Nexus 1000v Port-Channel Best Practices

The Nexus 1000v requires port-channels for port-profiles containing more than one interface per host. This document describes best practices for deploying port-channels on N1k. Please let me know if your topology is not covered by the examples in this document.

Modification History

Rev.	Date	Originator	Release	Comment
1.0	06/12/11	Matthew Wronkowski	-	Original version
1.1	09/5/11	Matthew Wronkowski		Added N7k 'lacp suspend-individual' command
1.2	05/2/12	Matthew Wronkowski		Added single-homed static port-channel configuration.

Table of Contents

N1k on UCS-B in End-Host mode

Cisco UCS uses two diverse paths between the blade and upstream network. Currently, the Fabric Interconnects does not support LACP/vPC southbound toward the blades. This means a static port-channel from the N1k perspective must be used. Mac Pinning is required since the upstream switches do not support multi-chassis etherchannel.

```
# VSM configuration
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 100, 101, 102, 103, 200 - 300
  channel-group auto mode on mac-pinning
  no shutdown
  system vlan 100,101,102,103
  state enabled

# Upstream switch configuration
 -None required
```

N1k on UCS-C or Rack Mount servers connected to Nexus 5k/7k switches with vPC

In this topology each rack server is physically connected to two different Nexus switches – one cable to each switch. LACP is the preferred mode as it allows the best traffic distribution and non-disruptive addition/subtraction of links. It is assumed the upstream Nexus switches already have a vPC peer-link configured.

```
# VSM configuration
feature lacp
lacp offload
port-channel load-balance ethernet source-mac
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 100, 101, 102, 103, 200 - 300
  channel-group auto mode active
  no shutdown
  system vlan 100,101,102,103
  state enabled

# Nexus 5k/7k switches #1 & #2 configuration
interface port-channel1000
  switchport mode trunk
  vpc 1000
  switchport trunk allowed vlan 100-103,200-300
  spanning-tree port type edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
```

```
    no lacp suspend-individual     <- Nexus 7k only!!!
!
interface Ethernet1/11
  description ESX-Host1
  switchport mode trunk
  switchport trunk allowed vlan 100-103,200-300
  spanning-tree port type edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
  channel-group 1000 mode active
```

N1k on UCS-C or Rack Mount servers connected to switches without vPC

In this topology each rack server is physically connected to two different switches but vPC is not available. The only supported configuration is mac-pinning. This configuration is identical to that used on UCS-B. A static port-channel (mode on) is not supported since the upstream switches do not support a multi-chassis-etherchannel technology.

```
# VSM configuration
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 100, 101, 102, 103, 200 - 300
  channel-group auto mode on mac-pinning
  no shutdown
  system vlan 100,101,102,103
  state enabled

# Upstream switch configuration
 -None required
```

N1k on UCS-C or Rack Mount servers connected to 6500 VSS or stacking switches

In this topology the upstream switches act as a single chassis. This allows N1k to connect using LACP.

```
# VSM configuration
feature lacp
lacp offload
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 100, 101, 102, 103, 200 - 300
  channel-group auto mode active
  no shutdown
  system vlan 100,101,102,103
  state enabled

# 6500 VSS configuration
interface Port-channel1000
```

```
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 100-103,200-300
  switchport mode trunk
  spanning-tree portfast edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
interface GigabitEthernet1/1/1
  description ESX-Host1 adapter 1
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 100-103,200-300
  switchport mode trunk
  spanning-tree portfast edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
  channel-group 1000 mode active
interface GigabitEthernet2/1/1
  description ESX-Host1 adapter 2
  switchport
  switchport trunk encapsulation dot1q
  switchport trunk allowed vlan 100-103,200-300
  switchport mode trunk
  spanning-tree portfast edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
  channel-group 1000 mode active
```

N1k on UCS-C or Rack Mount servers connected to a single upstream switch using a static port-channel

In this topology the servers are single-homed to an upstream switch. This topology provides no switch redundancy and is not a best practice.

```
# VSM configuration
port-profile type ethernet system-uplink
  vmware port-group
  switchport mode trunk
  switchport trunk allowed vlan 100, 101, 102, 103, 200 - 300
  channel-group auto mode on
  no shutdown
  system vlan 100,101,102,103
  state enabled
# Upstream Nexus switch
interface port-channel 1000
  switchport mode trunk
  switchport trunk allowed vlan 100-103,200-300
  spanning-tree port type edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
!
```

```
interface Ethernet1/11
  description ESX-Host1
  switchport mode trunk
  switchport trunk allowed vlan 100-103,200-300
  spanning-tree port type edge trunk
  spanning-tree bpduguard enable
  spanning-tree bpdufilter enable
  channel-group 1000 mode on
```