

NonStop NET/MASTER Tips and Techniques

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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.

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.

Easy Startup Configuration: Part 2 – Using Embedded Process Creation Hints

This article is written for NonStop NET/MASTER system managers. The first article in this series described some aspects of the NonStop NET/MASTER processing environment, then discussed some considerations when starting NonStop NET/MASTER with its default configuration (one dynamic NC process).

This article discusses how to go beyond the default configuration by using embedded process creation hints in the file names used to create NonStop NET/MASTER application processes. To go beyond the default configuration means to start NonStop NET/MASTER with more functionality than one NC process or to start NonStop NET/MASTER using application processes other than NC processes.

The article discusses the concept of embedded process creation hints, how to create files with creation hints, how to start NonStop NET/MASTER with these files, and some things you should consider when using creation hints, and some general considerations when going beyond the default configuration.

Understanding Embedded Process Creation Hints

You start NonStop NET/MASTER by starting the NonStop NET/MASTER control process (NCP). This process starts all other processes, including application processes. During startup, the NCP scans file names in the subvolume in which it resides for names that begin with the letters NM. If it finds any matches, it assumes that the files are to be used to start application processes.

The NCP uses the following guidelines to determine whether to use a file and how to start an application process from the file:

NM – the 1st and 2nd characters – if the NCP finds a file beginning with NM it assumes that it is to be used to start an application process

xx – the 3rd and 4th characters – these characters specify the application process class – the letters should be BK, EM, IS, MS, or NC

nn – the 5th and 6th characters – these characters specify the number of static processes created – normally you would specify a two-digit decimal number from 00 through 99

nn – the 7th and 8th characters – these characters specify the number of dynamic processes created – normally you would specify a two-digit decimal number from 00 through 99

Creating Files With Embedded Process Creation Hints

Creating files with creation hints in their names is easy. NonStop NET/MASTER is distributed with one application program object file (called NMNC0001), which already has creation hints. All application processes, regardless of class, are started from this file or from a copy of this file. Files with creation hints in their names, therefore, are created by simply renaming and copying this file. The following table shows some examples:

To start NonStop NET/MASTER with	Do the following
Two static NC processes	Rename NMNC0001 as NMNC0200
One static NC process; one dynamic NC process	Rename NMNC0001 as NMNC0101
One static NC, IS, and MS process; one dynamic IS and MS process	Rename NMNC0001 as NMNC0100; Copy NMNC0100 as NMIS0101 and NMMS0101
One static NC, EM, IS, and MS process; one dynamic IS and MS process	Rename NMNC0001 as NMNC0100; Copy NMNC0100 as NMEM0100, NMIS0101, and NMMS0101
Two static BK processes; one static EM, IS, and MS process; one dynamic IS and MS process	Copy NMNC0001 as NMBK0200, NMEM0100, NMIS0101, and NMMS0101

Running NonStop NET/MASTER with at least one NC process and a mix of other processes is called extended basic mode. Running NonStop NET/MASTER without any NC processes, with a mix of BK, EM, IS, and MS processes, is called advanced mode.

Starting NonStop NET/MASTER

After copying and renaming files, to start NonStop NET/MASTER when using creation hints, start the NCP by using a TAFL command such as the following:

```
RUN NCP /NAME $BNNM, NOWAIT, TERM $OSP, CPU 0/1
```

To log on to NonStop NET/MASTER from TACL after the NCP starts all processes, type:

```
NNM $BNNM
```

Considerations When Using Embedded Process Creation Hints

The main advantage of using creation hints is simplicity. It is very easy to copy and rename files to create multiple application processes from multiple program object files – one object file per process class. This means it is very easy to start NonStop NET/MASTER with a complex configuration without using a configuration file to specify individual application process attributes.

The main disadvantage of using creation hints is resource usage. Creating multiple application processes from multiple program object files means an increase in the consumption of virtual memory, physical memory, disk space, process resources, and so on. If you want to start NonStop NET/MASTER with a complex configuration and use resources as efficiently as possible, it is more efficient to use a configuration file. Using a configuration file, you can start every application process from a single program object file.

Another disadvantage of using creation hints and not a configuration file when starting NonStop NET/MASTER with a complex configuration is that you cannot specify individual process attributes such as priority, primary and backup CPU, name, and so on.

When using creation hints, you must be careful to create at least one NC process or the functional equivalent of one NC process (BK + EM + IS + MS). Otherwise, NonStop NET/MASTER will not start. For example, even if your NonStop NET/MASTER system has no links to remote systems, NonStop NET/MASTER will not start with a BK, EM, and MS process but without an IS process.

When creating multiple program object files with creation hints, note that you can create both static and dynamic application processes of the same class from the same file. For example, if you want to create one static and dynamic NC process, there is no need to create two files (NMNC0100 and NMNC0001). Simply rename NMNC0001 to NMNC0101.

When renaming and copying be careful not to mix old and new program object files. For example, assume you rename NMNC0001 to NMNC0101. If you upgrade NonStop NET/MASTER, the upgrade will create a new file called NMNC0001. When you next start NonStop NET/MASTER, if you leave the old NMNC0101 where it is, the NCP will start NC processes from the old NMNC0101 and an NC process from the new NMNC0001 ... with unpredictable results.

General Considerations When Going Beyond the Default Configuration

Be careful when creating dynamic processes at NonStop NET/MASTER startup. There is no need to create multiple dynamic processes unless the processes have work to do immediately after startup. For example, there is no need to create two dynamic MS processes at startup unless more than ten interactive users are likely to log on relatively quickly, or to create two IS processes unless two links will be started soon after startup. Creating processes unnecessarily during startup means that NonStop NET/MASTER takes longer to start in addition to using resources unnecessarily.

When starting NonStop NET/MASTER with no NC processes, there is no need to create more than one EM process because NonStop NET/MASTER will never use the second or subsequent EM process. Additionally, NonStop NET/MASTER must always be able support EMS functions. From this point of view, it makes little difference whether you create a static or dynamic EM process. If static, the NCP will always restart a failed EM process. If dynamic, the NCP will never stop the EM process.

When starting NonStop NET/MASTER with no NC processes, if your NonStop NET/MASTER system handles a lot of background processing by BMON, BLOG, BSYS, or LOGP, you may want to consider creating two BK processes so that the work is divided between the two processes. Do not create more than two because NonStop NET/MASTER will never use the third or subsequent BK process. If you create two BK processes, it is advisable to create either two static or two dynamic, but not one static and one dynamic.

When starting NonStop NET/MASTER with no NC processes, the number of MS and IS processes you create depends on the number of interactive users and the number of links to remote systems. One MS process supports up to ten interactive users. One IS process supports one link to a remote system. Whether these processes are static or dynamic depends on the extent to which you think the workload will fluctuate. For example, if the number of interactive users is almost always ten and rarely greater than ten, you may want to create one static and one dynamic MS process. If you always have two links to remote systems, then you would probably want to create two static IS processes.

It is not advisable to mix configuration methods, that is, to start some application processes with creation hints and other application processes from a configuration file. Mixing configuration methods

means accepting the disadvantages of both methods – additional resource usage and the necessity to specify individual process attributes.

Conclusion

Part 1 in this series briefly described some aspects of the NonStop NET/MASTER processing environment, then discussed some considerations when starting NonStop NET/MASTER with its default configuration. This article discussed how to go beyond the default configuration by using embedded process creation hints in the file names used to create NonStop NET/MASTER application processes. Part 3 will describe advanced configuration techniques using a configuration file.