sun microsystems

Systems Architecture Committee

Subject: N_Port_ID Virtualization for Solaris

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File: PSARC/2007/501/opinion.ms

Date: February 20th, 2008.

Committee: Mark Carlson (opinion written by Garrett D'Amore), Kais Belgaied.

Product Approval Committee:

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1. Summary

N_Port_ID Virtualization (NPIV) allows one Fibre Channel port to represent many physical ports, thus virtualizing the hardware. NPIV is especially useful for virtual machine environments.

2. Decision & Precedence Information

The project is approved as specified in reference [1].

The project may be delivered in a minor release of the ON consolidation.

3. Interfaces

The project exports the following interfaces.

Interfaces Exported		
Interface	Classification	Comments
FCA	Project Private	Specified in [2].
HBA-API extensions	Project Private	Specified in [3].
fcadm command line	Committed	See [4].
fcadm output	Uncommitted	See [4].
fcinfo output	Uncommitted	See [4].
fcadm SCF	Project Private	Storage for NPIV WWWN.
xenstore	Volatile	Changes for existen Xen database
xm input/output	Volatile	Xen CLI
/usr/lib/xennpivd file	Project Private	Xen reconfiguration daemon
xnpivd file	Project Private	Xen reconfiguration driver

The project imports the following interfaces.

Interfaces Imported		
Interface	Classification	Comments
T11 NPIV Specs	Standard	From the T11 web site.
libhbaaapi(3LIB)	Standard	Derived from T11 FC-MI

4. Opinion

4.1. Configuration and Locking

During inception, several questions were raised about a configuration file, and locking of the configuration database. The project team decided to change to use standard libscf(3LIB) APIs for this, resolving the issue suitably.

4.2. Daemon Startup

During inception, a question was raised pertaining to daemon startup. The project team's response is that SMF is used to start the deamon, and only for Xen.

4.3. NPIV Configuration and Zones

During inception a member asked what the administrative experience would be for a zone when an NPIV device is configured for the zone, but the underlying HBA doesn't support NPIV. Offline, the project team decided to reduce the scope of the project to exclude zones. This question will need to be answered in another case if/when the project team revisits support for zones.

4.4. Relationship to Other Virtualized IO Projects

A member raised a concern about the relationship of this project to other projects, such as Crossbow, which are also providing facilities for IO virtualization. The project team examined Crossbow in particular, and found some similarities, but there were enough differences as well. No action to unify interfaces between networking and storage virtualization was requested, and none was taken.

5. Minority Opinion(s)

None.

6. Advisory Information

None.

7. Appendices

7.1. Appendix A: Technical Changes Required

None.

7.2. Appendix B: Technical Changes Advised

None.

7.3. Appendix C: Reference Material

Unless stated otherwise, path names are relative to the case directory PSARC/2007/501.

1 Functional specifcation.
File: commitment.materials/NPIV_Func_spec.pdf

2 FCA Interface Changs to Support NPIV.
File: commitment.materials/NPIV_FCA_Interface_Doc-0.2.1.pdf

3 fcinfo, fcadm manual page with changes.
File: commitment.materials/fcinfo.man

4 PSARC 20 Questions.
File: commitment.materials/psarc_20q_npiv

5 npivxend manual page.
File: commitment.materials/npivxend.man

6 xenstore manual page.
File: commitment.materials/xenstore.man

7 xm manual page.
File: commitment.materials/xm.man

8 Issues file.
File: issues

