



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.

cxip220 cicm status

CXIP220 - Status - Critical Refresh 16:47:22

Slot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Fault																
Active							●	●	●							
Maint																

Node A, cxip220a
Service = running
 Status = Online
 Node State = master
 Fault code=0
 No faults detected

Node B, cxip220b
Service = running
 Status = Online
 Node State = slave
 Fault code=0
 No faults detected

virtual media gateways

VMG instance	Node A	Node B
VMG220	In Service	Hot Standby

network

IP address	Adapter	Active
47.165.169.110	Node A, Adapter 1	Yes
47.165.169.111	Node A, Adapter 2	Yes

CM-EM Version 6.12.125

▶ [cicms](#) ▶ [home](#)

Right-hand menu:

- ▶ summary
- ▶ perform maintenance on cxip220
- ▶ view status of chassis components
- ▶ performance monitoring
 - Connections
- ▶ view the status of
 - cxip220

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

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

entrex IP Client Manager

NORTEL NETWORKS

CICM

status

configuration

terminals

users

maintenance

CICM-EM

status

synchronization

profiles

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enterprise

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network

user

feature

diagnostics

diagnostics

maintenance status (cxip220)

```

Creating EM
Creating local MIB object
EM created. Creating GW...
Creating new Gateway(cxip220)
Critical 0 0 cxip220a cxip220b No No
GW Created
PreCheck() initing remote gw to cxip220
PreCheck() initing remote gw to node(0)=cxip220a
Creating MIB object on cxip220a
gw_version==6.12
Creating MIB object on cxip220a
Creating MIB object on cxip220b

```

```

Action=null
Getting status from node 0
PreCheck() doing nothing
level=6.12.124**
PreCheck() doing nothing
PreCheck() doing nothing
PreCheck() doing nothing

```

```

Enumerating folder: \centrexip-pem\patching
Enumerated folder: \centrexip-pem\patching
PreCheck() doing nothing
system idle@@**system idle@@@
running***running

```

Node A (cxip220a) ?	
Node status	slave
Service Status	running
Node Maintenance status	system idle <i>PreCheck() doing nothing</i> (current reboot count: 0)
Version	6.12.124
Terminal Service	started

apply maintenance release

Node:

Maintenance Release:

transfer terminals

Node:

Terminal Shutdown Timeout:

- 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.*

The screenshot shows the 'cxip220 cicm status' page in the Centrex IP Client Manager. The page has a blue header with 'Centrex IP Client Manager' on the left and the 'NORTEL NETWORKS' logo on the right. A left-hand navigation menu is visible with categories like 'CICM', 'CICM-EM', 'profiles', and 'diagnostics'. The main content area is titled 'cxip220 cicm status' and includes a 'Refresh 19:19:11' button. Below this is a table for 'CXIP220 - Status - Critical' with columns for Slot (01-16) and rows for Fault, Active, and Maint. Slots 07, 08, 09, and 10 have green dots in the Active row. Below the table, there are two sections for 'Node A, cxip220a' and 'Node B, cxip220b', both showing 'Service = running', 'Status = Online', and 'Node State = slave'. The 'Active Connections' section at the bottom shows 'Node A active connections' and 'Node B active connections', both with 'VMG220' and '0 (0) per minute'. A right-hand navigation menu is visible with options like 'summary', 'perform maintenance on cxip220', 'view status of chassis components', 'performance monitoring', and 'view the status of'.

- 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.*

Centrex IP Client Manager

NORTEL NETWORKS

CICM

status

configuration

terminals

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maintenance

CICM-EM

status

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profiles

audio

enterprise

language

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user

feature

diagnostics

diagnostics

cxip220 cicm status

CXIP220 - Status - Critical Refresh 19:24:24

Slot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Fault																
Active							●	●	●							
Maint																

Node A, cxip220a

Service = running
 Status = Online
 Node State = slave
 Fault code=0
 No faults detected

Node B, cxip220b

Service = running
 Status = Online
 Node State = master
 Fault code=0
 No faults detected

Terminal Login Statistics for Node A (cxip220a)

Terminal Service	Started	
Number of logged in users	0	
Number of terminals connected	Nortel Networks i2004	0
	Nortel Networks i2002	0
	Nortel Networks m6350	0
	Total	0

Terminal Login Statistics for Node B (cxip220b)

summary

perform maintenance on cxip220

view status of chassis components

performance monitoring

Terminals

view the status of

cxip220

- 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.*

Centrex IP Client Manager NORTEL NETWORKS

cxip220 cizm status

CXIP220 - Status - Critical Refresh 19:24:24

Slot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Fault																
Active							●	●	●							
Maint																

Node A, cxip220a **Service = running**
 Status = Online
 Node State = slave
 Fault code=0
 No faults detected

Node B, cxip220b **Service = running**
 Status = Online
 Node State = master
 Fault code=0
 No faults detected

packet rates for node A

Interface	Tx Packets (average packets/second)	Tx Bytes (average bytes/second)	Rx Packet Rate (average packets/second)	Rx Bytes (average bytes/second)
EchoServer (UDP)	0 (0)	0 (0)	0 (0)	0 (0)
H248 (UDP)	0 (0)	0 (0)	0 (0)	0 (0)
UFTPServer (UDP)	0 (0)	0 (0)	0 (0)	0 (0)

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 cizm** menu option on the right, select the CICM to view from the drop-down menu.
Response: The <CICM_name> cizm status page opens.
- 2 Click on the **view status of chassis components** menu option on the right menu.
*Response: The <CICM_name> cizm status page updates to display the **chassis components for <cizm_name>** details.*

Centrex IP Client Manager NORTEL NETWORKS

cxip220 cicm status

CXIP220 - Status - Critical Refresh 19:50:36

Slot	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Fault																
Active							●	●	●							
Maint																

Node A, cxip220a **Service = running**
 Status = Online
 Node State = slave
 Fault code=0
 No faults detected

Node B, cxip220b **Service = running**
 Status = Online
 Node State = master
 Fault code=0
 No faults detected

chassis components for cxip220

Card Status

Slot	●	●	●	Slot Type	Card Type	Card Name	Card Model	PEC Code Front	PEC Code Rear
01				Non-System					
02				Non-System					
03				Non-System					
04				Non-System					
05				Non-System					

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

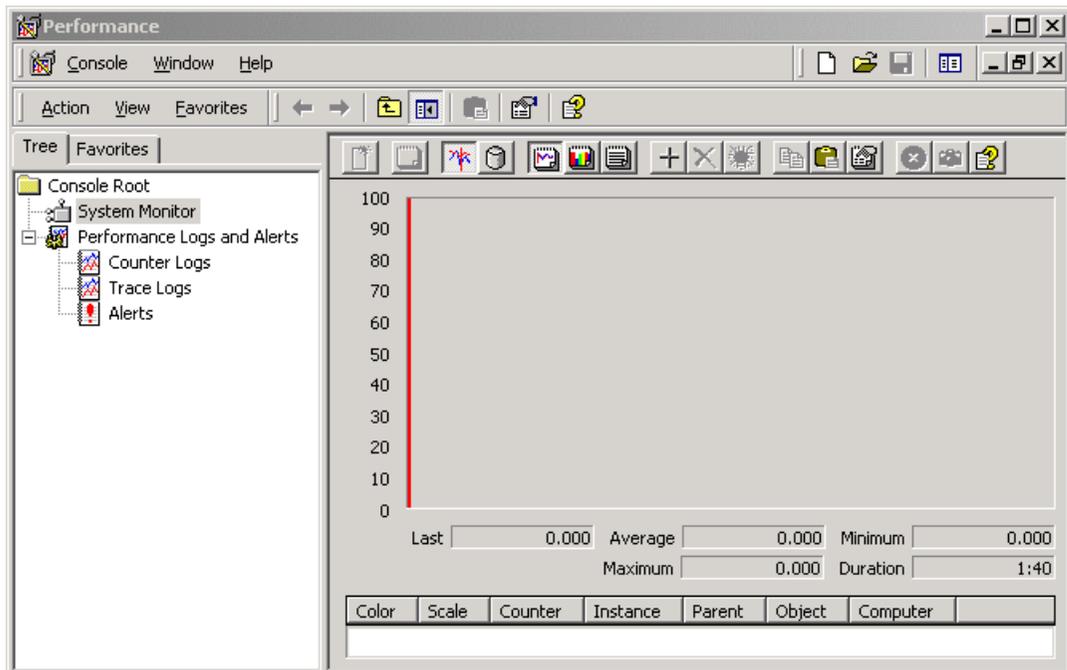
This section describes how to use the Microsoft Performance Monitoring tool (Perfmon).

Procedure 5 Use MS Performance Monitoring

At the MS2000 desktop of the CICM EM

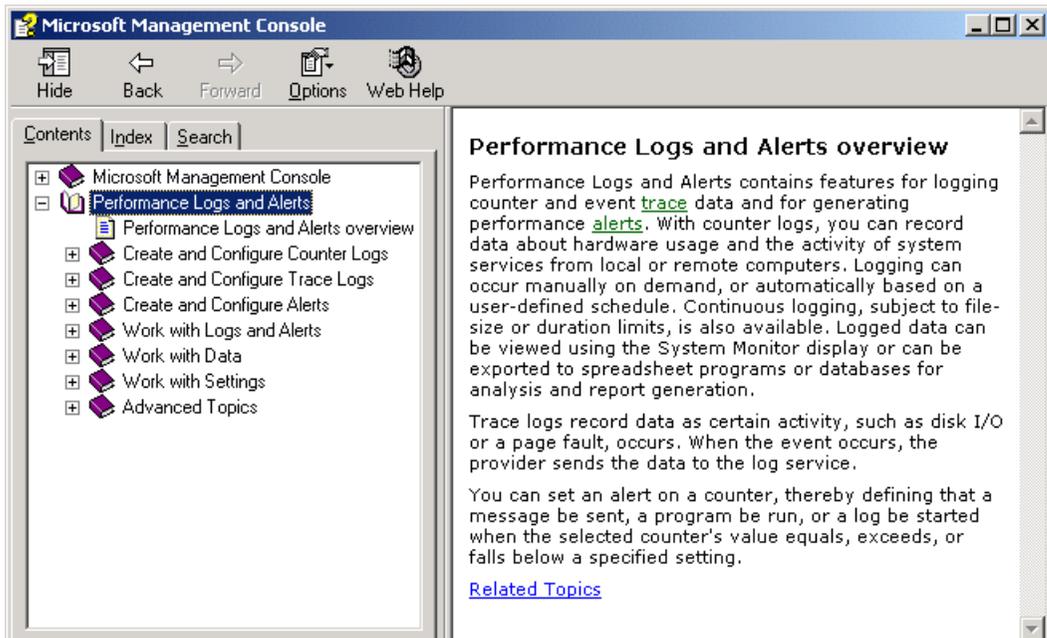
- From the **Start** menu of the desktop, select **Programs**, then select **Administrative Tools**, then select **Performance**

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**.

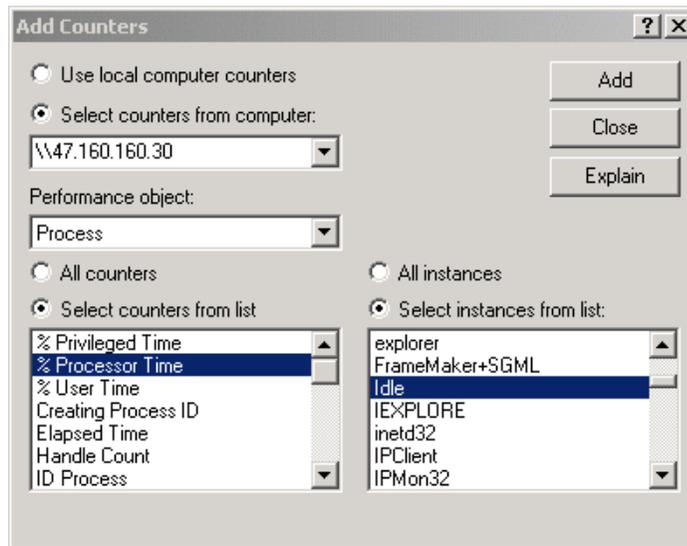
Example

```
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.