a color depth of at least 256 colors should be used.

The Web Interface allows you to configure and monitor CICMs via a set of web pages. Web pages are hosted on the Element Manager. They offer configuration and status options to the administrator. These web pages are password protected and can also be accessed from a remote web enabled terminal.

The web interface is made up of two basic components: the navigation bar and the context panel.

The navigation bar is arranged upon installation to offer full administration of the CICM. For example, configuration and status web pages that are applicable to a particular CICM can be selected from the CICM menu on the navigation bar.

The context panel contains different displays depending on which option has been selected on the navigation bar.

LMM Interface

The Line Maintenance Manager (LMM) Interface on the CS2K is the primary interface between administration personnel and the CS2K. The LMM Interface is used to perform administrative and maintenance tasks on the CS2K, including:

- General maintenance
- Network management
- Operational measurements
- Service analysis
- Trunk tests
- Data modification
- Line tests

Refer to the CS2K documentation suite for detailed procedures on the LMM Interface.

CICM SNMP agent

Simple Network Management Protocol (SNMP) is an industry standard management interface. An SNMP agent provides a standard interface for status monitoring and fault reporting.

The CICM provides an SNMP interface for remote status monitoring. Each CICM node will send SNMP traps to a set of management systems when specific events occur (See also the *Event Log* section of the *Security and Administration* module of this document).

An SNMP browser can be used to view the standard MIB-2 mibs as well as the Nortel Networks specific CICM mib.

CICM WMI agent

WMI is a management interface from Microsoft, and is a standard component of the NT-embedded operating system. The WMI management system provides the capability to monitor the status of the CICMs. The WMI Agent does not need configuration.

WMI management systems are available from companies such as Hewlett Packard.

Security and administration procedures

Security and administration procedures are performed by means of the Element Manager Web Interface, a Telnet connection to the Administration LAN, and the Microsoft desktop.

User administration

This section provides procedures for the administration of user accounts on the CICM EM, including the administration of user and administrator privileges. It does not address CICMs.

Since the standard operating system on Series 2.5 EMs is Windows 2000, these procedures are written for a Windows 2000 EM. However, Windows NT is also supported on legacy EMs.

Open the Computer Management tool

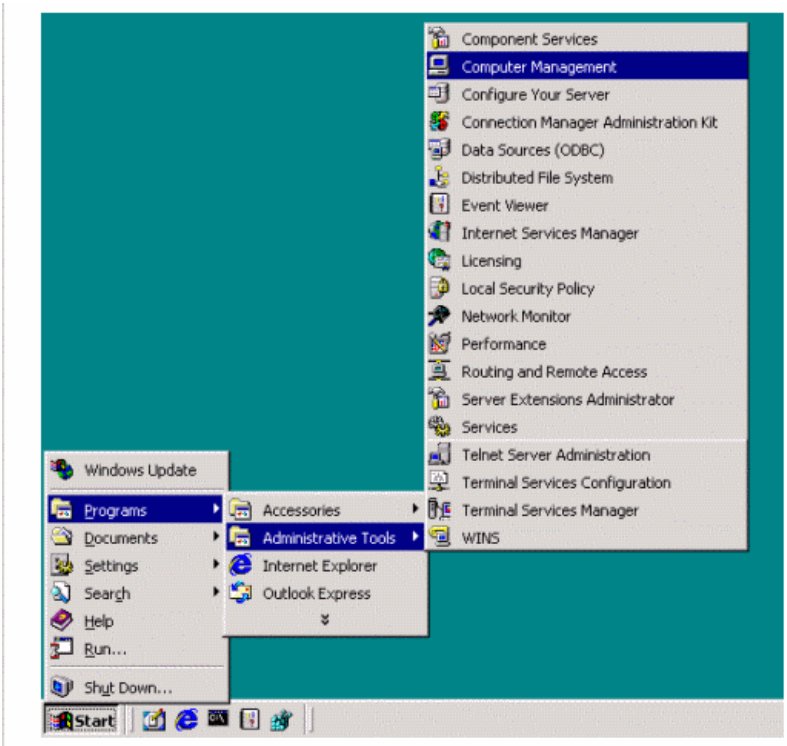
The User Administration procedures use the Computer Management tool, which is a program on Windows 2000 that allows various tasks to be performed, including the management of users. The following procedure demonstrates how to access this tool.

Procedure 1 Open the Computer Management tool

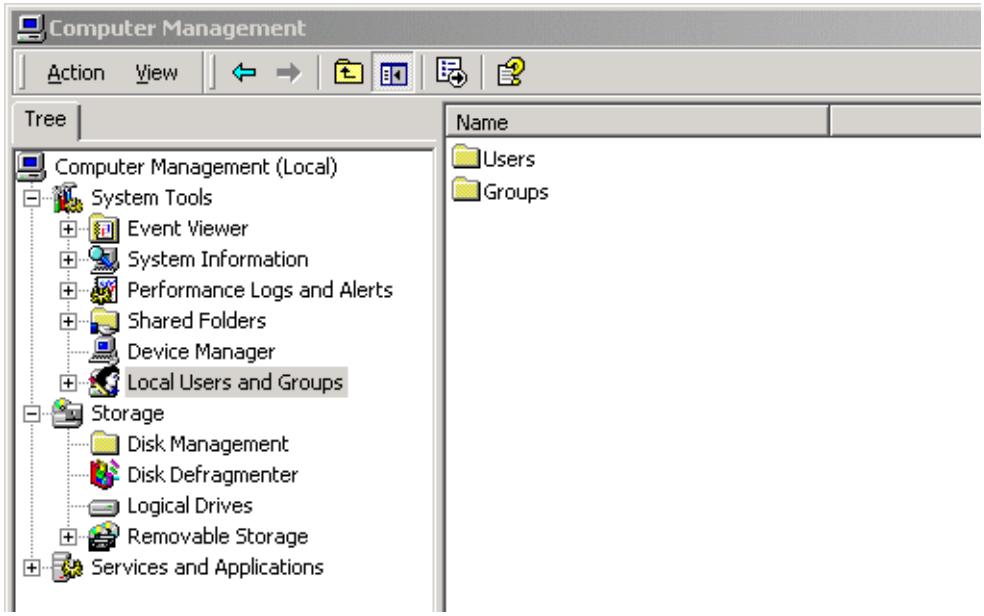
On the EM MS 2000 desktop

1 From the Microsoft Windows Start menu, select **Programs**, then **Administrative Tools**, then **Computer Management**:

Start > Programs > Administrative Tools > Computer Management



Response: The Computer Management window opens.



2 This procedure is complete.

View users on an EM

When the Series 6.12 CICM software is installed on an Element Manager, a standard set of user accounts is automatically created. The following table provides a description of these automatically created user accounts.

Table 1 Standard User Accounts

User Name	Purpose
IUSR_CENTREXIP-PEM	A built-in account for anonymous access to Internet Information Services (IIS). This user name and password is created and managed by IIS and as such should not be deleted or modified.
IWAM_CENTREXIP-PEM	A built-in account for Internet Information Services to start out of process applications. This user name and password is created and managed by IIS and as such should not be deleted or modified.
TsInternetUser	This user account is used by “Terminal Services Internet Connector License.” As this is not installed on the EM by default, this account can be disabled safely.

Table 1 Standard User Accounts

User Name	Purpose
Guest	A built-in account for guest access to the computer. This account is not used by CICM and can be disabled if not needed.
Administrator	A built-in account for administering the computer with full access permissions. It is used for most operations on the EM. This user password is initially set to “centrexip” but can be changed at any time (see the *Change User Password* procedure below). It is recommended to rename this user name to a less obvious name to enhance security. It is necessary to have an account on the EM with full privileges so all maintenance can be performed.
NortelTAS	This user account allows Nortel Support access to the EM. TAS is the Nortel Technical Assistance Service.
CICM account (site specific, but usually called comuser)	This is an important account that the majority of CICM software runs under. It is created on the EM installation by the preboot command (the install command in 2.4). It should have the same name and password on all CICMs and CICM-EMs that interface with each other. It is not possible to change this account’s password. This account should not be used for general administration purposes.

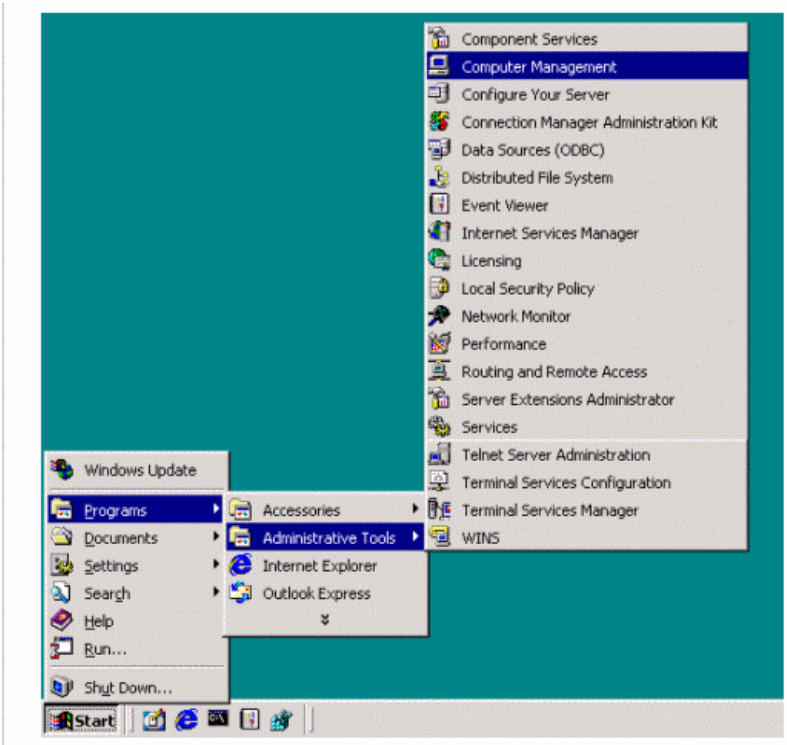
Use the following procedure to view the users on an EM.

Procedure 2 View users on an EM

On the EM MS 2000 desktop

1 Open the Computer Management tool from the Microsoft Windows Start menu:

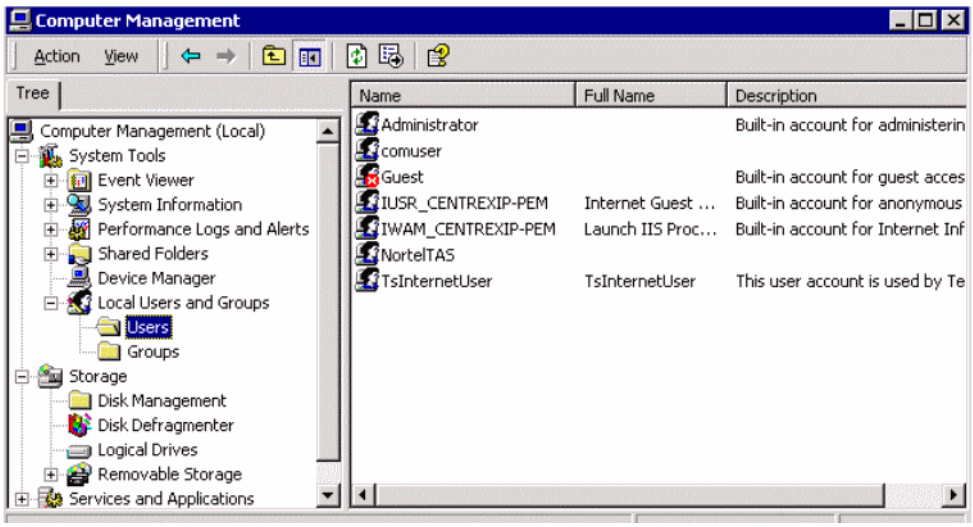
Start > Programs > Administrative Tools > Computer Management



2 In the Computer Management window, expand the **Local Users and Groups** file, then click on the **Users** folder.

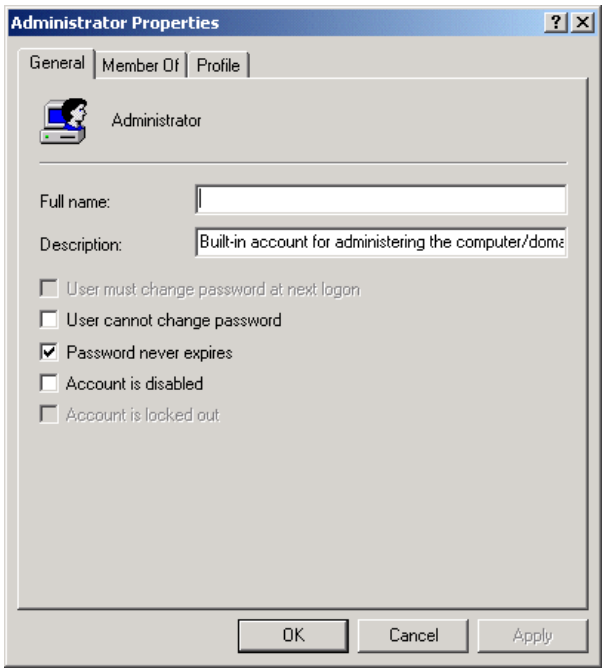
Response: On the right of the Computer Management window is displayed a list of all users on the system.

> ***Note:*** *The following figure shows the user accounts that are automatically created. Refer to Table 3 above, Standard User Accounts, for a description of these user accounts.*



3 To view the properties of a user, double-click on the user name from the list in the right window.

*Response: The **<Username> Properties** window opens.*



4 This procedure is complete.

Create new users

Use this procedure to create new users on the CICM EM. Only a user with administrator privileges can perform this procedure.

All new users are automatically assigned user privileges. To assign administrator privileges, first create the user, then perform the *Assign Administrator Privileges* procedure below.

Procedure 3 Create new users

On the EM MS 2000 desktop

1 Logon to the EM with a user account with administrator's privileges.

2 Open the Computer Management tool from the Microsoft Windows Start menu:

Start > Programs > Administrative Tools > Computer Management

3 In the Computer Management window, expand the **Local Users and Groups** file by double-clicking on this file.

Response: The Users and Groups sub-folders are displayed in the left window.

4 Click on the **Users** folder.

Response: The right window displays the contents of the Users folder.

5 Click on the **Action** menu, then select the **New User** option.

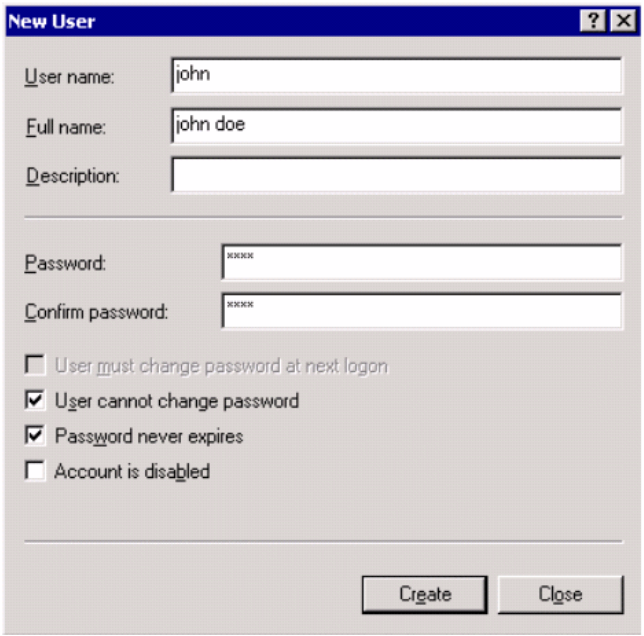
Response: A New User dialog box opens.

6 Datafill the New User dialog box:

a Enter the username and password for the new user.

b Check the boxes as shown in the following figure.

Note: The check boxes normally should be set as shown in the following figure. To set password expiration, see the procedure below, *Set Password Expiration*.



7 Click the **Create** button.

Response: The New User dialog box closes and the new user account appears in the Computer Management window's list of users.

8 This procedure is complete.

Delete or rename a user

Use this procedure to delete or rename a user account. Only a user with administrator privileges can perform this procedure.

Procedure 4 Delete or rename a user

On the EM MS 2000 desktop

1 Logon to the EM with a user account with administrator's privileges.

2 Open the Computer Management tool from the Microsoft Windows Start menu:

Start > Programs > Administrative Tools > Computer Management

3 In the Computer Management window, expand the **Local Users and Groups** file by double-clicking on this file.

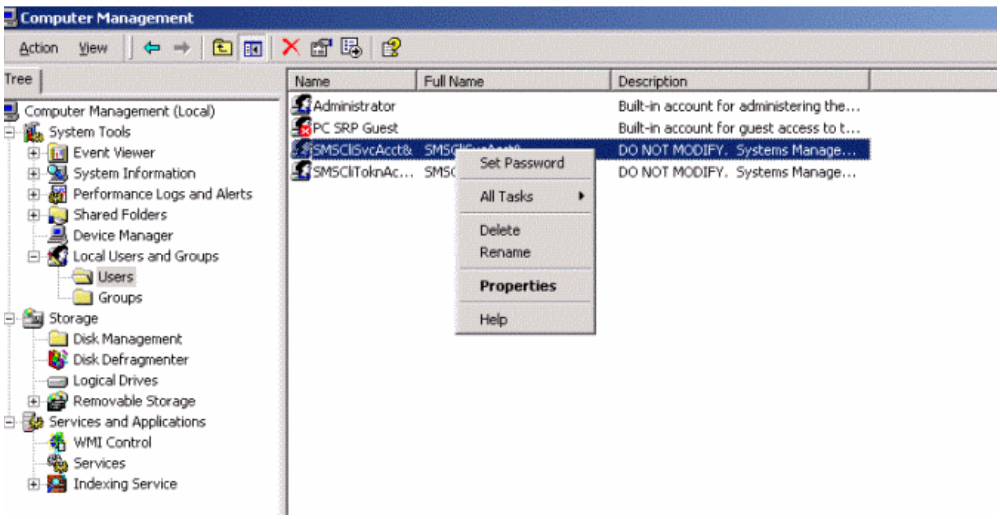
4 Click on the **Users** folder.

Response: The right window displays the contents of the Users folder.

5 From the list of users in the right window, right-click on the user to delete or rename, then

a To delete the user, choose **Delete** from the pop-up menu.

b To rename the user, choose **Rename** from the pop-up menu, then enter the new name and press **Enter**.



6 This procedure is complete.

Set user password

Use either of the following procedures to set or change a user password, or to reset an expired password.

The procedure below changes passwords from the Computer Management tool, and the following procedure changes passwords from the EM Web Interface.

Only a user with administrator privileges can perform these procedures.

Some user account passwords are controlled by IIS and shall not be modified. Refer to Table 3, *Standard User Accounts*, for information on these accounts.

Procedure 5 Set user password (Computer Management tool)

On the EM MS 2000 desktop

1 Logon to the EM with a user account with administrator's privileges.

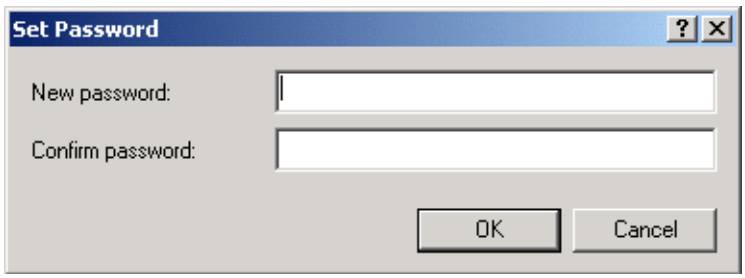
2 Open the Computer Management tool from the Microsoft Windows Start menu:

Start > Programs > Administrative Tools > Computer Management

3 Expand the **Local Users and Groups** file, then the **Users** file.

4 From the list of users in the right window, right-click the user, then select **Set Password** from the pop-up menu.

Response: The Set Password dialog box opens.



5 Enter the new password, confirm it, then press **OK**.

6 This procedure is complete.

Procedure 6 Set user password (EM Web Interface)

At the CICM - Element Manager home page

1 Select **users** from the navigation bar.

*Response: The **user home page** opens.*

2 Choose the CICM, then click on the **configure users on** text box on the right.

*Response: The **users on <CICM name> (drawer name)** page opens.*

3 In the table of users, click on the user ID to edit.

*Response: The **edit user <name> on <CICM name>** page opens.*

4 Enter a new user password into the **password** field, then click on **save changes** text bar on the right.

Response: A status page opens to confirm the change.

5 This procedure is complete.

Assign/Remove administrator privileges

There are two privilege levels for users: user privileges, and administrator privileges.

User privileges applies by default to all new users, who are put into the Users group automatically upon creation.

A user is assigned administrator privileges by adding them to the Administrator group. Administrator privileges are removed by removing the user from the Administrator group.

The user account “Administrator” that is automatically created upon EM configuration is set up as a member of the Administrator’s group.

The following table compares the two privilege levels.

Table 2 User and Administrator Privileges

Operation	User Privileges	Administrator Privileges
Logon locally	Given by default. This privilege can be removed by using the User Rights Assignment in the Local Security Settings program.	Given by default. Can be removed using the User Rights Assignment in the Local Security Settings program.
Logon remotely using Terminal Services Client	No	Given by default. Can be removed by editing user properties within the Computer Manager.
Telnet	Yes	Yes
FTP	Yes	Yes
CICM web page access	Yes	Yes
Certain operations such as installing some types of software, changing network settings, etc.	Restricted	Yes
Running **preboot** or **swupgrade** on the EM	No	Yes
Change other user's passwords	No	Yes

Only a user with administrator privileges can perform this procedure to assign or remove administrator privileges.

Procedure 7 Assign/Remove administrator privileges

At the EM MS2000 desktop

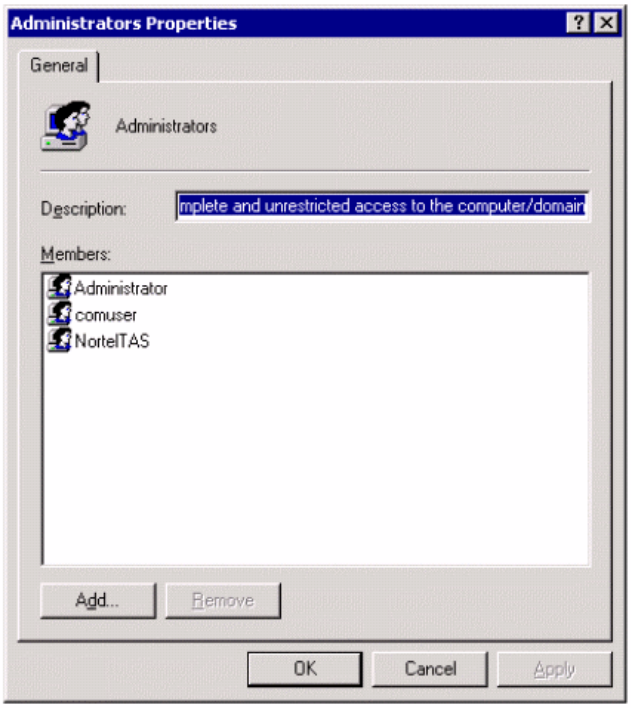
1. Logon to the EM with a user account with administrator's privileges.
2. Open the Computer Management tool from the Microsoft Windows Start menu:

   Start > Programs > Administrative Tools > Computer Management

3 Expand the **Local Users and Groups** file, and then the **Groups** file.

4 Double-click on **Administrators** from the list of groups in the right window.

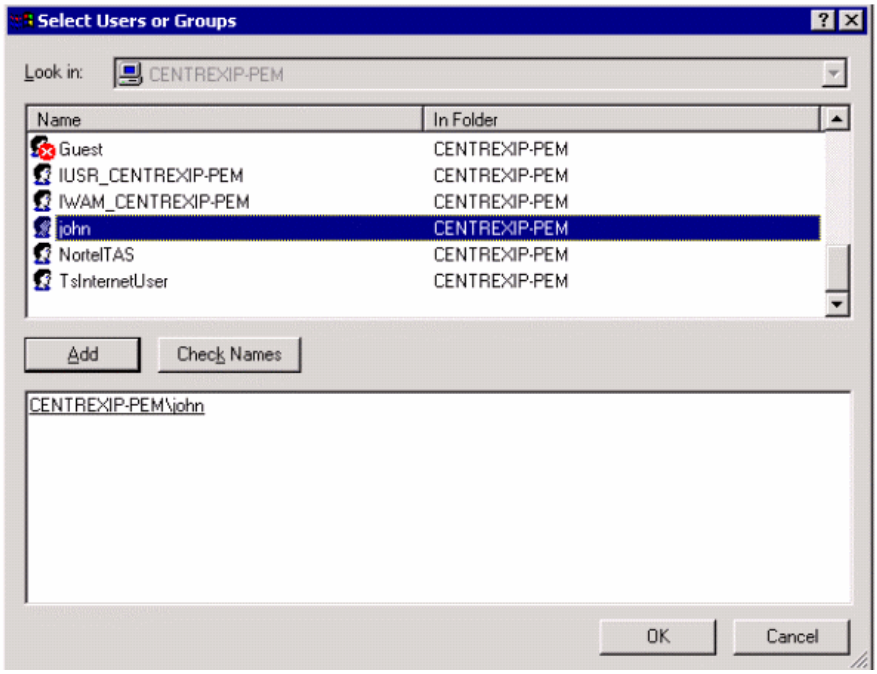
Response: The Administrator's Properties dialog box opens with a list of the Administrator's group members.



5 To add a user to the Administrator group and assign them administrator privileges:

a In the Administrator's Properties window, click on the **Add** button

Response: The Select Users or Groups dialog box opens.



b Search for and select the user to add from the list in the top half of the dialog box, or type the username into the bottom window of the dialog box,

c Then click on the **Add** button.

Response: The name added moves to the bottom half of the dialog box.

d Continue to select and add until you have completed your list,

e Then click **OK** to save your changes.

6 To remove a user's administrator's privileges:

a From the **Administrator's Properties** window's list of administrators, click on the user name to remove,

b Then click on the **Remove** button.

c Continue to remove user names until complete,

d Then click on **OK** to save your changes.

7 This procedure is complete.

Set password expiry

Microsoft Windows has a build-in method to manage password expiry. This is turned off on the EM to stop certain accounts from expiring,

which could affect the running of the CICM. Before turning on password expiration, you must make sure the CICM account is set to never expire.

Only a user with administrator privileges can perform this procedure.

Procedure 8 Set password expiry

On the EM MS 2000 desktop

1 Logon to the EM as an Administrator.

2 From the Microsoft Windows Start menu, open the Computer Management tool by selecting:

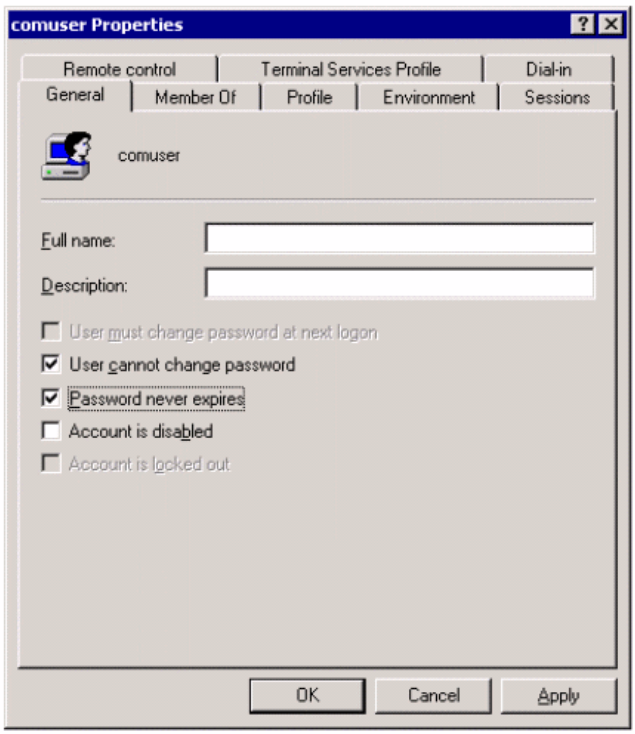
Start > Programs > Administrative Tools > Computer Management

3 In the Computer Management window, expand the **Local Users and Groups** file, then the **User** file.

4 Double-click on the CICM user account from the list of Users on the right window.

Note: The CICM user account is site-specific, but it is usually named **comuser**.

Response: The <CICM user account> Properties dialog box opens.

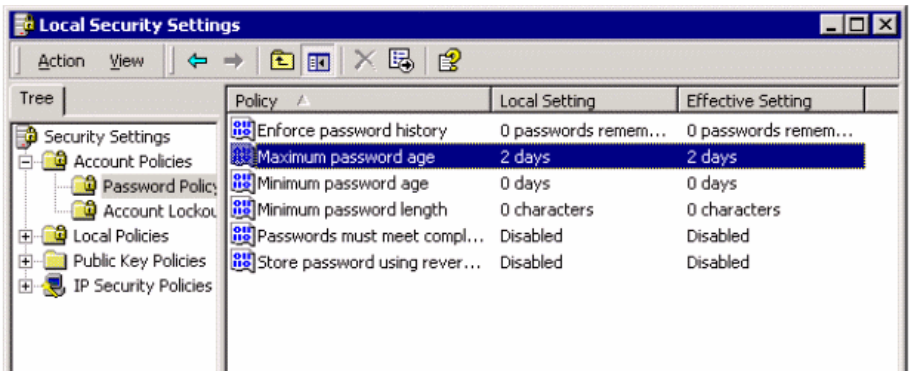


5 In the user Properties dialog box, check the **User cannot change password** and **Password never expires** options, then click **OK**.

6 To turn on password expiry, it is necessary to first change a system setting. From the Microsoft Windows Start menu, open the Local Security Settings dialog box by selecting:

Start > Programs > Administrative Tools > Local Security Policy

Response: The Local Security Settings dialog box opens.

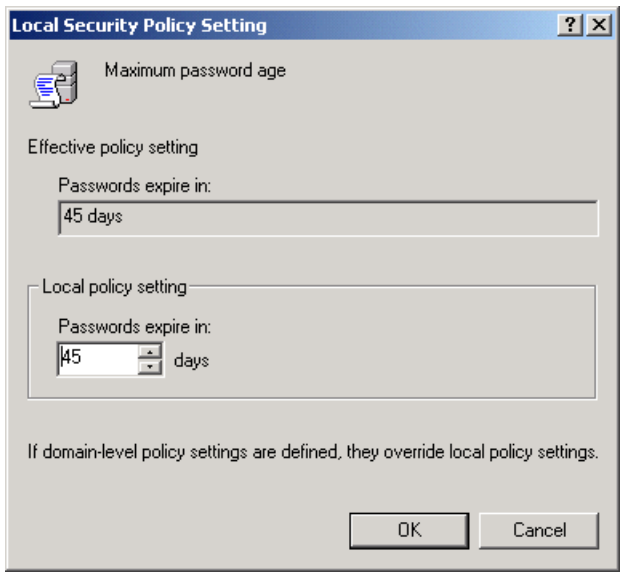


7 From the **Local Security Settings** window, expand the **Account Policies** file, then expand the **Password Policy** file.

Response: The right window displays a list of settings that affect passwords.

8 It is recommended to only change the Maximum Password Age setting. To change this setting, double-click on **Maximum Password Age** from the list of settings in the right window of the **Local Security Settings** window.

*Response: The **Local Security Policy Setting** dialog box opens.*

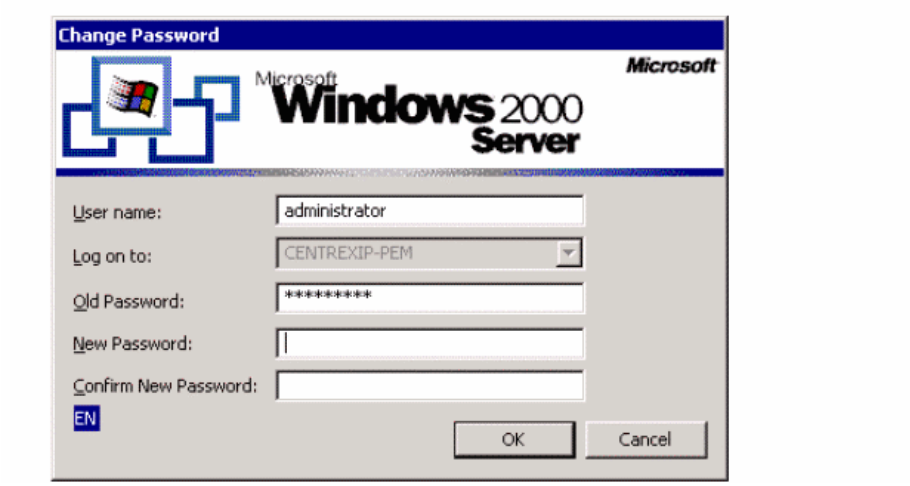


9 To change the expiry setting:

a To disable expiry, set the Maximum Password Age in the **Passwords expire in:** field to 0, then click **OK**.

b To enable expiry, set the Maximum Password Age in the **Passwords expire in:** field to the number of days you want passwords to be valid, then click **OK**.

10 *(OPTIONAL: FOR EXPIRED PASSWORDS)*
Once a user password is close to the expiry time, when the user logs into the EM (either at the EM desktop or remotely via the Terminal Services Client) the user will receive a warning message telling them to change their password. If their password is not changed and expires, they will not be able to login or use the EM web pages. Upon attempting to login, a **Change Password** dialog box opens, which must be completed before they can proceed.



11 This procedure is complete.

Prevent user logon to local EM

Use this procedure to prevent a particular user from logging on locally to the EM. Users with or without administrator privileges can both be denied logon privileges. Only a user with administrator privileges can perform this procedure.

Procedure 9 Prevent user logon to local EM

On the EM MS 2000 desktop

1 Logon to the EM as an Administrator.

2 From the Microsoft Windows Start menu, open the Local Security Settings window by selecting:

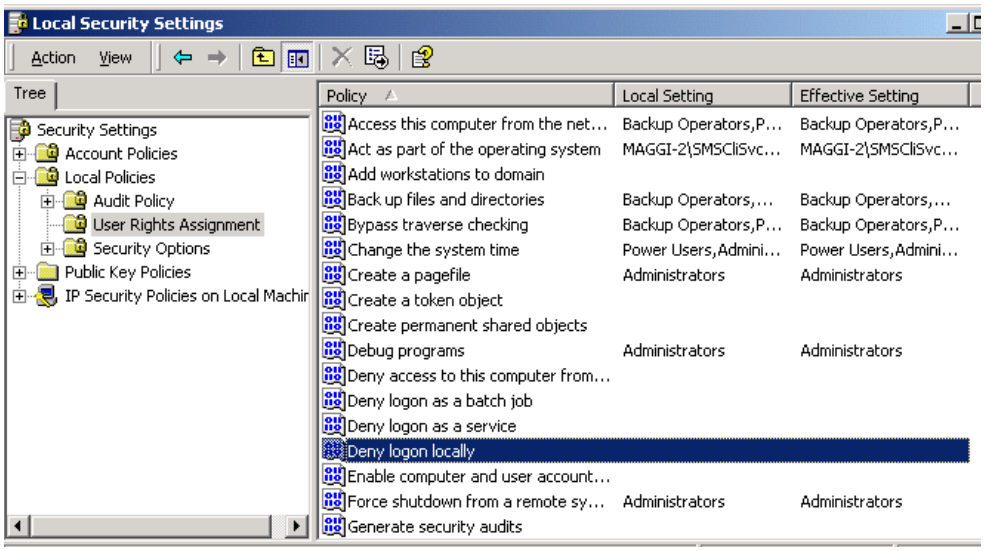
Start > Programs > Administrative Tools > Local Security Policy

Response: The Local Security Settings window opens.

3 In the left window of the Local Security Settings window, expand the **Local Policies** file.

4 Click on **User Rights Assignment**

Response: The right window displays the list of User Rights policies.

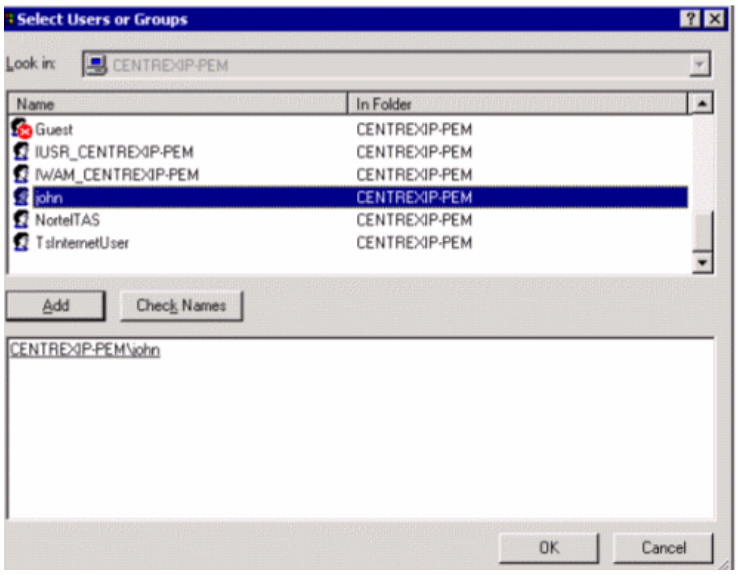


5 In the right window, double-click on **Deny logon locally**.

Response: The Local Security Policy Settings dialog box opens to display the current list of users denied logon.

6 Click the Add button in the Local Security Policy Setting dialog box.

*Response: The **Select Users or Groups** dialog box opens.*



7 Search and select from the top window, or type in the bottom window the username to deny access to, then click **OK**.

8 This procedure is complete.

Disable the Telnet service

Use this procedure to disable the Telnet service. This will stop all users from using it. Only a user with administrator privileges can perform this procedure.

Procedure 10 Disable the Telnet service

On the EM MS 2000 desktop

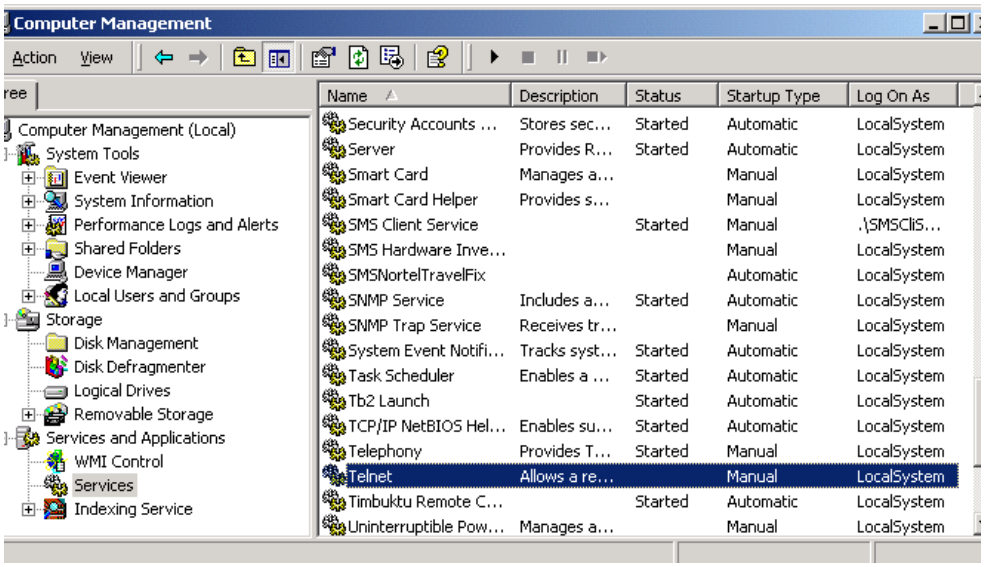
1 Logon to the EM as an Administrator.

2 From the Microsoft Windows Start menu, open the Computer Management window by selecting:

Start > Programs > Administrative Tools > Computer Management

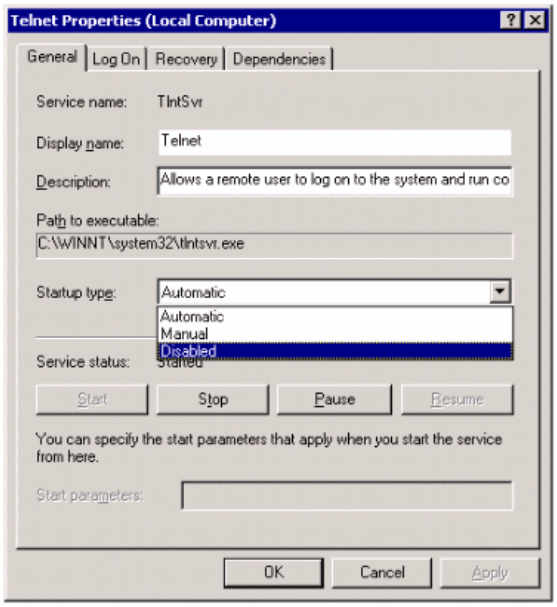
3 Expand the **Services and Applications** file.

4 Click on **Services**.



5 In the list in the right window, double-click on the **Telnet** service.

The Telnet Properties dialog box opens.



6 Change the **Startup type** to disabled, then click the **Stop** button, then click **OK** to save the changes.

7 This procedure is complete.

Element Manager Web pages procedures

This section provides procedures based on the Element Manager web pages. For all procedures provided in this document, it is required to use administrator userids and passwords to login to the Element Manager.

Access Element Manager Home page

The Element Manager Home page consolidates access to all of the user administration procedures. It is accessed from a PC running Internet Explorer 5.0 or above. From this home page, the following administrative web pages may be accessed:

- CICMs
- configuration (see the *Configuration* section of this document)
- audio profiles (see the *Configuration* section of this document)
- language profiles (see the *Configuration* section of this document)
- network profiles (see the *Configuration* section of this document)
- user profiles (see the *Configuration* section of this document)
- SNMP (see the *Configuration* section of this document)
- terminals (see the *Configuration* section of this document)

- users (see the *Configuration* section of this document)
- CICM upgrades (see the *Upgrade* section of this document)
- synchronization
- diagnostics

Procedure 11 Access CICM Home page

At the Internet Explorer address line

1 Type the IP address of the Element Manager, followed by **/centrexip/**, then press Enter.

Example
http://47.73.240.176/centrexip/

Response: A prompt for the user name and password opens.

2 Type your Administrator user name and password, then press Enter.

*Response: The **cicm home** page opens.*

3 This procedure is complete.

CICM home page

The CICM home page allows CICMs to be added, configured, and deleted from the Element Manager. It also allows the status of the CICMs to be viewed.

Monitor the status of a CICM

Use this procedure to monitor the status of a CICM.

The **CICM status** page is an emulation of the alarm bar panel on the physical CICM. Any alarms that are seen on the alarm bar will be seen within 30 seconds on the Element Manager **CICM Status** page. From this page you can view the status of individual cards and information about their configuration.

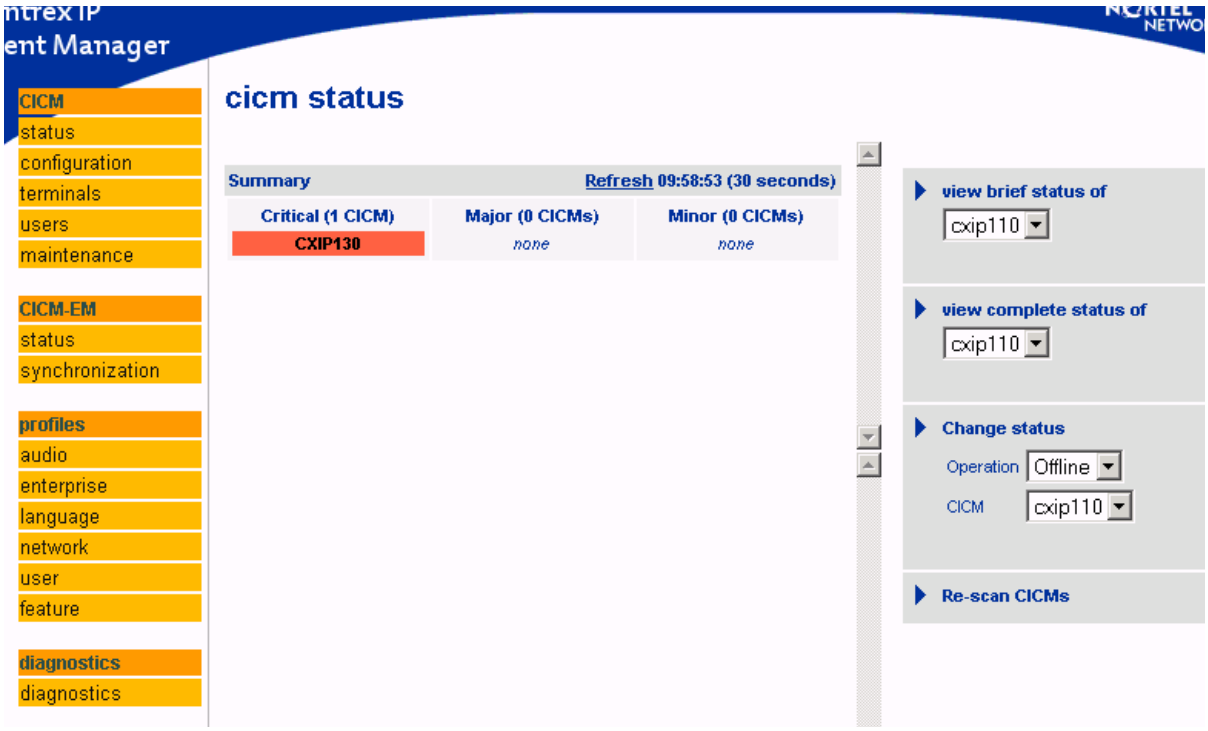
This **CICM Status** web page is the best tool to monitor the CICM status. However, it is recommended to also periodically monitor the event logs of both nodes and the Element Manager. The details of event logs should also be viewed if an error occurs to identify the cause of the fault. Refer to the *View Event Logs* procedure of this document.

Procedure 12 Monitor the status of a CICM

At the CICM home page on the Element Manager web interface

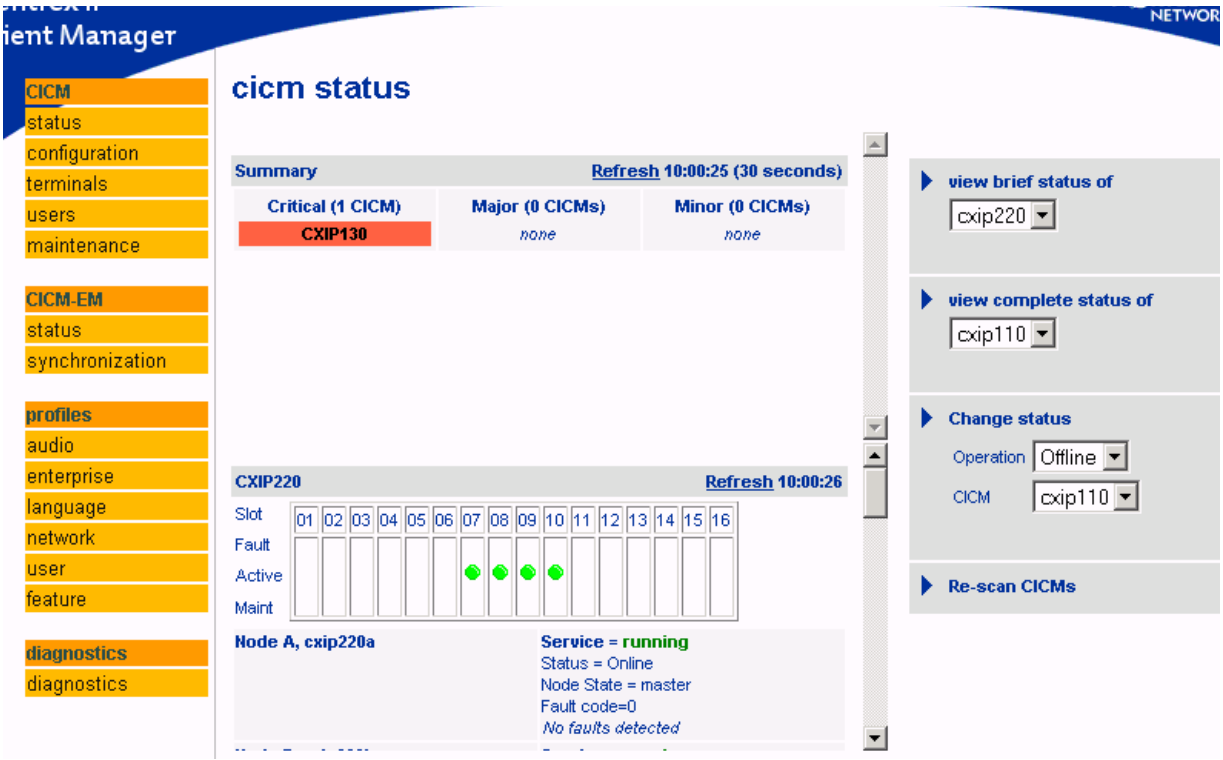
1 Select **View the status of the CICMs** from the navigation bar on the right.

*Response: the **cicm status** page displays a summary of critical, major, and minor faults on the CICM.*



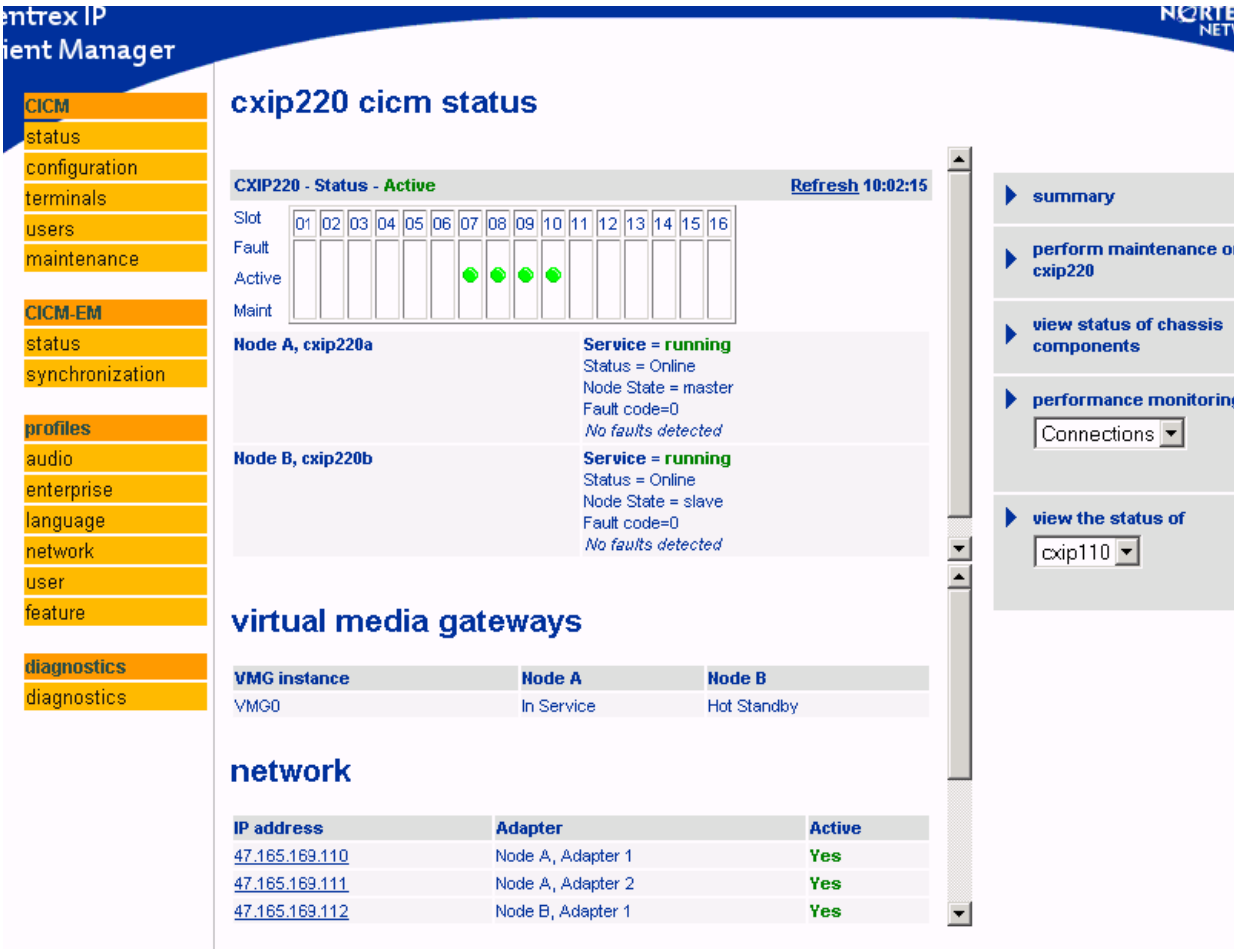
2 To view additional details of the CICM status, click on the **view brief status of** text box on the right.

*Response: The **cicm status** page updates to add additional node and card status information for the CICM.*



3 To view the complete CICM status, click the **view complete status of** text box on the right menu.

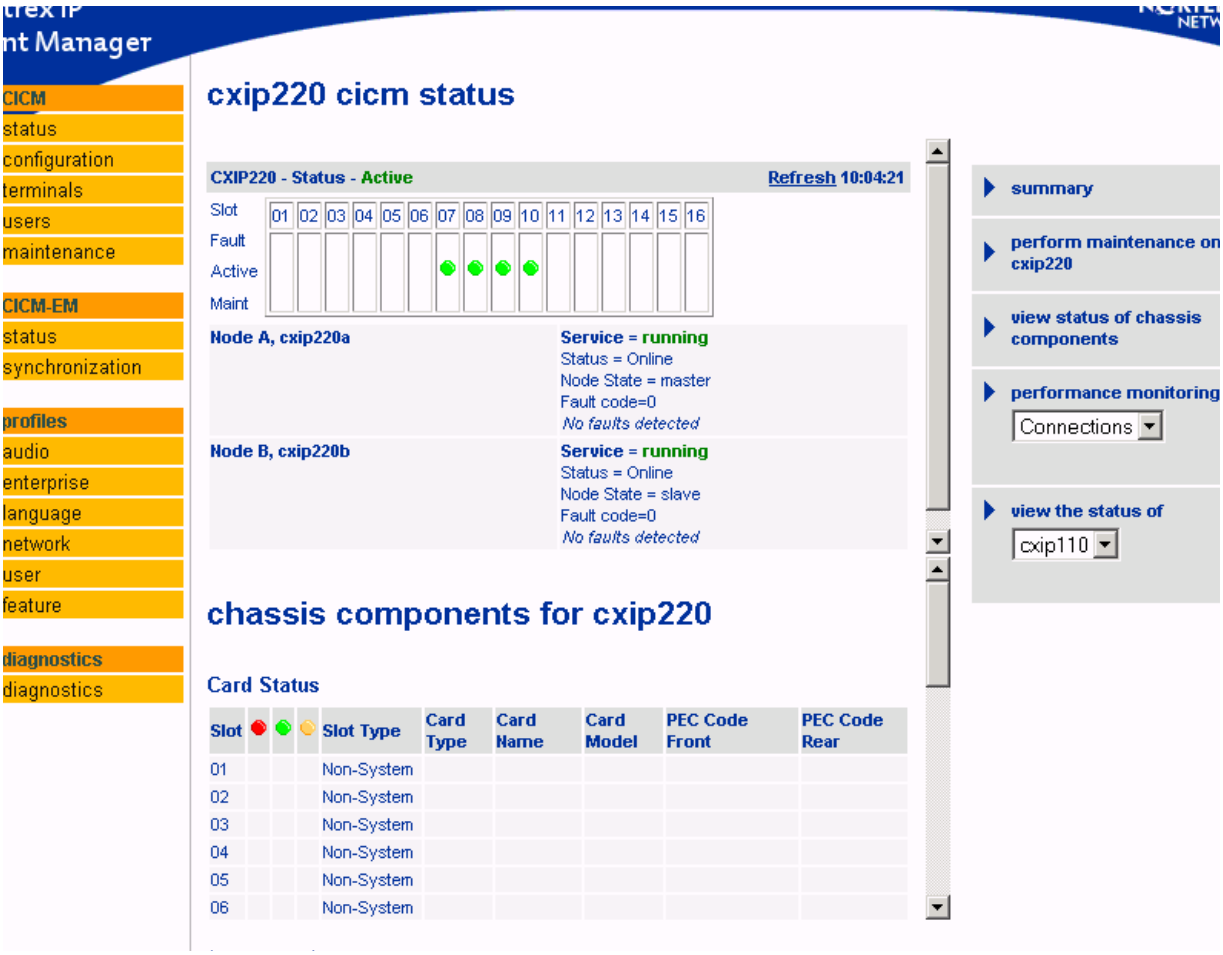
*Response: The **<cicm_name> cicm status** page updates to add additional VMG, node, and network information, and to provide options to view additional detail (See step 4).*



Note: You must scroll down in the details sub-window to view all information.

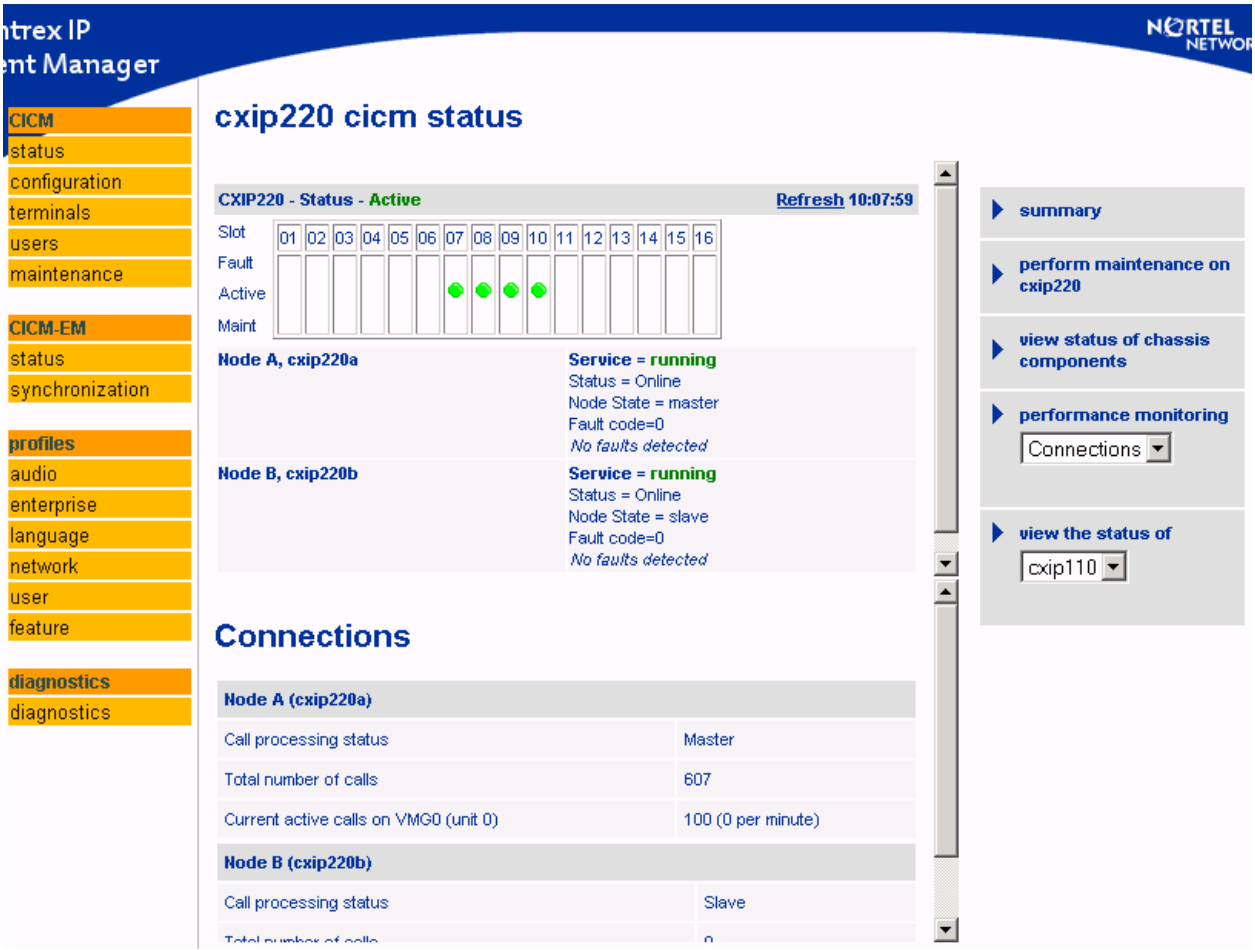
4 To view details of the chassis components, select the **view status of chassis components** text for each options on the right menu bar.

*Response: The **<cicm name> cicm status** page updates with the additional detail selected.*



5 For performance monitoring of connections or terminals, from the **<cicm_name> cicm status** page, select **Connections**, **Terminals**, or **Packets** from the drop-down menu in the **performance monitoring** option on the right menu, then click on the **performance monitoring** text.

*Response: the **<cicm_name> cicm status** page updates to display the information. The figure below displays connections information.*



6 This procedure is complete.

Change the online/offline status of a CICM

Use this procedure to change the online/offline status of a CICM.

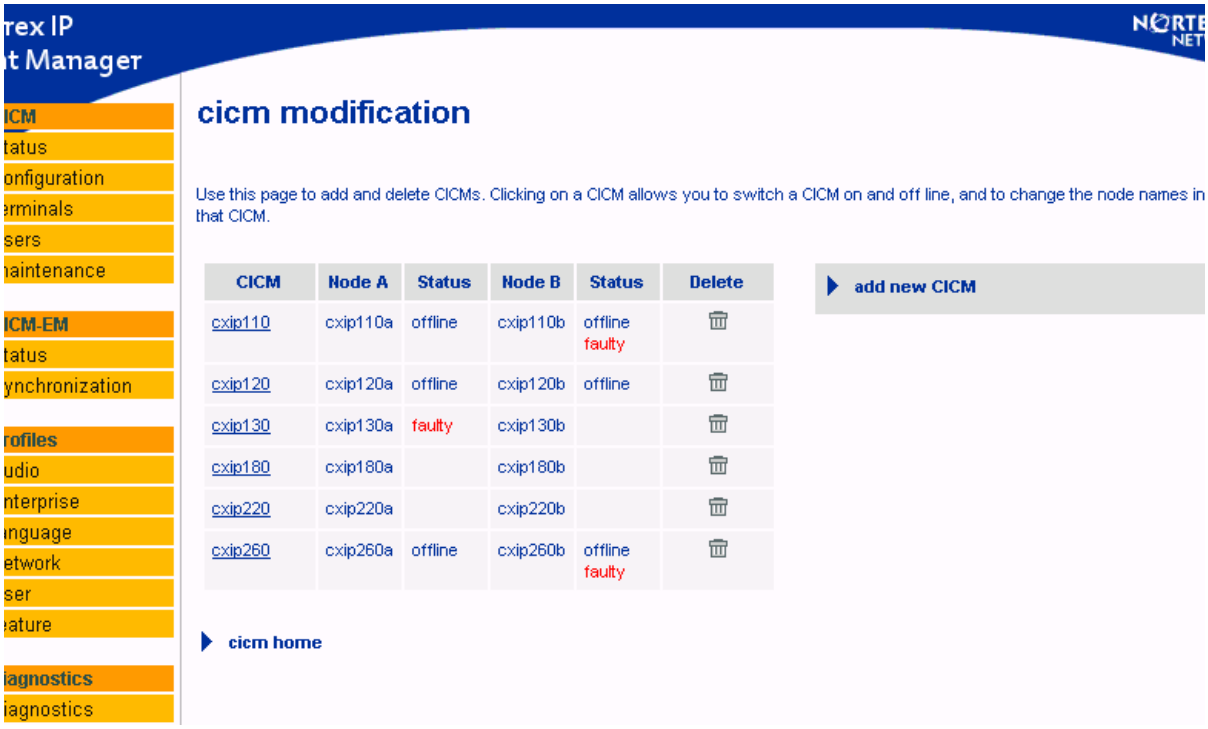
When a CICM is put into offline status, the CICM is not taken out of service, but the EM does not report alarms on an offline CICM.

Procedure 13 Change the online/offline status of a CICM

At the CICM Home page on the Element Manager web pages

1 Click on the **Change the list of CICMs stored on the CICM-EM** text bar in the menu on the right.

*Response: The **cicm modification** page opens.*



2 On the list of CICMs displayed, click on the hypertext CICM name to be changed.

*Response: The **edit cicm <cicm_name>** page opens.*

3 Click the CICM **online/offline** box to toggle it on or off.

4 Click on the **Apply Changes** text bar on the right.

5 This procedure is complete.

Add a CICM

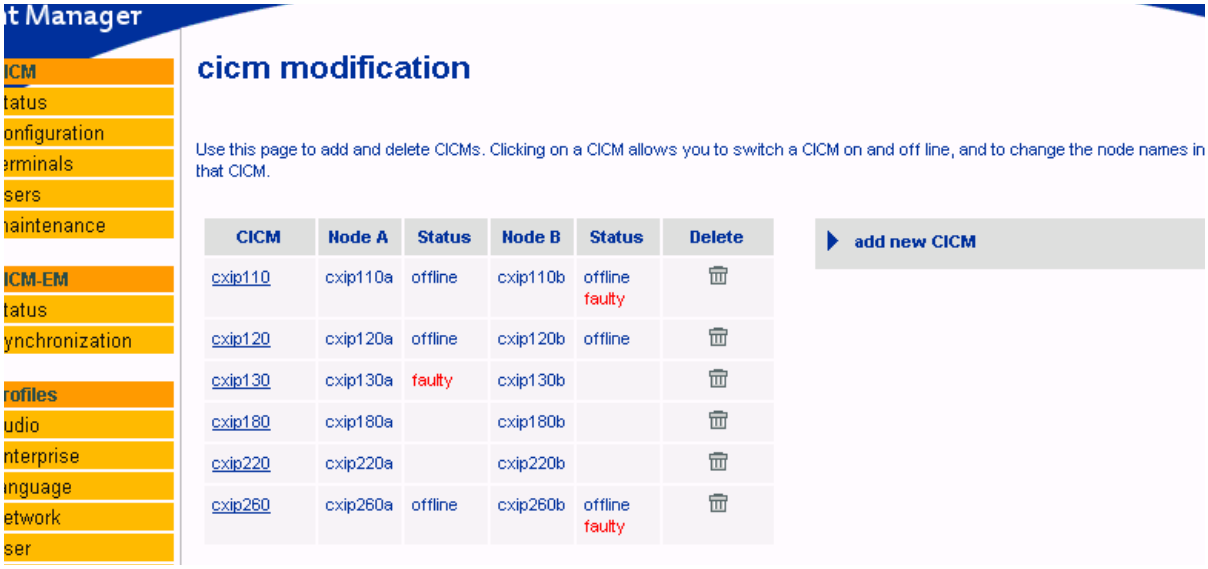
Use this procedure to add a CICM to an Element Manager.

Procedure 14 Add a CICM

At the cicm home page

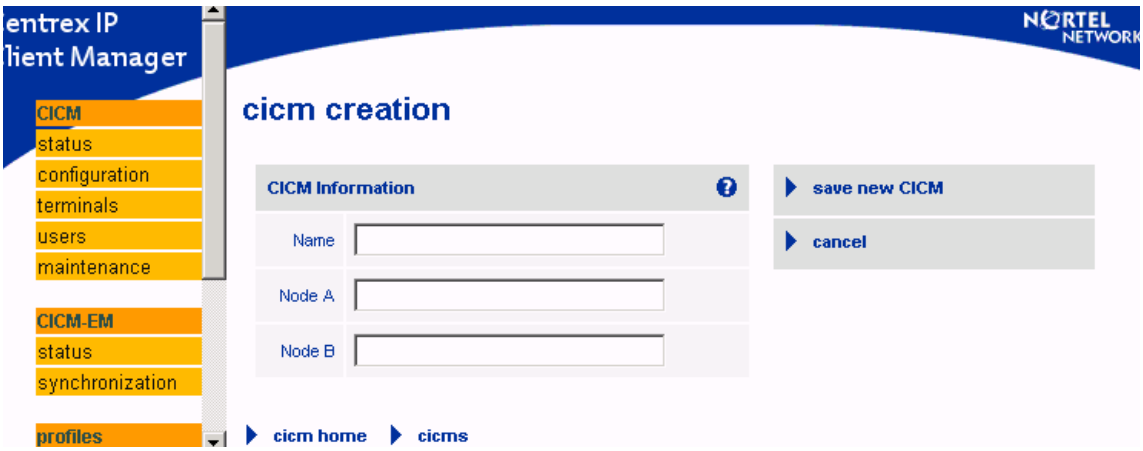
1 Click on the **Change the list of CICMs stored on the CICM-EM** text bar on the right navigation bar.

*Response: The **cicm modification** page opens.*



2 Click on the **add new CICM** text on the right.

*Response: The **CICM creation** page opens.*



3 Type the CICM name in the **Name** field,

Where

CICM name
refers to both sides of the CICM.

Then enter the node names in the **node A** and **node B** fields,

Where

nodes
are the names of each side of a CICM. The Element Manager accesses the CICM using the node names.

Then click on the **save new CICM** text on the right.

*Response: The **CICM creation** page displays the status of the creation, and confirms completion.*

4 Change the status of the new CICM to **online**. See the *Change the Online/Offline status of a CICM* procedure above.

5 This procedure is complete.

Delete a CICM

This procedure is used only under Nortel support direction to delete a CICM from the Element Manager.

Procedure 15 Delete a CICM

WARNING
Loss of all service
Completing this procedure will delete a CICM and result in loss of all CentrexIP service on that CICM.
This procedure shall only be performed under Nortel Support direction.

At the CICM Home page of the element manager web pages

1 Click on the **Change the list of CICMs stored in the CICM-EM** text in the menu on the right.

*Response: The **CICM modification** page opens.*

2 On the list of CICMs displayed, click the **delete** (trash can) icon for the CICM to be deleted.

Response: A status window displays the status of the deletion operation, and provides notification when complete.

3 This procedure is complete.

Edit CICM nodes

Use this procedure to edit the CICM nodes.

Procedure 16 Edit CICM nodes

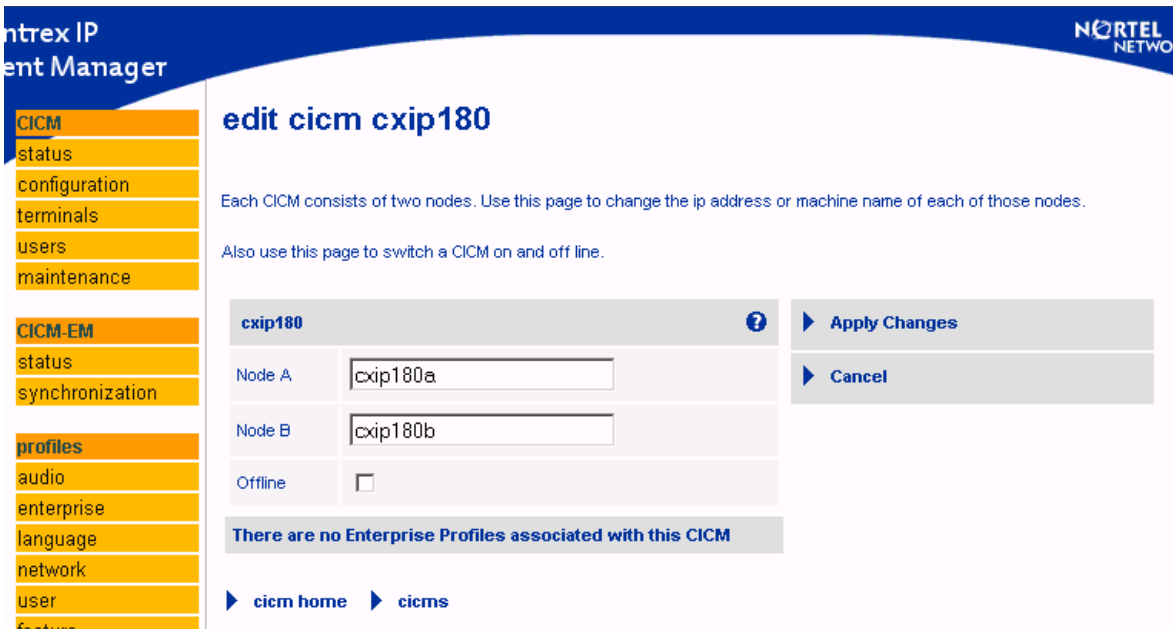
At the cicm home page of the element manager web pages

1 Click on the **Change the list of CICMs stored in the CICM-EM** text in the menu on the right.

*Response: The **cicm modification** page opens.*

2 On the list of CICMs displayed, click on the CICM to be changed.

*Response: The **edit cicm <cicm_name>** page opens.*



3 Enter the node name for unit A node and/or unit B node,

Where

node names (unit)
are the names of each side of the CICM. The Element Manager accesses the CICM using the node names.

4 Click on the **Apply Changes** text bar on the right.

5 This procedure is complete.

View Element Manager synchronization

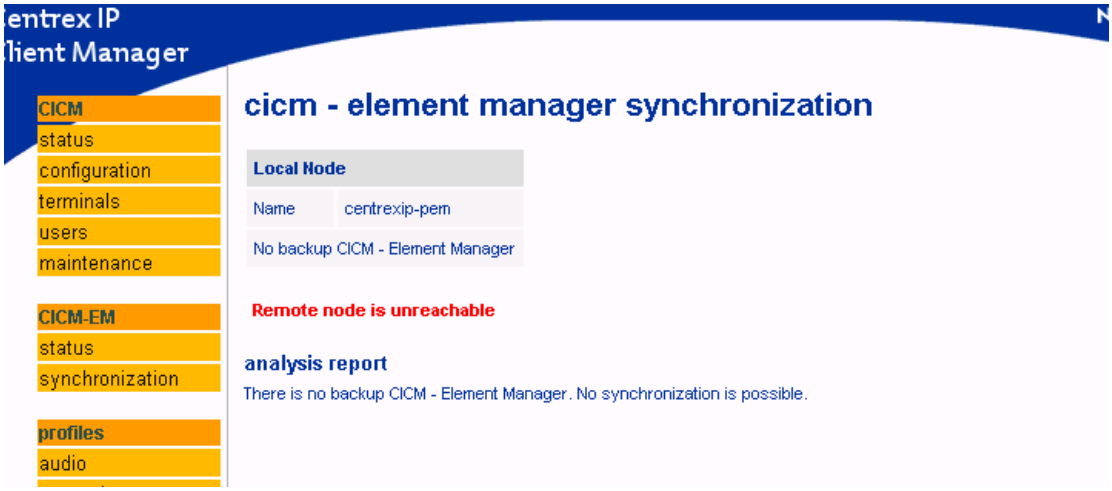
Use this procedure to view and check the synchronization between the Primary and Backup Element Managers.

Procedure 17 View Element Manager synchronization

At the cicm - element manager home page

1 Select **synchronization** from the **CICM-EM** section of the left navigation bar.

*Response: The **cicm - element manager synchronization** page opens.*



2 This procedure is complete.

View Language Profiles on a CICM

Use this procedure to view the Language Profiles applied to a CICM. Current Language Profiles available are English, German, Spanish, Italian, and French. New Language Profiles will be added via new software releases.

Procedure 18 View Language Profile on a CICM

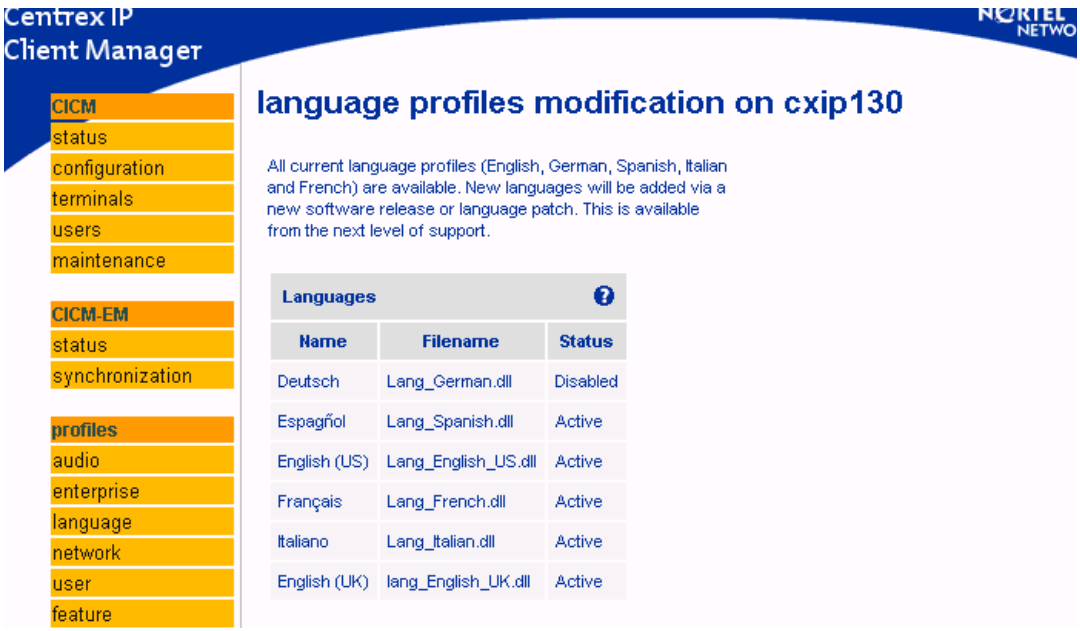
At the cicm - element manager home page

1 Select the **language** option form the **profiles** section of the left menu.

*Response: The **language profile home** page opens.*

2 To view the language profiles stored on a CICM, select the CICM from the drop-down menu, then click on the **view the profiles stored on the following CICM** text box on the right menu.

*Response: The **language profiles modification on <cicm_name>** page opens and displays the list of language profiles on the CICM.*



3 This procedure is complete.

Perform sanity check on a CICM

Use this procedure to perform a sanity check on a CICM. It will result in a display of the software release version.

Procedure 19 Perform sanity check on a CICM

At the diagnostics home page of the element manager web pages

1 Choose the CICM from the drop-down menu in the **sanity check on a CICM** option on the right navigation bar.

*Response: the **verify CICM <CICM name>** page opens and displays the results of the sanity check.*

2 This procedure is complete.

View terminal status

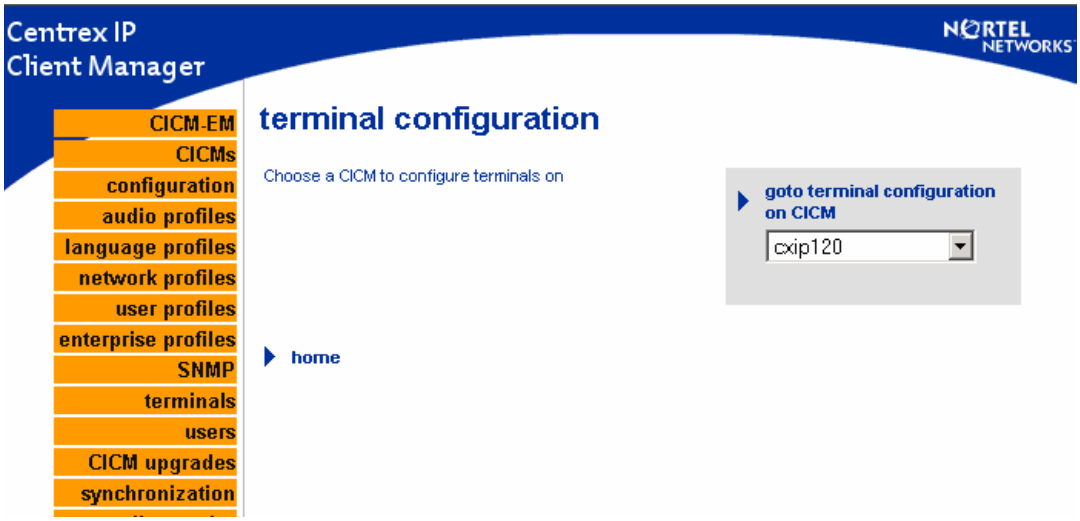
Use this procedure to view a terminal status

Procedure 20 View terminal status

At the CICM - element manager home page

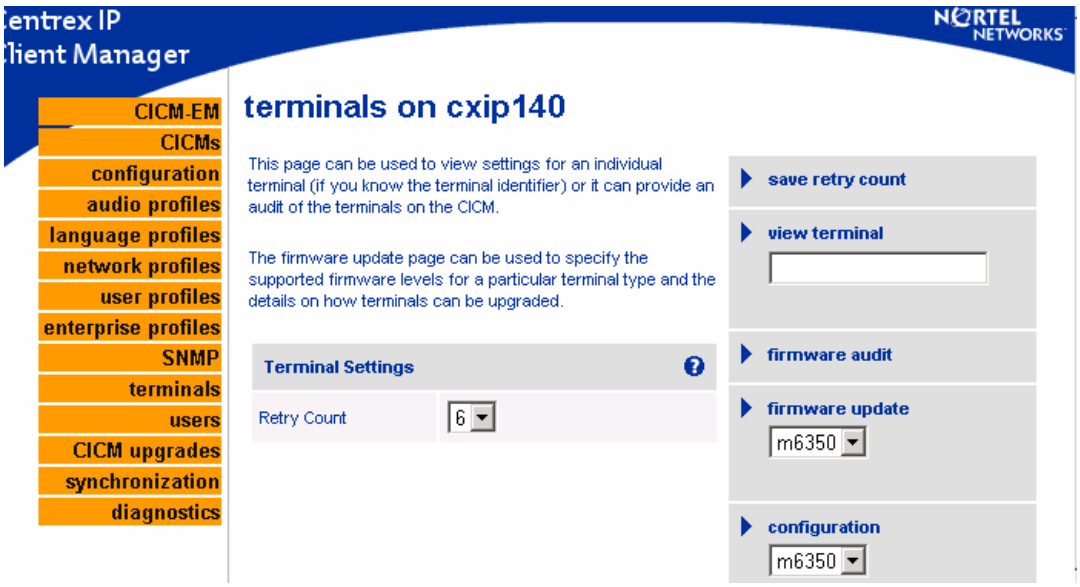
1 Select **terminals** from the left navigation bar.

*Response: The **terminal configuration** page opens.*



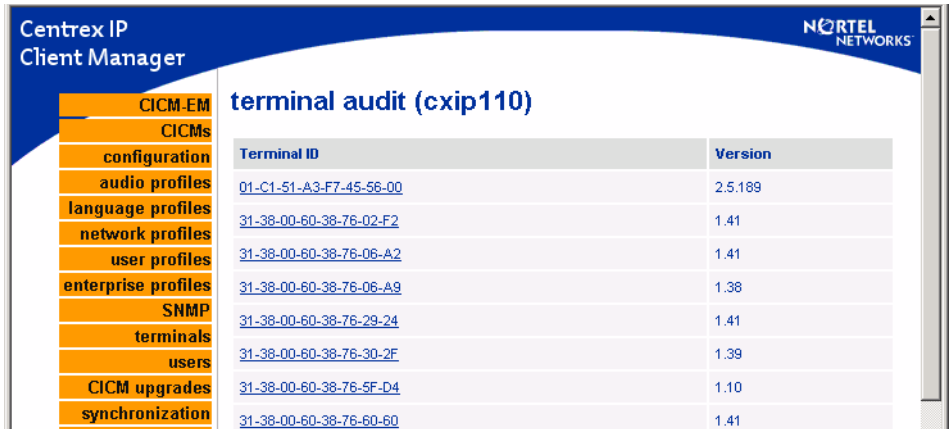
2 Select the CICM from the drop-down menu in the **go to terminal configuration on CICM** text box on the right.

*Response: The **terminals on <CICM name>** page opens.*



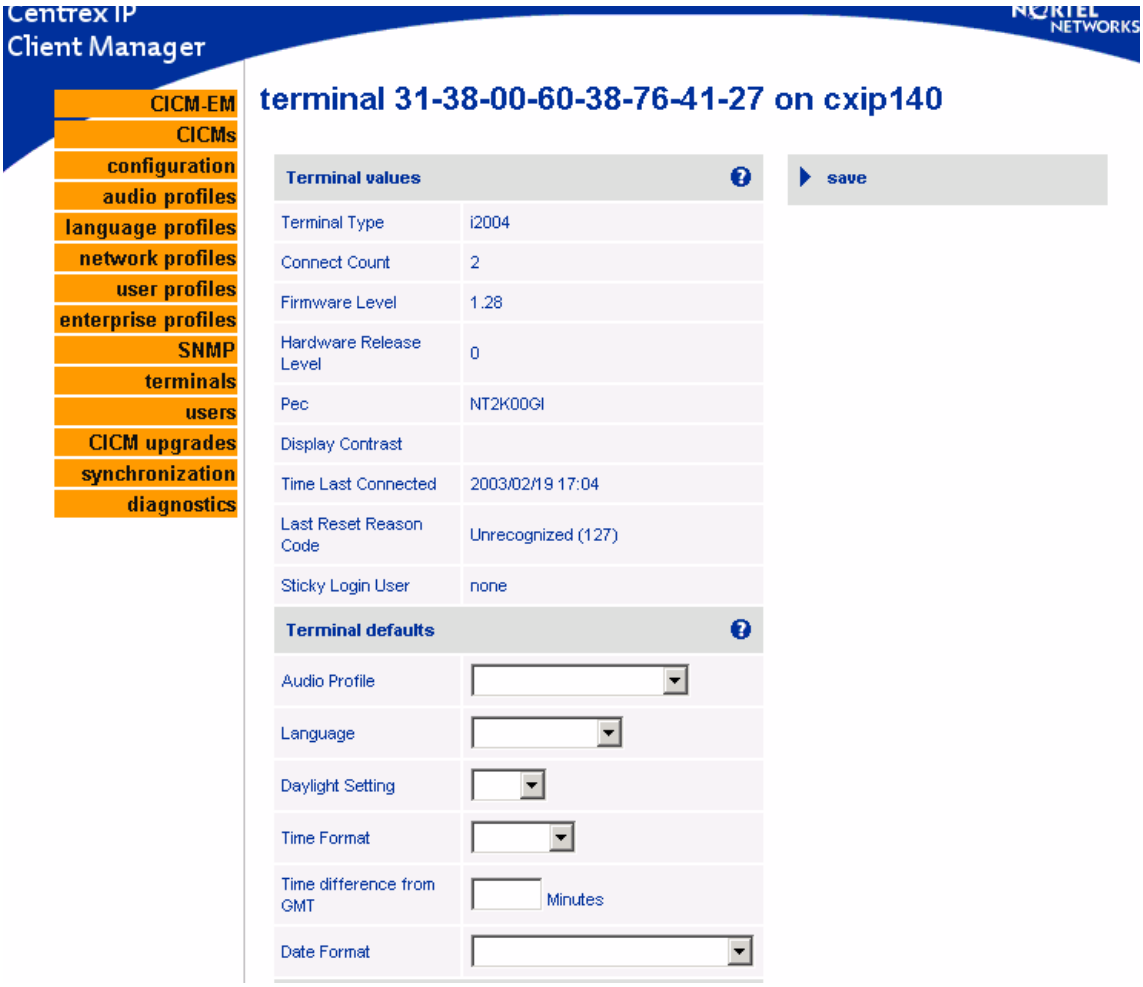
3 Click on the **firmware audit** text box on the right.

*Response: The **terminal audit** page opens.*



4 To view terminal values and defaults for a specific terminal, click on the terminal ID.

*Response: The **terminal <name> on <cicm name>** page opens.*



5 This procedure is complete.

View CICM information at the node level

The Web Interface can be used to collect statistics about the number of calls that are handled by the CentrexIP International Gateway. These statistics are collected and displayed on a per-node basis.

Procedure 21 View CICM information at the node level

At the cicm - element manager home page

1 Select the **CICMs** link from the left navigation bar.

*Response: The **cicm home** page opens.*

2 Select the CICM to be viewed from the drop-down menu on the **view the status of the following CICM** text bar on the right

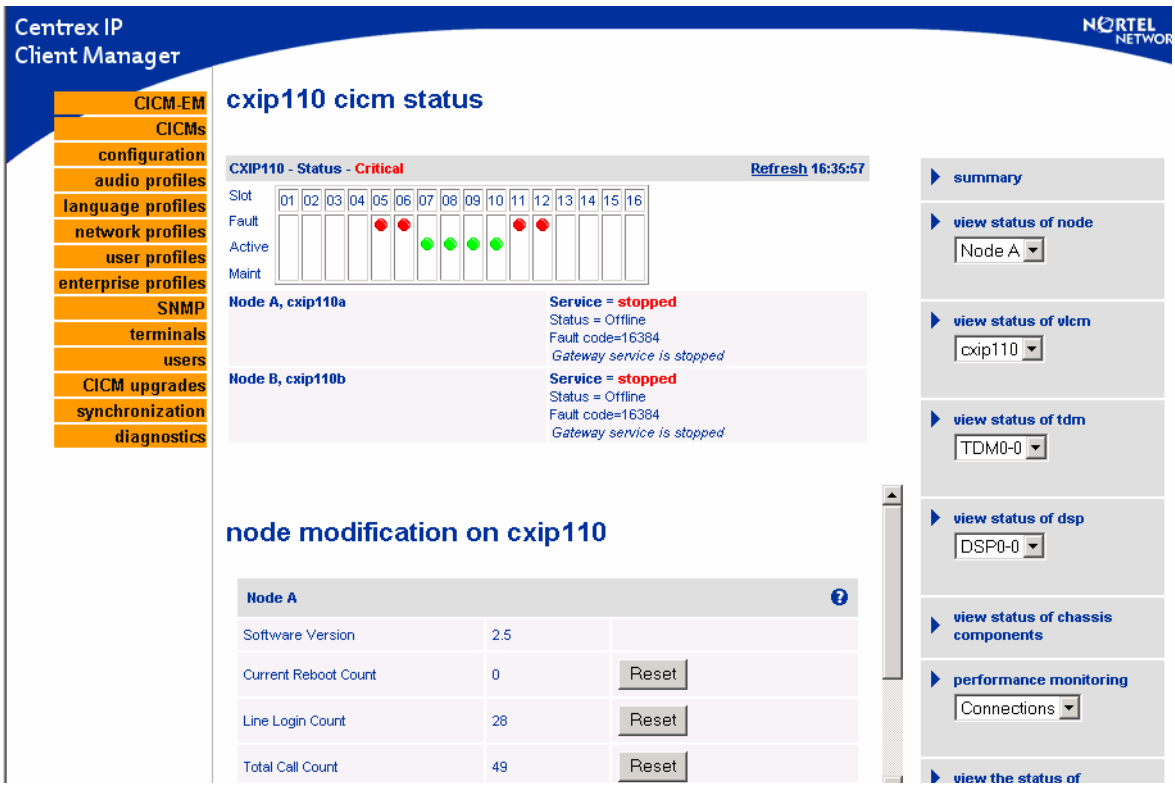
menu, then click on the **view the status of the following CICM** text.

*Response: The **<cicm name> cicm status** page opens.*

3 Select the node to view from the drop-down list of the **view status of node** box on the right,

then click on **view status of node** text.

*Response: The **node modification on <cicm name>** window section opens on the bottom of the **<cicm name> cicm status** page.*



4 Scroll down the **node modification on <cicm name>** window section to view the node information.

5 This procedure is complete.

View the record of backup sets for a CICM

Use this procedure to view the record of backup sets (backup execution times) for a CICM.

Procedure 22 View the record of backup sets for a CICM

At the CICM home page of the Element Manager web pages

1 Select the cicm name from the drop-down menu in the **show the backup sets available for** text box on the right menu.

*Response: The **<CICM name> backup sets on <element manager>** page opens and displays a table of backup sets for the CICM.*

2 This procedure is complete.

Perform a terminal handover

Use the following procedure to perform a controlled terminal handover. This procedure is performed to minimize service impact during upgrade or maintenance, by transferring service from one CICM node to its mate node.

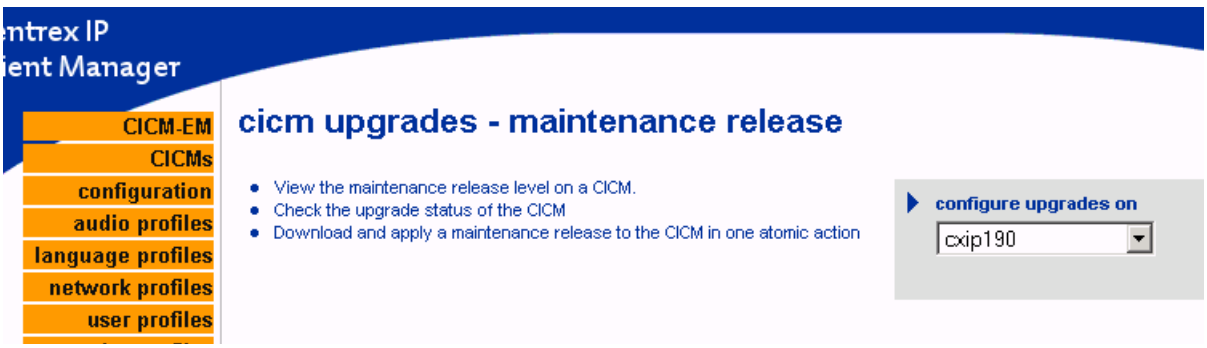
Terminal handovers are initiated and monitored from the CICM Element Manager.

Procedure 23 Perform a terminal handover

At the CICM-EM home page of the Element Manager web pages

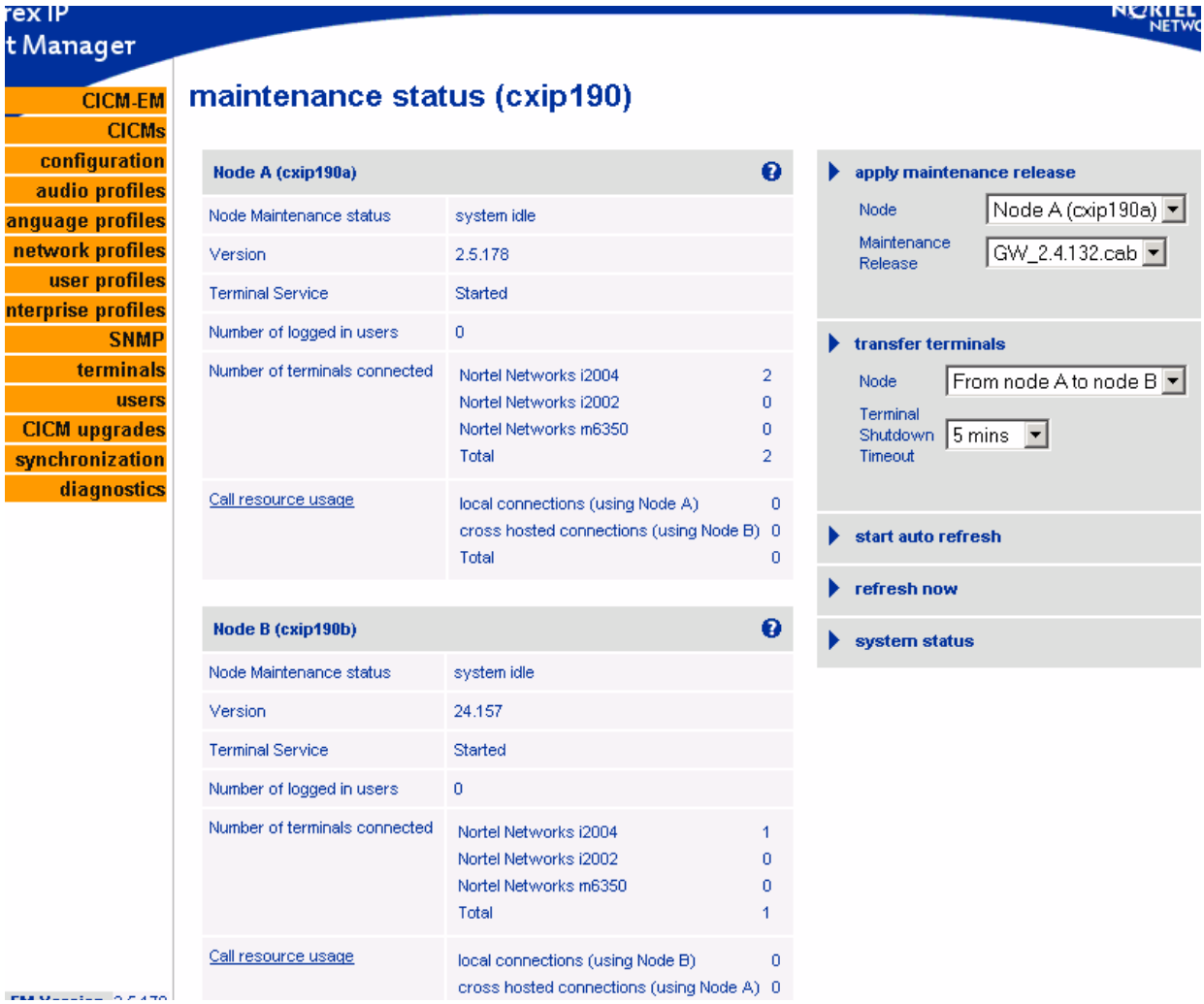
1 Select the **CICM upgrades** link from the left navigation bar.

*Response: The **cicm upgrades - maintenance release** page opens.*



2 Select the CICM to view from the drop-down menu on the **configure upgrades on** text box on the right.

*Response: The **maintenance status <CICM name>** page opens.*



3 View the terminal status on the **maintenance status <CICM name>** page.

The following information relevant to terminal handover is displayed on this page:

- **Number of logged in users (**for each node)
- **Number of terminals connected** (by type of terminal, for each node). This field shows the number of terminals that will suffer an outage if terminals are transferred from this node.
- **Terminal Service**
  This field shows the status of terminal service on each node. It is shown as “started” when terminal handover is not taking

place. It is shown as “stopped” when the node is stopped and the terminal handover to the mate node has occurred.

Note: Terminal handovers are not initiated on a node already shut down. If a shutdown has occurred, the terminals that were connected have already been automatically redirected to the mate node.

- **Transfer Terminals**
  This menu option is visible when both nodes are active and have connected terminal(s). This option is not shown when a node is already shut down and it is not possible to initiate a terminal transfer.
  - **Node** drop-down menu. Choose the nodes to transfer terminals from and to.
  - **Terminal Shutdown Timeout** drop-down menu. Select a time value between 5 and 60 minutes, by 5-minute intervals, to schedule the timeout. This is the time displayed to the user to give them time to complete active calls.

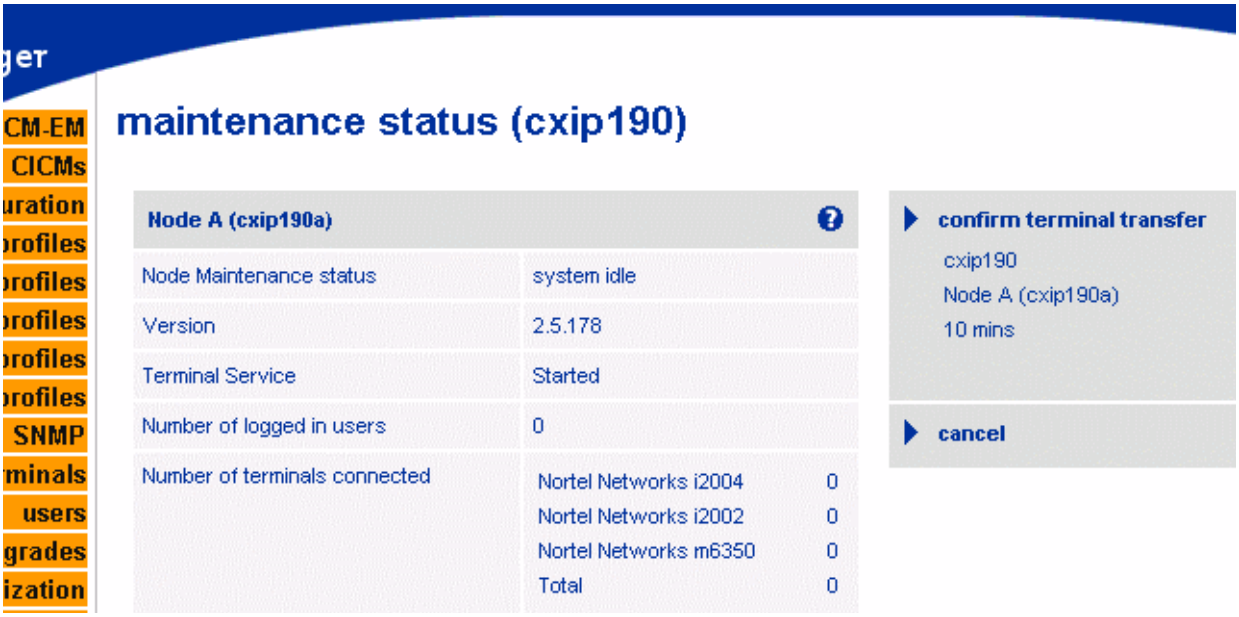
4 To initiate a terminal handover,
In the **transfer terminals** text box on the right menu:

a Choose the node to transfer from and to by selecting **From node A to node B** or **From node B to node A** from the drop-down menu,

b Then select the **terminal shutdown timeout** time from the drop-down menu,

c Then click on the **transfer terminals** text.

*Response: The **maintenance status <CICM name>** page updates with a prompt to confirm the terminal transfer.*



5 From the right menu, select **Confirm terminal transfer** OR **cancel** the transfer.

6 Verify that the terminal service has stopped.
From the **maintenance status <cicm name>** page, monitor the progress of the transfer by selecting the **start auto refresh** or **refresh now** text boxes on the right menu.

*Response: The progress of the terminal handover taking place is shown. The **Terminal Service** field for the node displays the percentage of time elapsed since the handover commenced. **Note**: this is not the percentage of terminals.*

*When the terminal handover has completed, the state of the **terminal service** will be shown as **stopped**.*

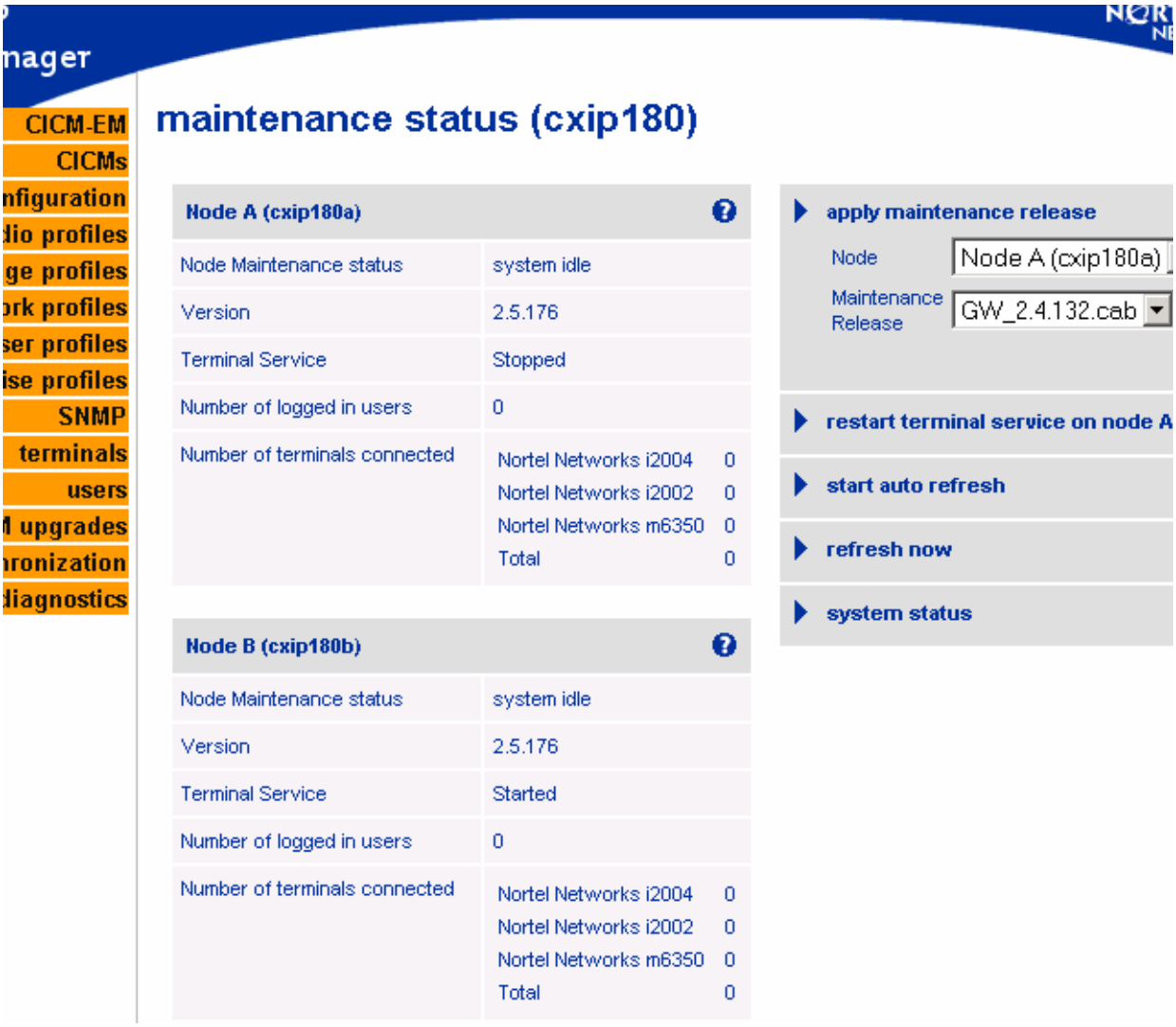
7 (**OPTIONAL STEP**)
To abort a terminal handover in progress, click on the **abort terminal transfer on node <#>** on the **maintenance status <CICM name>** page's right menu.

8 Restart the terminal service (after upgrade or maintenance).
When the terminal handover is complete and the state of the terminal service is shown as **stopped**,
restart the terminal service on the node by clicking on the **restart**

terminal service on node <#> on the right menu, as shown in the following figure.

Note 1: Stopping and starting the terminal service without restarting the rest of the system has no impact on call processing on either node, except that users on active calls when the terminal handover completes will be forcefully redirected to the mate node (where new calls may immediately begin).

Note 2: Some terminals cannot be transferred during a handover (e.g. older versions of the m6350 or terminals that are not configured correctly). These terminals are left connected to the node and are able to initiate new calls until the node is shut down. In this case the status of the terminal service is shown as “stop pending -- xxx terminals remaining”



*Response: When the terminal service has restarted, the status changes to **started**.*

9 This procedure is complete.

Start or stop the CICM Service

Stopping a node on the CICM may be necessary when upgrading or during routine maintenance such as changing cables. The procedures to start or stop the CICM Service (the CICM nodes) are only used under Nortel Support direction, or according to documented procedures.

It is recommended to perform terminal handover prior to stopping or restarting the CICM service, in order to minimize service outage. Refer to the *Perform Terminal Handover* procedure above.

Procedure 24 Start the CICM Service

CAUTION
Loss of service
Using the ***Restart*** button can result in loss of service if terminal handover is not performed prior to this procedure.
This procedure shall only be performed under Nortel Support direction.

At the CICM-EM home page of the Element Manager web pages

1 Complete the *Perform Terminal Handover* procedure above, through step 6.

2 Click on the **CICMs** option on the left navigation bar.

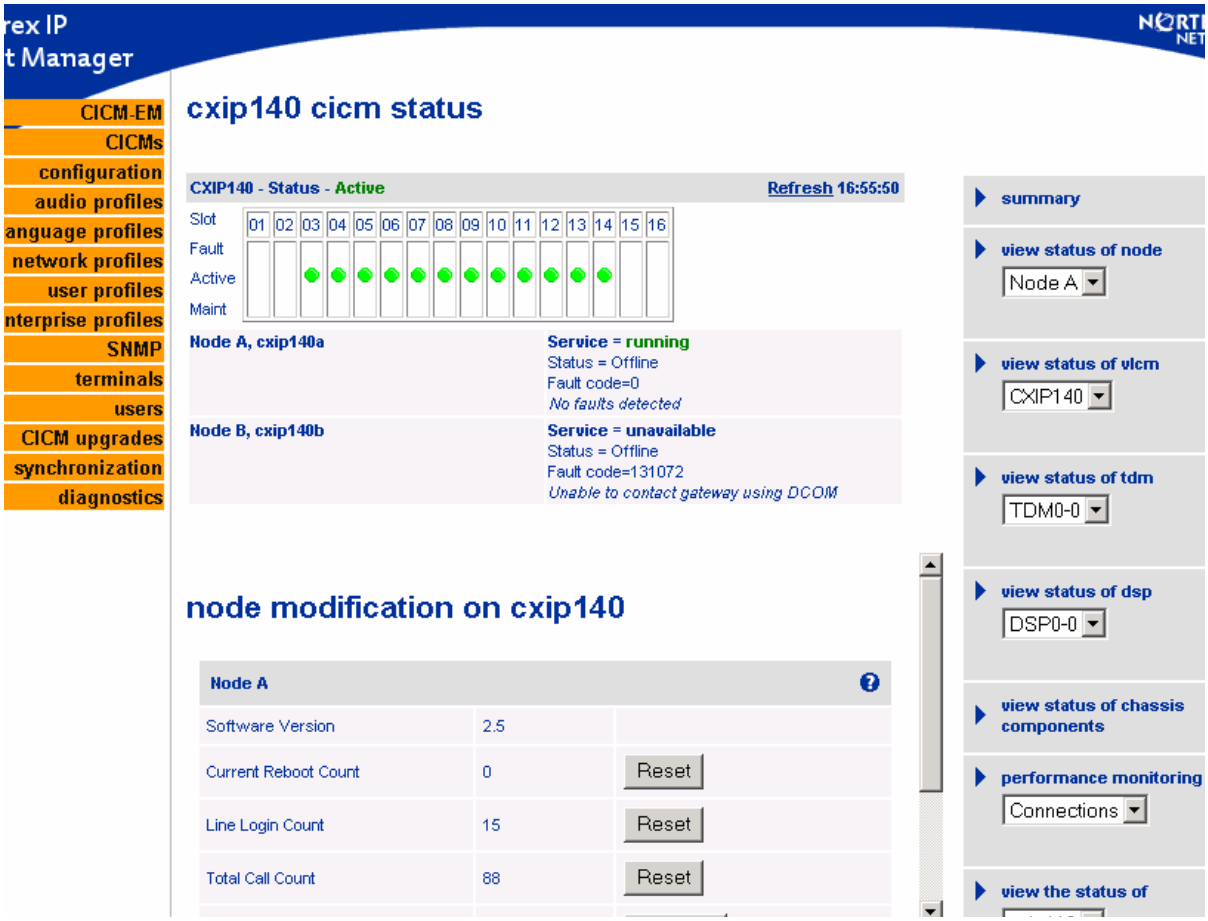
*Response: The **cicm home** page opens*

3 Select the CICM to view from the drop-down list on the right, then click on the **view the status of the following CICM** text.

*Response: The **<cicm name> cicm status** page opens.*

4 On the **<cicm name> cicm status** page, select the node you want to start from the drop-down list labeled **view status of node** on the right, then click on **view status of node** text.

*Response: The **node modification on <cicm name>** window section opens on the bottom of the **<cicm name> cicm status** page.*



5 On the **<cicm name> cicm status** page, scroll down the **node modification on <cicm name>** section to the **Service State** field.

Then click on the **Restart Service** button to start the CentrexIP service.

Response: A confirmation prompt is displayed.

6 At the confirmation prompt, enter **Yes** to confirm restart (or **no** to decline).

Response:
With confirmation, the CICM resets and attempts to start the service on the node.

*The **Service State** field updates to display the current service state. Possible states are: Stopped, Start Pending, Running, and Stop Pending.*

***Note:** The node will be in the state "Start Pending" while the hardware is being initialized.*

7 Monitor the node service state from the **<cicm name> cicm status** page.

When the **service state** changes to **running** the service has correctly started.

8 Repeat this procedure to start the second node.

9 This procedure is complete.

***Note:** If the service fails to start, refer to the CS2K documentation *Remote Line concentrating Module Maintenance Guide* to bring the CentrexIP into service.

Procedure 25 Stop the CICM Service

WARNING
Loss of service
Completing this procedure to will result in loss of CentrexIP service on that node if terminal handover is not performed prior to this procedure.
This procedure shall only be performed under Nortel Support direction.

At the Element Manager home page

1 Complete the *Perform Terminal Handover* procedure above, through step 6.

2 Click on the **CICMs** option on the left navigation bar.

*Response: The **cicm home** page opens*

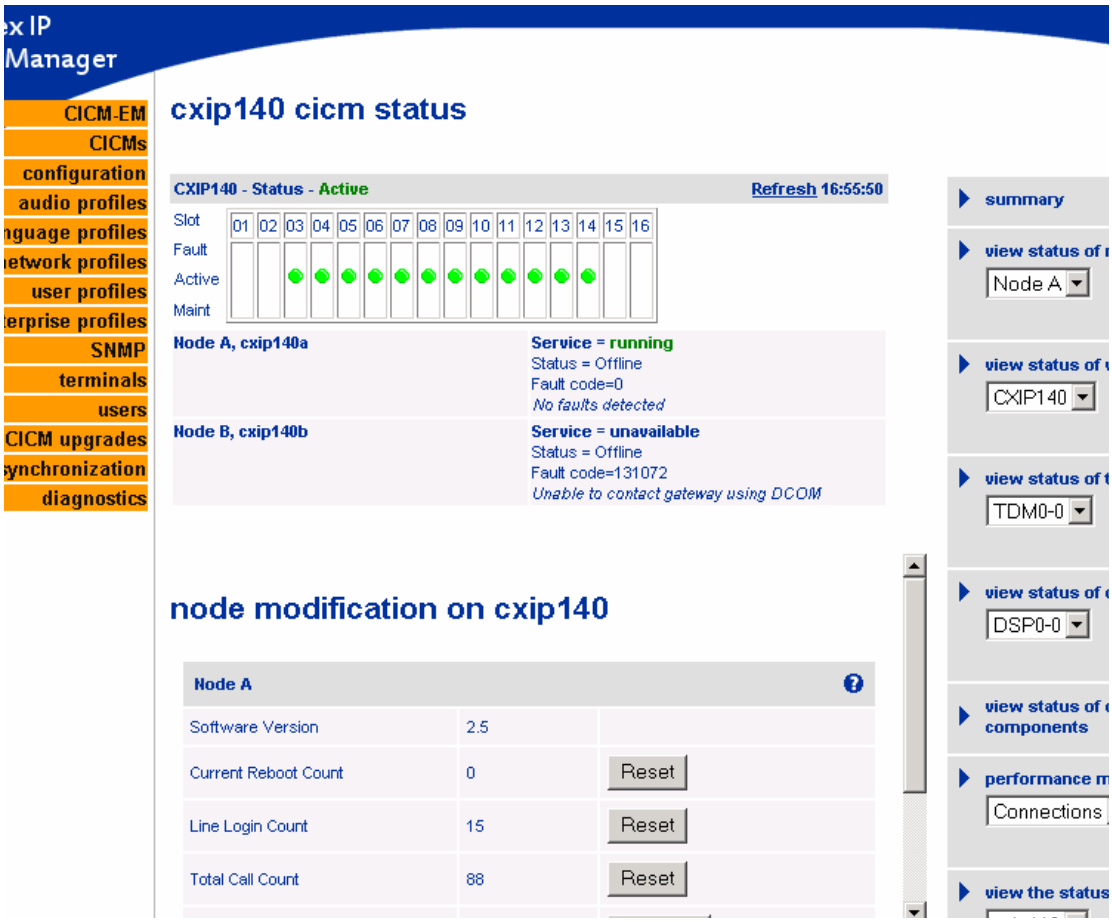
3 Select the CICM to view from the drop-down list on the right, then click on the **view the status of the following CICM** text.

*Response: The **<cicm name> cicm status** page opens.*

4 On the **<cicm name> cicm status** page, select the node you want to stop from the drop-down list labeled **view status of node** on the right,

then click on **view status of node** text.

*Response: The **node modification on <cicm name>** window section opens on the bottom of the **<cicm name> cicm status** page.*



5 On the **<cicm name> cicm status** page, scroll down the **node modification on <cicm name>** section to the **Service State** field.

Then click on the **Stop Service** button to stop the CentrexIP service.

Response: The node begins the shutdown process.

*The **Service State** field displays the current service state. Possible states are: **Stopped**, **Start Pending**, **Running**, and **Stop Pending**.*

> ***Note:** The node will be in the **Stop Pending** state while the hardware is shutting down.*

6 Monitor the node service state from the **<cicm name> cicm status** page.

When the service state changes to **stopped** the service has correctly been shut down.

Note: Stopping the CentrexIP service will result in alarms being raised. To prevent these alarms, offline the CICM at the CS2K before powering down the CICM. Refer to the Nortel Networks documentation *Remote Line Concentrating Module Maintenance Guide*.

7 Repeat this procedure to stop the second node.

8 This procedure is complete.

Event Viewer procedures

Event Viewer is a Windows 2000 and NT administrative tool. It is used to monitor event logs, which provide information about hardware, software and system problems.

There are three types of logs in Windows 2000 and NT: Application, System, and Security logs. All CICM related event logs are filed as Application logs.

View and save event logs

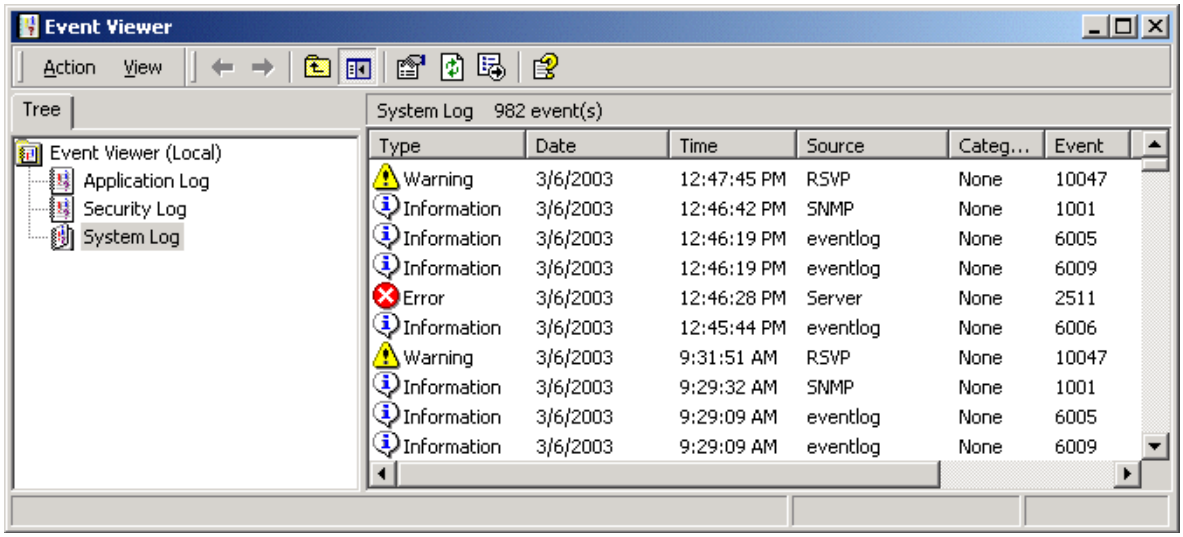
Use these procedures to view event logs with Windows 2000 or NT, and to save them to another folder, for example, a shared folder accessible to Nortel Support personnel.

Procedure 26 View and save event logs (Windows 2000)

At the Windows 2000 desktop

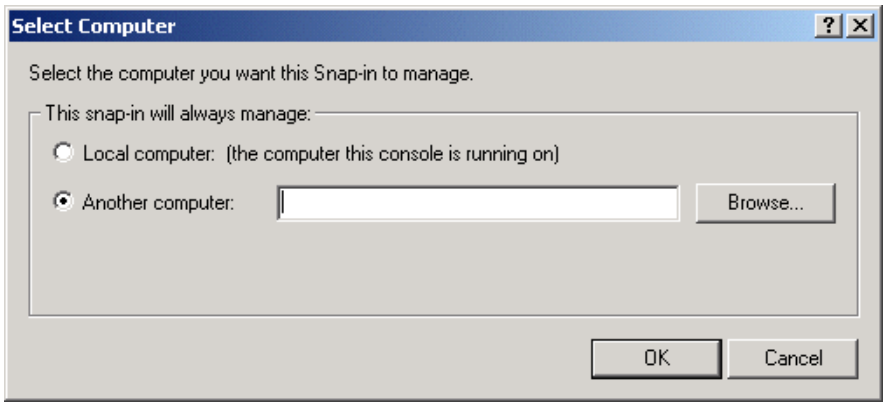
1 Go to
Start > Programs > Administrative tools > Event Viewer

Response: The Event Viewer window opens.



2 Right click on **Event Viewer (Local)** icon in the **Tree** menu, then select **Connect to another Computer**

*Response: The **Select Computer** dialogue box opens.*



3 Type in the IP address of the node whose logs you want to view, then click **OK**.

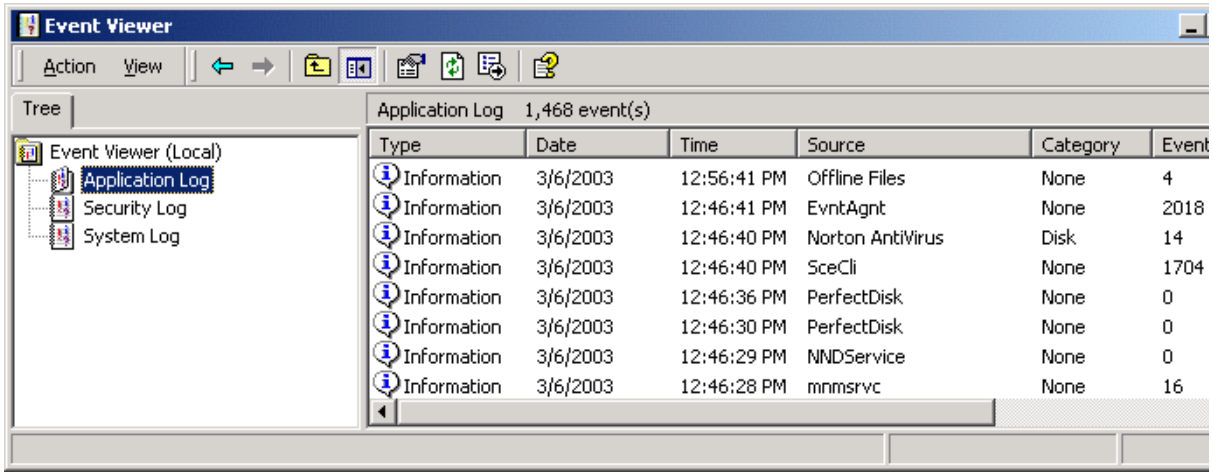
Example of format
47.160.160.100/centrexip/

*Response: The **Event Viewer** window updates to display the events for the selected node.*

4 Select the type of log you want to view from the Event Viewer Tree panel by clicking on the type of log.

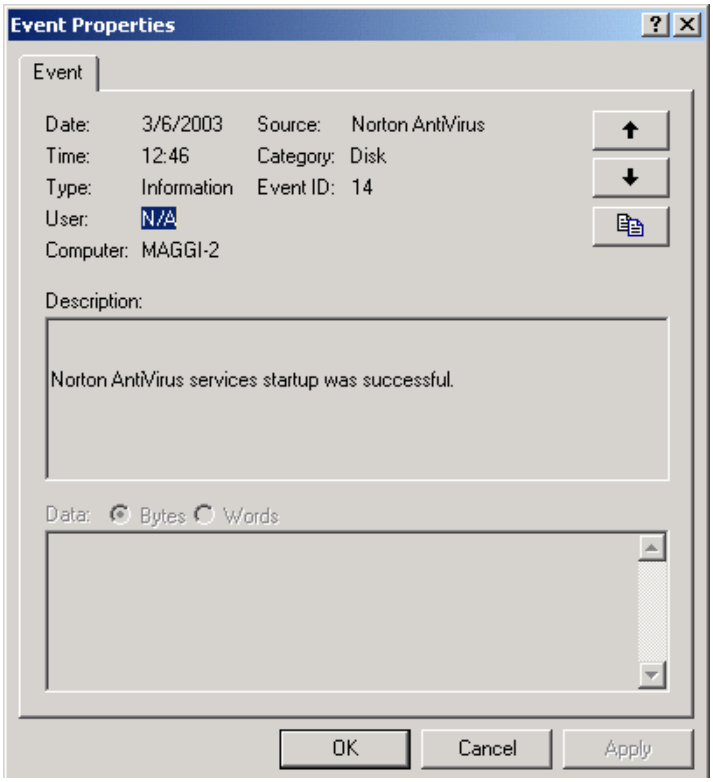
Note: CICM related logs are Application logs.

Response: The selected log folder is opened and its contents displayed in the Event Viewer panel on the right.



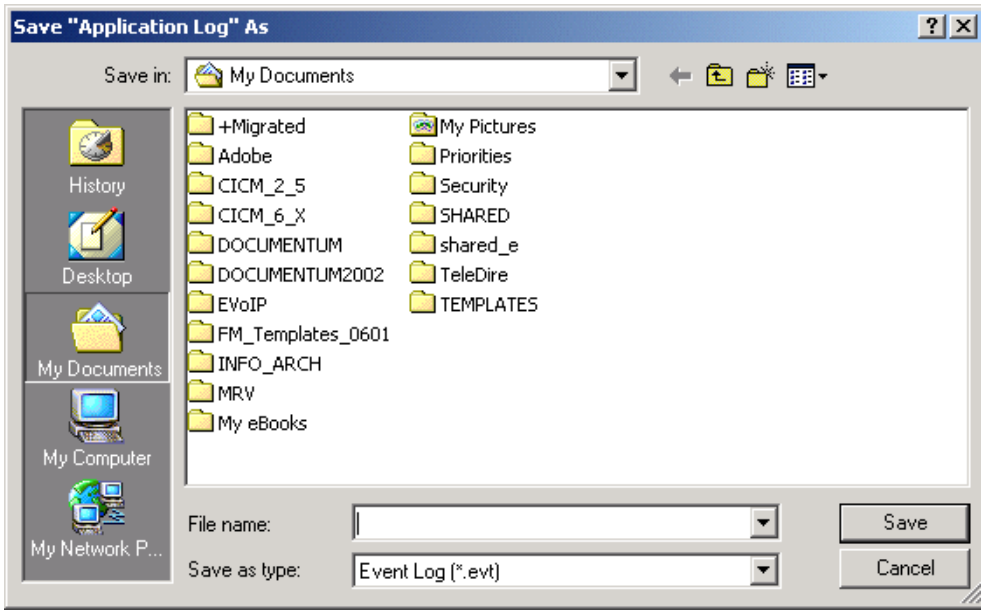
5 From the list of logs on the panel on the right, double-click on the specific log to view.

*Response: The **Event Properties** window is displayed for the selected log.*



6 To save the logs to your PC, in the **Event Viewer** left panel, select the log folder to save (e.g. Application), then from the **Event Viewer** window, select the **Action** menu, then choose **Save Log file As ...**

*Response: The **Save "Application" As** window opens.*



Note: You can also use **Export list** from the **Action** menu to copy the logs to your PC. However, this will not copy the text associated with each log.

7 Name the file and save it to your PC in either of the following file types:

- .csv file
  The comma delimited file format is easy to format using Microsoft Excel. Open the .csv file in MS Excel by double-clicking on the saved file icon.
- .txt file
  The text file format is the one that Nortel Support personnel prefer.

8 This procedure is complete.

Procedure 27 View and save event logs (Windows NT)

At the Windows NT desktop

1 Go to
Start > Programs > Administrative tools > Event Viewer

Response: The Event Viewer for the current machine opens.

2 Go to
Log > Select Computer

then select the name of the node you want to view,

then click **OK**

Response: The events for the selected node is displayed.

3 Go to
Log

then select the type of events (e.g. System logs, Application logs) you want to view.

Response: The logs selected are displayed.

4 After locating the logs you want to save, go to
Log > Save As

5 Type the name to save the file as, the location to save it to, and the text file type extension (.txt),
then press Enter.

Note: Files should be named fully and clearly to facilitate troubleshooting, including the CICM name, log type and date.

Example
xcip106a_App_071502

6 This procedure is complete.

Filter event logs

Use these procedures for Windows 2000 to filter event logs.

Procedure 28 Filter event logs

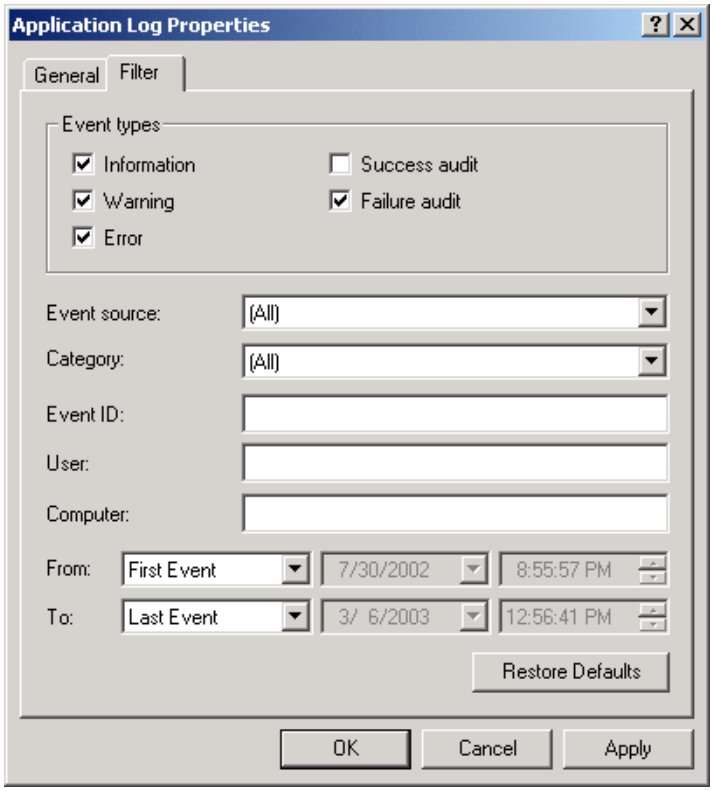
At the Windows 2000 desktop on an Administration LAN PC

1 Select **Start/Programs/Administrative Tools /Event Viewer**

*Response: The **Event Viewer** window opens.*

2 In the **Tree** panel of the **Event Viewer** window, select the log file (e.g. Application Logs) to filter, then from the View menu, select **Filter**.

*Response: The **Properties** window opens for the file selected (e.g. **Application Log Properties**).*



3 On the Filter tab, specify the characteristics required, then click **OK**.

4 This procedure is complete.

Terminal Services Client procedures

The Element Manager operating system for Series 2.5 release is Windows 2000 Server, which supports remote access to the Element Manager via Windows Terminal Services Client. With this release, the Terminal Services Client is the primary remote access mechanism for the Element Manager.

This section includes a procedure for installation of Terminal Services. For additional information on use of the Terminal Services Client, please refer to Microsoft documentation library and www.microsoft.com.

Install Terminal Services

Use this procedure to install Terminal Services.

Procedure 29 Install Terminal Services

At the MS Windows 2000 server

1. Login to the server as an Administrator.
2. Click **Start**, then **Settings**, then **Control Panel**, then **Add/Remove Programs**.

   *Response: The **Add/Remove Programs** window opens.*
3. Click on the Add/Remove Windows Components from the left panel of the window.

   *Response: The **Windows Components Wizard** window opens.*
4. From the list of Windows components in the **Windows Components Wizard** window, click to select the **Terminal Services** check box, then click **Next**.

   Note: Click the **Details** buttons to view information about the following subcomponents of the Terminal Services component selected.

   - **Client Creator Files**. Windows uses these files to create installation disks for Terminal Services client computers.
   - **Enable Terminal Services**. Windows uses this component to configure the Terminal Services software on your computer.
5. On the **Terminal Services Setup** screen, click **Remote Administration**, then click **Next**.
6. If you are prompted, insert your original installation media.
7. When the installation is complete, click **Finish**, then click **Close**.
8. This procedure is complete.

Configure Terminal Services

After MS Terminal Services is installed, it must be configured and managed. The Terminal Services installation process places the following new tools in the Administrative Tools Group:

- Terminal Services Configuration Tool
- Terminal Services Manager
- Terminal Services Client Creator

Use the following procedure to configure Terminal Services after installation.

Procedure 30 Configure Terminal Services

At the MS Windows 2000 server

1. Login to the server as an Administrator.
2. Click **Start**, then **Programs**, then **Administrative Tools**, then **Terminal Services Configuration**.

   Response: The Terminal Services Configuration window opens with the Terminal Services Configuration tree in the left panel.

3. In the Terminal Services Configuration tree, click on **connections** in the left panel.

   *Response: The **connections** file is expanded to list all connections in the right panel of the window.*

4. To rename a connection, right-click on the connection in the right panel, then select **rename** from the pop-up menu. Rename the connection, then press **Enter**.
5. To configure the properties of a specific connection, right-click on the connection in the right panel of the Terminal Services Configuration window, then select Properties from the pop-up menu.

   *Response: The **<connection name> Properties** window opens.*

6 In the **General** tab of the **<connection name> Properties** window, configure the **Encryption level**, according to the following table:

Table 3 Encryption Levels

Level	Enter	Description
Low	Low	Use low, input-only encryption to protect sensitive data. This level encrypts data sent from the client to the server (one-way) by using either a 40-bit or a 56-bit key. A Windows 2000 Terminal Server uses a 56-bit key when Windows 2000 clients connect to it and a 40-bit key when earlier versions of the client connect to it.
Medium	Default No action needed.	Use medium encryption to secure sensitive data as it travels over the network for display on remote clients. This level encrypts data sent from client to server and from server to client (two-way) by using either a 40-bit or a 56-bit key. A Windows 2000 Terminal Server uses a 56-bit key when Windows 2000 clients connect to it and a 40-bit key when earlier versions of the client connect to it.
High	High	If you are located in the United States or Canada, you have the option to encrypt data sent from client to server and from server to client (two-way) by using strong 128-bit encryption.

7 Click on the **Logon Settings** tab of the **<connection name> Properties** window to configure the logon parameters.

Table 4 Logon Settings

Parameter	Enter	Description
Use client-provided logon information	Default. No action needed	Recommended. This setting results in a login prompt requiring user to supply login information.
Always use the following logon information	Datafill the logon information	Not recommended. Security is decreased with this option. This configures an automatic logon (auto-logon).
Always prompt for password	Click to select.	This setting results in every logon request being challenged for a password, even requests configured to auto-logon with an authentic username and password.

8 Click on the **Sessions** tab of the **<connection name> Properties** window to configure the Sessions parameters. The

Sessions tab is used to configure session timeout and reconnection behavior.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 5 Sessions

Parameter	Enter	Description
Override user settings	Default. No action needed	Default is recommended. All remote administration session on the Media Application Server will originate from the Media Application Server Management Console. These sessions are established for the management of the Media Application Server, and so must always be available. This behavior is enforced by configuring Terminal Services to always override user settings and to never limit or disconnect a session.
Override user settings (second selection)	N/A	Do not use. Provides option to disconnect a session.

9 Click on the **Environment** tab of the **<connection name> Properties** window to configure the Environment parameters. The Environment tab is used to configure the user environment at logon.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 6 Environment parameters

Parameter	Enter	Description
Override settings from user profile and Client Connection Manager wizard	Default is not selected. No action needed.	Default is recommended. Terminal Services Remote Administration mode does NOT support targeted program start-up on logon (this is supported by Terminal Services when operating in Application Server mode)
Client wallpaper	Default is selected. No action needed.	Default is recommended. Disabling the wallpaper improves performance.

10 Click on the **Remote Control** tab of the **<connection name> Properties** window to configure the Remote Control parameters.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 7 Remote control parameters

Parameter	Enter	Description
Use remote control with default user settings	Default is not selected. No action needed.	Do not use.
Do not allow remote control	Default is selected. No action needed.	This default selection is required. Remote Control capabilities must be disabled.
Use remote control with the following settings.	Default is not selected. No action needed.	Do not use.

11 Click on the **Client Settings** tab of the **<connection name> Properties** window to configure the Client Settings parameters. The Client Settings tab is used to configure the client operating environment.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 8 Client Settings parameters

Parameter	Enter	Description
Use connection settings from user settings	Default is selected. No action needed.	Default is recommended. In order to minimize interference with the operation and performance of the server, the client is provided minimal access to server resources.
Disable (select): • Windows printer mapping • LPT port mapping • COM port mapping • Clipboard mapping	Accept the default. All are selected except Clipboard mapping. No action needed.	Default is recommended. All are disabled (selected) except Clipboard mapping. This is the only function supported and enabled to ease data gathering for the client.

12 Click on the **Network Adapter** tab of the **<connection name> Properties** window to configure the Network Adapter parameters. The Network Adapter tab is used to identify the network adapter upon which this connection resides, and to specify the number of permitted connections.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 9 Network adapter parameters

Parameter	Enter	Description
Unlimited connections	Default is selected. No action needed.	Default is recommended.
Maximum connections	Default is not selected. No action needed.	Default is recommended.

13 Click on the **Permissions** tab of the **<connection name> Properties** window to configure the Permissions parameters. The Permissions tab is used to grant Terminal Services access permissions to additional users and/or groups.

No action is needed. It is recommended to accept the defaults. The table below provides additional information.

Table 10 Permissions parameters

Parameter	Enter	Description
Administrators	Default is selected. No action needed. **Full Control** box is checked. **User Access** box is checked. **Guest Access** box is checked.	Default is recommended. Select the user or group in the top panel, then select their permissions in the bottom panel. Default grants Terminal Services remote access full privileges to the Administrator's group.
SYSTEM	Default is selected. No action needed. **Full Control** box is checked. **User Access** box is checked. **Guest Access** box is checked.	Default is recommended. Grants Terminal Services remote access full privileges to the System.
Add	Press **Add** button	Click the **Add** button to open the **Select Users or Groups** window that provides a pick-list of existing users and groups. Select the user or group, then press **Add**, then press **OK**.
Remove	Select the user or group in the top panel, then press the **Remove** button	Removes the user or group from Terminal Services access. Click the **Remove** button to open the **Select Users or Groups** window that provides a pick-list of existing users and groups. Select the user or group, then press **Remove**, then press **OK**.
Advanced	Press **Advanced** button, then press **<group name>**, then **View/Edit**	Provides more detail for access permissions.
Default	Press **Default** button	Restores the defaults.

- Click the **Add** button to open the **Select Users or Groups** window that provides a pick-list of existing users and groups.
- Select the user or group in the top panel, then select their permissions in the bottom panel.

14 This procedure is complete.

Backup the CICM registries (schedule automatic backup)
Use this procedure to schedule the automatic backup of the registry MIB files on a CICM. For information on manual backup of a registry, refer to the *Backup a registry (manual)* procedure in this document.

Procedure 31 Backup the CICM registries (schedule automatic backup)

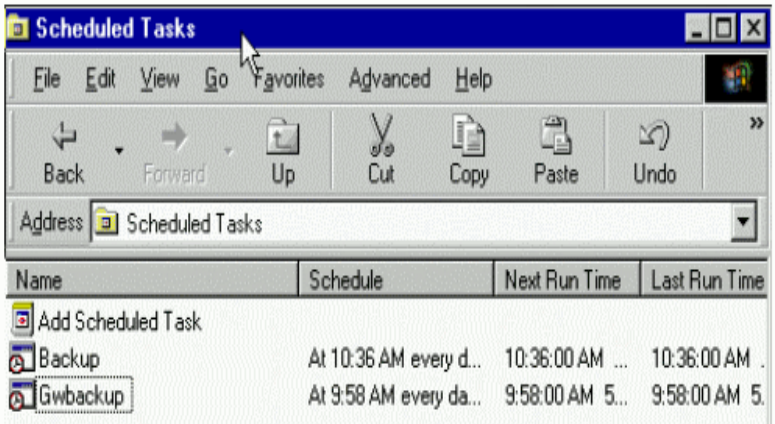
At a PC on the Administration LAN

1 Use Terminal Services Client to access the Element Manager desktop.

At the Element Manager Windows 2000 desktop

2 Select
Start > Programs > Accessories > System Tools > Scheduled tasks

*Response: The **Scheduled Tasks** window opens*



3 Double click on the **Add Scheduled Task** item.

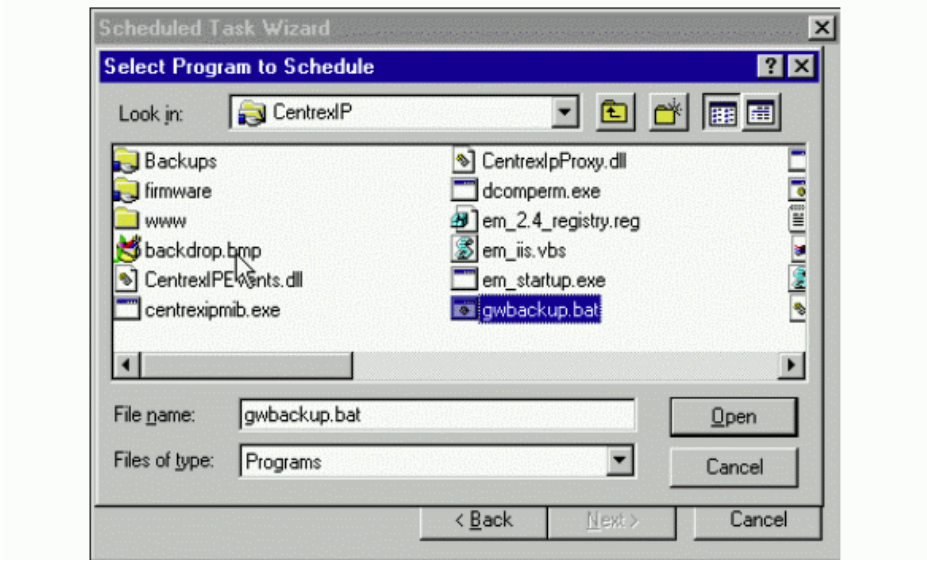
*Response: The **Scheduled Task Wizard** opens.*

4 Click **Next**

Response:

5 Click on **Browse**
then open the **CentrexIP** folder.

Response:



6 Choose the **gwbackup.bat** program for backing up registry MIB files, then click on **open**.

Response:

7 Type a name for the task,
then select the radio button to indicate how frequently to perform the task (daily, weekly, etc.),
then click **Next**.

Response:

8 Select the time and day to start the task, then click **Next**.

Note: Backup scheduling recommendations:

- Schedule backup during off-peak hours.
- Do not schedule automatic backup to run at exactly the same time on both the primary and backup element managers, in order to reduce the load on the CICMs.

Response: A confirmation of the scheduled task is displayed. At the scheduled time, the registry files will be backed up from all the nodes registered with the Element Manager. These files can be viewed on the Element Manager in the directory path ***C:\CentrexIP\Backups\<node_name>***

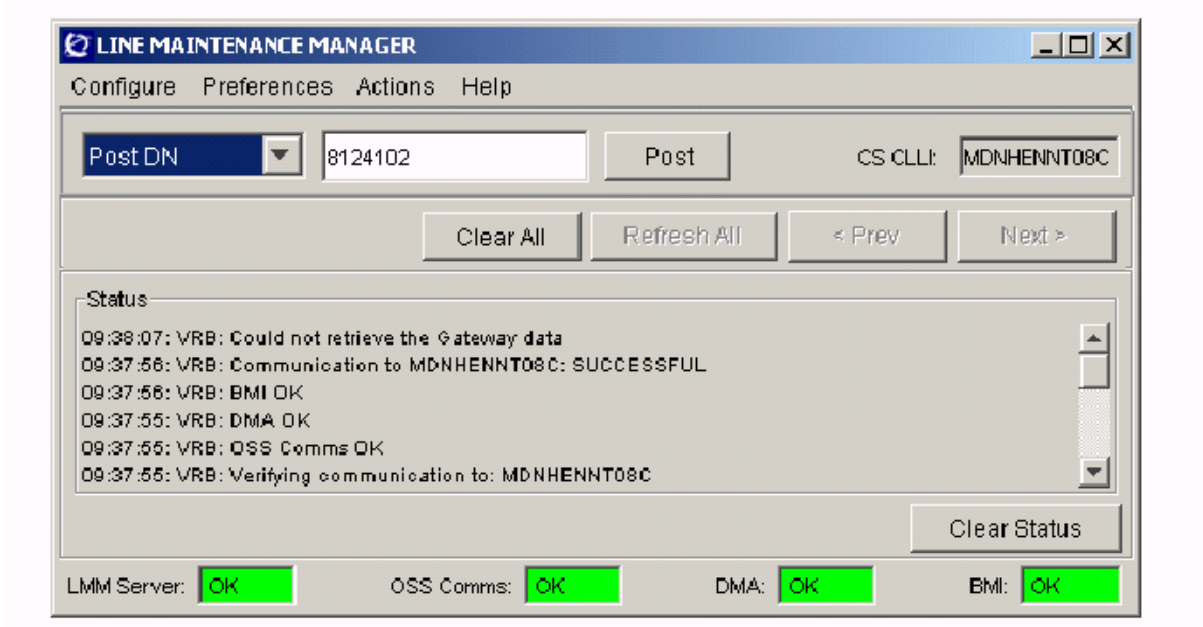
9 This procedure is complete.

Security and Administration section changes

Line Maintenance Manager

The Line Maintenance Manager (LMM) is a GUI provided by the SESM to replace/emulate the functionality provided by the MAPCI tool on the CS2000 Core.

Example: Line Maintenance Manager



The LMM provides for the following commands:

- BSY
- RTS
- FRLS
- INB

The LMM also provides the functionality to post a gateway in addition to individual lines.