Virtual Partition Manager for IBM i
Starting at 10:00 am UK time by Janus Hertz

Series details, registration and replays of previous webinars from http://tinyurl.com/UK-PowerVM-VUG

Register by sending email to Jyoti Dodhia – jyoti_dodhia@uk.ibm.com

Upcoming sessions ..... 

Session 17: Updating Power Systems, I/O and HMC on 3rd October 2012, 10:00 - 11:00 BST (UK time)
Virtual Partition Manager (VPM) for IBM i

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Agenda

• Overview of iVirtualization
• New enhancements
• VPM based setup
• Things to consider
Virtual Partition Manager (VPM)

- Virtual Partition Manager (VPM) is a partition management tool that supports the creation of partitions that use only virtual I/O and does not require the HMC, SDMC or IVM.
- In addition to being able to manage Linux guest partitions, the VPM now supports creation and management of IBM i client partitions.
- VPM function is available on POWER6® and POWER7™ Express Servers™ that do not have an external management console (HMC or SDMC)
- Requirement IBM i 7.1 TR3 in the IBM i host partition
Where Do I Start with Installing IBM I hosting clients on Power system?

VPM based

Creating IBM i Client Partitions Using Virtual Partition Manager

Introduction

This Redpaper provides steps, considerations, limitations, and links to information regarding the creation of IBM I Client Partitions using the third generation of Virtual Partition Manager (VPM).

Beginning with IBM I 7.1, the Virtual Partition Manager was enhanced and now allows you to create and manage Linux partitions and IBM i partitions without the use of the Hardware Management Console (HMC), Systems Director Management Console (SDMC), or Integrated Virtualization Manager (IVM). It involves the use of VPM and the new support for Ethernet layer-2 bridging between a physical Ethernet adapter and a virtual Ethernet adapter that provides the ability for an IBM i partition to share a physical Ethernet connection with other partitions in the same system.

The intended audience for this Redpaper publication is advanced system administrators.

Virtual Partition Manager Enhancements to Create IBM i Partitions

The Virtual Partition Manager (VPM) is a partition management tool that supports the creation of partitions that use only virtual I/O and does not require the Hardware Management Console, Systems Director Management Console, or Integrated Virtualization Manager. In addition to being able to manage Linux guest partitions, the VPM now supports creation and management of IBM i partitions.

This enhanced VPM function is available on IBM POWER9® and IBM POWER7™ IBM Express Servers™ that do not have an external management console. With this enhancement to IBM I 7.1, the ability to create up to four IBM i partitions are enabled in VPM. Client IBM i partitions, which are created with VPM, use virtual I/O to connect back to the IBM I I/O server partition to access the physical disk and network. VPM in the IBM I I/O server

IBM i Client LPAR Quick Install Guide

Cover both VPM & HMC based Setups.

To get copy send email to Peter Croes

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peter_g_croes@nl.ibm.com
TechNote: Creating IBM i Client Partitions Using Virtual Partition Manager (VPM)

- http://www-01.ibm.com/support/docview.wss?uid=nas18a657691e95faa03862579130018604

Creating IBM i Client Partitions Using Virtual Partition Manager (VPM)

Virtual Partition Manager Enhancement to Create IBM i Partitions

The Virtual Partition Manager (VPM) is a partition management tool that supports the creation of partitions that use only virtual I/O and does not require the Hardware Management Console (HMC), Systems Director Management Console (SDMC) or Integrated Virtualization Manager (IVM). In addition to being able to manage Linux guest partitions, the VPM now supports creation and management of IBM i partitions.

This enhanced VPM function is available on POWER6 and POWER7 Express Servers that do not have an external management console. With this enhancement to IBM i 7.1, the ability to create up to four IBM i partitions are enabled in VPM. Client IBM i partitions, that are created with VPM, use virtual I/O to connect back to the IBM i I/O server partition to access the physical disk and network. VPM in the IBM i I/O server partition is used to create the virtual SCSI and virtual Ethernet adapters for the client partitions. The user is then be able to use Network Storage Spaces (NWSSTG) and Network Storage Descriptions (NWSD) in the IBM i I/O server partition to define the storage for the client partitions. Tape, disk, and optical are allowed to be virtualized to the client partitions.

The client IBM i partitions can be IBM i 7.1 or IBM i 6.1 with either 6.1 or 6.1.1 machine code.

Ethernet Layer-2 Bridging

IBM i V7R1 Technology Refresh(TR) Three has new support for Ethernet layer-2 bridging between a physical network and the Power Systems virtual Ethernet. Using layer-2 bridging, one Ethernet port in an IBM i partition can provide network access for other logical partitions on the same platform. This is similar in functionality to the Shared Ethernet Adapter (SEA) support provided by a Power Systems Virtual I/O Server (VIOS) partition.

This works by putting two Ethernet adapters (one physical, one virtual) into a mode where they can receive traffic that is not specifically destined for their address, and selectively sending those frames onto the other network according to the IEEE 802.1D standard (“bridging”the frames). Because of this, frames transmitted
Virtual versus Physic Hardware Resources

**Virtual I/O**
- IBM i host ASP function as SAN

**Physic I/O**
- Each partition owns I/O
- IBM i/AIX/Linux managed hardware
- IBM i/AIX/Linux independent from other partitions
IBM i Virtual Client Partitions

- IBM i-based Virtualization
  - IBM i partition uses I/O resources from another IBM i partition
  - Eliminates requirement to buy adapters and disk drives for each IBM i partition
  - Supports simple creation of additional partitions .... e.g., for test and development
  - Requires POWER6 (or later) systems with IBM i 6.1
  - Requires *PowerVM standard edition*
  - Can mix virtual and direct I/O in client
    - VPM based only virtual!

- Platform support
  - All POWER6 (and later) System models *(NOT PowerBlades)*

- Storage support
  - Determined by host IBM i partition (SAN, EXP24, integrated disk)

- LPAR management
  - HMC, (SDMC)
  - VPM (virtual partition manager) with IBM i 7.1 TR3 (new in oct.2011)
IBM i Host and Client Partitions: Overview

- **Requirements**
  - POWER6/7 hardware
  - IBM I 6.1 (or later) on host and client
  - PowerVM standard edition required,

- **DASD**
  - Hardware assigned to host LPAR in HMC/SDMC
  - DASD can be integrated or SAN
  - DASD virtualized as NWSSTG objects

- **Optical**
  - DVD drive in host LPAR virtualized directly (OPTxx)

- **Networking**
  - Network adapter (such as IVE) and Virtual Ethernet adapter in host LPAR
  - Virtual Ethernet adapter in client LPAR

- **Tape virtualization**
  - new from 7.1 TR2
Virtualization Enhancements

1. **IBM i 6.1 partition can host**
   - IBM i 7.1 and 6.1 partitions
   - AIX and Linux partitions (SLES & RHEL)
   - iSCSI attached System x and BladeCenter

2. **IBM i 7.1 partition can host**
   - IBM i 7.1 and 6.1 partitions (SLES & RHEL)
   - AIX and Linux partitions
   - iSCSI attached System x and BladeCenter

3. **PowerVM VIOS can host**
   - IBM i 7.1 and IBM i 6.1 partitions
   - AIX and Linux partitions (SLES & RHEL)
   - VIOS supports advanced virtualization technologies including Active Memory Sharing and NPIV
iVirtualization Enhancements in IBM i 7.1 Technology Refreshes

Following the GA of IBM i 7.1, IBM i point / modification releases have been replaced by a new release delivery mechanism called a Technology Refresh.

Technology Refreshes are also used to deliver new capabilities for iVirtualization (IBM i Host / IBM i Client partition concept).

- **TR1**: Support for embedded media changers (enabling unattended installs of IBM i Client partitions)
- **TR2**: IBM i to IBM i virtual tape support (info APAR II14615 lists supported devices and required PTFs)
- **TR3**: Ethernet layer-2 bridging and Virtual Partition Manager enhancement to create IBM i partitions

Detailed information on Technology Refreshes can be found via

IBM i host to IBM i Client Virtual Tape Summary

- **Allows IBM i client partitions to use tape devices attached to IBM i server partitions**
  - Client partition utilizes existing support for VIOS-hosted tape devices
  - Server partition utilizes existing support for Linux & Windows virtual tape clients
  - Error recovery & serviceability improvements

- **Only a subset of tape drives are supported for virtualization**
  - Physical tape drives only, no support for exporting tape image catalogs to IBM i clients
    - LTO3/LTO4/LTO5
    - DAT72/DAT160/DAT320
  - IOPlless attachment only, IOP attached tape drives are not supported by the IBM i client
  - **Tape library drives can only be virtualized when configured as a stand-alone device, they are not supported while in library mode**
System Requirements (as of 04/2011)

- **Server Partition Software**
  - IBM i 7.1 with Technology Refresh 2

- **Client Partition Software**
  - IBM i 7.1 with TR2 + MF52103
    -- OR --
  - IBM i 7.1 + client support PTFs
    -- OR --
  - IBM i 6.1.1 + client support PTFs.

- **Tape Device Hardware**
  - TS2230 HH-LTO3 SCSI drive
  - TS2240 HH-LTO4 SAS
  - TS23240 LTO4 SAS
  - FC 5746 HH-LTO4 SAS
  - TS2250 HH-LTO5 SAS
  - TS2350 LTO5 SAS
  - FC 5638 HH-LTO5 SAS
  - TS2900 in sequential mode with LTO4 or LTO5 SAS drives
  - TS3100 in sequential mode with LTO3, LTO4 or LTO5 SAS/FC drives
  - TS3200 in sequential mode with LTO3, LTO4 or LTO5 SAS/FC drives
  - FC 5907 DAT72 SAS
  - FC 5619 DAT160 SAS
  - FC 5661 DAT320 SAS
  - 7206 Model 336 external SCSI DAT72 drive.

- Info APAR: "II14615 - SUPPORT OF CLIENT VIRTUAL TAPE DEVICES ON SYSTEM I"
  - [https://www-304.ibm.com/support/docview.wss?uid=nas2e654bc8dc47fcbed8625781e0041eb64](https://www-304.ibm.com/support/docview.wss?uid=nas2e654bc8dc47fcbed8625781e0041eb64)
Network Virtualization with an IBM i Bridged Ethernet Adapter

- IBM i now provides the capability to share a physical network adapter by creating a Layer-2 Virtual Ethernet bridge
  - Bridges an internal VLAN switched managed by the POWER Hypervisor to the external LAN through a physical Ethernet adapter.
- Virtual Ethernet adapters in client IBM i partitions get direct access to outside network.
- Done though an option on the Hardware Management Console (HMC) or automatically via VPM
### Comparison of hosting options

<table>
<thead>
<tr>
<th></th>
<th>VIOS on POWER6/7 server</th>
<th>VIOS on POWER6/7 blade</th>
<th>IBM i hosting a client partition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum IBM i level required?</strong></td>
<td>i 6.1</td>
<td>i 6.1</td>
<td>i 6.1 for IBM i client partition</td>
</tr>
<tr>
<td><strong>Skills required</strong></td>
<td>VIOS, IBM i</td>
<td>VIOS, IBM i BladeCenter</td>
<td>IBM i</td>
</tr>
<tr>
<td><strong>Management interface</strong></td>
<td>HMC/SDMC or IVM*</td>
<td>IVM or SDMC*</td>
<td>HMC/SDMC or VPM*</td>
</tr>
<tr>
<td></td>
<td>* certain models</td>
<td>* certain models</td>
<td>* req. 7.1 TR3</td>
</tr>
<tr>
<td><strong>Console used</strong></td>
<td>HMC or IVM*</td>
<td>LAN console</td>
<td>HMC or VPM: LAN console</td>
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<tr>
<td>IBM i</td>
<td>* mkvt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Storage options</strong></td>
<td>Integrated / FC / FCoE</td>
<td>FC / SAS</td>
<td>NWSSTG</td>
</tr>
<tr>
<td><strong>Physical adapter ownership</strong></td>
<td>Optional</td>
<td>No</td>
<td>HMC: Optional</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VPM: No!</td>
</tr>
</tbody>
</table>
Partitioning - Getting Started

- Logon to DST or SST (strsst)
- Select option 5
Is the System Ready? Ups – HMC controlled...

Virtual Partition Manager is not supported and this service function cannot be started. The system is in a state that does not allow this operating system to partition the server. Refer to the Virtual Partition Manager documentation for more information.
Is the System Ready? YES – not HMC.

Logical Partitioning Environment Supported

Virtual Partition Manager is supported. The system is in a state that does allow this operating system to partition the server. Refer to the Virtual Partition Manager documentation for more information.

Press Enter to confirm using Virtual Partition Manager to partition the server.

F3=Exit   F12=Cancel
Free some CPU and Memory - Option 3 Work with partition configuration

Choose option 3: Work with partition configuration.
Free some CPU and Memory

![Virtualization Management Interface](image)

Available processor units: 0.00
Available memory (MB): 0
Memory region size (MB): 128

Type option, press Enter:
1=Display  2=Change  9=Delete

<table>
<thead>
<tr>
<th>Opt</th>
<th>ID</th>
<th>Name</th>
<th>Total</th>
<th>Units</th>
<th>Uncap</th>
<th>Weight</th>
<th>Memory (MB)</th>
<th>WLM</th>
<th>Virtual Ethernet ID</th>
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<tr>
<td>2</td>
<td>1</td>
<td>65-372DC</td>
<td>4</td>
<td>4.00</td>
<td>2</td>
<td>None</td>
<td>23552</td>
<td>2</td>
<td>1 2 3 4</td>
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</table>

F3=Exit  F5=Refresh  F11=Work with partition status  F12=Cancel
Free some CPU and Memory

Type changes, press Enter.

Partition identifier and name .............. 1  IBM171H
Number of available system processors ... 0
Number of partition processors .......... 1
Minimum / maximum number of processors  1 / 4
Use shared processor pool ............... 1, 1=Yes, 2=No
  Shared processor pool units .......... 0
  Minimum / maximum processor pool units 0, 10 / 4, 00
Uncapped processing ...................... 1, 1=Yes, 2=No
  Uncapped processing weight .......... 255
  Size of available memory (MB) ........ 0
  Size of partition memory (MB) .. 1024
  Minimum / maximum size of memory (MB) 4096 / 20480
Enable workload management .............. 2, 1=Yes, 2=No
Virtual Ethernet Identifiers (1=Yes, 2=No)
  1 2 3 4
  1 2 2 2

F3=Exit  F12=Cancel
Free some CPU and Memory
Free some CPU and Memory

Available processor units .......: 3.00
Available memory (MB) ...........: 13312
Memory region size (MB) ........: 128

Type option, press Enter.
1=Display 2=Change 9=Delete

<table>
<thead>
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<th>Opt</th>
<th>ID</th>
<th>Name</th>
<th>Total</th>
<th>Units</th>
<th>Uncap</th>
<th>Weight</th>
<th>Memory</th>
<th>Virtual</th>
<th>Ethernet ID</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td></td>
<td>IBM171H</td>
<td>1</td>
<td>1.00</td>
<td>1</td>
<td>High</td>
<td>10240</td>
<td>2</td>
<td>1 2 2 2 2 &lt;</td>
</tr>
</tbody>
</table>

< Indicates partition IPL may be required.
F3=Exit    F5=Refresh    F10=Display change status
F11=Work with partition status   F12=Cancel
Partition 1 change was successful.
Free some CPU and Memory

Attention: Incorrect use of this utility can cause damage to data in this system. See service documentation.

Number of partitions . . . . . . . . : 1
Partition release . . . . . . . . . : V7R1M0
Partition identifier . . . . . . . . : 1
Partition name . . . . . . . . . . . : IBMI71H *

Select one of the following:

2. Work with partition status
3. Work with partition configuration
4. Clear configuration data
5. Create a new partition

Selection

F3=Exit  F10=IPL system to activate changes  F12=Cancel
System IPL may be required to activate changes.
Free some CPU and Memory – IPL but take care

A system IPL may be required to activate changes made to the partition configuration.

Press F10 to IPL the whole system now.
   Any active secondary partitions will be powered off in delayed mode, then the system will be IPLed.
Press F3 or F12 to continue working.
   Any changes made may still be pending to take effect on the next system IPL.

F3=Exit   F10=IPL system to activate changes   F12=Cancel
Creating an IBM i Client partition => STRSST again

Attention: Incorrect use of this utility can cause damage to data in this system. See service documentation.

Number of partitions : 1
Partition release : V7R1M0

Partition identifier : 1
Partition name : IBM71H *

Select one of the following:

2. Work with partition status
3. Work with partition configuration
4. Clear configuration data
5. Create a new partition

Selection 5

F3=Exit  F12=Cancel
Creating an IBM i Client partition – Select Operating Environment

Select one of the following:

1. OS/400
2. Guest

Selection

F3=Exit    F12=Cancel
Creating an IBM i Client partition – Create New Partition

Complete blanks, press Enter.

Partition identifier and name .............. 2 ___________
Number of available system processors ....... 3
Number of partition processors ............. __ / __
Minimum / maximum number of processors .... 1 1=Yes, 2=No
Use shared processor pool .................. 1 __ 1=Yes, 2=No
Shared processor pool units ............... __ : __ / __
Minimum / maximum processor pool units .... 1 1=Yes, 2=No
Uncapped processing ...................... 128 0, 64, 128, 255
Uncapped processing weight ............... 13568
Size of available memory (MB) ............. __________
Size of partition memory (MB) .............. 2 __________ / __________
Minimum / maximum size of memory (MB) .... 2 1=Yes, 2=No
Enable workload management .............. 1 2 3 4
Virtual Ethernet Identifiers (1=Yes, 2=No) .... 2 2 2 2

F3=Exit  F12=Cancel
Creating an IBM i Client partition - confirm

In order to select Virtual Ethernet as the console device you have to set a Virtual Ethernet Identifier to ‘3’, Instead of ‘1’.
Creating an IBM i Client partition – IPL required ‘<‘

```
Creating an IBM i Client partition – IPL required ‘<‘

```

**Work with Partition Configuration**

- **System**: S65372DC
- **Available processor units**: 1.00
- **Available memory (MB)**: 1024
- **Memory region size (MB)**: 128

Type option, press Enter:
1 = Display  2 = Change  9 = Delete

<table>
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<td>High</td>
<td>10240</td>
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<td>&lt;</td>
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<tr>
<td></td>
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<td>IBMi71C</td>
<td>1</td>
<td>1.00</td>
<td>1</td>
<td>Med</td>
<td>8192</td>
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<td>3</td>
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<td>1.00</td>
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<td>Med</td>
<td>4096</td>
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<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>&lt;</td>
</tr>
</tbody>
</table>

< Indicates partition IPL may be required.
F9 = Exit  F5 = Refresh  F10 = Display change status
F11 = Work with partition status  F12 = Cancel
Partition 2 change was successful.

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Identify virtual SCSI resource
Identify virtual SCSI resource
– Look for ”290B” with location ending Cx30
Identify virtual SCSI resource
Setting up IBM i Virtual I/O Resources

- Create Network Server Description (NWSD)
- Create Network Storage Space (aka Virtual Disk)
- Linking the virtual disks to the NWSD
- Optionally create a Virtual Image Catalog
Network Server Description: CRTNWSND

Type choices, press Enter.

**Network server description**... > IBM71C1  Name
**Resource name**...... > CTL06  Name, *NONE, *AUTO
**Network server type**:  > *GUEST  *IXSVR, *ISC_SI, *GUEST...
Server connection  > *opsys  *WIN32, *AIXPPC, *ESX...
Server operating system
**Online at IPL**......  > *yes  *YES, *NO
Vary on wait  > *NOWAIT  *NOWAIT, 1-15 minutes
**Shutdown timeout**...  > *TYPE  2-45 minutes
*NONE
**Partition**.......  > 2  1-65535, *NONE
**Partition number**...  > *LANGVER  *LANGVER, 437, 850, 852, 857...
**Code page**......  > *JOBLOG  Name, *JOBLOG, *NONE
Server message queue
**Library**......  > *BASE  *BASE, *SHRPOOL1...
Pool identifier

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys

Connected to remote server/host 127.0.0.1 using port 61602
Create Network Server Desc (CRTNWSD)

Type choices, press Enter.

Text 'description' ........... IBM i Client partition 1

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
Network Server Description: WRKNWSD
Network Storage Space: CRTNWSSTG
Network Storage Space: ADDNWSSTGL
Network Storage Space: WRKNWSSTG

Work with Network Server Storage Spaces

Type options, press Enter.
1=Create  2=Change  3=Copy  4=Delete  5=Display  6=Print  10=Add link
11=Remove link

Opt   Name       Server   Seq Link Type Access Path
1     IBM71C1D01 IBM71C1  1 *DYN *UPDATE

Parameters or command

F3=Exit  F4=Prompt  F5=Refresh  F6=Print list  F9=Retrieve
F11=Display disk status  F12=Cancel  F17=Position to
Network server storage space link added.

Connected to remote server/host 127.0.0.1 using port 61602
Network Server Description – Vary On

Position to _______ Starting characters

Type options, press Enter.
1=Vary on  2=Vary off  5=Work with job  8=Work with description
9=Display mode status  13=Work with APPN status...

Opt  Description     Status
1    IBM71C1           VARIED OFF

Parameters or command

---
F3=Exit   F4=Prompt   F12=Cancel   F23=More options   F24=More keys

Connected to remote server/host 127.0.0.1 using port 61602
Network Server Description – Vary On

**Work with Configuration Status**

Position to _______ Starting characters

06/09/12 19:01:02

Type options, press Enter.
1 = Vary on  2 = Vary off  5 = Work with job  8 = Work with description
9 = Display mode status  13 = Work with APPN status...

<table>
<thead>
<tr>
<th>Opt</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>IBM71C1</td>
<td>VARY ON PENDING</td>
</tr>
</tbody>
</table>

---

**Parameters or command**

F3 = Exit  F4 = Prompt  F12 = Cancel  F23 = More options  F24 = More keys

Vary on completed for network server IBM71C1.
Network Server Description – Vary On

Type options, press Enter.
1=Vary on    2=Vary off    5=Work with job    8=Work with description
9=Display mode status 13=Work with APPN status...

Opt  Description    Status
-----  -----------    ---------
 IBM71C1    ACTIVE

Parameters or command

F3=Exit   F4=Prompt   F12=Cancel   F23=More options   F24=More keys

Connected to remote server/host 127.0.0.1 using port 61602
Next you need to activate the partition

- From the SST go to VPM:
  - 5. Work with system partitions
  - 2. Work with partition status
    - Verify IPL source: D
    - Verify IPL Mode: Manual
    - Option 1 to activate
Next you need to activate the partition (2)

- The partition will begin initialization. The hosting partition will present the virtual optical device or devices and if a real optical drive is assigned to the hosting partition it will be presented as well.

- The client partition will locate a valid install or bootable media from any of the optical devices it finds on the VSCSI connection.
  - The rest of the install proceeds as normal, client partition will prompt for ‘next media’. Go to the host partition and ‘mount’ the next media or virtual media image.

- Start your Operations Console LAN and connect to the IBM i Client LPAR.
  (Note: When configuring LAN console, the Target partition value reflects the Partition Identifier value.)
Install IBM i using virtual optical or real media

- The client partition will see all optical devices presented by the server partition.
- This includes any physical or virtual optical devices owned by the IBM i server partition.
- The client will not see any difference between virtual or physical.
Backups for IBM i Clients

For full-system backup, the client storage spaces can be saved on the host IBM i partition
- Similar to AIX, Linux client partitions and iSCSI integrated servers with Windows or Vmware => ideal for disaster recovery
- File-level backup is not supported
- Storage spaces can be restored on another IBM i host
- Storage spaces can be located in IASP, Flash Copy can be used on IASP

You can use the following command to save a specific NWSSTG-obj:
```
SAV DEV('/QSYS.LIB/TAP0x.DEVD') OBJ('/QFPNWSSTG/virtual_disk_name'))
```

The accompanying restore command to restore a specific NWSSTG-obj is:
```
RST DEV('/QSYS.LIB/TAP0x.DEVD') OBJ('/QFPNWSSTG/virtual_disk_name'))
```
Things to consider

- **Client Virtual Tape**
  - Tape library drives can only be virtualized when configured as a stand-alone device, they are not supported while in library mode

- **Considerations on number of storage spaces (virtual disks)**
  - Apprx. 4-12, leaving room for growth upto 16
  - Storage spaces should be same size for performance reasons

- **IBM i host vs. VIOS**
  - External storage
  - Skills
  - New virtualization enhancements like Active Memory Sharing, Suspend/Resume

- **VPM limitations vs. HMC**
  - Only virtual IO
  - No dynamic movement of resources
  - Maximum 4 client lpars
Where Do I Start with Installing IBM I hosting clients on Power system?

HMC based

Same guide Describes VIOS hosting IBM i clients

• Latest version at: http://www.ibm.com/systems/resources/systems_i_Virtualization_Open_Storage.pdf