Performance management

Performance management overview

Service providers can provision performance management on the Centrex IP Client Manager by configuring Office Parameters for Operational Measurements (OMs) on all element managers. Office Parameters set OMs collections & reporting criteria.

Office parameters are initially set by Nortel Networks to meet design criteria and switch configuration.

Traffic loading

Series 6.1 CICM supports/provides for:

- 1024 users
- Up to two call origination or termination attempts per second (7200 BHHCA)
- Up to a total of 512 simultaneous active call halves
- Any single terminal can support up to eight simultaneous active call halves, using functionality such as multiple DNs and call hold

Note: Acting as a slave processor to the core and GWC in the CS2K network, the CICM performance cannot accurately be measured in BHCA. The CICM only has knowledge about half calls, the other half of the call, even if it is hosted from the same CICM, is made anonymous by the CS2K and GWC.

Traffic load testing

The CICM is tested at full load as part of the product test process.

Traffic impact on users

If the full complement of users is logged in and they are all actively hitting keys on their sets, they may notice delays in screen updates and response of their sets to stimulus. This is a result of the user interface being controlled by the CICM itself. The effect is difficult to quantify, but should not have a significant impact.

Architectural resilience

The CICM node is partitioned into two identical independent physical nodes: Node A and Node B. The CICM uses a SAM 16 hardware platform with dual cPCI backplane.

The two CICM nodes are contained in two half shelves. There is one pair of CPV5370 CPU cards per shelf. Each CICM node, or half shelf, having one CPU card and a hot swap controller card.

Towards the GWC, the two cards present themselves as a single network entity (one CPU is the master, the other is a warm-standby slave). The terminals are configured with the address of both CPUs. The terminal will failover between them when a failure occurs.

The resulting flexibility allows the CICM to react promptly by adjusting itself to operation in failure conditions, thus ensuring the overall impact on the service provided is kept to a minimum.

Software resilience

The CICM uses Microsoft Windows NT Embedded Server Version 4.0 as its operating system. This is a highly specialized version of Windows NT which is suitable for high availability applications.

Operational Measurements

Operational Measurements (OMs) provide information on the performance of the components of the network. Periodic scans of network components and activities result in the collection, storage and transmission of data. Operating company personnel set the office parameters that define the way OMs are collected, stored, transmitted and reported.

There are three types of OMs: Event OMs, Usage OMs, and High Watermark OMs:

- **Event OMs** are incremented each time a predetermined event occurs. These events are predefined in the software.
- **Usage OMs** are incremented at preset intervals if the appropriate device is in use. These registers are pre-defined in the software.
- **High Watermark OMs** measure the highest level of usage within a set time interval.

The OMs, and especially the High Watermark OMs, can be used as a benchmark of the levels of traffic-dependent activity on the switch during the current interval.

For additional OM information and the reasons for incrementing each register, refer to the CS2000 documentation *CS2000 Operational Measurements Reference Manual*.

Performance management procedures

This section provides procedures for viewing performance measurements.

View OMs (OMSHOW)

The OMSHOW command causes the system to display or print a report for the OM group specified.

The Active class of OMs contains the OM groups that are current for the software load. The Holding class of OMs contains the OM groups for the previous measurement cycle.

Procedure 1 View CICM OMs

At the LMM Interface

1 To view the current 15 minute operational measurements for the peripheral modules,

type **OMSHOW LMD ACTIVE**

then press Enter.

Where

LMD
is the OM group that provides traffic information for the peripheral modules (PM).

Response: Display of all remote units on the CS2K, each with an index number before its name.

Note: To show the OMs for a specific remote unit, add the index number after the entry.

Example
OMSHOW LMD ACTIVE 2

2 To view the previous 15 minute measurements,

type **OMSHOW LMD HOLDING**

then press **Enter**.

3 This procedure is complete.

View CICM node status and statistics

Use this procedure to view the following CICM status and statistics for each node:

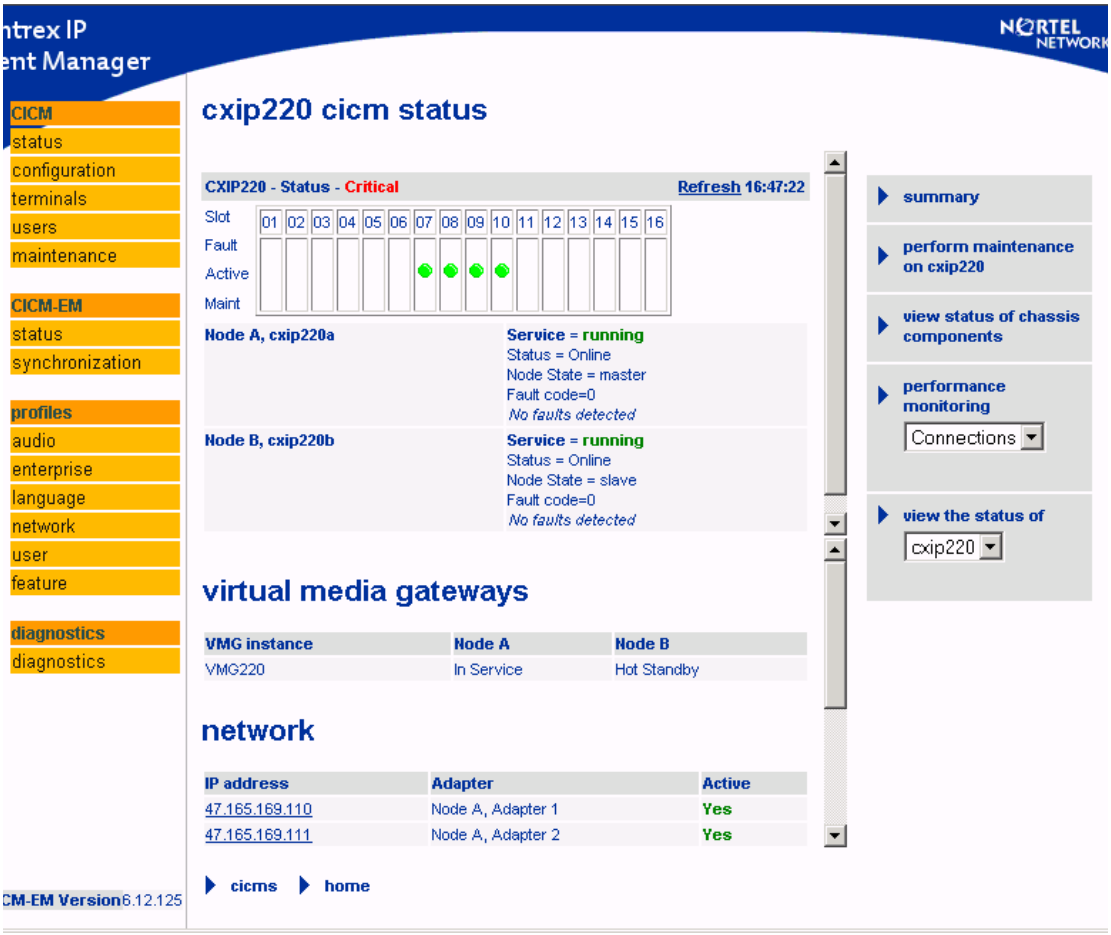
- Node status (dual node: master or slave)
- Service status (running or idle)
- Node maintenance status
  - current reboot count
- Version (of the software running on the node)
- Terminal service status (**started**, **stopped**, or **shutting down**)
- Number of logged in users (total login count)
- Number of active terminals
  - Details of terminal login statistics show the type of terminals
- Number of active calls (total call count)

Procedure 2 View CICM gateway statistics

At the CICM EM home page

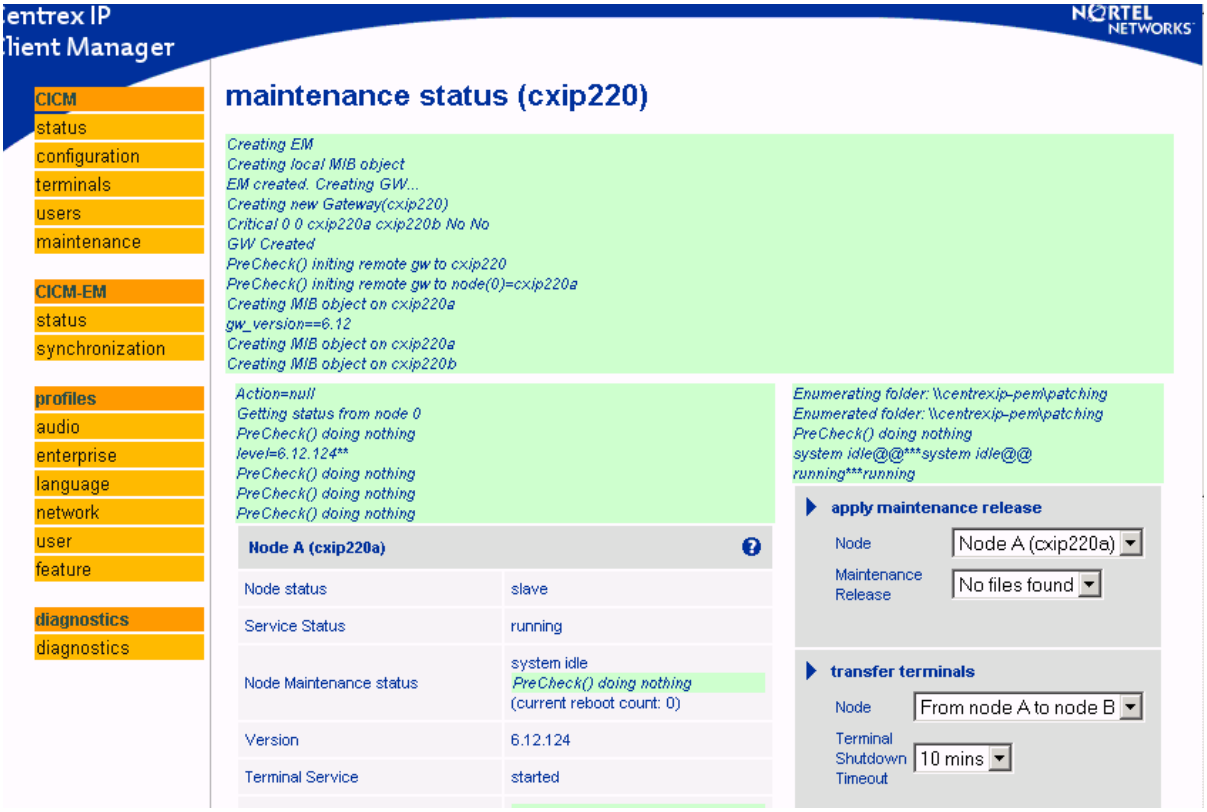
1 On the **CICM home** page, select the CICM to view from the drop-down menu in the right navigation menu, then click on the **view the status of the following CICM** text.

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



2 Select the **perform maintenance on <cicm_name>** option from the right menu

*Response: The **maintenance status <cicm_name>** page opens.*



3 Scroll down the **maintenance status <cicm_name>** page to view the status and statistics for each node.

4 To reset the **Current Reboot Count**, the **Total Login Count** or **Total Call Count**, in the **reset counter** option on the right menu bar:

a select the node, and

b then select the counter from the drop-down menu

c then click on the **reset counter** text

Response: The selected counters will reset

Note: The **Line Login Count** and **Total Call Count** statistics are automatically reset when the node reboots.

5 This procedure is complete.

View connections, terminals, and packets performance statistics

Use this procedure to view the performance statistics on each node:

Procedure 3 View connections, terminals, and packets statistics

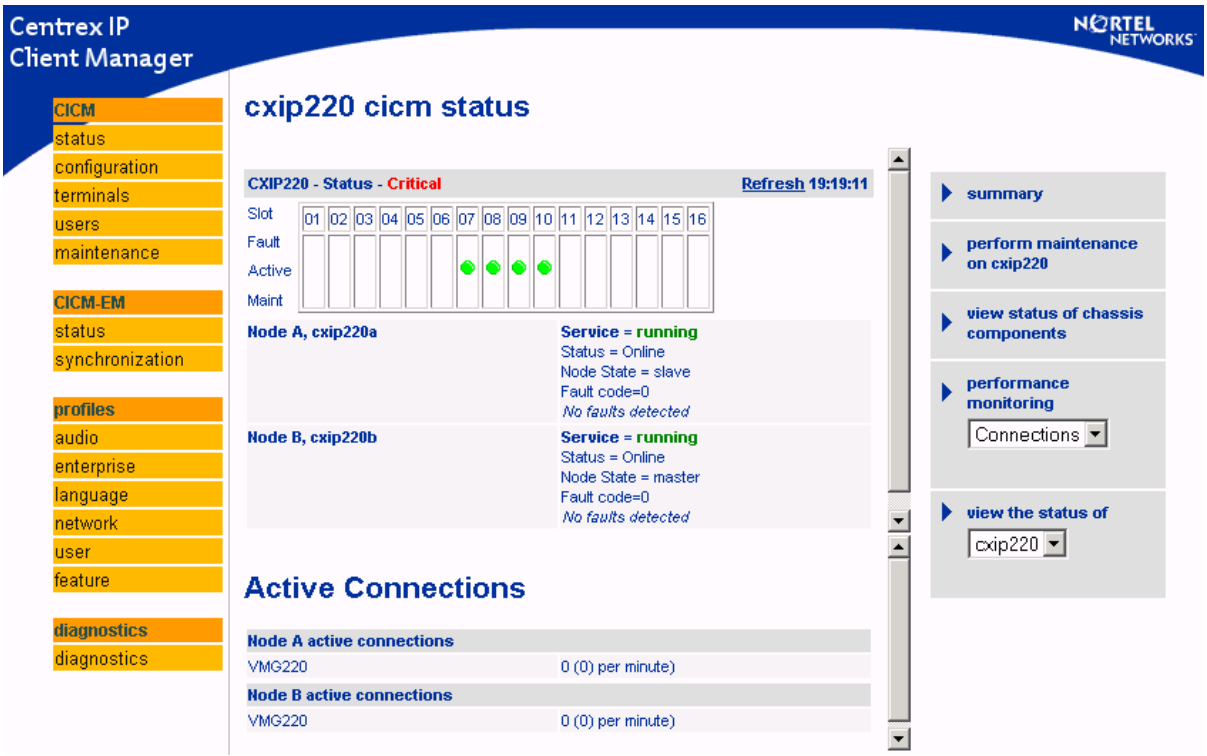
At the CICM EM web pages

1 On the **CICM home** page, select the CICM to view from the drop-down menu in the right navigation menu, then click on the **view the status of the following CICM** text.

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

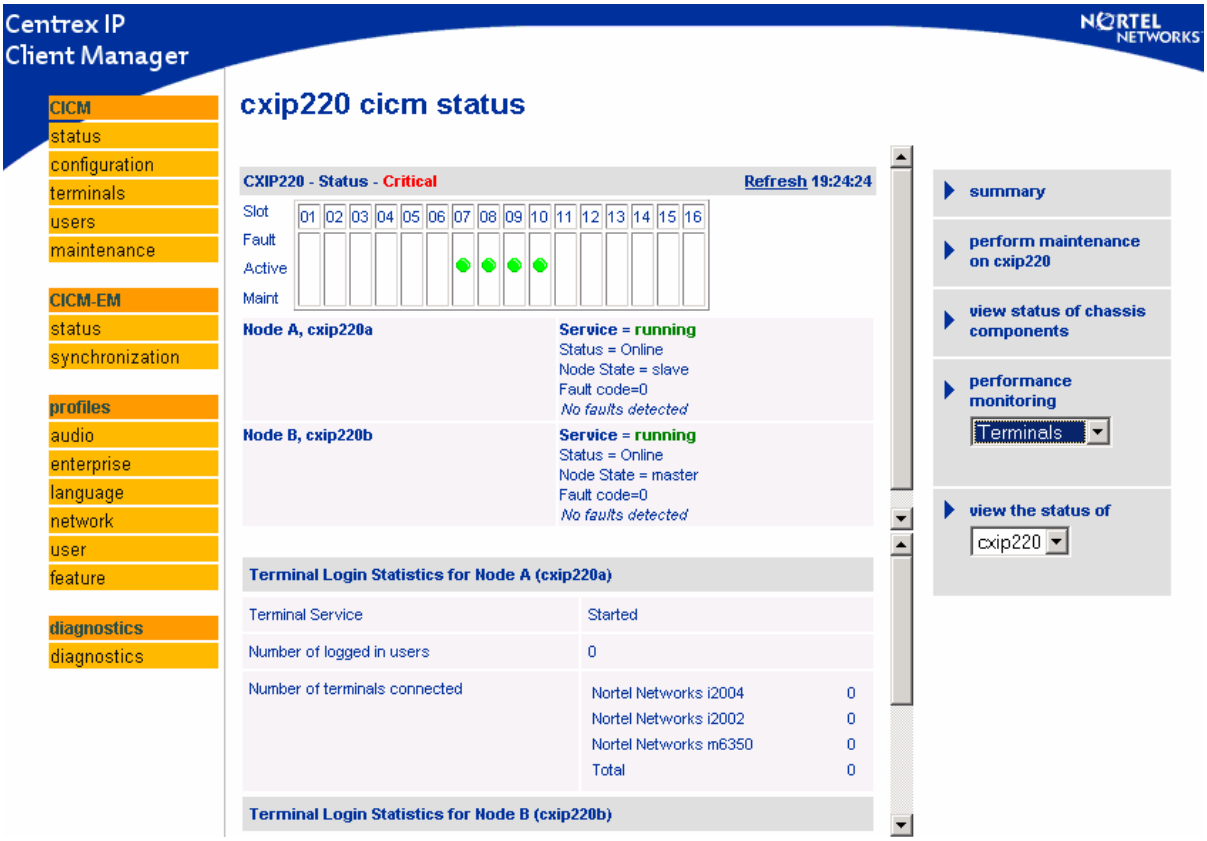
2 To view the connections statistics, in the **performance monitoring** menu option on the right menu bar, select **Connections** from the drop-down menu, then click on the **performance monitoring** text.

*Response: The **Active connections** section opens in the **<cicm_name> cicm status** page.*



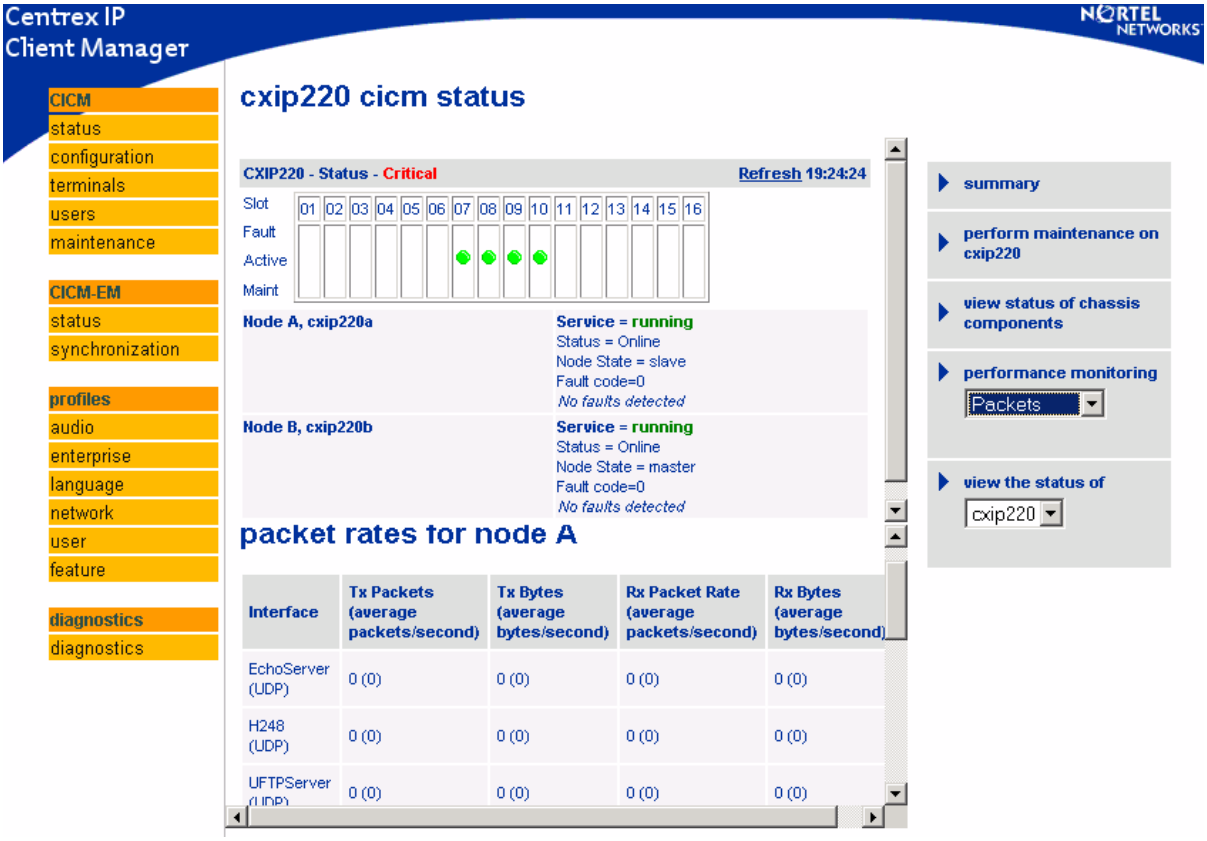
3 To view the terminals statistics, in the **performance monitoring** menu option on the right menu bar, select **Terminals** from the drop-down menu, then click on the **performance monitoring** text.

*Response: The **Terminal login statistics** section opens in the **<cicm_name> cicm status** page.*



4 To view the packets statistics, in the **performance monitoring** menu option on the right menu bar, select **Packets** from the drop-down menu, then click on the **performance monitoring** text.

*Response: The **Packet rates statistics** section opens in the **<cicm_name> cicm status** page.*



5 This procedure is complete.

View chassis components status

Use this procedure to view the chassis components status for a CICM.

Procedure 4 View chassis components status

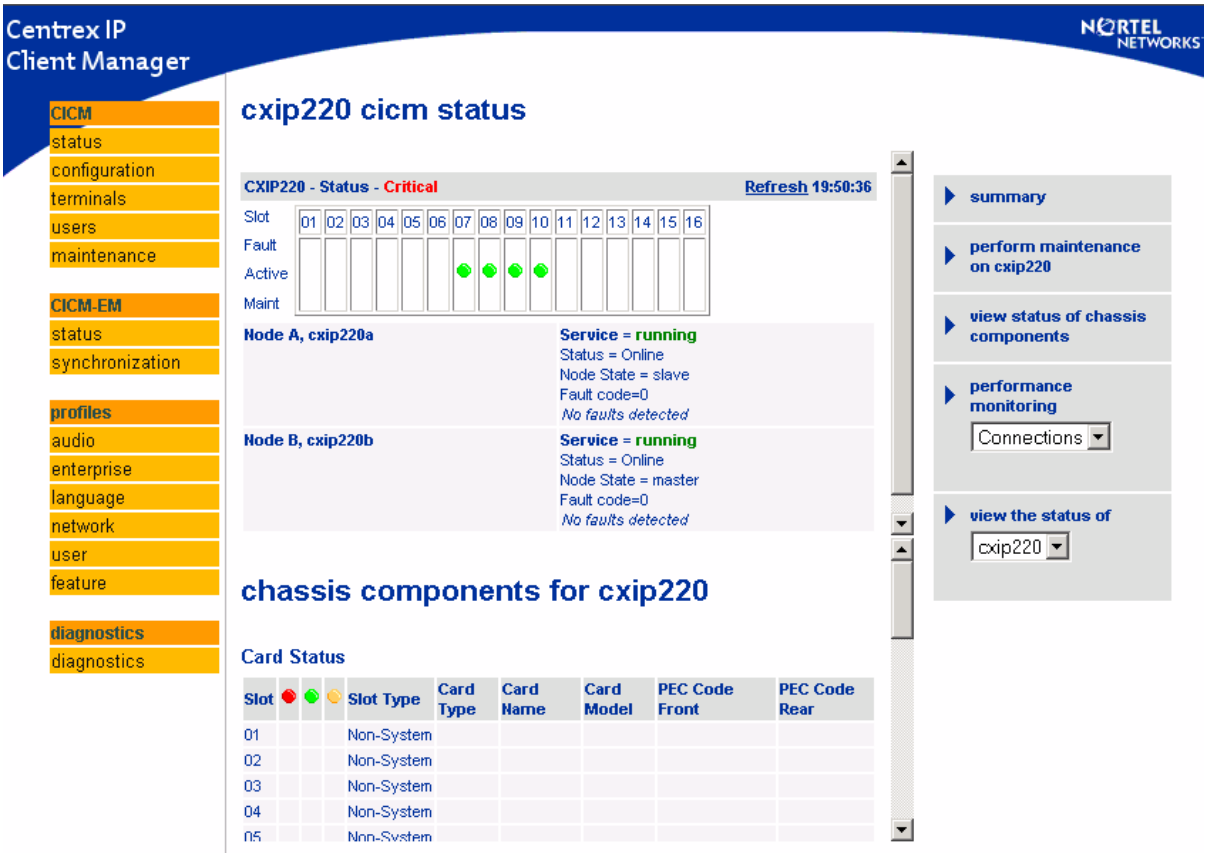
At the CICM EM Home page

1 In the **view the status of the following cicm** menu option on the right, select the CICM to view from the drop-down menu.

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

2 Click on the **view status of chassis components** menu option on the right menu.

*Response: The **<CICM_name> cicm status** page updates to display the **chassis components for <cicm_name>** details.*



3 Scroll down the **chassis components for <cicm_name>** section of the **<cicm_name> cicm status** page to view the card and fan status and CPU temperature.

4 This procedure is complete.

Use MS Performance Monitoring

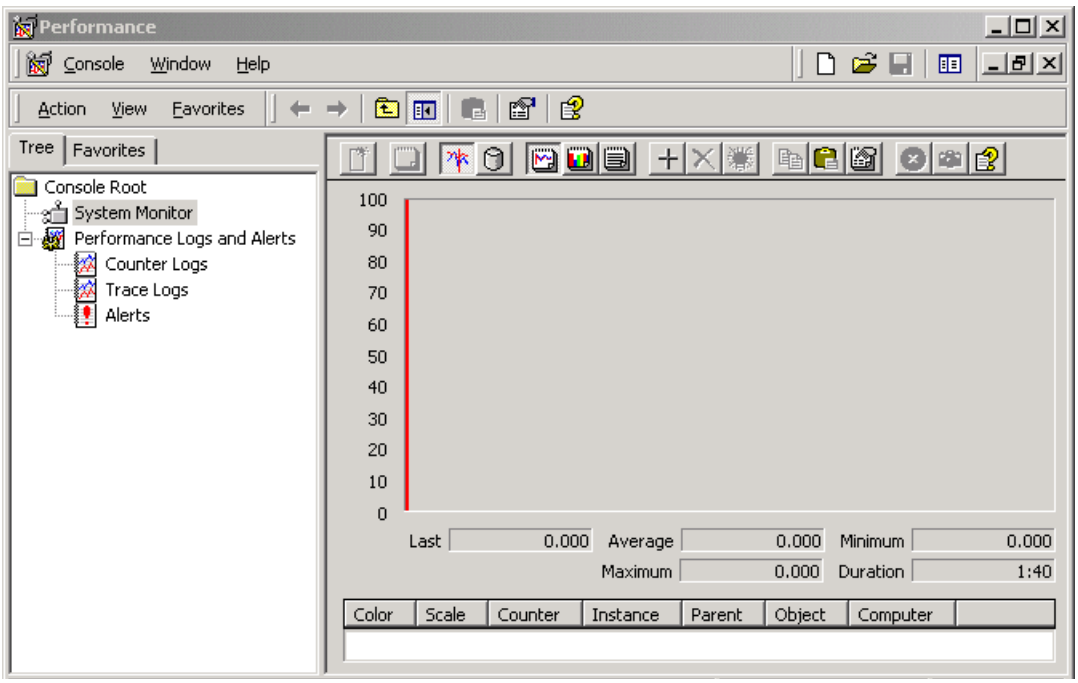
This section describes how to use the Microsoft Performance Monitoring tool (Perfmon).

Procedure 5 Use MS Performance Monitoring

At the MS2000 desktop of the CICM EM

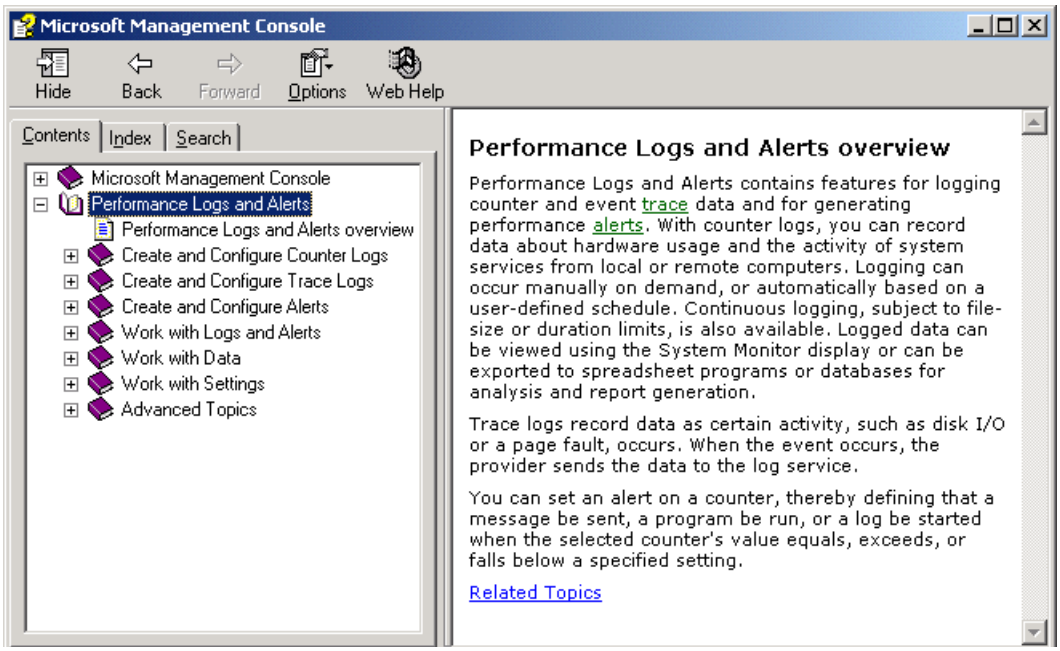
1 From the **Start** menu of the desktop,
select **Programs**,
then select **Administrative Tools**,
then select **Performance**

*Response: the **Performance** window opens.*



2 For additional help and procedures for the Performance Management tool:
From the **Action** menu,
select **Help**,
then enter **Performance** in the index search.

Response: A Performance Logs and Alerts overview is displayed, and additional logs and alert procedures are available.



3 This procedure is complete.

Monitor the CPU load on CICM nodes

Use this procedure to monitor the CPU load on CICM nodes.

Procedure 6 Monitor the CPU load on CICM nodes

At a PC on the administration LAN

1 Telnet to the CICM node. Refer to the *Telnet to a CICM node* procedure in the *CICM Security and Administration* document.

At the DOS command prompt

2 Type

net use \\<remote_IP_address> /user:<admin_name> <admin_password>
Or
net use \\<node_name> /user:<admin_name> <admin_password>

then press **Enter**.

Example
net use \\47.165.169.95 /user:admin1 admin1password

3 Verify that you receive the following response:

```
The command completed successfully.
```


4 Start the Performance Monitoring tool:
From the MS desktop, select:

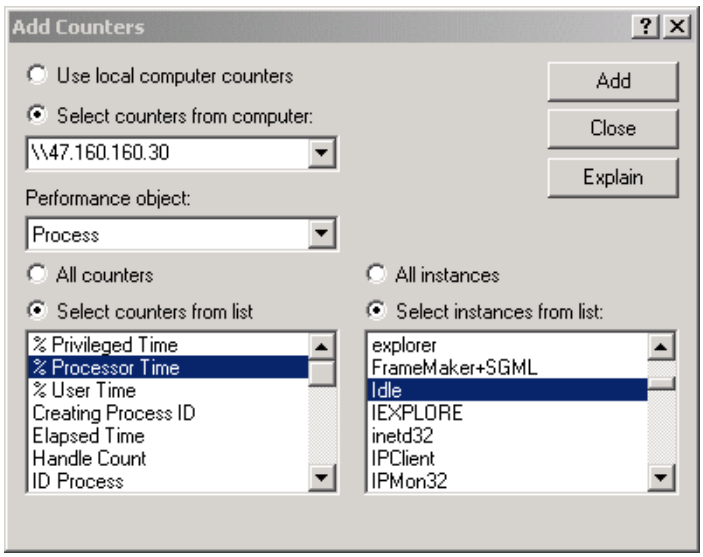
Start > Programs > Administrative Tools > Performance

Response: the Performance window opens.

5 From the Performance window's left menu tree panel, select **System Monitor**.

6 Right-click the mouse in the Performance window's right panel (graph area),
then select **Add Counters.**

*Response: the **Add Counters** window opens.*



7 In the **Add Counters** window:

a Change the **Select counters from computer** field to:

node_IP_address
or
node_name

b In the **Performance object** field, select **Process** from the drop-down menu.

c In the **Select counters from list** field, select **% Processor Time**.

d In the **Select instances from list** field, select **Idle**

Response: The idle % time for the chosen node is displayed.

8 Repeat this procedure for the mate node or other CICM nodes to be monitored.

9 This procedure is complete.

