BROCADE

FC-SW-6
NPIV SWITCH

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T11/13-114v0

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NPIV Switch

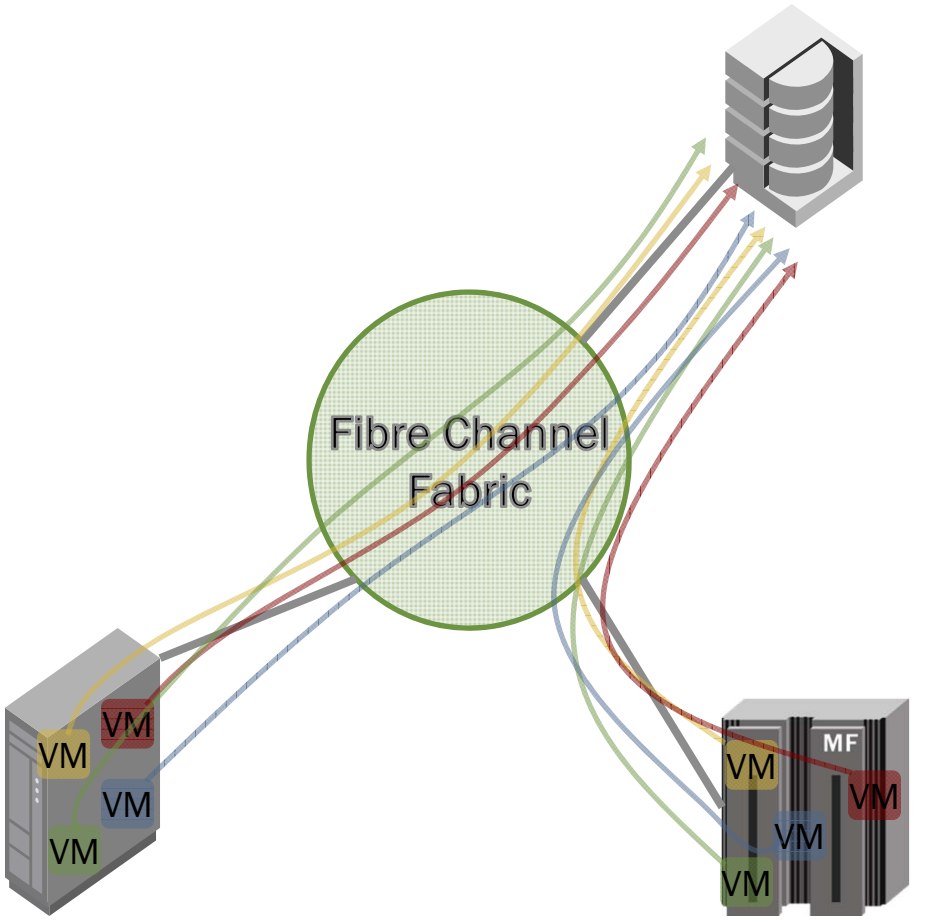
Reference

Traditional NPIV

NPIV

Target Solutions

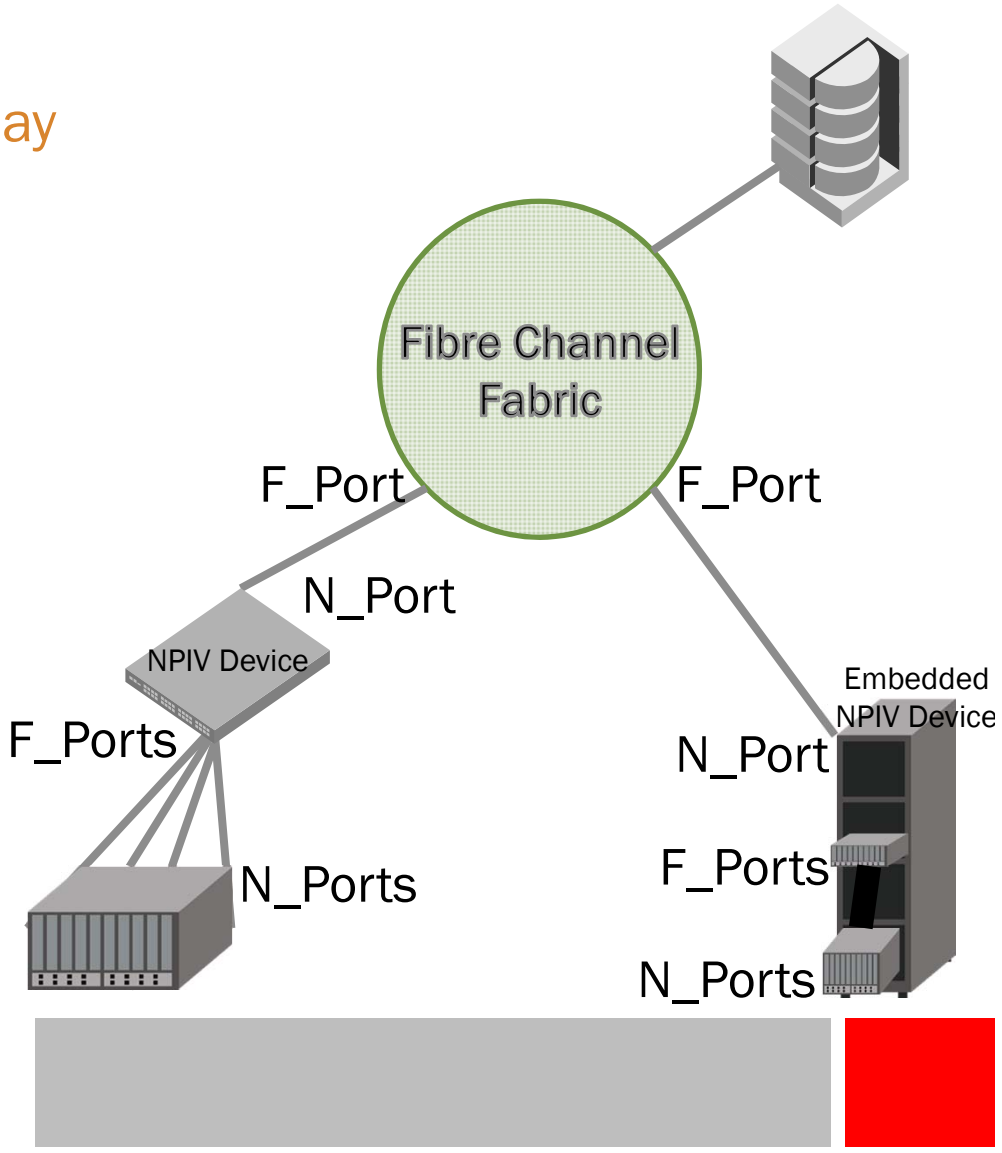
- Original Objective
  - "N_Port ID Virtualization (NPIV) provides a FC facility for sharing a single physical N_Port among multiple N_Port IDs, thereby allowing multiple initiators, each with its own N_Port ID, to share the N_Port."
- Operational Objectives
  - Provides a common implementation methodology
  - Provides interoperability between devices
  - Provides backward compatibility with current implementations and legacy devices



NPIV

Examples of Implementations Today

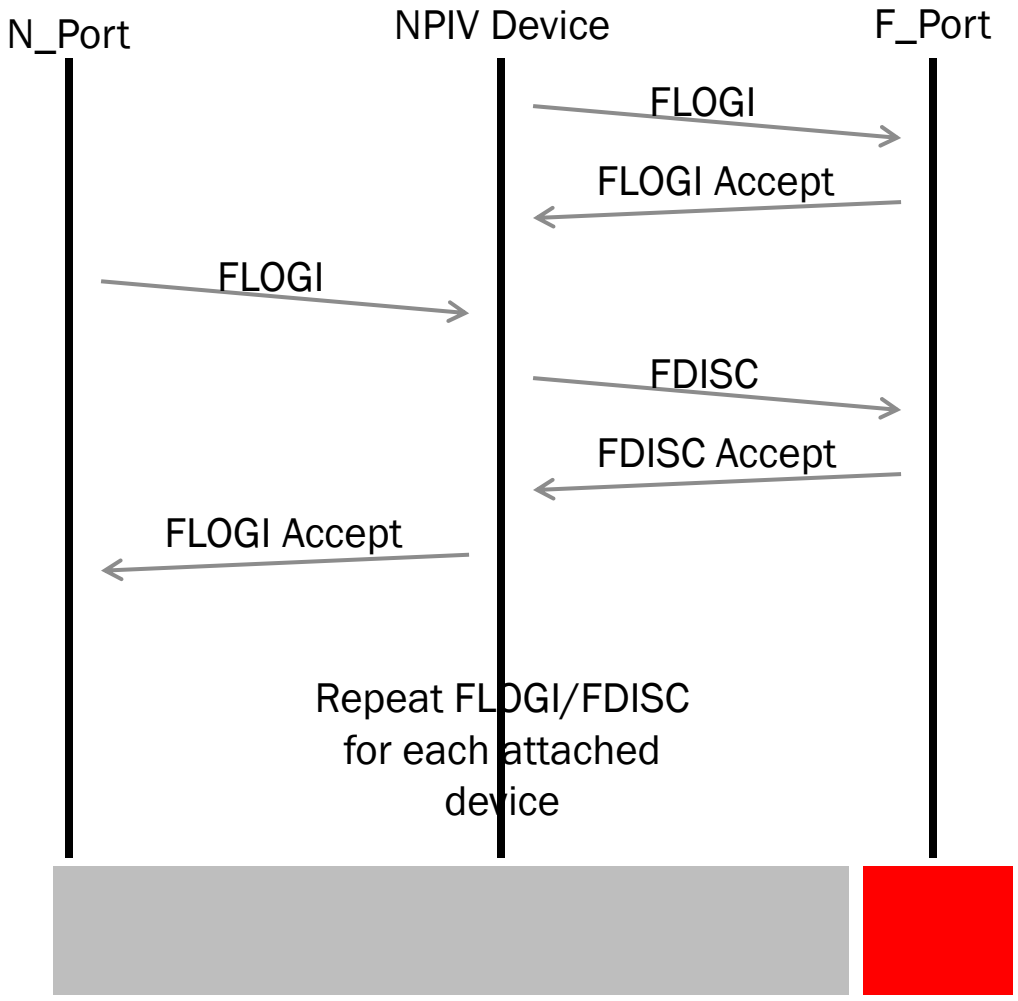
- Bridging
  - Provides device connectivity as part of existing fabric
  - Leverages existing functional behavior
  - Localizes interoperability concerns to N_Port profile
  - Limits domain identifier consumption
- Multiplexing
  - Extends connectivity
  - Utilizes existing infrastructure



NPIV Device

Login Sequence

- NPIV Device
  - Performs fabric login for base N_Port
  - Performs FDISC login for each additional Fibre Channel Address desired
    - Number depends on supported device ports
  - Allocates FCA's to device ports
  - Forwards all other requests to fabric F_Port
- N_Port
  - Performs normal Fabric Login
  - Receives FCA from NPIV Device
  - Processes remaining fabric service requests normally



NPIV in the Standard

References (sort of ;-)

- FC-LS
  - 4.2.26 Discover F_Port Service Parameters (FDISC)
    - 4.2.26.1 Description
      - The FDISC ELS shall transfer Service Parameters from the initiating Nx_Port to the Fx_Port at wellknown F_Port_ID (i.e., FFFFFEh). This provides the means for the exchange of Service Parameters and the assignment of additional N_Port_IDs without changing service parameters.
- FC-GS
  - 6.2.3.4.3 Platform Type
    - The format of the Platform Type attribute, shall be as shown in table 122.
    - 00 00 00 14 N_Port Virtualizer

Table 122 – Platform Type - encoding

Encoded value (hex)	Description
00 00 00 01	Obsolete
00 00 00 02	Other - none of the following
00 00 00 05	Gateway
00 00 00 06	Obsolete
00 00 00 07	Obsolete
00 00 00 08	Obsolete
00 00 00 09	Obsolete
00 00 00 0A	Host
00 00 00 0B	Storage subsystem
00 00 00 0C	Obsolete
00 00 00 0D	Obsolete
00 00 00 0E	Storage access device
00 00 00 0F	Wavelength division multiplexer
00 00 00 11	NAS server
00 00 00 12	Bridge
00 00 00 13	Virtualization device
00 00 00 14	N_Port Virtualizer
xx xx xx FF	Multi-function device (see table 123 for values to fill in for xx xx xx)
all others	Reserved

NPIV Switch

Goals

- Define operation of existing implementations

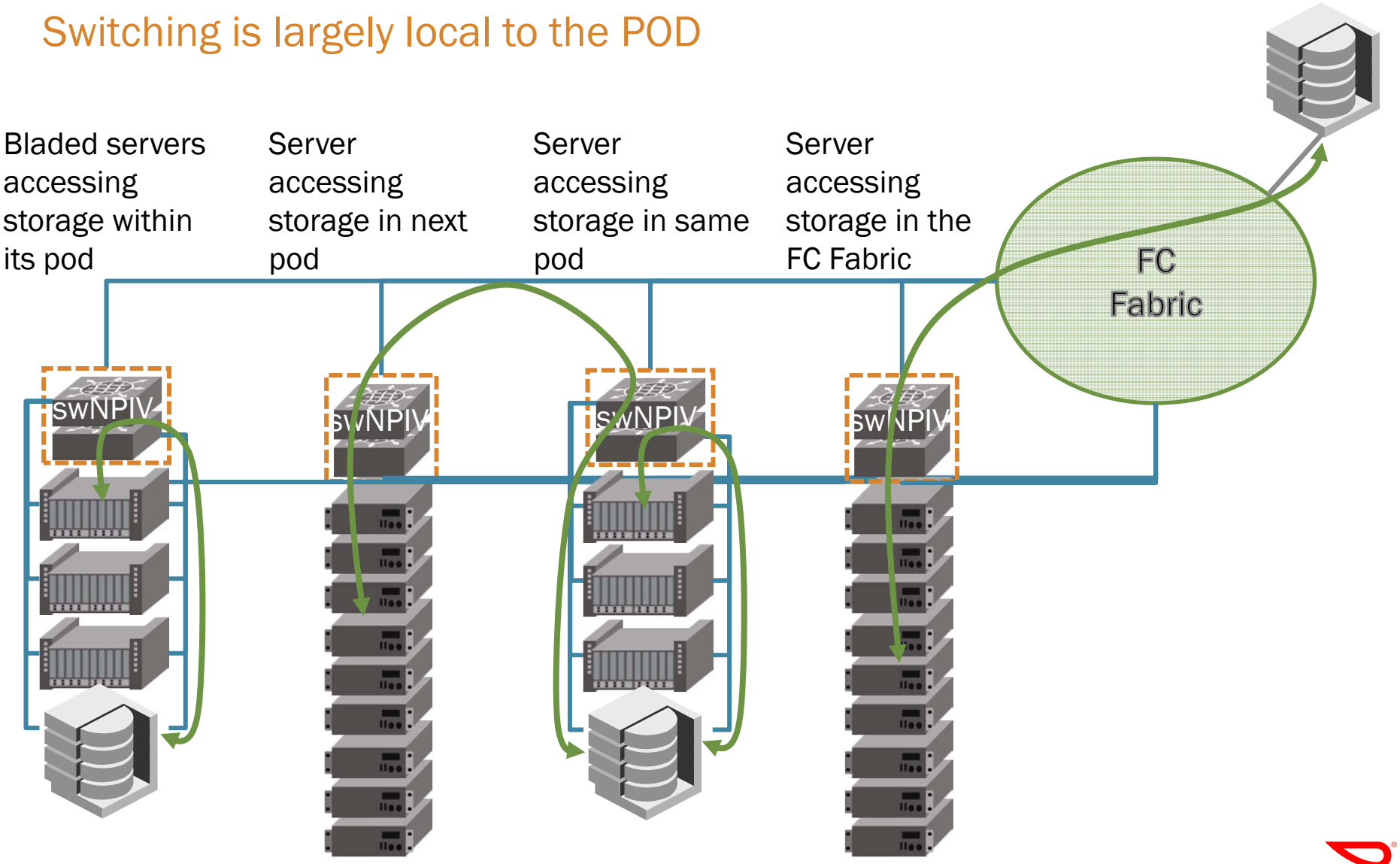
- Include NPIV operation in current activities

Use Case

"Local Switching"

NPIV Switch

Switching is largely local to the POD



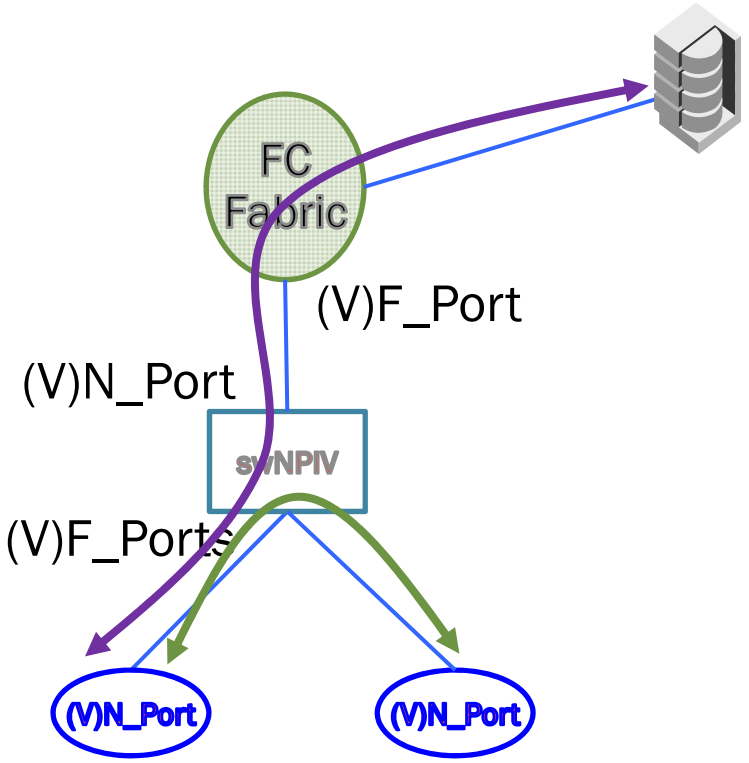
Proposal

NPIV Switch

NPIV Switch

Operation

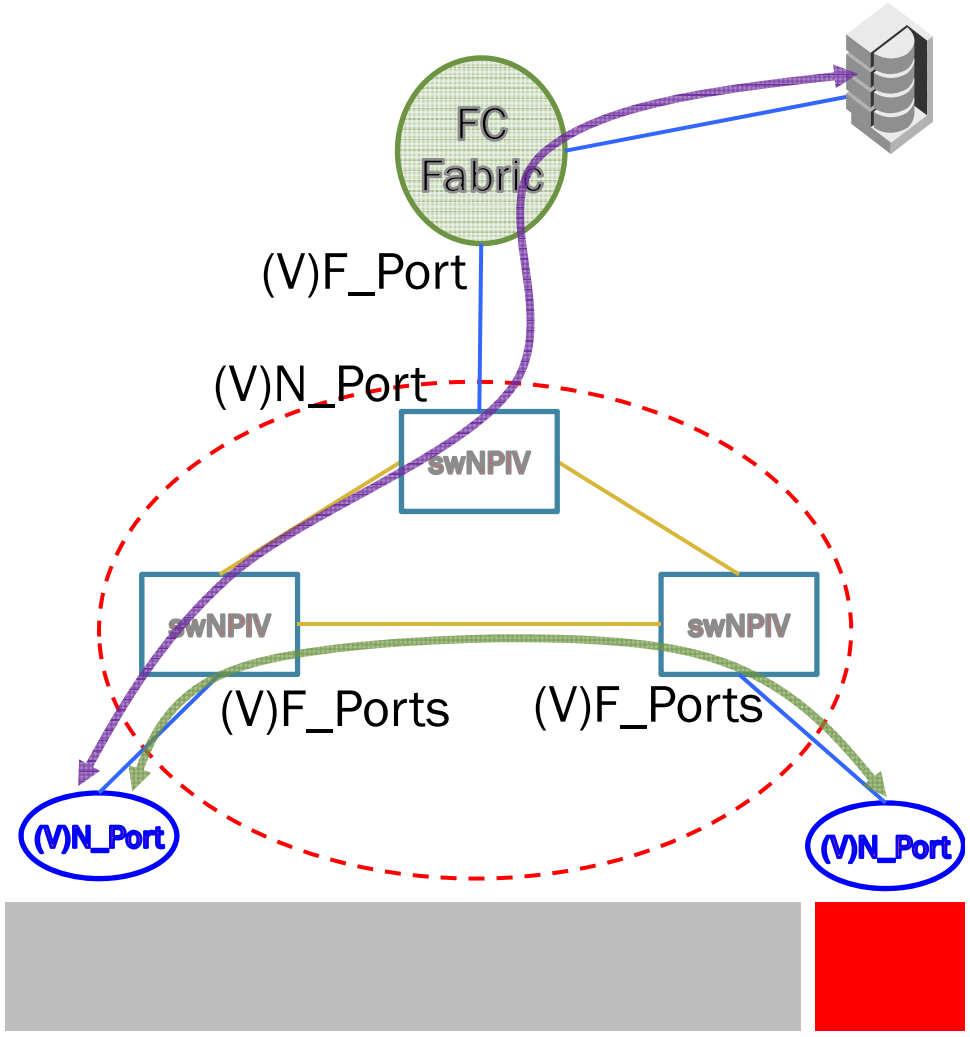
- Function
  - Fabric attachment is as a (V)N_Port
  - Device attachment appears as a (V)F_Port
  - NPIV protocol is utilized to allocate desired FC addresses
- Attributes
  - Forwarding efficiency of a Virtual Domain
  - Deployment simplicity of a single device
  - The NPIV Switch leverages FC services of the attached fabric



NPIV Switch

Characteristics

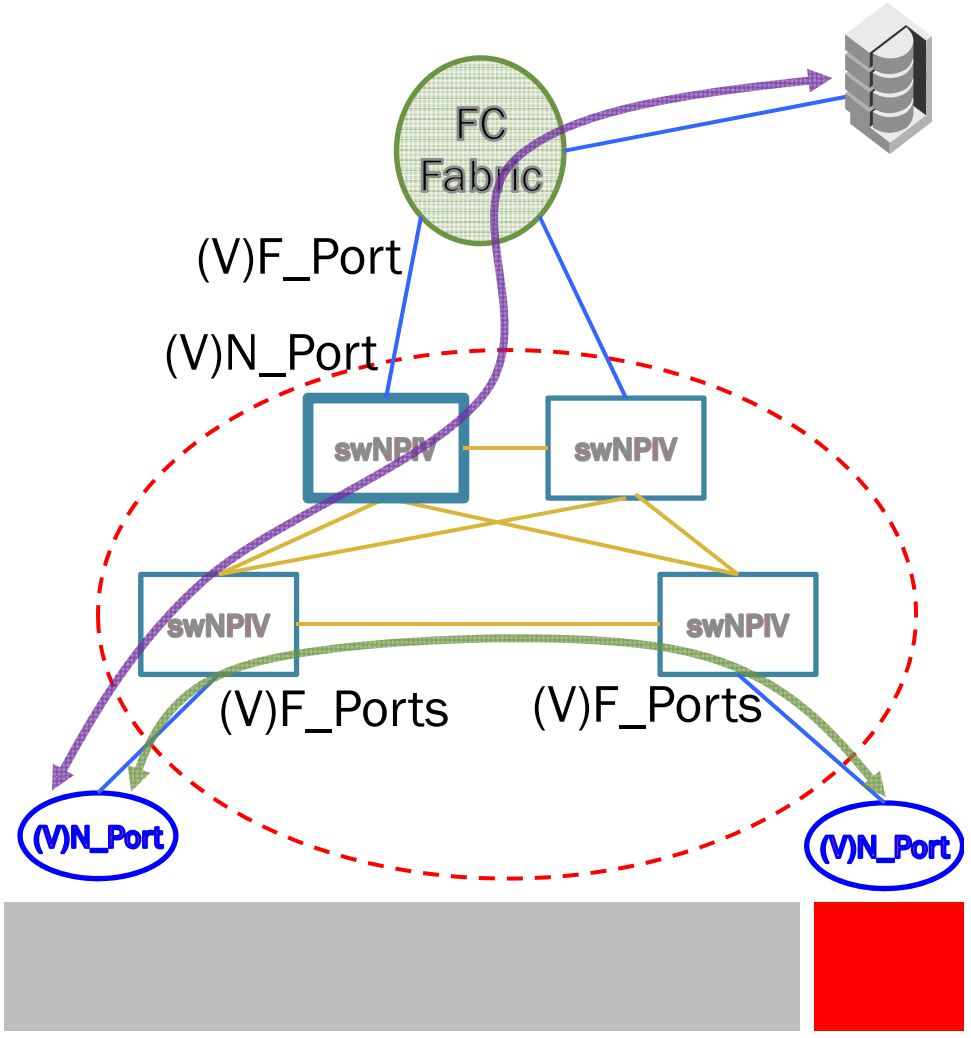
- All devices log into FC fabric
  - (V)N_Port to Fabric (V)F_Port link
- Name service provided by fabric
- Zoning service provided by fabric
- No additional domains consumed
- Routing and zoning extracted by swNPIV via proxy behavior
- “Local Switching” used to optimize data plane flow
- *Simplified interoperability*



NPIV Switch

Redundancy (possibly)

- Same characteristics as non-redundant configuration
- NPIV Switches at the fabric edge provide redundant access to the fabric
- All devices log into FC fabric via a Primary NPIV Switch
  - (V)N_Port to Fabric (V)F_Port link
- Non-primary NPIV Switches provide redundant access to the fabric in the event the primary NPIV Switch fails



NPIV Switch

Proposal

- Let's complete the definition of NPIV Switch
  - Define what's already available
  - Extend what was started in FC-GS as a Platform Type
- Let's formally address NPIV in the current Distributed Switch effort
  - We can associate it with the current FC-SW-6 work
- Let's provide a minimalist solution for interoperability

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End of Frame

Thank You