

NPIV For Solaris Introduction

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Agenda

- Introduction to NPIV
- Behavior in Different Environments
 - > Standalone
 - > Xen/Containers
- Major Work
 - > Driver Changes
 - > Management
 - > Xen
 - > Containers

NPIV Introduction

- NPort ID Virtualization
- Allows FibreChannel Nodes to log in multiple times to switch, and create multiple WWN
- You can think of it as virtual ports on an HBA
- For Xen, each DOMU can have its own virtual HBA
 - > Useful so you can still use zoning and LUN masking at the target
 - > Especially useful for migration
- Part of T11 standard, standards body for FibreChannel

Standalone Environment

- Each NPIV WWN will show as a separate controller
- For example, with cWtXdY number, W will vary for each virtual WWN
- Existing utility (fcinfo) will be expanded so that users can trace virtual HBA to physical HBA
- New utility, fcadm, will be created to administer NPIV

Xen/Containers Environment

- WWNs will be bound to a DOMU/local zone
 - > One WWN per physical HBA
- On migration, WWN will be disabled on original host, and enabled on new host (Xen)
- Modify block mapping to optionally allow all block devices from mapped WWN to appear in a DOMU, without intervention
 - > But default to existing behavior, requiring mapping

Driver Changes

- Modify FCA Interface
- FCA Driver must tell Leadville Framework if NPIV capable, and how many WWNs it can support
- Leadville will enable NPIV, assign WWN
- One fp instance for each virtual WWN
- For userland configuration, appropriate ioctls to allow for determining NPIV capability, creating new WWN, deleting WWN

Configuration and Status

- Need a new interface to configure, report status
- Proposal for HBA API changes in early stages
 - > Will invent our own extensions in interim
 - > Also, it's unclear if HBA API will include update (change NPIV configuration) or remain read only
- Need to modify fcinfo tool
 - > Add fcadm as a hard link to fcinfo, fcadm will allow changes, fcinfo output now includes NPIV port information

Changes To Xen

- Need to store per DOMU WWN in Xenstore using xm (Xen CLI)
- Enable NPIV WWN on DOMU creation, disable on deletion
- Change Xen DOMU block device mapping to optionally allow all visible devices to be automatically mounted
 - > Separate per block device mapping step is not required
 - > Behavior is similar to existing SANs
 - > Optional behavior

Changes to Containers

- Modify zonecfg tool to bind an NPIV WWN to a non global zone
- Automatically map devices found on a NPIV WWN controller to a zone