



Gateway Controller Performance Management

What's new in SN07

The following release SN07 feature is documented in this NTP:

- A00003691 - IEMS SNMP OM polling from GWC and SC. Added new procedure [Configure access to GWC and Shelf Controller MIB data on page 35](#).

Performance management strategy

CS 2000 captures performance metrics through OM (operational measurement) registers. The OMs collect operational statistics that are successfully reported to the XA-Core and stored in the Core for future retrieval. Performance is measured and reported by event peg counts and state usage counts.

Some OMs originate from the gateways and are reported to the GWC, which then forwards the OMs to the CS 2000. To retrieve these OM statistics about gateways, refer to the CS 2000 Performance Management NTP, NN10149-711 or NN10151-711. Examples would be the DTSR or CES OMs generated by the MG 9000 gateway. For more information about these OMs refer to the MG9000 Performance Management NTP, NN10140-711.

In addition to OMs, the GWC also uses Management Information Base (MIB) performance measurements (PMs) to collect statistics. GWC-based performance measurements are defined in the following MIB database files:

- GWC-UNIT-STATUS-MIB
- GWC-DPT-SERVICES-PM-MIB
- MIB II

Some PMs in each of these files are polled by the SNMP (simple network management protocol) PM poller, a utility found on the

CS 2000 Management Tools server. PM poller collects performance attributes from several Carrier Voice over IP (VoIP) network components. Some PMs in the GWC-UNIT-STATUS-MIB are also displayed on the CS 2000 GWC Manager. For more information on MIB-based GWC PMs, refer to section [Performance measurements \(PMs\) on page 13](#).

Tools and utilities

OMs are accessed using the XA-Core MAP display commands such as OMSHOW.

PMs can be viewed using the following:

- CS 2000 GWC Manager GUI
- SNMP PM poller data collection output files

For each option, a subset of all PMs listed in the GWC MIB files are available. Refer to [Performance measurements \(PMs\) on page 13](#) for details.

The comma separated value (CSV) PM poller output files can be loaded into a customer supplied text viewer or into spreadsheet software to browse or manipulate the raw data.

Note: The CSV file format is not intended to be a user-friendly format for viewing the output using a standard text editor.

We recommend that you use an OSS tool to view the CSV output files. If you require a product to analyze and view performance data, contact your Nortel Networks account prime to allow Nortel staff to review and recommend a commercial solution.

Use the CS 2000 SAM21 Manager to configure access to GWC and Shelf Controller MIB data.

Integrated Element Management System

Many FCAPS activities may now be performed using the Integrated Element Management System (EMS). In addition, access to the CS 2000 GWC Manager and the CS 2000 SAM21 Manager is now provided using the Integrated EMS. For more information, refer to the Integrated EMS Basics NTP, NN10329-111.

To launch the CS 2000 GWC Manager or the CS 2000 SAM21 Manager, refer to the following procedures in the Integrated EMS Basics NTP, NN10329-111:

- “Launching GWC Manager”
- “Launching SAM21 Manager”

Operational measurements (OMs)

This section describes the following OMs which impact GWC performance management.

- [XPMOVL D OM on page 3](#)
- [XPMOCC OM on page 7](#)
- [DTSRPM on page 12](#)

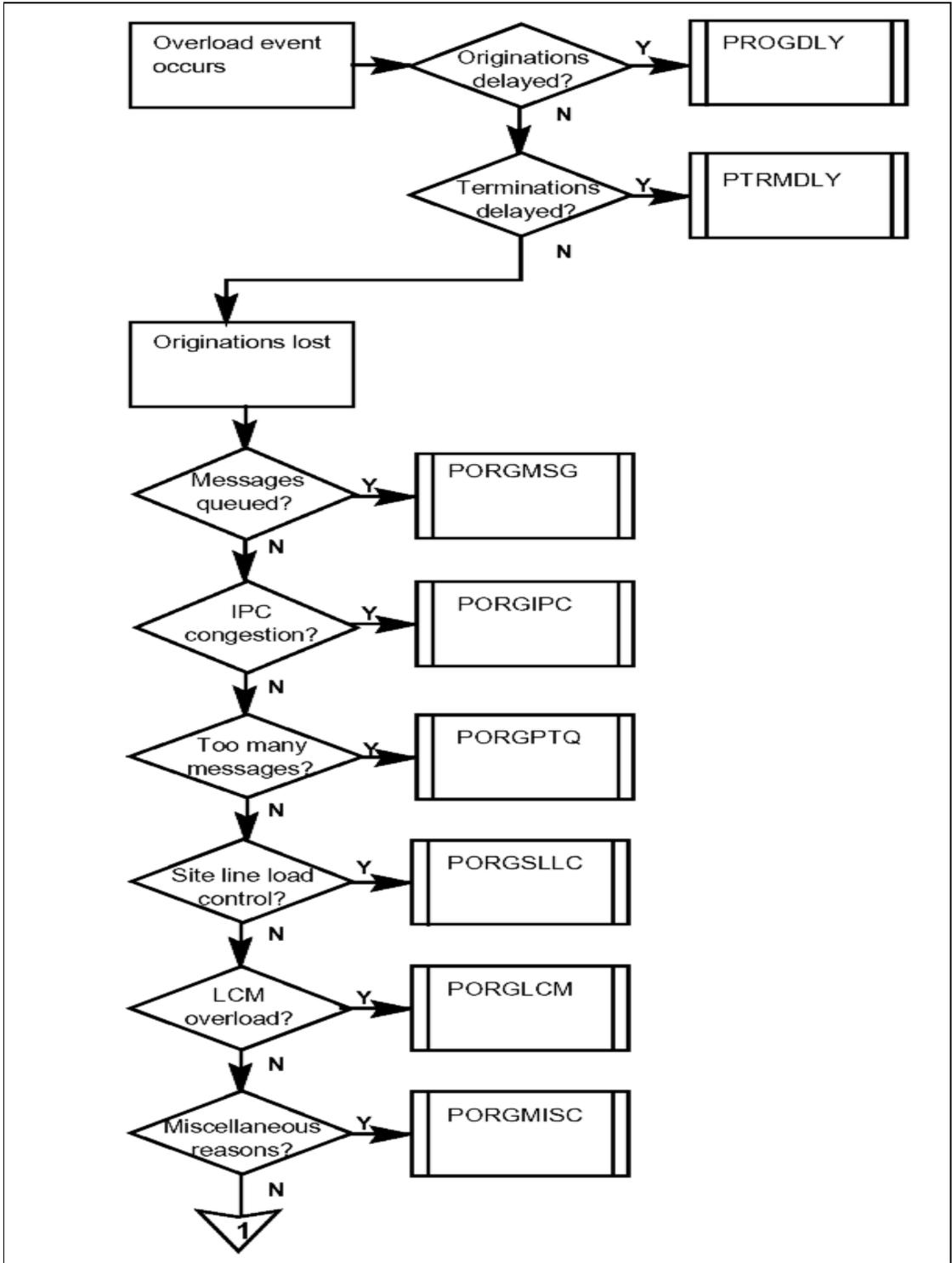
XPMOVL D OM

The XPMOVL D OM has traditionally been used to collect statistics on DMS-system based XPM overload conditions. In Carrier VoIP networks, this OM collects statistics on the number of delayed originations, number of delayed terminations, and the number of lost originations or terminations due to different reasons. This OM is used as part of the System Overload Controls feature, a set of software functionality that are distributed throughout the XA-Core architecture and used to mitigate resource consumption during periods of peak usage that would exceed normal engineered office limits.

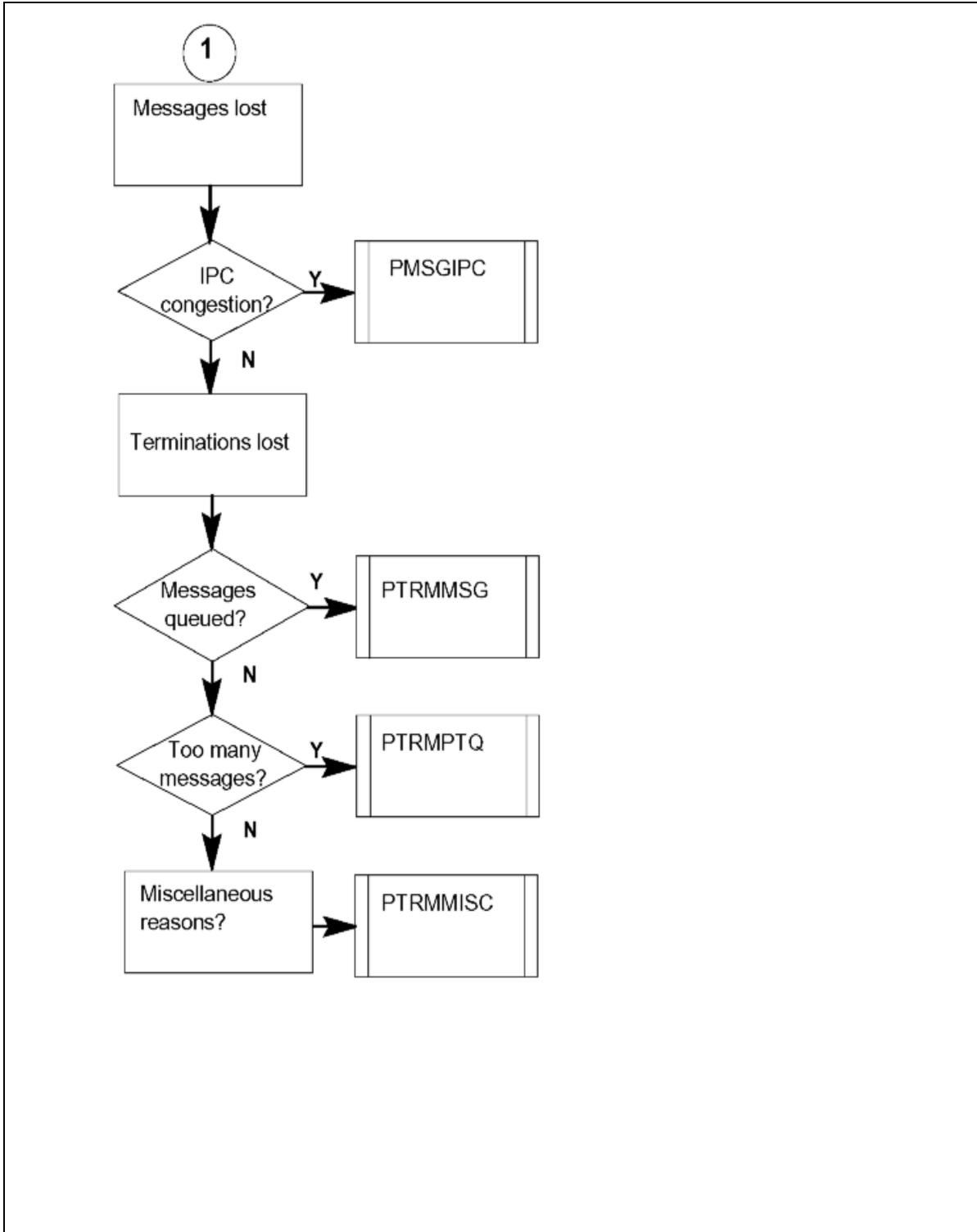
The XPMOVL D OM is an unsolicited OM. Once it is turned on by the Core, statistics will continually be collected and reported by the GWC. No further messaging is required by the Core until the OM is turned off. The XPMOVL D OM is off by default.

The status of the OM can be checked at any time in TABLE OFCVAR. Once in TABLE OFCVAR, position on XPMOVL D_OM_CONTROL. This parameter is used for Legacy OM control. If this variable is set to Y, then the OM is on, if it is set to N, then the OM is off. Simply change the variable to toggle the OM off and on. For simplex GWCs (GWC cards not configured to operate with a duplex backup unit) it is necessary to busy and return to service the GWC card for the OM to start. Refer to the Gateway Controller Security and Administration NTP, NN10213-611, for instructions on how to busy and return to service individual GWC cards. The following flow chart shows the XPMOVL D OM register flow.

OM Group XPMOVL D Registers Flow



OM Group XPMOVL D Registers Flow - continued



XPMOVL D OM registers (Sheet 1 of 2)

OM name	OM register	Purpose
XPMOVL D		collects statistics on DMS-system based XPM overload conditions
	PROGDLY	counts the number of originations delayed.
	PTRMDLY	counts the number of terminations delayed.
	PORGMSG	counts the number of originations lost because too many messages are present in the flow control system.
	PORGIPC	stands for PM originations interprocess communication (IPC) buffer congestion. Counts the number of originations lost as a result of IPC buffer congestion.
	PORGPTQ	counts the number of originations lost because of the limit on the number of messages allowed per terminal in the flow control system.
	PORGSLLC	counts the number of originations lost as a result of site line load control.
	PORGLCM	counts the number of originations lost as a result of line concentrating module overload.
	PORGMISC	counts the number of originations lost for miscellaneous reasons. An interprocess communication buffer (IPC) index that is not correct is an example of a miscellaneous reason.

XPMOVL D OM registers (Sheet 2 of 2)

OM name	OM register	Purpose
XPMOVL D	PMSGIPC	stands for PM messages interprocess communication (IPC) buffer congestion (PMSGIPC). Counts the number of messages lost as a result of IPC buffer congestion. The messages that this register counts include messages other than originations.
	PTRMMSG	counts the number of terminations lost because there are too many messages in the flow control system.
	PTRMPTQ	counts the number of terminations lost because of the limit on the number of messages allowed per terminal in the flow control system.
	PTRMMISC	counts the number of terminations for miscellaneous reasons. An interprocess communication buffer (IPC) index that is not correct is an example of a miscellaneous reason.

XPMOCC OM

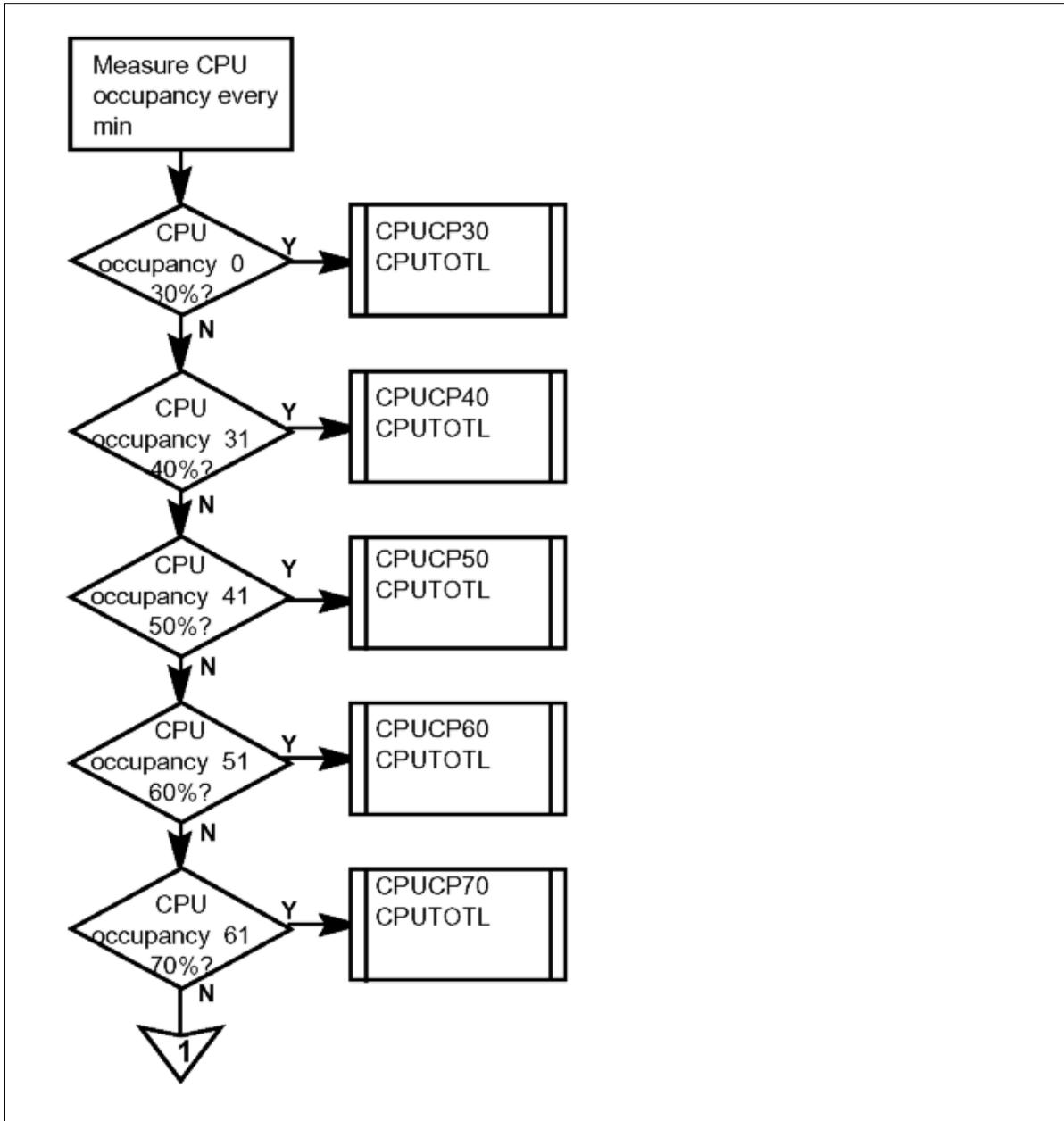
The XPMOCC OM is used to collect statistics on CPU occupancy in the GWC. Statistics are collected in the GWC in the same manner as they were in the XPM. Statistics collected correlate with the amount of time the GWC is at a specific occupancy level. Like XPMOVL D the OM is used as part of the System Overload Controls feature.

The XPMOCC OM is an unsolicited OM. Once it is turned on by the Core, statistics will continually be collected and reported by the GWC. No further messaging is required by the Core until the OM is turned off.

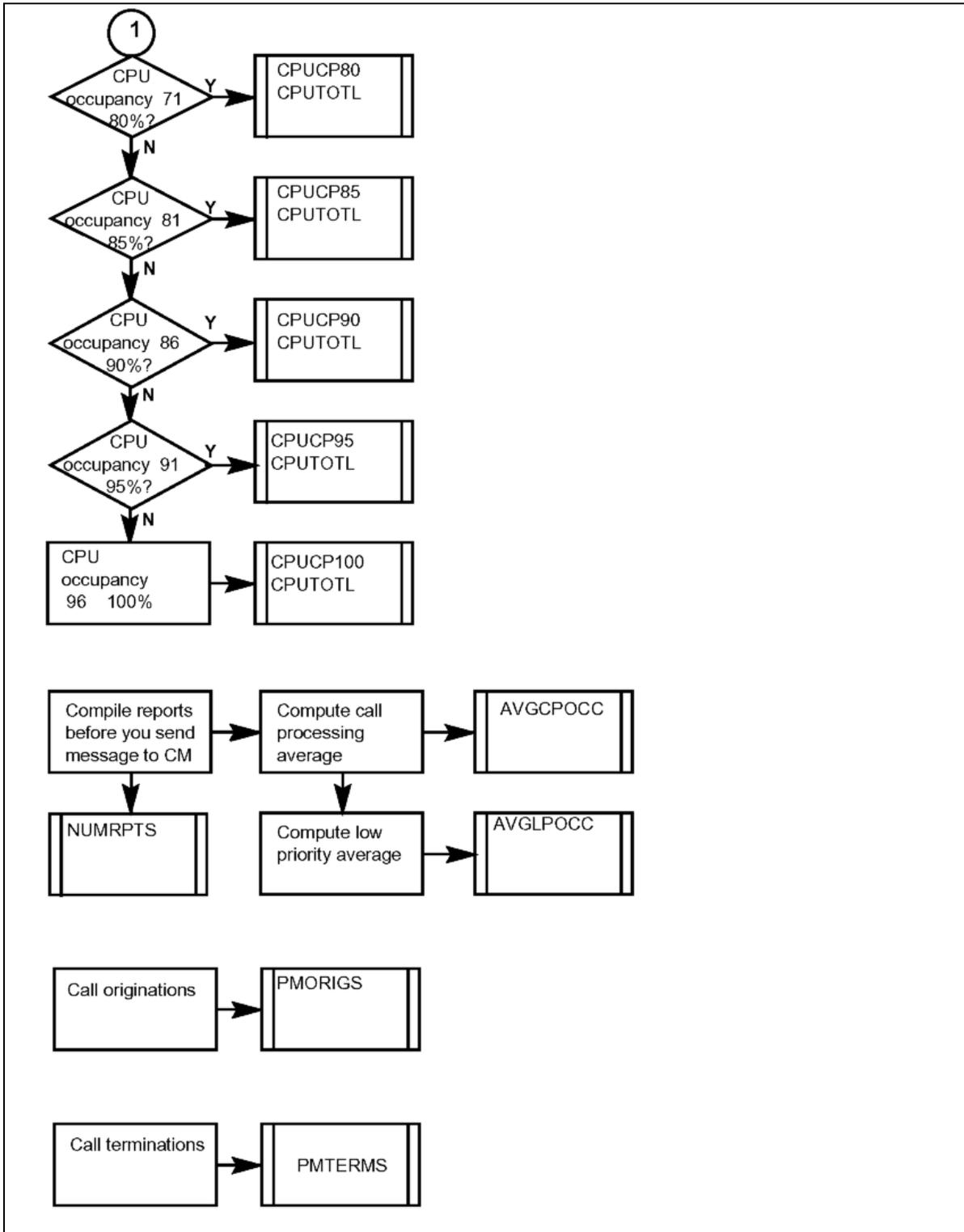
The XPMOCC OM is off by default. The status of the OM can be checked at any time in TABLE OFCVAR. Once in TABLE OFCVAR, position on XPMOCC_OM_CONTROL. This parameter is an existing parameter used for Legacy OM control. If this variable is set to Y, then the OM is on, if it is set to N, then the OM is off. Simply change the variable to toggle the OM off and on. For simplex GWCs (GWC cards not configured to operate with a duplex backup unit) it is necessary to

busy and return to service the GWC card for the OM to start. Refer to the Gateway Controller Security and Administration NTP, NN10213-611, for instructions on how to busy and return to service individual GWC cards. The following flow chart shows the XPMOVLDM register flow.

OM Group XPMOCC Registers Flow



OM Group XPMOCC Registers - continued



XPMOCC OM registers (Sheet 1 of 2)

OM name	OM register	Purpose
XPMOCC		collects statistics on CPU occupancy in the GWC
	AVGCPOCC	a usage register that measures average call processing occupancy
	AVGLPOCC	a usage register for unified processors. It measures average low priority occupancy. Enhanced ISDN signaling processors (EISN) have a zero in this register.
	CPUCP100	counts the number of times call processing occupancy is in the 96 to 100% range
	CPUCP30	counts the number of times call processing occupancy is in the 0 to 30% range
	CPUCP40	counts the number of times call processing occupancy is in the 31 to 40% range
	CPUCP50	counts the number of times call processing occupancy is in the 41 to 50% range
	CPUCP60	counts the number of times call processing occupancy is in the 51 to 60% range
	CPUCP70	counts the number of times call processing occupancy is in the 61 to 70% range
	CPUCP80	counts the number of times call processing occupancy is in the 71 to 80% range
	CPUCP85	counts the number of times call processing occupancy is in the 81 to 85% range

XPMOCC OM registers (Sheet 2 of 2)

OM name	OM register	Purpose
XPMOCC	CPUCP90	counts the number of times call processing occupancy is in the 86 to 90% range
	CPUCP95	counts the number of times call processing occupancy is in the 91 to 96% range
	CPUTOTL	accumulates the totals in registers CPUCP30, CPUCP40, CPUCP50, CPUCP60, CPUCP70, CPUCP80, CPUCP85, CPUCP90, CPUCP95, and CPUCP100.
	NUMRPTS	counts the number of 15 min. reports added to accumulation registers to normalize registers AVGCPOCC and AVGLPOCC.
	PMORIGS	counts the total call origination attempts. Register PMORIGS reports on an XPM by XPM basis. This register contains a value only for tuples that associate with the unified processor. Register PMTERMS always contains a zero for enhanced ISDN signaling processor (EISP) tuples.
	PMTERMS	counts total call termination attempts. Register PMORIGS reports on an XPM by XPM basis. This register contains a value only for tuples that associate with the unified processor. Register PMTERMS always contains a zero for enhanced ISDN signaling processor (EISP) tuples.

DTSRPM

The DTSRPM registers collect performance statistics related to off-hook activity emanating over a line gateway then reports them to the XA-Core. Because not all gateways support dial tone speed recording (DTSR), all DTSR-related statistic collection is done by the GWC itself.

The GWC takes a time stamp when an off hook signal is received. It then takes a second timestamp when the acknowledgement for the apply dial tone message is received. It compares the two timestamps and reports dial tone delay based on the difference. The time delay represents how long it takes for an off hook to travel to the core, be processed, and the resulting dial tone to come back to the line.

All the statistics are stored in the applicable registers shown in Table 3 and reported to the XA-Core. The GWC keeps track of the statistics by internal node number.

DTSRPM OM registers

OM name	OM register	Purpose
Dial tone speed recording peripheral module (DTSRPM)	DTMF originations	Pegged when a DTMF line goes off hook
	DTMF delays	Pegged when dial tone is applied more than 3 seconds after the off hook
	DP originations	Not supported
	DP delays	Not supported
	Keypad originations	Pegged when a P-phone line goes off hook
	Keypad delays	Pegged when dial tone is applied more than 3 seconds after the off hook

Performance measurements (PMs)

Performance measurements (PMs) are statistics collected about the system using MIB-based peg counters. The GWC performance measurements are defined in the following files:

- GWC-UNIT-STATUS-MIB
- GWC-DPT-SERVICES-PM-MIB

These GWC MIBS are located in the following directory on the CS 2000 Management Tools server:

/opt/nortel/snmp-poller/config/profiles/GWC/mibs.

The tables in this section describe the MIB attributes for all GWC MIB objects in the two files listed above. To determine whether a MIB object is polled by the SNMP PM poller using the default configuration, refer to the field “Polled by default”.

Note 1: SNMP PM poller data comma separated value (CSV) output files are located in the /data/oms directory on the CS 2000 Management Tools server.

Note 2: There are a number of GWC MIB objects that are used but not polled using the SNMP poller’s default configuration. For procedures to add, configure or delete the SNMP PM poller, refer to the CS 2000 Management Tools information in the Configuration Management NTP for your solution, NN10409-500.

MIB II and the GWC

The second version of the Management Information Base (MIB-II) is supported by the GWC and other Carrier VoIP devices. This MIB is typically used with network management protocols in TCP/IP-based networks. The MIB-II profile includes RFC 1213 and the Host Resources MIB. MIB-II objects are located in the following directory on the CS 2000 Management Tools server: /opt/nortel/ptm/current/mibs.

More information on MIB-II is available on the Internet Engineering Task Force (IETF) web site at <http://www.ietf.org/>.

Where to find GWC PM information

Most objects in the GWC-UNIT-STATUS-MIB are displayed as PM parameters on certain screen elements in the CS 2000 GWC Manager GUI. (See the fields, “EM Screen Name” and “EM PM Name” in the following table.) Objects in the GWC-DPT-SERVICES-PM-MIB are not visible on any CS 2000 GUI or MAP console. These MIB objects can be viewed only in the SNMP PM poller’s comma separated value (CSV) files.

GWC-UNIT-STATUS-MIB objects

The following table contains the objects and attributes of the GWC-UNIT-STATUS-MIB:

GWC-UNIT-STATUS-MIB objects (Sheet 1 of 6)

MIB Objects	Attributes
norUnitAdminStatus	Object type: Scalar
	Syntax: NorNodelsoAdminState
	OID: gwcUnitStatus 1
	EM Screen Name: Maintenance panel
	EM PM Name: Administrative state
	Description: The desired state of the Card (Manager set)...ISO AdminState.
	Polled by default: Yes
norUnitOperStatus	Object type: Scalar
	Syntax: NorNodelsoOperState
	OID: gwcUnitStatus 2
	EM Screen Name: Maintenance panel
	EM PM Name: Operational state
	Description: The operational state of the Card...ISO OperState
	Polled by default: Yes

GWC-UNIT-STATUS-MIB objects (Sheet 2 of 6)

MIB Objects	Attributes
norUnitUsageStatus	Object type: Scalar Syntax: NorNodelsoUsageState OID: gwcUnitStatus 3 EM Screen Name: Maintenance panel EM PM Name: Usage state Description: The usage state of the Card...ISO UsageState. Polled by default: No
norUnitAlarmStatus	Object type: Scalar Syntax: NorNodelsoAlarmStatus OID: gwcUnitStatus 4 EM Screen Name: Maintenance panel EM PM Name: Alarm state Description: The alarmStatus of the Card...ISO AlarmStatus. Polled by default: No
norUnitAvailStatus	Object type: Scalar Syntax: NorNodelsoAvailStatus OID: gwcUnitStatus 5 EM Screen Name: Maintenance panel EM PM Name: Available state Description: The availabilityStatus of the Card...ISO AvailabilityStatus Polled by default: No

GWC-UNIT-STATUS-MIB objects (Sheet 3 of 6)

MIB Objects	Attributes
norUnitStandbyStatus	<p>Object type: Scalar</p> <p>Syntax: NorNodeIsoStandbyStatus</p> <p>OID: gwcUnitStatus 6</p> <p>EM Screen Name: Maintenance panel</p> <p>EM PM Name: Stand by state</p> <p>Description: The standbyStatus of the Card...ISO StandbyStatus</p> <p>Polled by default: No</p>
norUnitUnknownStatus	<p>Object type: Scalar</p> <p>Syntax: NorNodeIsoUnknownStatus</p> <p>OID: gwcUnitStatus 7</p> <p>EM Screen Name: Not applicable</p> <p>EM PM Name: Not applicable</p> <p>Description: The unknownStatus of the Card...ISO UnknownStatus</p> <p>Polled by default: No</p>
norUnitFaultStatus	<p>Object type: Scalar</p> <p>Syntax: NorNodeFaultStatus</p> <p>OID: gwcUnitStatus 8</p> <p>EM Screen Name: Maintenance panel</p> <p>EM PM Name: Fault state</p> <p>Description: The Current FaultStatus of the Card. A bitMap, with each bit representing the possible faults on a card.</p> <p>Polled by default: No</p>

GWC-UNIT-STATUS-MIB objects (Sheet 4 of 6)

MIB Objects	Attributes
norUnitActivity	Object type: Scalar
	Syntax: NorNodeActivity
	OID: gwcUnitStatus 9
	EM Screen Name: Maintenance panel
	EM PM Name: Activity state
	Description: The Activity of the Card. Note that this is read-only; to force a SwAct the Manager should use the norUnitSwActStatus object.
	Polled by default: Yes
norUnitIsolation	Object type: Scalar
	Syntax: NorNodeIsolation
	OID: gwcUnitStatus 10
	EM Screen Name: Maintenance panel
	EM PM Name: Isolation state
	Description: The Isolation Status of the Card.
	Polled by default: No
norUnitAdminStatusOverride	Object type: Scalar
	Syntax: NorNodeAdminStatusOverride
	OID: gwcUnitStatus 11
	EM Screen Name: Not applicable
	EM PM Name: Not applicable
	Description: By setting this field in addition to setting the adminStatus of the Unit, the Manager can override restrictions on the set.
	Polled by default: No

GWC-UNIT-STATUS-MIB objects (Sheet 5 of 6)

MIB Objects	Attributes
norUnitSwActStatus	Object type: Scalar
	Syntax: NorNodeSwActStatus
	OID: gwcUnitStatus 12
	EM Screen Name: Maintenance panel
	EM PM Name: Swact state
	Description: The type of SwAct to execute. Setting this field acts as a trigger to the Agent to initiate a SwAct on the Unit. In the event of a device SwAct (nonDirected), the manager can read this field to find out why.
	Polled by default: No
norUnitReset	Object type: Scalar
	Syntax: NorNodeReset
	OID: gwcUnitStatus 13
	EM Screen Name: Not applicable
	EM PM Name: Not applicable
	Description: This is a command to perform a processor reset of the Unit. Note that this may not be reliable if any of the software running on the Unit is not sane.
	Polled by default: No

GWC-UNIT-STATUS-MIB objects (Sheet 6 of 6)

MIB Objects	Attributes
operStatusLastChange	Object type: Scalar
	Syntax: TimeStamp
	OID: gwcUnitStatusChanges 2
	EM Screen Name: Not applicable
	EM PM Name: Not applicable
	Description: The last change time of the norUnitOperStatus.
	Polled by default: No
activityLastChange	Object type: Scalar
	Syntax: TimeStamp
	OID: gwcUnitStatusChanges 9
	EM Screen Name: Not applicable
	EM PM Name: Not applicable
	Description: The last change time of the norUnitActivity.
	Polled by default: No

GWC-DPT-SERVICES-PM-MIB objects

The following table contains the objects and attributes of the GWC-DPT-SERVICES-PM-MIB (note that the objects included below are polled by default):

GWC-DPT-SERVICES-PM-MIB objects polled by default (Sheet 1 of 4)

MIB Objects	Attributes
dptCallAttempts	Object type: Scalar
	Syntax: Counter32
	OID: dptMeasurements 1
	Description: Number of total DPT calls
	Polled by default: Yes
dptCallFailResTimeout	Object type: Scalar
	Syntax: Counter32
	OID: dptMeasurements 2
	Description: Number of times a DPT call times out when trying to obtain an APG resource from RA.
	Polled by default: Yes
dptCallFailResError	Object type: Scalar
	Syntax: Counter32
	OID: dptMeasurements 3
	Description: Number of DPT call failures when Resource Allocator reports error.
	Polled by default: Yes

GWC-DPT-SERVICES-PM-MIB objects polled by default (Sheet 2 of 4)

MIB Objects	Attributes
dptCallFailAccOOS	Object type: Scalar
	Syntax: Counter32
	OID: dptMeasurements 4
	Description: Number of DPT call failures when ACC goes Out of Service or ColdSwacts.
	Polled by default: Yes
dptToneNotApplied	Object type: Scalar
	Syntax: Counter32
	OID: dptMeasurements 5
	Description: Number of times a requested tone was not applied due to failure to get an APG resource.
	Polled by default: Yes
accState	Object type: Scalar
	Syntax: AccStateType
	OID: apgMeasurements 1
	Description: State of the ACC.
	Polled by default: Yes
apgInsertions	Object type: Scalar
	Syntax: Counter32
	OID: apgMeasurements 2
	Description: Total number of APG invocations.
	Polled by default: Yes

GWC-DPT-SERVICES-PM-MIB objects polled by default (Sheet 3 of 4)

MIB Objects	Attributes
maxSimulApgCalls	Object type: Scalar
	Syntax: Counter32
	OID: apgMeasurements 3
	Description: Greatest Number of APG simultaneous calls.
	Polled by default: Yes
apgCallFailGWException	Object type: Scalar
	Syntax: Counter32
	OID: apgMeasurements 4
	Description: Number of APG call failures due to gateway exceptions.
	Polled by default: Yes
apgCallFailGWLost	Object type: Scalar
	Syntax: Counter32
	OID: apgMeasurements 5
	Description: Number of APG call failures due to lost heartbeat with gateway.
	Polled by default: Yes
raState	Object type: Scalar
	Syntax: RaStateType
	OID: raMeasurements 1
	Description: RA Server provisioning.
	Polled by default: Yes

GWC-DPT-SERVICES-PM-MIB objects polled by default (Sheet 4 of 4)

MIB Objects	Attributes
totalResourceCapacity	Object type: Scalar
	Syntax: Counter32
	OID: raMeasurements 2
	Description: Total capacity of all available resources.
	Polled by default: Yes
resourceRequestError	Object type: Scalar
	Syntax: Counter32
	OID: raMeasurements 3
	Description: Number of failures to provide a resource.
	Polled by default: Yes
Note: Counters (see the syntax field) are set to zero at system initialization and are incremented over time. When the maximum value allowed for the counter is reached, 4294967295, the counter returns to zero.	

GWC performance management procedures

The following GWC performance management procedures are available in this document:

- [View GWC performance data on page 25](#)
- [View and interpret the operational status of a GWC node on page 30](#)
- [Configure access to GWC and Shelf Controller MIB data on page 35](#)

View GWC performance data

Purpose of this procedure

Use this procedure to display performance related information about the GWC operation and capacities.

When to use this procedure

Use this procedure as a primary source for accessing performance related information.

Prerequisites

This procedure has no prerequisites.

Action

Gateway Controller OM data, including active and holding counts, can be viewed using the XA-Core MAP OMSHOW command. Counts remain in active registers until the end of the holding period. At the end of the holding period, the counts are transferred to the holding registers. The following procedure illustrates the use of the OMSHOW command:

At the MAP level

- View OM counts by typing
>OMSHOW <om_name> <class>
where
om_name
 is the name of the OM
class
 is the name of the class to appear (ACTIVE or HOLDING)

Example

```
>OMSHOW XPMOVL D ACTIVE
XPMOVL D
CLASS:    ACTIVE
START:2003/12/12 00:15:00 FRI; STOP: 2003/12/12 00:00:00
FRI;
SLOWSAMPLES:      2 ; FASTSAMPLES:      20 ;
INFO (XPMOVL D_OM_KEY)
      PORGDLY   PTRMDLY   PORGMSG   PTRMMSG
      PORGI PC   PMSGIPC   PORGP TQ   PTRMP TQ
      PORGSL LC  PORGL CM  PORGMISC  PTRMMISC
```

0	DTC	0	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
1	DTC	1	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
2	DTC	2	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
3	DTC	3	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
4	DTC	4	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
5	DTC	5	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
6	DTC	6	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
7	DTC	7	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
8	DTC	8	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
9	DTC	9	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0

10	DTC	10	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
11	DTC	11	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
12	DTC	12	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
13	DTC	13	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
14	DTC	14	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
15	DTC	15	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
16	DTC	16	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
17	DTC	17	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
18	DTC	18	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
19	DTC	19	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0

20	DTC	20	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
21	DTC	22	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
22	DTC	23	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
23	DTC	24	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
24	DTC	25	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
25	DTC	26	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
26	DTC	27	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
27	DTC	28	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
28	DTC	29	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
29	DTC	30	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0

30	DTC	31	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
31	DTC	32	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
32	DTC	33	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
33	DTC	34	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0
34	DTC	35	N		
	0		0	0	0
	0		0	0	0
	0		0	0	0

	0		0	0	0
	0		0	0	0
	0		0	0	0

2 This procedure is complete.

View and interpret the operational status of a GWC node

Purpose of this procedure

Use this procedure to determine the operational status of a selected Gateway Controller (GWC) node using the CS 2000 GWC Manager.

Note: Refer to table [CS 2000 GWC Manager status fields on page 32](#) to interpret the GWC cards (units) status fields.

When to use this procedure

Use this procedure as a primary source of information about the operational status of a GWC card or GWC node.

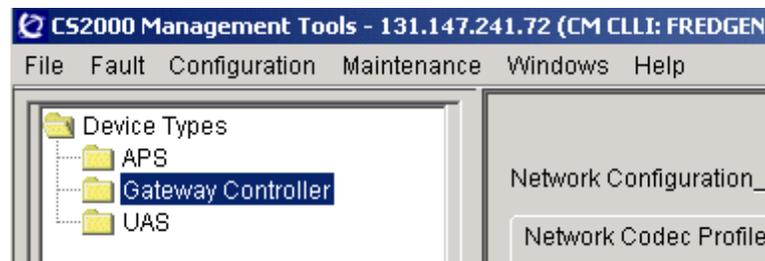
Prerequisites or guidelines

This procedure has no prerequisites or guidelines.

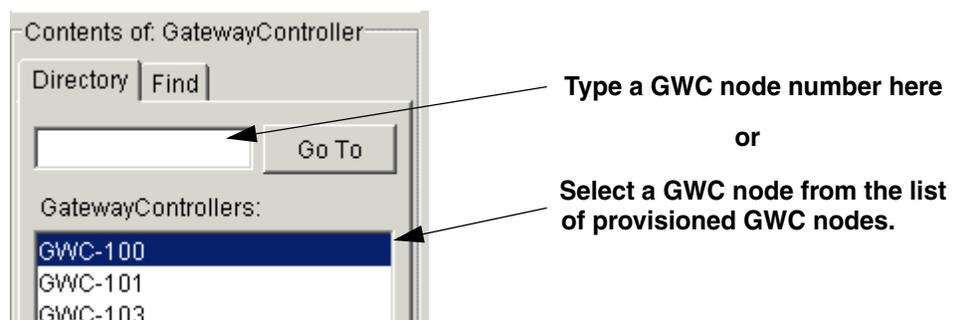
Action

At the CS 2000 GWC Manager client

- 1 At the CS 2000 Management Tools window, click the Gateway Controller folder from the Device Types menu.



- 2 From the Contents of: Gateway Controller frame, select the GWC node that you wish to view.



3 Click the **Maintenance** tab.

The GUI displays the Maintenance panel with two independent status views, one for each of the GWC cards in the node.

The screenshot displays the Maintenance panel for GWC-1. At the top, it shows 'GWC-1' and two units: 'Unit 0: 172.25.2.6' and 'Unit 1: 172.25.2.7'. Below this, there are two tabs: 'Maintenance' (which is selected and circled) and 'Provisioning'. The main area is divided into two sections, one for 'GWC-1-UNIT-0' and one for 'GWC-1-UNIT-1'. Each section contains a grid of status fields with their current values and counts in parentheses. For GWC-1-UNIT-0, the states are: Administrative (unlocked(1)), Usage (idle(1)), Operational (enabled(1)), Stand by (providingService(3)), Activity (active(1)), Swact (manualSwActWarm(1)), Isolation (notIsolated(2)), Alarm (major(2), alarmOutstanding(4)), Available (00 00 00 00), and Fault (none(0)). The Loadname is GI070BN. For GWC-1-UNIT-1, the states are: Administrative (unlocked(1)), Usage (idle(1)), Operational (enabled(1)), Stand by (hotStandby(1)), Activity (standby(2)), Swact (noSwAct(0)), Isolation (notIsolated(2)), Alarm (major(2), alarmOutstanding(4)), Available (00 00 00 00), and Fault (none(0)). The Loadname is also GI070BN. Below each unit's status fields are four buttons: 'Save Image', 'Busy (Disable)', 'RTS (Enable)', and 'Card View'. At the bottom of the panel, there is a 'Force' checkbox and two buttons: 'Warm Swact' and 'Cold Swact'.

Unit	Administrative state	Usage state	Operational state	Stand by state	Activity state	Swact state	Isolation state	Alarm state	Available state	Fault state	Loadname
GWC-1-UNIT-0	unlocked(1)	idle(1)	enabled(1)	providingService(3)	active(1)	manualSwActWarm(1)	notIsolated(2)	major(2), alarmOutstanding(4)	00 00 00 00	none(0)	GI070BN
GWC-1-UNIT-1	unlocked(1)	idle(1)	enabled(1)	hotStandby(1)	standby(2)	noSwAct(0)	notIsolated(2)	major(2), alarmOutstanding(4)	00 00 00 00	none(0)	GI070BN

- 4** Refer to table [CS 2000 GWC Manager status fields on page 32](#) following this procedure to interpret the GWC card (unit) status fields.
- 5** Repeat this procedure for other cards that you wish to view.
- 6** This procedure is complete.

The following table describes the GWC card (unit) status fields.

CS 2000 GWC Manager status fields (Sheet 1 of 3)

Status field	Possible values	Meaning
Administrative state:	locked	The unit is prohibited, administratively, from providing service to users. Note: A status of “locked” on the CS 2000 GWC Manager indicates that the software application on the card is no longer performing its primary call processing function, but the card is still running. (The call processing function has been “busied”, but underlying maintenance and communications activities are still functioning.) A status of “locked” on the CS 2000 SAM21 Manager indicates that the hardware is locked to ROM level, and the software application is no longer running.
	unlocked	The unit is permitted, administratively, to provide service to users.
Operational state:	enabled	The unit is partially or fully providing service to users.
	disabled	The unit is not operating or providing service to users. If the Administrative state for this unit is “locked”, then the unit has been manually busied. If the Administrative state for this unit is “unlocked”, then the unit has been busied by the system.
Activity state:	active	The unit is currently providing end user services. This is the state of the node as seen by other network elements.
	standby	The unit is not providing end user services but can be switched to Active at any time if the active (mate) unit fails.
Isolation state:	isolated	The unit is not communicating with the XA-Core.
	notisolated	The unit is communicating with the XA-Core.

CS 2000 GWC Manager status fields (Sheet 2 of 3)

Status field	Possible values	Meaning
Available state:	offLine(3)	The unit has not received its configuration data from the CS 2000 GWC Manager. The unit cannot provide service until it is booted and receives configuration data.
	degraded(6)	The unit does not have heartbeat communication with its mate and it is operating without fault-tolerant redundancy.
	offLine(3), degraded(6)	The unit has both: offline and degraded conditions.
	00 00 00 00	The unit does not have either of the above conditions.
Loadname:	<string_of_alphanumeric_characters>	This is the name of the load file that the unit currently boots from. The file is located on the CS 2000 Core Manager (SDM) or Core and Billing Manager (CBM) disk drive.
Usage state:	idle	The GWC maintenance system is not currently working on a request, such as a Return to Service (RTS). The unit is available for maintenance requests.
	busy	Maintenance is in progress on this unit and no further requests will be accepted.
Stand by state:	providingService	The unit is the active unit and is providing service.
	hotStandby	The unit is the standby unit - ready to provide service.
	coldStandby	The unit is synchronizing with the active unit (not providing redundancy). After completion of synchronization, the status changes to hotStandby when the Operational state is enabled.

CS 2000 GWC Manager status fields (Sheet 3 of 3)

Status field	Possible values	Meaning
Swact state:		This field indicates the last switch of activity for the unit.
	manualSwActWarm	Last switch of activity was due to a manual warm SwAct. Requested by a user, a warm SwAct causes no service interruption to stable calls, but calls in the setup processes can be lost.
	manualSwActCold	Last switch of activity was due to a manual cold SwAct. Requested by a user, a cold SwAct temporarily takes both units out of service and takes down all calls.
	autonomousSwActWarm	Last switch of activity was due to a system warm SwAct. These SwActs are automatically performed by the device in response to faults or failures. Established calls are preserved. Calls in setup are lost.
	autonomousSwActCold	Last switch of activity was due to a system cold SwAct. These SwActs are automatically performed by the device in response to faults or failures. All calls are lost.
	noSwAct	No switch of activity has occurred.
Alarm state:	00 00 00 00	There are no alarms raised on the GWC card unit.
	critical(1), major(2), minor(3), alarmOutstanding(4)	This field indicates the severity of the currently raised alarms.
Fault state:	none(0)	This field is not used.

Configure access to GWC and Shelf Controller MIB data

Purpose of this procedure

Use this procedure to configure the IP address of a device or application that can access gateway controller (GWC) and SAM21 Shelf Controller MIB information.

This allows GWCs and SAM21 Shelf Controllers to be polled for MIB data by an Integrated Element Management System (EMS) application deployed on a host other than the CS 2000 Management Tools server.



CAUTION

In release SN07, the Integrated Element Management System (EMS) cannot collect MIB data from the GWC and SAM21 Shelf Controller.

In SN07, MIB data for the GWC and SAM21 Shelf Controller is collected by the SNMP Poller application on the CS 2000 Management Tools server.

Performing this procedure does not interfere with the SNMP Poller application available at the CS 2000 Management Tools server. SNMP polling from the Integrated EMS can be configured in addition to the SNMP poller application residing on the CS 2000 Management Tools server.

Note 1: The Integrated EMS may reside on the CS 2000 Management Tools server. In this case, the Integrated EMS uses a virtual IP address for element management communications.

Note 2: You may also use this procedure to configure access to GWC and SAM21 Shelf Controller MIB data from an SNMP poller application that is not part of an Integrated EMS.

Note 3: Performance statistics for the SAM21 Shelf Controllers are only available if the SAM21 Shelf Controllers are configured with ATM interfaces.

When to use this procedure

Use this procedure if you are adding an Integrated EMS to your network.

You may also use this procedure to configure access to GWC and SAM21 Shelf Controller MIB data from an SNMP poller application that is not part of an Integrated EMS.

Prerequisites and guidelines

If no server is configured, the GWCs and SAM21 Shelf Controllers will continue to respond to SNMP requests from the SNMP Poller application deployed on the CS 2000 Management Tools.

Immediately after performing this procedure, a message is sent from the CS 2000 SAM21 Manager server application to the SAM21 Shelf Controllers to allow SNMP requests from the newly configured device or application. There is no requirement to reboot GWC or SC cards.

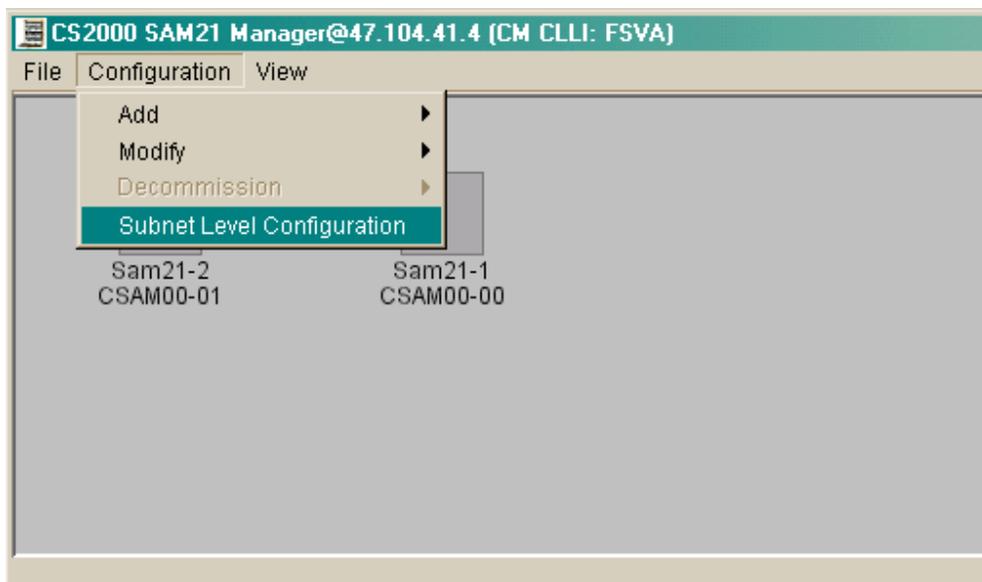
The following guidelines apply to SN07:

- The Integrated Element Management System (EMS) cannot collect MIB data from the GWC and SAM21 Shelf Controller.
- MIB data for the GWC and SAM21 Shelf Controller is collected by the SNMP Poller application on the CS 2000 Management Tools server.

Action

At the CS 2000 SAM21 Manager client

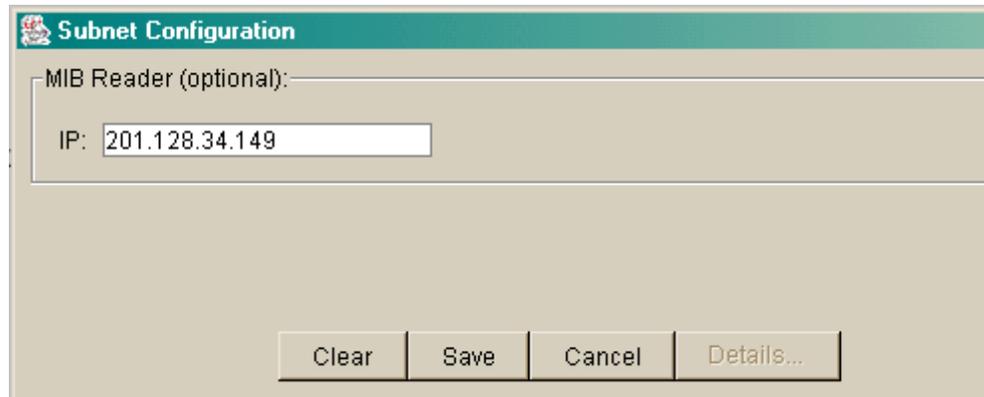
- 1 At the CS 2000 SAM21 Manager Subnet View, click on the **Configuration** menu and select **Subnet Level Configuration**.
The Subnet Configuration window opens.



- 2 Determine your next step using the following table:

If	Do
you wish to configure a device or application to access MIB information (initial configuration)	step 3
you wish to remove the setting for a device or application that currently has access to MIB information	step 4
you wish to change the device or application that has access to MIB information	step 5

- 3 Perform the following steps to configure a device or application to access MIB data (initial configuration):
 - a Enter a valid IP address for the device or application in the IP field.
Use the format <0-255>.<0-255>.<0-255>.<0-255>.
If the IP address is not valid, the IP field will be outlined in red.
Click the **Details** button for help on entering a valid address.



The screenshot shows a window titled "Subnet Configuration". Inside the window, there is a section labeled "MIB Reader (optional):" which contains a text input field for "IP:" with the value "201.128.34.149". At the bottom of the window, there are four buttons: "Clear", "Save", "Cancel", and "Details...".

- b Click the **Save** button to implement the change.
GWCs and the SAM21 Shelf Controllers will now respond to SNMP request from the IP address identified in the previous step.
 - c Go to [step 6](#).
- 4 Perform the following steps to remove an existing subnet configuration setting from the system:

Note: The current IP address setting appears in the IP field.

 - a Click the **Clear** button to remove the entry in the IP field.
 - b Click the **Save** button to implement the change.
The existing setting is removed. Any SNMP requests from the IP address previously configured are now rejected.
 - c Go to [step 6](#).

- 5 Perform the following steps to change an existing subnet configuration setting:
 - Note:** The current IP address setting appears in the IP field.
 - a Click the **Clear** button to remove the entry in the IP field.
 - b At the Subnet Configuration window, enter a valid IP address for the Integrated EMS in the IP field.

Use the format <0-255>.<0-255>.<0-255>.<0-255>.

If the IP address is not valid, the IP field will be outlined in red. Click the **Details** button for help on entering a valid address.
 - c Click the **Save** button to implement the change.

The setting is changed. MIB data for the GWC and SAM21 Shelf Controller is now available to the IP address configured in the previous step. Any SNMP requests from the IP address previously configured are now rejected.
- 6 This procedure is complete.