

NonStop NET/MASTER Tips and Techniques

by John New

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Introduction

This is an ongoing column with NonStop NET/MASTER tips and techniques. Each column is also accessible from <http://www.greshamsoftwarelabs.com.au/> (Gresham Software Labs). Please send all comments and suggestions to John New at [jnew@greshamsoftwarelabs.com.au](mailto:jnew@greshamsoftwarelabs.com.au).

Biography

John New is a technical writer. He has written and updated various Tandem manuals. He currently writes hard-copy, online, and web documents for a variety of software products.

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NonStop NET/MASTER MS Tips and Techniques

Running NonStop NET/MASTER on G02

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Introduction

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This article discusses some migration considerations that are relevant to NonStop NET/MASTER users who are considering migrating to an S-series system. Considerations include the faster performance of the hardware, faster performance of NonStop NET/MASTER, faster message processing, NCL coding refinements, the unavailability of certain Tandem products, and changes to the RMS CPU Up rule.

Performance Improvements

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Previous performance analyses of NonStop NET/MASTER have shown that product performance has been improving steadily. This trend was seen to continue when a subset of tests from an earlier performance analysis were recently rerun.

When running on an S7000 running G02 the results showed striking performance improvements in the areas measured. For example when comparing performance on a Himalaya K1002 running D32 with performance

on an S7000 running G02, improvements ranged from 24.1% to 216.5%.

The results also showed that the most recent version of NonStop NET/MASTER performs significantly faster than older versions when running on the same system.

See Appendix A for a complete analysis.

#### Faster Message Processing

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On an S-series system, the improved performance results in faster message processing. Messages can now arrive more rapidly on the operator console.

This means system and network operators may find it more difficult to monitor message flow and detect messages that report events requiring intervention. Therefore you may want to increase the level of NCL or RMS automation that you are using or to throttle event flow from the EMS distributor (using the SYSPARMS EMSMAXRATE command).

#### NCL Coding Refinements

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As a direct result of improved message processing, you may want to reexamine your NCL procedures to ensure that you have designed them to process events in any order.

This is because NonStop NET/MASTER processes commands and messages asynchronously. NCL procedures that do not check the results of executing a command, that rely on results from multiple commands arriving in a certain order, or that depend on event messages arriving at a certain time, may be affected by differences in message processing speed. (A similar observation was made when Tandem applications migrated from CISC to RISC, because the RISC environment is faster.)

The following NCL code could cause a problem because there is no INTREAD verb to read the results of the executed command before the NCL process terminates. The code effectively assumes that the command has been successfully executed or that the command has successfully performed its function.

```
...
INTCMD nnm-command
EXIT
```

The following NCL code ensures that results are checked:

```
...
INTCMD nnm-command
INTREAD
/* further processing */
EXIT
```

The following NCL code could cause a problem because it executes a series of commands and then reads the results. It assumes either that the first command will be executed before the second or that the results of the first command will be returned to the NCL process before the results of the second.

```
...
INTCMD first-nnm-command
INTCMD second-nnm-command
INTREAD
INTREAD
...
```

However commands are executed asynchronously and results are returned asynchronously. This code may have worked (fortuitously) in the past. However recent performance improvements mean there is no guarantee that this code will work now.

One possible solution executes the commands and then uses a DO UNTIL loop to read the responses. The command-dependent processing must distinguish between the results from each command before taking appropriate action.

```
...
INTCMD first-nnm-command
INTCMD second-nnm-command
```

```
DO UNTIL /* last response */
  INTREAD
  /* command-dependent processing */
END
...
```

Another possible solution executes each command and processes the results from each command in turn.

```
...
INTCMD first-nnm-command
INTREAD
/* command processing */
INTCMD second-nnm-command
INTREAD
/* command processing */
...
```

#### Unavailability of Certain Tandem Products

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PUP and CMI are no longer available on G-series NSK operating systems. Therefore if your NCL procedures or RMS rules use these utilities, you should use an alternative, such as SCF. For example you could change a PUP LISTDEV command in an NCL procedure to an SCF LISTDEV command.

#### Changes to the RMS CPU Up Rule

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The CPU Up rule in the BASERULE ruleset is affected if you are running RMS on NSK G02 or a more recent version. The rule originally used PUP, which is no longer available, and now uses a TACL OBEY file instead.

During RMS initialization the NSK version is checked. If the NSK version is G02 or more recent then the CPU Up rule is modified automatically to have a system action of:

```
OPSYS SEND TACL OBEY $SYSTEM.STARTUP.CPUREBAL
```

A flag in the RMS database indicates that this change was made so that the CPU Up rule is not modified again in the future. The CPUREBAL file

is site-specific and is not distributed with RMS. It should contain commands for rebalancing the system, for example SCF PRIMARY commands.

## Conclusion

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NonStop NET/MASTER runs well on G02. Faster performance raises some migration issues as does the absence of certain products. However users who want to migrate NonStop NET/MASTER to G02 can do so confidently.

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## Appendix A: Performance Analysis

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This appendix describes the test environment for the most recent NonStop NET/MASTER Management Services (MS) and Rule Management Services (RMS) performance analysis (completed during September 1997) and presents the performance results in detail.

Note: It is not valid to compare these results with other products.

### Test Environment

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An earlier performance analysis during June/July 1995 (Bond, 1996) compared two versions of NonStop NET/MASTER running on the same system (a Himalaya K1002 with two processors, each with 64MB memory, running NSK D30.02). The RMS versions were T6583C31 and T6583AAJ.

A performance analysis completed during September 1997, which used the same methodology, revealed that NonStop NET/MASTER runs even faster on an S7000 system (running NSK G02).

This analysis compared the same version of NonStop NET/MASTER MS (T6581AB0) and RMS (T6583AAV) running on two different systems. The control system was a Himalaya K1002 with two processors, each with 64MB memory, running NSK D32. The comparison system was an S7000 with two processors, each with 256MB memory, running G02.

Note: The Himalaya K1002 was devoted exclusively to running the tests. Therefore it is unlikely that the additional memory on the S7000 significantly affected results.

## Test Results

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The analysis used a subset of tests from the earlier performance analysis so that some direct comparisons could be made.

Note: In the following tables: "Incremental" is the improvement from one release to the next more recent release; "From C31" is the improvement from the original T6583C31 release to a more recent release.

Measurement 1a measured the elapsed time required to recover one Pathway terminal with minimal system load. Results were:

Version	Hardware	Software	Elapsed Time	Incremental	From C31
T6583C31	K1002	NSK D30.02	1.3 secs	-	-
T6583AAJ	K1002	NSK D30.02	1.0 secs	23.1%	23.1%
T6583AAV	K1002	NSK D32	0.661 secs	33.9%	49.2%
T6583AAV	S7000	NSK G02	0.502 secs	24.1%	61.4%

Measurement 1b measured the elapsed time required to recover ten Pathway terminals with minimal system load. Results were:

Version	Hardware	Software	Elapsed Time	Incremental	From C31
T6583C31	K1002	NSK D30.02	9.7 secs	-	-
T6583AAJ	K1002	NSK D30.02	9.7 secs	0%	0%
T6583AAV	K1002	NSK D32	7.98 secs	17.7%	17.7%
T6583AAV	S7000	NSK G02	3.86 secs	51.6%	60.2%

Measurement 2 measured the elapsed time required to recover one Pathway terminal with background events. Five background events per second were generated to the EMS log during this test. Results were:

Version	Hardware	Software	Elapsed Time	Incremental	From C31
T6583C31	K1002	NSK D30.02	35.6 secs	-	-
T6583AAJ	K1002	NSK D30.02	1.7 secs	95.2%	95.2%
T6583AAV	K1002	NSK D32	1.2 secs	29.4%	96.6%

T6583AAV S7000 NSK G02 0.655 secs 45.4% 98.2%

Measurement 3 measured the elapsed time required to recover 100 Pathway terminals. Results were:

Version	Hardware	Software	Elapsed Time	Incremental	From C31
T6583C31	K1002	NSK D30.02	131.5 secs	-	-
T6583AAJ	K1002	NSK D30.02	88.0 secs	33.1%	33.1%
T6583AAV	K1002	NSK D32	82.0 secs	6.8%	37.6%
T6583AAV	S7000	NSK G02	31.66 secs	61.4%	75.9%

Measurement 4 measured the elapsed time required to process 3000 event messages. NonStop NET/MASTER was started without a configuration file. EMS messages were processed by the event interface, passed to EMSPROC (written in NCL), and not forwarded further. Results were:

Version	Hardware	Software	Events/Second	Incremental
T6583AAV	K1002	NSK D32	26.93	-
T6583AAV	S7000	NSK G02	85.24	216.5%

Note: Measurement 4 was not conducted during the June/July 1995 performance analysis.

#### Reference

Bond, T. (1996) 'NonStop NET/MASTER Performance Report' Tandem Connection, Vol.17, No.3, pp.31-34.