VIO Server Build Procedure

1. Purpose

To show all the changes and customization needed when building new VIO servers

1. Scope

Applicable to building VIO servers on IBM Power systems including SSP cluster nodes

1. Prerequisite
   1. IBM VIO Server Installation Media
   2. Hardware for VIO server including one pair of internal disk drives, one pair of Ethernet ports, one pair Fibre Channel ports, 0.5 processors and minimal of 4GB of memory
2. Procedure
   1. Install VIO server using IBM VIO installation media (CD)
      1. Follow IBM VIO installation procedure
      2. For S824 server with one CDROM drive that connected to one internal SAS controller, a couple of ways to install the second VIO server on the same S824 server via CDROM
         1. One way is to physically remove the pair of internal drives from the SAS controller with CDROM connected and mount the pair of disk drives from the other SAS controller with no CDROM.
         2. use alt\_disk\_install to make a copy of the VIO server on the pair of internal disk drives that have no access to CDROM
         3. Note: NIM install can be done if the network interfaces on the VIO servers are not EtherChannel/Link aggregated.
   2. Mirror the rootvg via internal disk drives
      1. Enter the root shell (oem\_setup\_env)
      2. Lsdev –Cc disk and determine the second local disk as hdisk1
      3. Extendvg rootvg hdisk1
      4. Mirrorvg –m rootvg hdisk1
      5. Bosboot –ad /dev/hdisk1
      6. Bootlist –m normal hdisk0 hdisk1
   3. EMC ODM support and PowerPath packages (applicable to EMC SAN disk)
      1. If external EMC SAN disks to be used by VIO servers, then EMC Powerpath and ODM support packages to be installed
      2. Install AIX EMC ODM support fileset (v5.3.1.0)
         1. Tar –xf EMC.AIX.5.3.1.0.tar
         2. Inutoc .
         3. Smit installp
         4. Choose “Install and Update from LATEST Available Software”
         5. Input device as [.]
         6. F4 (esc +4) and use F7 select EMC Clariion, Symmetrix, and Extreme IO Except Cellera and iSCSI
         7. Accept New License Agreement as YES
      3. Install EMC Powerpath software (v6.0.1) – SP1
         1. Gzip –d EMCPower.AIX.6.0.SP1.GA.b132.tar.gz
         2. Tar –xvf EMCPower.AIX.6.60.SP1.GA.b132.tar
         3. Smit installp
         4. Choose “Install and update from LATEST Available Software”
         5. Input device as [.]
         6. F4 and use F7 to select all components
         7. Accept new license agreement as YES
      4. Apply EMC license for powerpath
         1. Emcpreg –add BIPK-GB4V-4F4D-QQK9-M99D-SNHM
         2. Emcpreg –list ### Checks license.
         3. Reboot the server to apply it.he
   4. Disk configuration (after storage management team presented disks to VIO servers)
      1. Run cfgdev to scan for new disk and then powermt config (run under the root shell – oem\_setup\_env)
         1. For each of hdiskpowerX, perform the following command
            1. Chdev –l hdiskpowerX –a reserve\_policy=no\_reserve –P
            2. Note: This allows external disks to share across all clustered VIO servers
   5. HBA settings
      1. For each fiber channel port (fcsX), perform the following command (run under the root shell – oem\_setup\_env)
         1. Chdev –l fcsX –a max\_xfer\_size=0x200000 –a num\_cmd\_elems=2048 –P
   6. Network settings
      1. Run the following commands to update TCP/UDP related settings (run under the root shell – oem\_setup\_env)
         1. no –p –o rfc1323=1
         2. no -p -o tcp\_sendspace=262144
         3. no -p -o tcp\_recvspace=262144
         4. no -p -o udp\_sendspace=65536
         5. no -p -o udp\_recvspace=655360
   7. Network adapter settings
      1. Configure Link aggregation/Etherchannel (after network team put the network interfaces in LACP mode)
         1. Run smitty devices (under root shell)
         2. Communication
         3. EtherChannel / IEEE 802.3ad Link Aggregation
         4. Add an EtherChannel / Link Aggregation
         5. Choose the interfaces that have been added to LACP mode
         6. Set mode as 8023ad
         7. Set hash mode as src\_dst\_port
         8. All other settings as default
         9. This will create a EtherChannel interface – entX (e.g. ent4)
      2. Define SEA configuration
         1. Exit the root shell and back to VIO restricted shell
         2. Run the command “mkvdev –sea ent5 –vadapter ent4 –default ent4 –defaultid 211 –attr ha\_mode=auto”
            1. Where ent5 is the etherchannel adapter
         3. The above command will generate a new virtual SEA adapter and this SEA adapter can be used to assign an IP for this VIO server via the next command. Note: ha\_mode=auto is very critical… otherwise the two VIO servers will be fighting as primary for the SEA… with auto mode, it uses priority setting in the LPAR definition.. one of the LPAR profile should be set as priority 1 and one should be set as priority 2. Priority 1 will be the primary SEA adapter. Use errpt command to check and ensure one VIO server is primary and one as backup.
         4. mktcpip –hostname uXv824XX –inetaddr 172.XXX.XXX.XXX –interface en6 –netmask 255.255.255.0 –gateway 172.XXX.XXX.1 –nsrvaddr 172.22.227.70 –nsrvdomain ishealth.net
         5. Note: Do not assign IP under the root shell via smitty
   8. DNS and time related configuration
      1. NTP configuration
         1. Vi /etc/ntp.conf
         2. Add entry “server nettime.lan.ishealth.net”
         3. Startsrc –s xntpd
         4. Vi /etc/rc.tcpip
         5. Remove the # (comment) from line for xntpd
         6. Note: Check the time zone to make it matches the time zone for all other cluster nodes (if this VIO server is to be joined to a cluster)
      2. Hosts file
         1. Vi /etc/hosts
            1. Add IP address and host name for each of the nodes that are part of the cluster.
            2. Note: This is critical in case the DNS server is not available the cluster will continue to function with bringing down nodes that can be be resolved with name/IP
      3. Netsvc.conf
         1. Vi /etc/netsvc.conf
         2. Add entry “hosts = local, bind”
            1. Note: This is to perform DNS lookup on local host file first before reaching to DNS servers
   9. Shared Storage Pool (SSP)
      1. SSP and cluster related commands
         1. cluster –create –clustername TEST\_Cluster1 –sp TEST\_SSP1 –repopvs hdiskpower0 –sppvs hdiskpower1 hdiskpower2 (where hdiskpower0 is the cluster repository disk, and hdiskpower1 and hdiskpower2 are the shared storage pool data disks)
         2. cluster –addnode –clustername TEST\_Cluster1 –hostname ubv82410 (add node to cluster)
         3. cluster –rmnode –clustername TEST\_Cluster1 –hostname ubv82410 (remove node from cluster)
         4. cluster –status –verbose (cluster status in verbose mode and DBN is the main cluster node)
         5. pv –remove –Clustername DR\_Cluster1 –sp DR\_SSP1 –pv hdiskpower1 (this command can be used to remove LUN from SSP and use it as a migration tool from moving data from one LUN to another)
         6. lscluster –d (show all the disks associated with SSP cluster)
   10. Note for AIX clients consuming virtual disks from VIO servers
       1. Enable auto-path recovery
          1. Chdev –l hdisk0 –a hcheck\_interval=60 –P
          2. Chdev –l hdisk0 –a hcheck\_mode=nonactive –P
       2. To enable a failed path on MPIO clients
          1. Chpath –l hdisk –p vscsi1 –s disable
          2. Chpath –l hdisk –p vscsi1 –s enable
          3. Note: Use lspath command to ensure all paths are active

1. Definitions

See *Technology & Security Definitions & Acronyms* document located in PolicyManager under Kindred Health > Security.

Policy Manager Link:

<https://kindred.policymedical.net/policymed/anonymous/docViewer?stoken=09e41285-8848-43c1-bfc3-9d58623354f3&dtoken=1384c561-0d16-4f80-9112-94f78edb6c5c>

1. Responsibility and Compliance
2. Document Control
   1. History

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| --- | --- | --- | --- | --- |
| Date | Version | Section | Change | Author |
| 09/14/2017 | V1.0 |  | Initial draft | Eng Ng |
| 11/01/2021 | V1.1 |  | Revisions to SEA section | Patrick Warren |

* 1. Approvals

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| Role | Name | Approval Date |
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