CNS /Update Newsletter Feature

Open Up! OSG Dissects Systems Maintenance and Upgrade

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Last month, we discussed the architecture of the NERSP complex. This month we will discuss how we manage the NERSP on a daily basis and how we upgrade it.

An IBM SP system can be managed in different ways. The mode in which NERDC operates its SP is sometimes called "LAN-in-a-can," said Steve Ulmer, Open Systems Group manager. That is, we have multiple nodes (computers) which are connected and managed as if they make up a local area network (LAN). "We have many different services running on different nodes, and we make use of the SP's management infrastructure to reduce the systems administration burden and provide a centralized system image." In other words, we manage a large number of separate computers (nodes) as a system unit.

This is why the NERSP is a preferred platform for many business/administrative applications here at UF. Each application can be partitioned to a particular node or group of nodes. When each service or application is located on individual nodes, any node can be upgraded without impacting the performance of the whole system; any node can have customized software or a memory configuration to maximize the service provided on that node. And yet the system (all of the nodes) can be managed as one entity. Serving Web pages is a good example of a service that is housed on multiple nodes.

This feature that makes the SP such a flexible and useful environment, also means that a system-wide upgrade is a long, labor-intensive process that can take many months. Each node has its own copy of the operating system that must be upgraded. Each node has customized software and/or a customized memory configuration. Each node has different production services that must be protected during an upgrade. A production service is a program or collection of programs on NERSP that we publicize and support - this includes e-mail, Web servers, and others. It takes weeks to plan and test the upgrade for each node. And, the average time it takes to perform the final upgrade for a node is four hours. We currently have 26 nodes.

Usually, we plan to upgrade nodes that house one major production service per upgrade session (or per weekend). First, we verify the contents and configuration of the node to be upgraded. Next, we perform the complete upgrade on a test node, checking all software version interactions, and other compatibility issues. By the time we are ready to put an upgrade into production, we have performed five to seven upgrades on the test node.

There are various kinds of upgrades that require different upgrade paths. A system software upgrade requires different measures and precautions than a hardware upgrade or a hardware and software upgrade. As you might guess, a combination of those is the more complicated process.

We try to minimize/avoid system downtime due to upgrade activities by testing, recording our results, and moving services to other nodes to minimize the effect of any single upgrade.

While this is a lot of work, we think it is worth the effort to provide a stable platform for NERSP production services.

Your Comments are Welcome

We welcome your comments and suggestions on this and all UFIT documentation. Please send
your comments to:

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