Honeywell

Interpret NIM Loading

L53686
UCN

TotalPlant

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Table of Contents

Figures

Tables

Acronyms

AM.....Application Module
APM..... Advanced Process Manager
CG .....Computer Gateway
CPUFREE..... Percent of CPU Free Time
HEAPFRAG.....Percent of Heap Memory Fragmentation
HEAPMIN.....Minimum Number of Heap Memory Used Since Node Startup
HM.....History Module
LCN .....Local Control Network
LM ..... Logic Manager
NAK.....Negative Acknowledgement
NG .....Network Gateway
NIM ..... Network Interface Module
PM..... Process Manager
SMCC ..... System Maintenance Control Center
UCN.....Universal Control Network
US ..... Universal Station

References

Publication Title	Publication Number	Binder Title	Binder Number
For R5xx :			
HPM Service	HP13-500	PM/APM/HPM Service-1	TPS 3061-1
PM/APM Service	AP13-500	PM/APM/HPM Service-1	TPS 3061-1
Universal Control Network Guidelines	UN20-500	Installation/Universal Control Network	TPS 3041
HPM Implementation Guidelines	HP12-500	Implementation/HPM-1	TPS 3066-1
APM Implementation Guidelines	AP12-500	Implementation/APM-1	TPS 3042-1
PM Implementation Guidelines	PM12-500	Implementation/PM-1	TPS 3040-1
For R4xx:			
APM Service	AP13-400	PM/APM Service	TPS 2061
PM Service	PM13-400	PM/APM Service	TPS 2061
UCN Guidelines	UN20-400	Installation/UCN	TPS 2041
APM Implementation Guidelines	AP12-400	Implementation/APM	TPS 2042-1
PM Implementation Guidelines	PM12-400	Implementation/PM	TPS 2040-1

Introduction

Module Overview

About this module

This course module discusses NIM loading and what contributes to the NIM load. Some concepts are discussed in more detail in related publications and should be referred to.

Objectives

The objectives of this course module are to

- Estimate a NIM load.
- Identify NIM loading factors.

Sample test items

This course module's Criterion Test includes the following items:

- Use the loading chart to estimate whether a NIM is heavily loaded.
- Outline a recovery approach for a heavily loaded NIM.

Estimate the Load

Estimate NIM Load

Introduction

The NIM loading estimation tables (Tables 1 and 2) are typically used on two occasions:

- Used in planning a new system.
- Used to estimate a NIM loading problem on an existing system.

Table for NIM load

Tables 1 and 2 list most factors in NIM loading for estimation purposes.

Table 1 68020 NIM Loading Estimator (from *Implementation Guidelines manual*);

Load Sources	Units to be entered in number column	Number	Load Factor	Induced Load
UCN Induced Load				
• HPMs, APMs, PMs, LM, and SMs on UCN	• Number of HPMs, APMs, PMs, LMs, and/or SMs on the UCN	10	10	100
US Induced Load				
• Universal and UxS Stations	• Number principally accessing this NIM	3	15	45
• Fast schematic displays	• Number principally accessing this NIM	2	85	170
HM Induced Load				
Continuous History:				
• 68020 HM (2400 points per minute)	Number of HMs principally accessing this NIM	1	30	30
• 68040 HM (3000 points per minute)	Number of HMs principally accessing this NIM	1	40	
Checkpoints	Number of HMs checkpointing this NIM	1	70	70
AM and AxM Induced Loads (90 points per second)				
• 68020 AMs	• Number principally accessing this NIM	1	150	150
• 68040 AMs	• Number principally accessing this NIM	0	200	
CG Induced Loads				
Computer Gateways (100 parameters/second)	• Number principally accessing this NIM	1	60	60
			Total Induced Load	675
			Maximum allowable load	1000
			% of maximum allowable load	62.5

Continued on next page

Table 2 68040 NIM Loading Estimator (from *Implementation Guidelines manual*);

Load Sources	Units to be entered in number column	Number	Load Factor	Induced Load
UCN Induced Load				
• HPMs, APMs, PMs, LM, and SMs on UCN	• Number of HPMs, APMs, PMs, LMs, and/or SMs on the UCN	10	4	40
US Induced Load				
• Universal and UxS Stations	• Number principally accessing this NIM	3	6	18
• Fast schematic displays	• Number principally accessing this NIM	2	35	70
HM Induced Load				
Continuous History:				
• 68020 HM (2400 points per minute)	Number of HMs principally accessing this NIM	1	12	0
• 68040 HM (3000 points per minute)	Number of HMs principally accessing this NIM	1	16	16
Checkpoints	Number of HMs checkpointing this NIM	1	28	28
AM and AxM Induced Loads (90 points per second)				
• 68020 AMs	• Number principally accessing this NIM	0	60	0
• 68040 AMs	• Number principally accessing this NIM	1	80	80
CG Induced Loads				
Computer Gateways (100 parameters/second)	• Number principally accessing this NIM	1	24	24
			Total Induced Load	276
			Maximum allowable load	1000
			% of maximum allowable load	27.6

Estimate Schematic Load

Estimating schematic loads

Table 3 provides an estimator for schematic loads.

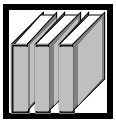
Table 3 Schematic Loading Estimator

Total Parameters in Schematic	Number of Parameters on Fast Update	Added :pad Factpr 68020	Added Load Factor 68040
100	0	0	0
100	50	65	26
150	0	5	2
150	50	70	28
200	0	15	6
200	50	75	30
250	0	20	12
250	50	85	34

Additional notes

Note the following about using Table 3:

- The load factor (Table 1 and 2) for a US using only standard displays is either 15.
- For each US, determine the load factor and add this up to get the US contribution to NIM loading.
- These are estimating guidelines only. It assumes that the typical schematic is following the guidelines for writing efficient schematics. Some users suggest no more than 50 parameters per schematic should be on fast update.



REFERENCE—For more information about how to calculate and assess a NIM load, you can refer at a later time to

- Section 4 in the *HPM, PM, or APM Implementation Guidelines Manual.*

Challenge in estimating

The challenge in estimating a NIM load and its effects is that requests to the NIM occur asynchronously and are therefore somewhat difficult to predict. Nonetheless, some users have had good results using the NIM loading estimators in Tables 1 and 2 as well as the steps described in the next section on assessing a NIM load.

Assess the NIM Load

Summary of assessments

As a result of your loading analysis, if your assessment is

- Less than 75% load—NIM will perform as specified
- 75% to 100% load—marginally acceptable
- above 100% load—NIM considered overloaded

Possible actions to take

If you feel your NIM has an unacceptable load, possible actions include

- Call up NODEFERF display and do a more detailed analysis of your NIM load.
  - a more detailed analysis of LCN requests (such as history collection, review active US displays, AM request schedules).
  - whether any NGs are adding to the NIM load.
  - whether any LCN requests are from devices not listed in the loading estimator tables (for example, Network Gateway, Archive Replay Module, and Utility Modules).
- Optimize requests (refer to the *Picture Editor Reference manual* on optimizing schematics).
- Consider a second NIM.

The NODEFERF displays are discussed in more detail later in this course module.

Troubleshooting off control systems

One “shotgun” method used for troubleshooting systems *not yet on-line controlling* a process is to use NIM loading table to estimate the load.

If the load is unacceptable, begin “working forward” by shutting off LCN devices (AM, HM, Utility modules, blanking US screens).

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Troubleshooting on control systems

In troubleshooting on control systems, you may find that more than one approach could be used. A good starting point is the UCN node diagnostic and/or status displays. The approach is to "work backwards" from the UCN node. You can do the following:

- Call up the HPM/APM/PM schedule display and identify whether an unacceptable level of point processing overruns is occurring. This would indicate whether the problem is HPM/APM/PM-resident as opposed to NIM-resident.
- Call up the HPM and APM display and identify whether an unacceptable level of CPUFREE time is available (available on R410 and later.)
- Call up the PERFMENU and select displays to determine the amount of
  - PARSEC
  - CPUFREE
  - HEAPMIN
  - HEAPFRAG
- Review any relevant UCN statistics that indicate NIM congestion. Note that the UCN Guidelines Manual should be referred to for an accurate interpretation of the statistic. For example, token rotation time could also indicate a hardware or chattering alarm problem.
  - No copy buffers
  - Token rotation time
  - No response errors
  - No receive buffers
  - Reply timeouts
  - Lost messages
  - At node NAK threshold
  - At node throttle threshold
  - Message buffer overruns
- Review any relevant system errors. Errors of "Job Queue Full" indicate loading. Use the task list provided in Table 4 and Table 5 to interpret system errors reported in error journals.
- Review the heavy load users from the NIM loading table, such as
  - USs with fast schematic displays (that is, number of PARSEC)
  - HMs with autocheckpointing (that is, checkpointing period)
  - AMs with 68020+ microprocessors (that is, schedules)
- Review LCN schematics using optimization guidelines
- *If it is feasible* in your system, you could
  - Disable autocheckpointing or change checkpoint period
  - Turn history collection off
  - Review schematics that are active (clear screens if feasible)
  - Review number of HM History Groups
  - Review AM (number of AM points accessing the NIM and their point processing rate)

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Assess the NIM Load, Continued

Quick troubleshooting

The quickest troubleshooting technique for an overloaded NIM involves clearing US screens while monitoring Toolkit displays. As you blank USs of suspected schematics, observe in the Toolkit display whether CPUFREE, HEAPFRAG, and HEAPMIN values improve.

NIM Task Priorities

Introduction

This section provides an overview of the tasks a NIM performs. Additionally the priority of the tasks are listed.

Overview

An overview of all NIM tasks (functions) is provided in Table 4.

Table 4 NIM and UCN Node Task Priority

NIM Tasks	Priority
Redundancy	Highest
Cable faults	Highest
Events	High
Control	High
Displays	Low
Point load	Lowest

How you can use this info

The task priority helps you understand why some things appear not to get done as fast (such as point building) in a heavily loaded system. Also note the significance of maintaining cabling hardware—cable faults can contribute to loading. At one customer site, overrun problems were traced to cable quality problems.

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NIM Task Priorities, Continued

List of tasks

A more detailed look at the NIM tasks is presented in Table 5; highest priority tasks are at the top. A description of task names is sometimes useful in interpreting error journals.

Table 5 NIM Tasks

Task Name	Description
UG$_RED	LCN communication with redundant partner
UG$_MISTY	NIM self-check
UG$_HPN_STS	UCN communication with redundant partner
UG$LEADTASK	Node startup and state change processing
U$LEADTASK	Unit logical node startup
PN$SYNCHER	Time synch UCN to LCN time
UG$_EV_DISTR	Formats and sends events on the LCN
UG$_DH_PSTP1	Parameter request for a manual value, operator demand
UG$_DH_PREP1	Raise/lower, schematic stores
UG$AUTORCNCT	Reconnect to UCN (if NIM off-line or alone)
UG$_EV_PRCSR	Receives events from UCN nodes
UG$_NS_TASK	UCN node status scan
UG$_EV_RECOV	Event Recovery requests to UCN nodes
UG$_EV_COMND	LCN commands affecting Event Recovery
UG$_CH_SLOW	Database save/restore (NIM/UCN nodes)
UG$_CH_LOAD	Load personality to UCN nodes
UG$_CH_DLL	Load sequence and ladder logic programs
UG$_DH_PSTP2	Parameter request for control fetch/store
UG$_DH_PREP2	High level control (AM, CG)
UG$_DH_PSTP3	Parameter request for display update
UG$_DH_PREP3	Change, history and new display
UG$_DH_PSTP4	Parameter request for normal display
UG$_DH_PREP4	Parameter request for trend pen
UG$_CH_FAST	Commands to UCN nodes (IDLE, RUN, etc)
UG$_DH_PSTP5	Parameter request for point build, query, SMCC
UG$_DH_PREP5	Slow display and load/store.

NODEPERF NIM Loading Indications

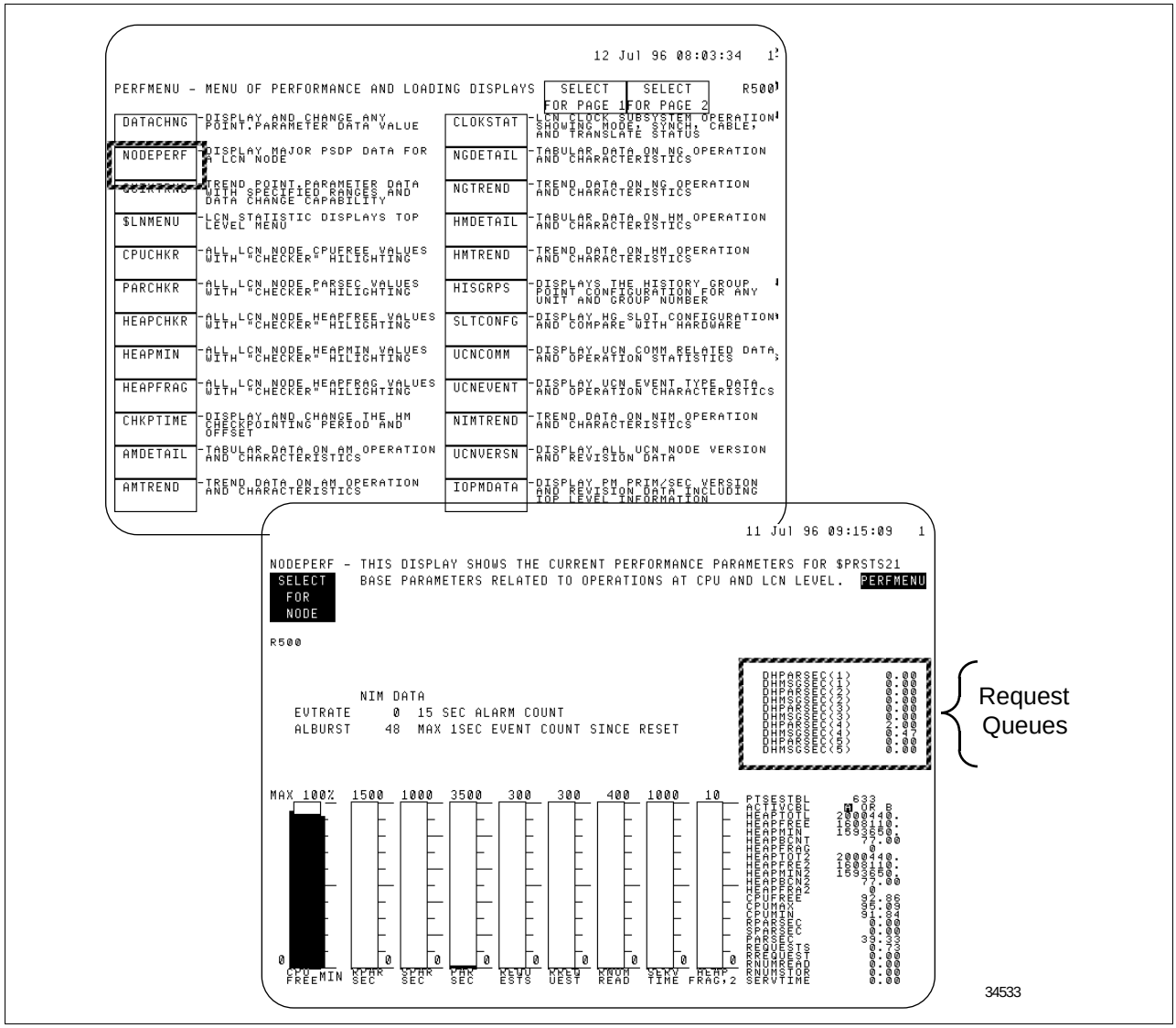
Introduction

The NODEPERF displays LCN request loading on the NIM. The NODEPERF display available in R410 and later provides additional parameters that can assist you in determining the source of a NIM loading problem.

Example display

Figure 1 is an example display of the NODEPERF

Figure 1 NODEPERF Example



Additional parameters

The additional R410 and later NODEPERF parameters are DHPARSEC(i) and DHMSGSEC(i), where i=index number 1 through 5. Briefly, the parameters represent the data access loading requests placed on the NIM.

Continued on next page

NODEPERF NIM Loading Indications, Continued

Index = task

The DHPARSEC(i) and DHMSGSEC(i) task index numbers 1 through 5 (where 1 is highest priority) represent the following:

- 1—regulatory control requests from an operator (for example, manual valve changes, schematic stores, raise lower commands)
- 2—node requests from AM, CG, HM (high level control)
- 3—display invocation (for example, new display callup)
- 4—normal display updates
- 5—point building, load/store

NIM interpretation

These index numbers have the following meanings for a NIM:

- Each DHPARSEC(i) is estimated to represent a 0.5 millisecond load (parameter request)
- Each DHMSGSEC(i) is estimated to represent a 12 millisecond load (message requests)

Example calculation

For example, if DHMSGSEC(2) = 45.53, 45.53 x 12 ms = a 546.4 ms load. Total the load from all DHPARSEC(i) and DHMSGSEC(i) to get a calculated NIM request load. At this time, a guideline load for a NIM is that the total request load should be less than 750 milliseconds.

Identifies load source

As an example of the relevance of these numbers, consider cases where the NIM is well within the performance guidelines 1200 PARSEC for a 68000/68020 or 2400 PARSEC for a 68040, but overload problems still occur (evidenced by JOB QUEUE FULL errors and slow US display callups). The DHPARSEC(i) and DHMSGSEC(i) parameters can be used to determine the source of the NIM loading problem.

In one customer case, it was originally thought schematics were the source of the NIM load, because NIM loading symptoms appeared after schematics were invoked . After the DHPARSEC/DHMSGSEC parameters became available, closer examination revealed the loading source was actually background CL/AM programs making unusually heavy requests to the NIM. In other words, NIM loading appeared when schematics were invoked, but schematics were not the cause of the problem, as the schematics at this site placed minimal load on the NIM.

Bundle requests

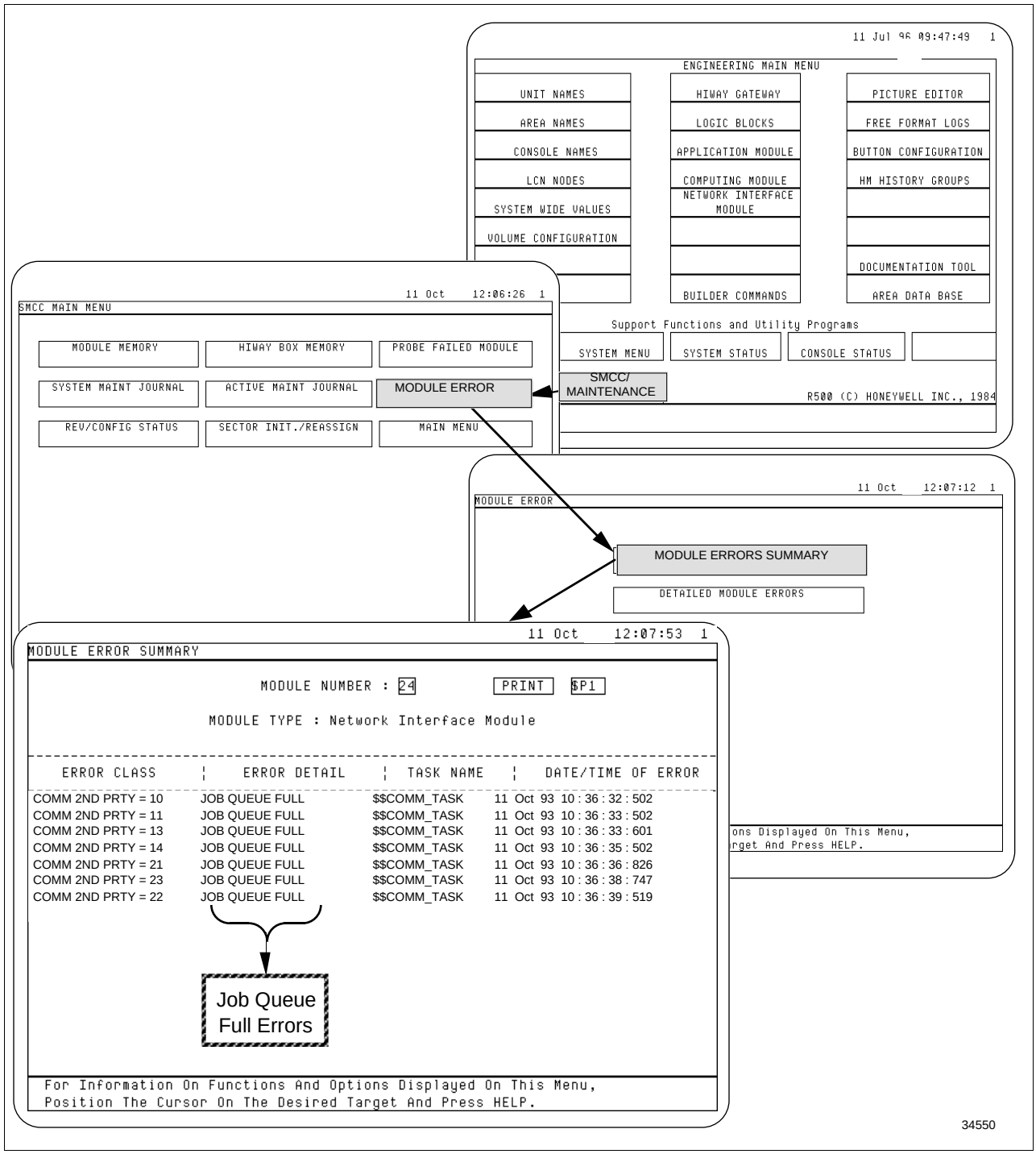
As a general rule, if parameter requests can be "bundled" into a message request, less loading results. For example, a request for 20 parameters could represent either 1 message or 20 messages depending on how it is configured in the schematic, history group(s), Data Definition Table, background CL/AM, or other LCN request.

Job Queue Full Indications

Introduction

You can also use System Maintenance Control Center (SMCC) displays along with NODEPERF to determine whether NIM loading is occurring. COMM 2ND PARTY identifies the requesting LCN node number.

Figure 2 Job Queue Full Example



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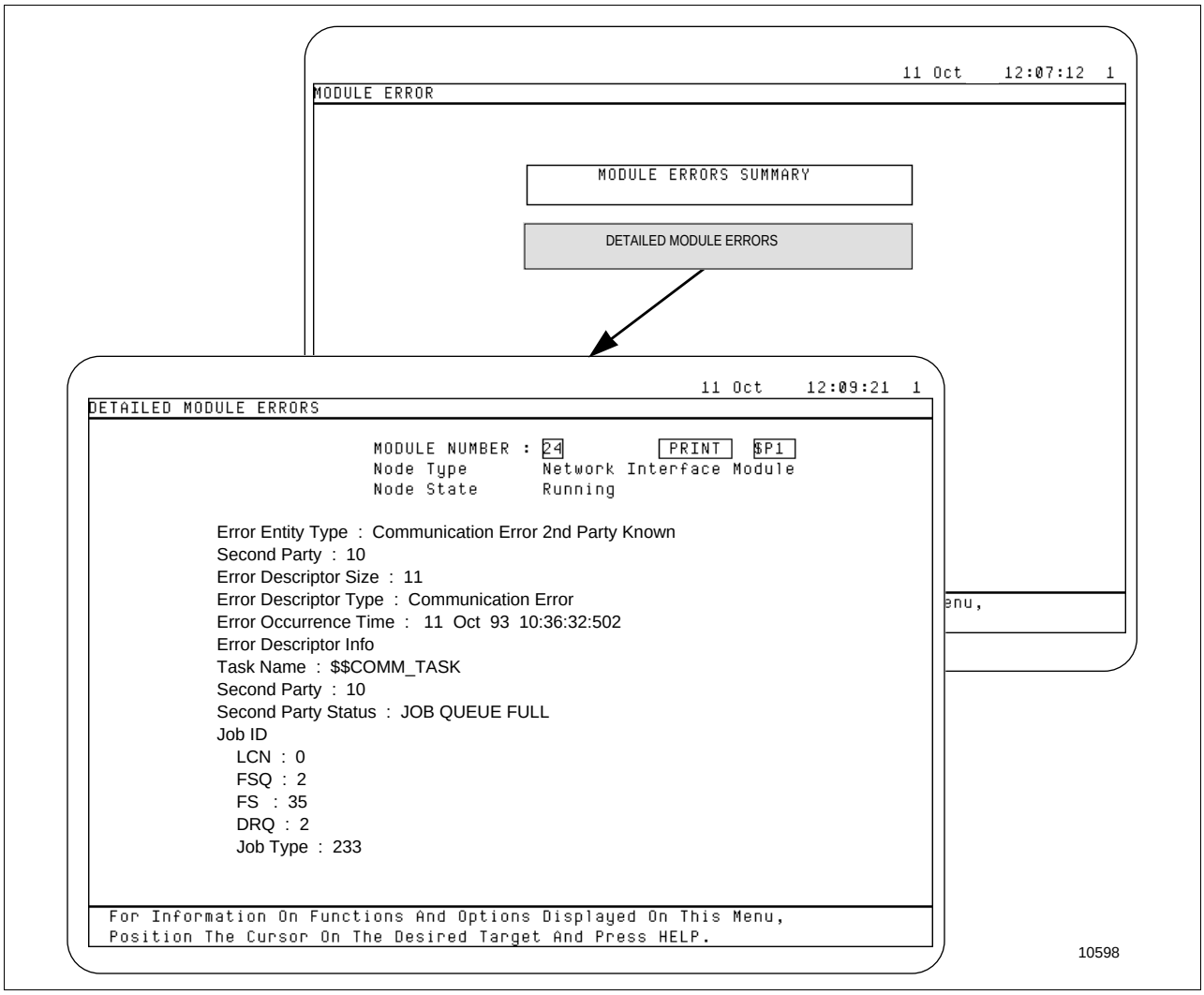
Job Queue Full Indications, Continued

Additional detail

The detailed error display provides additional information, such as which node experienced the JOB QUEUE error (identified as “Second Party”).

Figure 3 Job Queue Full Detail Error Example



Baseline a UCN System

Introduction

A procedure you can consider is to baseline your UCN system. For example, a doctor may ask you to take a stress test when you are "healthy" to have a reference point for the time when you are "unhealthy." Likewise, you can baseline your UCN system when it is healthy or in what you consider normal operations.

Parameters you can track

Baselining your system can be as simple as printing out the local UCN Statistics displays and several TOOLKIT displays, such as

- NODEPERF for your NIM
- UCNCOMM
- UCNSUMM
- UCNEVENT
- NODESTA1
- NODESTA2
- the NIM local UCN statistics.

Additionally you can trend the following parameters for each node:

- any of the local UCN statistics
- CPUFREE

Lab Exercises

Lab 1—Estimate NIM Load

Introduction

The following lab exercise asks you to do the following:

- Estimate the NIM load on your training system.
- Baseline a UCN system

ATTENTION

ATTENTION—Your course manager may decide to do this lab as an in-class exercise. Your course manager will identify a hypothetical configuration to estimate.

Estimate NIM load

Use Table 6 or 7 for estimating load.

Step	Action
1	Identify the nodes on your LCN that access your UCN.
2	Use the loading estimators in Tables 6 and 7 to estimate your NIM load

Continued on next page

Table 6 68020 NIM Loading Estimator;

Load Sources	Units to be entered in number column	Number	Load Factor	Induced Load
UCN Induced Load				
• HPMs, APMs, PMs, LM, and SMs on UCN	• Number of HPMs, APMs, PMs, LMs, and/or SMs on the UCN	__	10	__
US Induced Load				
• Universal and UxS Stations	• Number principally accessing this NIM	__	15	__
• Fast schematic displays	• Number principally accessing this NIM	__	85	__
HM Induced Load				
Continuous History:				
• 68020 HM (2400 points per minute)	Number of HMs principally accessing this NIM	__	30	__
• 68040 HM (3000 points per minute)	Number of HMs principally accessing this NIM	__	40	
Checkpoints	Number of HMs checkpointing this NIM	__	70	__
AM and AxM Induced Loads (90 points per second)				
• 68020 AMs	• Number principally accessing this NIM	__	150	__
• 68040 AMs	• Number principally accessing this NIM	__	200	
CG Induced Loads				
Computer Gateways (100 parameters/second)	• Number principally accessing this NIM	__	60	__
			Total Induced Load	__
			Maximum allowable load	1000
			% of maximum allowable load	__

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Table 7 68040 NIM Loading Estimator;

Load Sources	Units to be entered in number column	Number	Load Factor	Induced Load
UCN Induced Load				
• HPMs, APMs, PMs, LM, and SMs on UCN	• Number of HPMs, APMs, PMs, LMs, and/or SMs on the UCN	__	4	__
US Induced Load				
• Universal and UxS Stations	• Number principally accessing this NIM	__	6	__
• Fast schematic displays	• Number principally accessing this NIM	__	35	__
HM Induced Load				
Continuous History:				
• 68020 HM (2400 points per minute)	Number of HMs principally accessing this NIM	__	12	__
• 68040 HM (3000 points per minute)	Number of HMs principally accessing this NIM	__	16	1__
Checkpoints	Number of HMs checkpointing this NIM	__	28	__
AM and AxM Induced Loads (90 points per second)				
• 68020 AMs	• Number principally accessing this NIM	__	60	__
• 68040 AMs	• Number principally accessing this NIM	__	80	__
CG Induced Loads				
Computer Gateways (100 parameters/second)	• Number principally accessing this NIM	__	24	__
			Total Induced Load	__
			Maximum allowable load	1000
			% of maximum allowable load	__

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Lab 1—Estimate NIM Load, Continued

Baseline UCN system

This lab exercise is optional. Print various UCN displays as part of your Baselining effort. Note: some UCN displays are available on R400 and later.

Step	Action
1	Call up Toolkit displays and baseline your system by printing: • NODEPERF for your NIM • UCNCOMM • UCNSUMM • UCNEVENT • NODESTA1 • NODESTA2 Some displays should be reset and allowed to run for several minutes before printing.
2	Call up the local UCN statistics for your NIM. Reset its statistics, let it run for several minutes, then print its display.

Lab 2—Identify Job Queue Full Errors

Introduction

This lab exercise introduces displays that can be called up to examine job queue full errors.

Identify job queue errors

This procedure may require placing an excessive stress on the UCN to create the job queue errors.

Step	Action
1	To identify job queue errors, do the following: • From the Engineering Main Menu, select the SMCC/ MAINTENANCE target. • In the SMCC Main Menu, select the MODULE ERROR target. • Select the MODULE ERRORS SUMMARY target. • Move the cursor to the Module Number port ☐ and enter the LCN module address for your primary NIM. • Observe whether any job queue errors are present.
2	Return to Module Error display by pressing [CTL], and [PAGE BACK] and do the following: • Select the DETAILED MODULE ERRORS target. • Move the cursor to the Module Number port ☐ and enter the LCN module address for your primary NIM. • Observe whether any job queue errors are present. You may have to page forward to locate the job queue error seen earlier in the summary display • Note the job queue full error in the Second Party Status field. • Note the codes following Job ID, which may be of interest to TAC: – LCN (which represents the LCN number)___ – FSQ (which represents the Function Set Qualifier)___ – FS (which represents the Function Set)___ – DRQ (which represents the Data Realm Qualifier)___ – Job Type (which represents the job or task making, for example, the request to the NIM)___

ATTENTION

ATTENTION— The node identified in the Job Queue Full error is not necessarily the node causing the job queue full condition. That is, another node may be loading the NIM, causing the NIM to report the job queues are full against additional requesting nodes.

Lab 3—Build a NIM Message Monitor Program (optional)

Overview

In the following optional lab exercise, build a CL/AM program that monitors NIM message queues. The program calculates message queues load and stores the calculation result in PVCALC.

Sample program provided

A sample program is provided for you on one of the system directories. If the program directory and file differs from the one listed in the lab, your course manager will let you know which file to use.

Sample point data

The sample AM point uses a regulatory control point in an AM.

```
NAME        =“NIMMS###“
UNIT        = AM
PTDESC      =“NIM MSG MONITOR      “
EUDESC      =“NIMMS”
KEYWORD     =“  “
PRIMMOD     = ---
PTDISCL     = FULL
PVALGID     = CL
CTLALDIG    = NULL
OVERVAL     = 0
SUPPIO      = NOSUPPR
$IPPASN     = OFF
PERIOD      = 1HR
BEFAFT      = NO
PVFORMAT    = D1
PVEUHI      = 1000.0000
PVEULO      = 0.000000
PVEXEUHI    = 1000.0000
PVEXEULO    = 0.000000
PVCLAMP     = CLAMP
PVSRCOPT    = ONLYAUTO
PVFLTOPT    = NONE
PVTV        = --------
```

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Lab 3—Build a NIM Message Monitor Program (optional),

Continued

Sample point data,
continued

```
PVALDB       = ONE
PVHITP       = 745.00000
PVLOTP       = --------
PVHHTP       = --------
PVROCPTP     = --------
PVROCNTP     = --------
ALENBST      = ENABLE
ALPRIOR        = LOW     (Before R500)
(R500 and later—Separate Alarm Priorities:)
  ADVDEVPR     = LOW     CLEALMPR  = LOW     PVHHPR  = LOW
  BADCTLPR     = LOW     CLFALMPR  = LOW     PVHIPR  = LOW
  BADPVPR      = LOW     CNFERRPR  = LOW     PVLLPR  = LOW
  BCLEALPR     = LOW     DEVHIPR   = LOW     PVLOPR  = LOW
  BCLFALPR     = LOW     DEVLOPR   = LOW     PVROCNPR = LOW
                                             PVROCPPR = LOW
                                             PVSGCHPR = LOW
CCINPT       = NO
CLSLOTS      = 1
NOPKG = 1
NUMSWTCH     = 0
NOGINPTS     = 5
NOGOPTS      = 0
PKGNAME(1)   =“NIMMON“
BOXREAD      = 0.0000000
BOXWRIT      = 0.0000000
BOXRDCG      = 0.0000000
BOXWRCG      = 0.0000000
BOXLSRD      = 0.0000000
BOXLSWR      = 0.0000000
GISRC(1)     = $PRSTS09.DHMSGSEC(1)
GIDSTN(1)    = QUE1
GIACTSTS(1) = ACTIVE
GISRC(2)     = $PRSTS09.DHMSGSEC(2)
GIDSTN(2)    = QUE2
GIACTSTS(2) = ACTIVE
GISRC(3)     = $PRSTS09.DHMSGSEC(3)
GIDSTN(3)    = QUE3
GIACTSTS(3) = ACTIVE
GISRC(4)     = $PRSTS09.DHMSGSEC(4)
GIDSTN(4)    = QUE4
GIACTSTS(4) = ACTIVE
GISRC(5)     = $PRSTS09.DHMSGSEC(5)
GIDSTN(5)    = QUE5
GIACTSTS(5) = ACTIVE
```

Lab 3—Build a NIM Message Monitor Program (optional),

Continued

Example program

Your sample program is similar to the following example program. You need to copy the program from our lab directory to your directory, then edit (to change ### to your partition number), compile, and link your program to an AM point.

```
BLOCK NIMMN### (POINT NIMMS###; AT PV_ALG)
--
--    NIM MONITOR PROGRAM TO KEEP TRACK OF NIM MESSAGES
--
--
PARAMETER   PVCALC
PARAMETER   PVAUTOST : PVVALST


--CALCULATE MESSAGE QUE LOAD
CALL ALLOW_BAD (PVCALC, (QUE1+QUE2+QUE3+QUE4+QUE5))

END NIMMN###
```

Example segment

Your AM point uses a custom data segment that is already built for you. You do *not* need to recompile this segment, just add it to your AM point as NIMMON.

```
CUSTOM
PARAMETER   QUE1  "QUE 1 MESSAGES"
VALUE       0.0
PARAMETER   QUE2  "QUE 2 MESSAGES"
VALUE       0.0
PARAMETER   QUE3  "QUE 3 MESSAGES"
VALUE       0.0
PARAMETER   QUE4  "QUE 4 MESSAGES"
VALUE       0.0
PARAMETER   QUE5  "QUE 5 MESSAGES"
VALUE       0.0
END CUSTOM
```

Continued on next page

Lab 3—Build a NIM Message Monitor Program (optional),

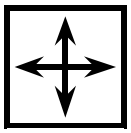
Continued

Build it, and it will monitor

Build an AM point, using a reference to the custom data segment on our system. Copy an existing program to a file referencing your partition, and then edit, compile, and link the program to your AM point. Run the program to monitor the messages to UCN nodes.

Step	Action
1	Build the AM point NIMMS### referenced in the data sheets.
2	Load the AM point NIMMS### to the AM.
3	Call up the Command Processor.
4	Copy the CL program NIMMSG.CL to your assigned partition, be sure to reference your partition number. Example copy command: COPY NET>CL>NIMMSG.CL NET>S###>NIMMN###.CL, where ### is your partition number.
5	Edit the program to change ### to your partition number.
6	Compile your CL program. Example compile command: CL NET>S###>NIMMN###.CL, where ### is your partition number.
7	Link the CL program NIMMN###.CL to your assigned point. Example link command: LK NET>S###>NIMMN### NIMMS###, where ### is your partition number.
8	Call up a detail display of your AM point, NIMMS###.
9	Activate your AM point. (Initially, the point may show a low value because of low communication traffic in our lab.)
10	Your program is based on a 1-hour interval. You can however, demand a point process special (note that this will give you less than 1-hour data).
11	Note your PVHITP value. This value arbitrarily identifies a message count that, when exceeded, is annunciated as an alarm.
12	Increase the UCN traffic in our lab by calling up parameter intensive displays. Observe the effects on your NIM message monitor.

Directions



DIRECTIONS—This is the end of the study material for this module. Discuss questions concerning the study material or the lab activities with a colleague or a course manager

If you are satisfied that you have achieved the objectives of this module, continue with the next section, the Student Proficiency Evaluation.

Student Proficiency Evaluation

Criterion Test

What you are expected to know

Review the NIM loading estimator chart from your lab exercise and answer this question.

Which of the following items in a recovery approach for a heavily loaded NIM is something you *could not* do?

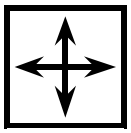
- Call up the HPM, APM, or PM schedule display and identify whether an unacceptable level of point processing overruns are occurring.
- Identify level of HPM/APM/PM CPUFREE time that is available.
- Determine the amount of NIM
  - PARSEC _____
  - CPUFREE _____
  - HEAPMIN _____
  - HEAPFRAG _____
- Review any relevant UCN statistics that indicate NIM congestion.
- Review HPM/APM/PM “Job Queue Full” errors.
- Review the heavy load users from the NIM loading estimator table.

- Clear US screens to determine if there is an excessive schematic load.

Self-Evaluation

Self-evaluation	*Your course manager may review the test answers in a class discussion.*

Directions



DIRECTIONS—This is the end of this module.

Use your course map to

- Get your course manager to sign off this module.
- Choose your next eligible module.

If you have a question

- Ask your course manager.

LAST PAGE