

Virtual Networking NetPerformer[®] System Reference



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Virtual Networking over PowerCell

This chapter includes the following:

- [Overview](#)
- [Parameters for Virtual Networking](#)
- [Display Virtual Network Numbers](#)

1.1 Overview

In NetPerformer, routing and multiplexing of the user traffic over the wide area network (WAN) is done by the Cell Relay (CR) module. The NetPerformer Cell relay module establishes the user connections, between a local and remote unit, by using the NetPerformer unit names and user port numbers. The links between the units must be configured with the PVCR protocol to operate in PowerCell mode.

By default, when many links are going to the same remote unit, load balancing is automatically activated by PowerCell. This means that the Cell Relay function decides automatically onto which PVCR link it transmits the user traffic/cells, which are sent sequentially on each PVCR links going to the remote destination. A mechanism in the PowerCell protocol, using sequence numbering, is used to guaranty that cells are put back in the right order at the receiving end.

The new Virtual Networking (VN) feature, introduced in software v10.4.2, is an alternate mechanism to PowerCell that de-activates the Cell Relay load balancing mechanism. With Virtual Networking, it is the operator that specifies (through the NetPerformer PowerCell link configuration) which user traffic will use which PVCR link. In that mode the NetPerformer can be set to transmit specific user traffic/cells on specific PVCR links without any load balancing occurring.

NOTE: NetPerformer cannot operate in both modes simultaneously. In fact, Virtual Networking is disabled by default in NetPerformer and needs to be activated through a global parameter if required. Finally, all the NetPerformer units in the same network should be configured the same way, in regards to Virtual Networking being enabled or not, for this function to work properly.

1.2 Parameters for Virtual Networking

Virtual Networking has the following parameters:

1.2.1 Global / Virtual networking over PowerCell

Console	SNMP	Text-based Config
Global / Virtual networking over PowerCell	npsysVirtNetActive	[npsys] VirtNetActive

Description: Activate the virtual networking over PowerCell.

Values: NO and YES; default NO

1.2.2 Global / Virtual network number for unit routing

Console	SNMP	Text-based Config
Global / Virtual network number for unit routing	npsysRipbcxVirtNetNo	[npsys] RipbcxVirtNetNo

Description: Assign a virtual number for the unit routing, which is the mechanism used by NetPerformer to exchange the unit name routing tables used to establish the cell relay user connections.

Values: 0 to 255; default 0

1.2.3 Global / Virtual network number for relays

Console	SNMP	Text-based Config
Global / Virtual network number for relays	npsysRopVirtNetNo	[npsys] RopVirtNetNo

Description: Assign a virtual number for the relay function, which is the mechanism used by NetPerformer to relay from the local console to the remote console through the cell relay link.

Values: 0 to 255; default 0

1.2.4 WANx / List of virtual network numbers

Console	SNMP	Text-based Config
WAN x / List of virtual network numbers	ifwanVirtNetNoList	[ifwan #] VirtNetNoList

Description: Assign a range of virtual numbers to a PVCR link. This parameter is only available for the PVCR protocol on a WAN link.

Values: Numbers between 0 and 255 in a range format; default 0

1.2.5 WAN x / Link rank

Console	SNMP	Text-based Config
WAN x / Link rank	ifwanLinkRank	[ifwan #] LinkRank

Description: Assign a rank number to a PVC/R WAN link, which is used to determine which link will be used when multiple links, set to the same virtual network, are going to the same location. This parameter indicates which link will be used primarily and which ones will be used secondarily in case of main link failure.

Values: Numbers between 1 and 10; default 1

1.2.6 WAN x / Virtual network number

Console	SNMP	Text-based Config
WAN x / Virtual network number	ifwanVirtNetNo	[ifwan x] VirtNetNo

Description: Assign a virtual number to a specific user port. This parameter is only available to the transparent protocols (HDLC, T-ASYNC, R-ASYNC, BSC, COP, PASSTHRU and SS7).

Values: 0 to 255; default 0

1.2.7 WAN Link x / Virtual network number for link management

Console	SNMP	Text-based Config
WAN Link x / Virtual network number for link management	ifwanLinkVirtNetNo	[ifwan #] LinkManagementVirtNetNo

Description: Assign a virtual number for the link management, which is an option on the E1 link configuration.

Values: 0 to 255; default 0

1.2.8 Slot channel x / Virtual network number

Console	SNMP	Text-based Config
Slot channel x / Virtual network number	ifvceVirtNetNo	[ifvce #] VirtNetNo

Description: Assign a virtual number to a specific voice port.

Values: 0 to 255; default 0

1.2.9 PU x / Virtual network number

Console	SNMP	Text-based Config
PU x / Virtual network number	puVirtNetNo	[pu #] VirtNetNo

Description: Assign a virtual number to a specific SNA channel. This parameter is only available to the SNA channels going through a link (SDLC-LINK, LLC-LINK, BAN-LINK and BNN-LINK).

Values: 0 to 255; default 0

1.2.10 FR PVC x / List of virtual network numbers

Console	SNMP	Text-based Config
FR PVC x / List of virtual network numbers	pvcVirtNetNoList	[frpvc #] VirtNetNoList

Description: Assign a range of virtual numbers to a PVCR mode Frame Relay PVC.

Values: Numbers between 0 and 255 in a range format; default 0

1.2.11 PVC x / Link rank

Console	SNMP	Text-based Config
PVC x / Link rank	frpvcLinkRank	[frpvc #] LinkRank

Description: Assign a rank number to a PVCR Frame Relay link, which is used to determine which link will be used when multiple links, set to the same virtual network, are going to the same location. This parameter indicates which link will be used primarily and which ones will be used secondarily in case of main link failure.

Values: Numbers between 1 and 10; default 1

1.2.12 PVC x / Virtual network number

Console	SNMP	Text-based Config
PVC x / Virtual network number	pvcVirtNetNo	[frpvc #] VirtNetNo

Description: Assign a virtual number to a specific PVC user channel. This parameter is only available to the multiplex modes MULTIPLEX and SP-MULTIPLEX PVCs.

Values: 0 to 255; default 0

1.2.13 Bridge / Virtual network number

Console	SNMP	Text-based Config
Bridge / Virtual network number	bridgeVirtNetNo	bridgeVirtNetNo

Description: Assign a virtual number to the bridge channels.

Values: 0 to 255; default 0

1.2.14 IPX / Global / Virtual network number

Console	SNMP	Text-based Config
IPX / Global / Virtual network number	ipxVirtNetNo	[ipx] VirtNetNo

Description: Assign a virtual number to the IPX channels.

Values: 0 to 255; default 0

1.2.15 IP / Global / Virtual network number

Console	SNMP	Text-based Config
IP / Global / Virtual network number	npipVirtNetNo	[npip] VirtNetNo

Description: Assign a virtual number to the IP channels.

Values: 0 to 255; default 0

1.3 Virtual Networking Classification Scenario

In the setup example below (Figure 1-1), predefined voice (FXS #101 and #102) are assigned to Virtual Network #1, Serial Data (Port #1) is assigned to Virtual Network #2 and IP LAN Data is assigned to Virtual Network #3. This is done so that these three traffic types will use separate PVCs (routes) going to the same destination unit.

NOTE: Different IP Precedence/DiffServ (DSCP) Quality of Service settings can be applied to these three IP link streams, allowing the IP VSAT modem to prioritize the links based on their importance, for example using the following approaches:

DSCP Value	Decimal Value	Meaning	Equivalent IP Precedence Value
101 110	46	High Priority	101 - Critical
001 100	12	Medium Priority	001 - Priority
000 000	0	Best Effort	000 - Routine

This table lists the commonly used DSCP values described in RFC 2475.

1.3.1 Virtual Networking Configuration for Traffic Classification of Serial Data and Predefined Voice Connection

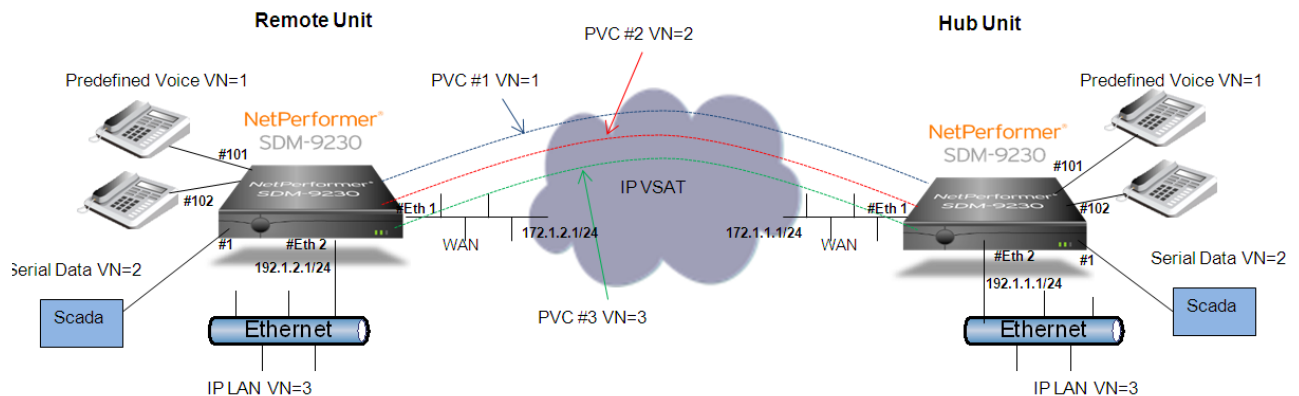


Figure 1-1: Virtual Networking over IP

1.3.1.1 HUB Configuration

The following provides essential parameter values for configuring the NetPerformer unit at the Hub site as per [Figure 1-1](#):

HUB Global Parameters

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:IP) ? GLOBAL
GLOBAL> Unit name.....HUB
GLOBAL> PowerCell version.....V1
GLOBAL> Virtual networking over PowerCell.....YES
GLOBAL> Virtual network number for unit routing.....0
GLOBAL> Virtual network number for relays.....0
GLOBAL> Default gateway.....172.001.001.001
GLOBAL> Jitter buffer (ms).....40
GLOBAL> Global CIR for FR over IP.....100000000
```

HUB Eth1 Port Parameters

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:GLOBAL) ? PORT
Port number (ETH1/ETH2/CSL/1,def:ETH1) ?
PORT ETH 1> Protocol.....ETH AUTO
PORT ETH 1> Link integrity.....YES
PORT ETH 1> LAN speed (mbps).....AUTO
PORT ETH 1> DHCP.....DISABLE
PORT ETH 1> IP address 1.....172.001.001.010
PORT ETH 1> Subnet mask 1 (number of bits).....24 {255.255.255.000}
PORT ETH 1> IP RIP.....DISABLE
```

HUB Eth2 Port Parameters

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:SLOT) ? PORT
Port number (ETH1/ETH2/CSL/1,def:1) ? ETH2
PORT ETH 2> Protocol.....ETH AUTO
PORT ETH 2> Link integrity.....YES
PORT ETH 2> LAN speed (mbps).....AUTO
PORT ETH 2> DHCP.....DISABLE
PORT ETH 2> IP address 1.....192.001.001.001
PORT ETH 2> Subnet mask 1 (number of bits).....24 {255.255.255.000}
PORT ETH 2> IP RIP.....DISABLE
```

HUB Extended Parameters

```
HUB>EP
EXTENDED PARAMETERS
IP> (MULTIHOMEDTYPE) Multihomed type.....DISABLED
HUB>
```

HUB PVC Parameters

```

HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ? PVC
PVC number (1-300,def:3) ? 1
PVC 1> Mode.....PVCR
PVC 1> Port.....0
PVC 1> DLCI address.....101
PVC 1> Committed Information rate.....64000
PVC 1> Remote unit name.....REMOTE
PVC 1> List of virtual network numbers.....0,1
PVC 1> Type.....DEDICATED
PVC 1> IP address.....010.000.000.001
PVC 1> Subnet mask (number of bits).....24 {255.255.255.000}
PVC 1> Frame over IP, source.....172.001.001.010
PVC 1> Frame over IP, destination.....172.001.002.010
PVC 1> Frame over IP, DSCP.....46
PVC 1> Link rank.....1

```

```

HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PVC) ?
PVC number (1-300,def:1) ? 2
PVC 2> Mode.....PVCR
PVC 2> Port.....0
PVC 2> DLCI address.....102
PVC 2> Committed Information rate.....64000
PVC 2> Remote unit name.....REMOTE
PVC 2> List of virtual network numbers.....0,2
PVC 2> Type.....DEDICATED
PVC 2> IP address.....010.000.000.001
PVC 2> Subnet mask (number of bits).....24 {255.255.255.000}
PVC 2> Frame over IP, source.....172.001.001.010
PVC 2> Frame over IP, destination.....172.001.002.010
PVC 2> Frame over IP, DSCP.....12
PVC 2> Link rank.....1

```

```

HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PVC) ?
PVC number (1-300,def:2) ? 3
PVC 3> Mode.....PVCR
PVC 3> Port.....0
PVC 3> DLCI address.....103
PVC 3> Committed Information rate.....256000
PVC 3> Remote unit name.....REMOTE
PVC 3> List of virtual network numbers.....0,3
PVC 3> Type.....DEDICATED
PVC 3> IP address.....010.000.000.001
PVC 3> Subnet mask (number of bits).....24 {255.255.255.000}
PVC 3> Frame over IP, source.....172.001.001.010
PVC 3> Frame over IP, destination.....172.001.002.010
PVC 3> Frame over IP, DSCP.....0

```

PVC 3> Link rank.....1

HUB FXS Voice Port Parameters

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ? SLOT
SLOT> Slot number (1/2/3,def:1) ?
Item (LINK/CHANNEL,def:LINK) ?
PORT 100> Status.....ENABLE
```

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:SLOT) ?
SLOT> Slot number (1/2/3,def:1) ?
Item (LINK/CHANNEL,def:LINK) ? CHA
SLOT> Port number (1-4/ALL,def:1) ?
VOICE 101> Protocol.....ACELP-CN
VOICE 101> Activation type.....PREDEFINED
VOICE 101> Remote unit.....REMOTE
VOICE 101> Virtual network number.....1
VOICE 101> Remote port number.....101
```

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:SLOT) ?
SLOT> Slot number (1/2/3,def:1) ?
Item (LINK/CHANNEL,def:CHANNEL) ?
SLOT> Port number (1-4/ALL,def:1) ? 2
VOICE 102> Protocol.....ACELP-CN
VOICE 102> Activation type.....PREDEFINED
VOICE 102> Remote unit.....REMOTE
VOICE 102> Virtual network number.....1
VOICE 102> Remote port number.....102
```

HUB User/Serial Port Parameters

```
HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PVC) ? PORT
Port number (ETH1/ETH2/CSL/1,def:ETH1) ? 1
PORT 1> Protocol.....T-ASYNC
PORT 1> Interface.....DCE-RS232
PORT 1> Clocking mode.....ASYNC
PORT 1> Port speed (bps).....9600
PORT 1> Format.....8-NONE
PORT 1> Framing active.....NO
PORT 1> Maximum idle characters.....2
PORT 1> Modem control signal.....STATIC
PORT 1> Remote unit.....REMOTE
PORT 1> Virtual network number.....2
PORT 1> Class.....3
PORT 1> Remote port number.....1
```

HUB IP Global Parameters

```

HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ? IP
Item (BOOTP/DNS/FTP/GLOBAL/NAT/OSPF/RADIUS/SNMP/SOURCE-STATIC/STATIC/
TELNET/TIMEP,def:STATIC) ? GLOBAL
IP> Router.....ENABLE
IP> Allow LAN-to-LAN IP routing.....NO
IP> Virtual network number.....3

```

HUB IP Static Route Parameters

```

HUB>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:IP) ? IP
Item (BOOTP/DNS/FTP/GLOBAL/NAT/OSPF/RADIUS/SNMP/SOURCE-STATIC/STATIC/
TELNET/TIMEP,def:GLOBAL) ? STATIC
IP STATIC 1> Valid.....YES
IP STATIC 1> Destination address.....192.001.002.000
IP STATIC 1> Subnet mask (number of bits).....24 {255.255.255.000}
IP STATIC 1> Next hop.....010.000.000.001

```

1.3.1.2 REMOTE Configuration

The following provides essential parameter values for configuring the NetPerformer unit at the Remote location, as per [Figure 1-1](#):

REMOTE Global Parameters

```

REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:IP) ? GLOBAL
GLOBAL> Unit name.....REMOTE
GLOBAL> PowerCell version.....V1
GLOBAL> Virtual networking over PowerCell.....YES
GLOBAL> Virtual network number for unit routing.....0
GLOBAL> Virtual network number for relays.....0
GLOBAL> Unit routing version.....1
GLOBAL> Default gateway.....172.001.002.001
GLOBAL> Jitter buffer (ms).....40
GLOBAL> Global CIR for FR over IP.....100000000

```

REMOTE Eth1 Port Parameters

```

REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:GLOBAL) ? PORT
Port number (ETH1/ETH2/CSL/1,def:ETH2) ? ETH1
PORT ETH 1> Protocol.....ETH AUTO
PORT ETH 1> Link integrity.....YES
PORT ETH 1> LAN speed (mbps).....AUTO
PORT ETH 1> DHCP.....DISABLE

```

```
PORT ETH 1> IP address 1.....172.001.002.010
PORT ETH 1> IP RIP.....DISABLE
```

REMOTE Eth2 Port Parameters

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ?
Port number (ETH1/ETH2/CSL/1,def:ETH1) ? ETH2
PORT ETH 2> Protocol.....ETH AUTO
PORT ETH 2> Link integrity.....YES
PORT ETH 2> LAN speed (mbps).....AUTO
PORT ETH 2> DHCP.....DISABLE
PORT ETH 2> IP address 1.....192.001.002.001
PORT ETH 2> Subnet mask 1 (number of bits).....24 {255.255.255.000}
PORT ETH 2> IP RIP.....DISABLE
```

REMOTE Extended Parameters

```
REMOTE>EP
EXTENDED PARAMETERS
IP> (MULTIHOMEDTYPE) Multihomed type.....DISABLED
REMOTE>
```

REMOTE PVC Parameters

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ? PVC
PVC number (1-300,def:3) ? 1
PVC 1> Mode.....PVCr
PVC 1> Port.....0
PVC 1> DLCI address.....101
PVC 1> Committed Information rate.....64000
PVC 1> Remote unit name.....HUB
PVC 1> List of virtual network numbers.....0,1
PVC 1> Type.....DEDICATED
PVC 1> IP address.....010.000.000.002
PVC 1> Subnet mask (number of bits).....24 {255.255.255.000}
PVC 1> Frame over IP, source.....172.001.002.010
PVC 1> Frame over IP, destination.....172.001.001.010
PVC 1> Frame over IP, DSCP.....46
PVC 1> Link rank.....1
```

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PVC) ?
PVC number (1-300,def:1) ? 2
PVC 2> Mode.....PVCr
PVC 2> Port.....0
PVC 2> DLCI address.....102
PVC 2> Committed Information rate.....64000
PVC 2> Remote unit name.....HUB
PVC 2> List of virtual network numbers.....0,2
```



```

PVC 2> Type.....DEDICATED
PVC 2> IP address.....010.000.000.002
PVC 2> Subnet mask (number of bits).....24 {255.255.255.000}
PVC 2> Frame over IP, source.....172.001.002.010
PVC 2> Frame over IP, destination.....172.001.001.010
PVC 2> Frame over IP, DSCP.....12
PVC 2> Link rank.....1

```

REMOTE>DP

DISPLAY PARAMETERS

Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/SS7/USER/ALL,def:PVC) ?

PVC number (1-300,def:2) ? 3

PVC 3> Mode.....PVCR

PVC 3> Port.....0

PVC 3> DLCI address.....103

PVC 3> Committed Information rate.....256000

PVC 3> Remote unit name.....HUB

PVC 3> List of virtual network numbers.....0,3

PVC 3> Type.....DEDICATED

PVC 3> IP address.....010.000.000.002

PVC 3> Subnet mask (number of bits).....24 {255.255.255.000}

PVC 3> Frame over IP, source.....172.001.002.010

PVC 3> Frame over IP, destination.....172.001.001.010

PVC 3> Frame over IP, DSCP.....0

PVC 3> Link rank.....1

REMOTE FXS Voice Port Parameters

REMOTE>DP

DISPLAY PARAMETERS

Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/SS7/USER/ALL,def:PVC) ? SLOT

SLOT> Slot number (1/2/3,def:1) ? 1

Item (LINK/CHANNEL,def:LINK) ?

PORT 100> Status.....ENABLE

REMOTE>DP

DISPLAY PARAMETERS

Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/SS7/USER/ALL,def:SLOT) ?

SLOT> Slot number (1/2/3,def:1) ? 1

Item (LINK/CHANNEL,def:LINK) ? CHA

SLOT> Port number (1-4/ALL,def:1) ? 1

VOICE 101> Protocol.....ACELP-CN

VOICE 101> Activation type.....PREDEFINED

VOICE 101> Remote unit.....HUB

VOICE 101> Virtual network number.....1

VOICE 101> Remote port number.....101

REMOTE>DP

DISPLAY PARAMETERS

Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/SS7/USER/ALL,def:SLOT) ?

SLOT> Slot number (1/2/3,def:1) ?

Item (LINK/CHANNEL,def:CHANNEL) ?

SLOT> Port number (1-4/ALL,def:1) ? 2

```
VOICE 102> Protocol.....ACELP-CN
VOICE 102> Activation type.....PREDEFINED
VOICE 102> Remote unit.....HUB
VOICE 102> Virtual network number.....1
VOICE 102> Remote port number.....102
```

REMOTE User/Serial Port Parameters

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:SLOT) ? PORT
Port number (ETH1/ETH2/CSL/1,def:ETH2) ? 1
PORT 1> Protocol.....T-ASYNC
PORT 1> Interface.....DCE-RS232
PORT 1> Clocking mode.....ASYNC
PORT 1> Port speed (bps).....9600
PORT 1> Format.....8-NONE
PORT 1> Framing active.....NO
PORT 1> Maximum idle characters.....2
PORT 1> Modem control signal.....STATIC
PORT 1> Remote unit.....HUB
PORT 1> Virtual network number.....2
PORT 1> Class.....3
PORT 1> Remote port number.....1
PORT 1> Redundant link.....NO
```

REMOTE IP Global Parameters

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:PORT) ? IP
Item (BOOTP/DNS/FTP/GLOBAL/NAT/OSPF/RADIUS/SNMP/SOURCE-STATIC/STATIC/
TELNET/TIMEP,def:STATIC) ? GLOBAL
IP> Router.....ENABLE
IP> Allow LAN-to-LAN IP routing.....NO
IP> Virtual network number.....3
REMOTE>
```

REMOTE IP Static Route Parameters

```
REMOTE>DP
DISPLAY PARAMETERS
Item (BRIDGE/CLASS/CUSTOM/ELOG/GLOBAL/IP/IPX/PORT/PVC/REDUNDANCY/SLOT/
SS7/USER/ALL,def:IP) ?
Item (BOOTP/DNS/FTP/GLOBAL/NAT/OSPF/RADIUS/SNMP/SOURCE-STATIC/STATIC/
TELNET/TIMEP,def:GLOBAL) ? STATIC
IP STATIC 1> Valid.....YES
IP STATIC 1> Destination address.....192.001.001.000
IP STATIC 1> Subnet mask (number of bits).....24 {255.255.255.000}
IP STATIC 1> Next hop.....010.000.000.002
```

1.4 Display Virtual Network Numbers

Similar to the Display PowerCell Connections (DX) Command, the Display Virtual Network (DVN) command displays all active internal connections on the NetPerformer unit with additional information regarding their respective virtual networks.

To execute the DVN command enter DVN at the console command prompt.

1.4.1 DVN example

```
HUB>DVN
DISPLAY VIRTUAL NETWORK NUMBERS

GROUP to REMOTE [SDM-9230]
LINK 1938 [pvc] vn/no list: 0,1
LINK 1939 [pvc] vn/no list: 0,2
LINK 1940 [pvc] vn/no list: 0,3
CLASS 0
  CHANNEL MGMT1 to REMOTE      : vn/no 0
CLASS 1
  CHANNEL IP to REMOTE        : vn/no 3
CLASS 3
  CHANNEL PORT 1 to REMOTE 1   : vn/no 2
CLASS 32768
  CHANNEL to REMOTE           : vn/no 1
```

The DVN display includes:

- **GROUP:** Indicates the Unit name and product identification of the destination NetPerformer unit.
- **LINK:** The active WAN link. More than one link may be listed.
- **CLASS:** The classes sharing the bandwidth of the WAN link connection. Class 0 represents internally routed connections, which are always uncompressed.
- **CHANNEL:** The individual connections made via the NetPerformer for each class. These are identified as IP, IPX, routing (MGMT1) or console (RELAY) connections. The destination Unit name, transmission channel (tx), receiving channel (rx) and compression status are indicated for each connection.
- **VN/NO:** The Virtual Network numbers assigned to the links as well as the virtual network numbers used by each user channel.



Separate Dial Plans Using Virtual Networking

This chapter includes the following:

- [Overview](#)
- [Parameters for separate dial plans using virtual networking](#)

2.1 Overview

With v10.4.2 software, when virtual networking is enabled, NetPerformer has the ability to create voice MAP entries that are set to go to specific Virtual Networks. This is done by setting a list of virtual network numbers for each MAP table entry. This information is used by the NetPerformer to determine onto which Virtual Network (VN) over PowerCell it will send each switched voice call.

This solution provides the ability to separate voice ports on a NetPerformer unit and create switched voice sub-systems based on their assigned Virtual Networks. That means that when an incoming call/digit string enters a calling voice port, the virtual network number set on that voice port will be used by the NetPerformer to determine which MAP table entry will be used to place that voice call.

Both the MAP entry dial string and the virtual network set on that map entry have to match the calling voice port virtual network entry for the call to proceed. At the receiving end, the destination voice port needs also to be set to the same virtual network for the call to be successful. With this type of configuration it is also possible to have many identical speed dial numbers set in the MAP table, but assigned on different virtual network numbers.

Since only the voice ports set on the same Virtual Network can place and receive calls from each other, this type of solution automatically creates separate voice sub-systems that are totally isolated from each other. This can be useful to support different types of dial plans on the same NetPerformer unit but for different groups in an organization. For example, one group for operational voice lines and one group for administrative voice lines, and this without any possible dial number conflicts.

2.2 Parameters for separate dial plans using virtual networking

MAP x / List of virtual network numbers

Console	SNMP	Text-based Config
MAP x / List of virtual network numbers	none	[map #] VirtNetNoList

Description: Assign a range of virtual numbers to a MAP entry.

Values: Numbers between 0 and 255 in a range format; default 0.

2.2.1 Example: Separate Dial Plans for Switched Voice

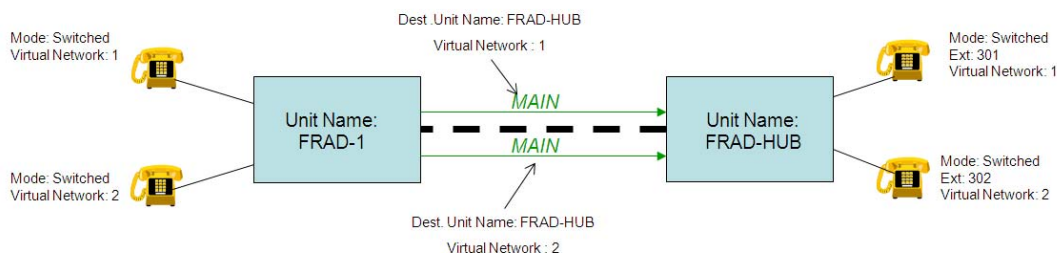


Figure 2-1: Separate Dial Plans for Switched Voice

Using the above setup (Figure 2-1), the voice configuration used is set in switched mode and split onto two different virtual networks. For example, on FRAD-1 unit, one voice port is set to Virtual Network 1 and one voice port to Virtual Network 2

```
VOICE 301> Activation type (def:PREDEFINED) ? SWITCHED
VOICE 301> V22 Modem relay (def:NONE) ?
VOICE 301> Virtual network number (0-255,def:0) ? 1
```

```
VOICE 302> Activation type (def:PREDEFINED) ? SWITCHED
VOICE 302> V22 Modem relay (def:NONE) ?
VOICE 302> Virtual network number (0-255,def:0) ? 2
```

Then two map entries with the same number are set in order to call two different voice extensions of the hub unit (FRAD-HUB) (one over VN =1, and one over VN=2), set as follows:

```
MAP> Operation (ADD/MODIFY/DELETE,def:ADD) ?
MAP > Entry digits (def:) ? 300
```

```
MAP 300.1> Map type.....NAME
MAP 300.1> Entry digits.....300
MAP 300.1> Destination name.....FRAD-HUB
MAP 300.1> List of virtual network numbers.....1
MAP 300.1> Destination extension source.....MAP
```

```
MAP 300.1> Destination extension.....301
MAP 300.1> Extended digits source.....NONE
MAP 300.1> Use SVC connection.....NO

MAP> Do you want to overload this entry (NO/YES,def:YES) ?

MAP> Position of the map to add (1-2,def:2) ?
MAP 300.2> Destination name (def:) ? FRAD-HUB
MAP 300.2> List of virtual network numbers (def:0) ? 2
MAP 300.2> Destination extension source (def:HUNT) ? MAP
MAP 300.2> Destination extension (def:) ? 302
MAP 300.2> Extended digits source (def:NONE) ?
MAP 300.2> Use SVC connection (def:NO) ?
MAP> Add another map entry (NO/YES,def:NO) ?
FRAD-1>
```

At the HUB unit, if the virtual network is set to 0 on the voice port ext 301 and 301, then calls coming from any voice ports of the remote unit 1 on speed dial 300 will not get answered. On the other end, if the virtual network is set to 1 on the FRAD-HUB voice ext 301 and set to 2 on the FRAD-HUB voice ext 302, then calls coming from the remote unit 1 on speed dial 300 will get answered by ext. 301 if coming from the virtual network 1 or get answered by ext. 302 when coming from the virtual network 2.

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