Session 2: VIOS - how to get going

Agenda

Reference sources
Redbooks
Movies
Whitepaper
VIOS Sizing
VIOS Media
VIOS How to Install
Using VIOS to support Virtual Ethernet, Virtual Disks, Virtual Optical
VIOS Sizing

It depends on what you are doing with Disk & Network I/O
- Physical adapters now in the VIOS so device driver cycles moved out
- Extra work involves function shipping the request
- Efficient as the Hypervisor uses virtual memory rather than raw data moving

Who knows the I/O details to rates and packet sizes?
- Answer: no one
- If you do, we can do some maths to estimate the CPU cycles at peak period.
- But most of the time that would be overkill
VIOS Sizing

Trick 1 – Uncapped, micro partition with VP+1
Use PowerVM to re-use unused VIOS CPU cycles in the application Virtual Machines

Trick 2 – Don’t worry about the tea bags!
Just make sure you have enough

Trick 3 – ROT then monitor
Rule of thumb: for every 16 CPUs – 1 CPU, 2 GB RAM
The monitor VIOS use & tune as necessary

PowerVM System Planning Tool and Workload Estimator
Simplifies the planning for and installation of Power servers with PowerVM

- Saves time and reduces errors
  - Browser-based application that helps you design logical partitioned systems
  - Integrated with the Workload Estimator to plan a system based on existing performance data
  - Integrated with IBM ordering system
  - Plans generated can be deployed on the system by HMC or IVM

- Available for download:
You will need the VIOS DVD or .iso image

1 Shipped with the machine or there about!
   - Careful as they may be out of date

2 Ordered from IBM – needs SWMA

3 Downloaded from ESS – needs SWMA
   - About 4.5 GB plus fixes
Current version

- Latest release VIOS 2.2.0.12-FP24 SP02 from May 2011
- See [http://tinyurl.com/AIXpert](http://tinyurl.com/AIXpert)
- PowerVM Virtual I/O Server - Recommended Levels
- Bonkers not to run the Latest
- OK … give it two weeks after it is released

VIOS Media

VIOS How to Install

```bash
Installation and Settings
Either type 3 and press Enter to install with current settings, or type the number of the setting you want to change and press Enter.

1  System Settings:
   Method of Installation: Hard Disk
   Disk Where You Want to Install: harddisk

2  Primary language environment settings (AFTER Install):
   Country/Region: United States
   Language: English (United States)
   Keyboard: English (United States)
   Keyboard Type: Default

3  Security Mode: Default

4  Disk Options (refresh install options)

5  Select Edition: Advanced

6  Install with the current settings listed above.

00  Help
09  Function Keys
00  Choice Edit

WARNING: Root (operating system installation) files will be destroyed in impact recovery mode Select disk(s) below.
```
VIOS How to Install

Integrated Virtualisation Manager (IVM)
- Have a dumb screen console working then power up
- Reset to factory defaults then boot of VIOS DVD
- Select console, language, disk and install
- Go watch the movies

HMC or SDMC
- Create VIOS LPAR on the HMC
- Boot off DVD media
- Select console, language, disk and install

Could use NIM—only for the NIM experts … IMHO

VIOS How to Install

HMC or SDMC
- Create VIOS LPAR on the HMC
- Boot off DVD media
- Select console, language, disk and install

- DEMO HERE
- HMC – start VIOS, find DVD, boot, …. Start Install
VIOS 1\textsuperscript{st} Tasks

- \texttt{cfgassit menu}
  - You are asked to confirm the license agreement
  - Set padmin password (sort of root user for VIOS)
  - Set date, time and timezone
  - Set up the network
  - Exit

VIOS 2\textsuperscript{nd} Tasks

Network

- Created when I created the VIOS LPAR →
  - ent0
  - ent1
  - Virtual Networks
  - ent2
  - ent3

- \(9.137.62.xxx\)
- \(9.69.44.xxx\)
padmin\$ lsdev | grep ent

<table>
<thead>
<tr>
<th>Clientvg</th>
<th>Defined</th>
<th>Volume group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ent0</td>
<td>Available</td>
<td>2-Port 10/100/1000 Base-TX PCI-Express Adapter (14104003)</td>
</tr>
<tr>
<td>ent1</td>
<td>Available</td>
<td>2-Port 10/100/1000 Base-TX PCI-Express Adapter (14104003)</td>
</tr>
<tr>
<td>ent2</td>
<td>Available</td>
<td>Virtual I/O Ethernet Adapter (l-lan)</td>
</tr>
<tr>
<td>ent3</td>
<td>Available</td>
<td>Virtual I/O Ethernet Adapter (l-lan)</td>
</tr>
<tr>
<td>ent4</td>
<td>Available</td>
<td>Virtual I/O Ethernet Adapter (l-lan)</td>
</tr>
<tr>
<td>ent5</td>
<td>Available</td>
<td>Virtual I/O Ethernet Adapter (l-lan)</td>
</tr>
<tr>
<td>ent6</td>
<td>Available</td>
<td>Shared Ethernet Adapter</td>
</tr>
<tr>
<td>ent7</td>
<td>Available</td>
<td>Shared Ethernet Adapter</td>
</tr>
</tbody>
</table>

padmin\$ lsdev -slots | grep ent

U9117.MMA.101CD8F-V2-C11 Virtual I/O Slot ent2
U9117.MMA.101CD8F-V2-C12 Virtual I/O Slot ent3
U9117.MMA.101CD8F-V2-C21 Virtual I/O Slot ent4
U9117.MMA.101CD8F-V2-C22 Virtual I/O Slot ent5
VIOS 2nd Tasks
Network

ent0

ent1

ent2/137

Virtual Networks

9.137.62.xxx

9.69.44.xxx

SEA
ent6

Shared Ethernet Adapter = bridge

SEA
ent7

Virtual Networks

ent3/69

Hostname
IP address
defaultId=137

defaultId=69

Port virtual ID
VIOS 2\textsuperscript{st} Tasks Network

ent0 physical network card on my 9.137.62.xxx network
ent2 first virtual network
$ mkvdev -sea ent0 -vadapter ent2 -default ent2 -defaultid 137
  -attr ha_mode=auto ctl_chan=ent4

$ mktcpip -hostname greyvios2 -interface en6 -inetaddr
  9.137.62.241
  -netmask 255.255.255.0 -gateway 9.137.62.1
  -nsrvaddr 9.137.62.2 -nsrvdomain aixncc.uk.ibm.com -start

ent1 physical network card on my 9.69.44.xxx network
ent3 second virtual network
$ mkvdev -sea ent1 -vadapter ent3 -default ent3 -defaultid 69
  -attr ha_mode=auto ctl_chan=ent5
VIOS 3rd Tasks Disks

Client LPARs Virtual SCSI Adapter ID

LPAR fred slot3
LPAR sally slot4

Any slot=any

VIOS Virtual SCSI Adapter ID

VIOS 1 slot13
VIOS 1 slot14
VIOS 1 slot15
VIOS 1 slot16

Demo HERE
### VIOS 3rd Tasks Disks

Virtual resources allow for the sharing of physical hardware between logical partitions. The current virtual adapter settings are listed below:

**Virtual SCSI Adapter ID**
- **LPAR fred slot3**
- **VIOS**
- **Virtual SCSI**
- **Virtual SCSI Adapter ID**
- **VIOS 1 slot14**
- **LPAR sally slot4**

**VIOS 1 slot15**
- **(5) slot4**
- **VIOS 1 slot16**
- **Any slot=any**

### VIOS 4th Tasks Optical

**VIOS Virtual SCSI Adapter ID**
- **VIOS 1 slot13**
- **Client LPARs Virtual SCSI Adapter ID**
- **LPAR fred slot3**

**/var/vio/VMLibrary**
- **1 Optical Repository (many GB)**
- **mkrep or HMC GUI**

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© 2011 IBM
1 Optical Repository (many GB) mkrep or HMC GUI
2 Can load physical DVD or ftp .iso & make read-only
3 Load particular .iso using Loadopt of HMC GUI
VIOS 5th Tasks Clients

VIOS
Virtual SCSI
Adapter ID

New Client LPAR

VIOS 1 slot14

Done

LPAR sally slot4

To do

Virtual Ethernet
port=137

ent2/137

To do

Done

Demo HERE