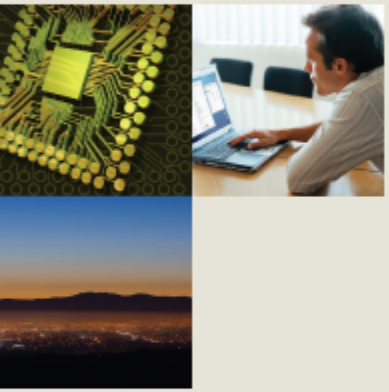

Linux Installation Planning

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Presentation Download

http://linuxvm.org/Present/SHARE111/S9233mp.pdf

Agenda

- First Things First
- Pick the Right Architecture
- Disk Storage Selection
- Application Selection
- Application Requirements
- File System Selection
- File System Layout

Agenda (2)

- Network Requirements
- Ongoing System Support
- Management Tools
- Data for Installation
- Questions (I'll also take questions as we go along unless time gets short)

First Things First

Get the right groups involved up front

- Network
  - Hardware
  - IP Architects
  - Administrators
    - Talk to your network & storage admins: **draw pictures**
- Other Hardware, IOCP support
- Security, including network security
- System Administration

First Things First

- Installing Linux is *not* like installing z/OS or z/VM (hopefully you're not surprised)
- For mainframe installs, you will need an installation server
  - It's "best" if this is a Linux or UNIX system
- There must be a usable TCP/IP network connection between the installation server and your target system
  - This means end-to-end, through whatever firewalls, routers, bridges, WAN links, whatever

Pick the Right Architecture

- Where are you going to be running Linux?
  - Intel (or other midrange boxes)
  - LPAR
  - With z/VM
  - All three
- The decision of which platform depends on the type of workload to be run
- Mainframes are *not* good candidates for CPU-intensive workloads.
  - Just about any other architecture is faster
  - Less true with z9, but still pretty expensive cycles
- CPU-intensive work should be done on Intel or RISC platforms (this includes heavy program compilation)

Pick the Right Architecture

- Mainframe Linux is a good choice for:
  - Network services
  - I/O intensive work; consolidating low-use servers
  - Front-ending mainframe-resident databases and applications
  - Fast provisioning of test/development as well as production servers
  - Offloading expensive z/OS cycles
- How many Linux systems do you think you'll need?
  - For "just a few," LPAR may be a good choice. Remember to count all your test/development and failover systems.
- z/VM is the best platform if you're going to have more than a *very small* number of Linux systems (and their workload characteristics are a good fit)

Disk Storage Selection

- What kind of disk/DASD devices are you going to be using?
  - Directly attached (FICON or ESCON)
  - SCSI over FCP
  - NAS
  - SAN
- SCSI over FCP gives better performance, and the SAN adapters are cheaper, but you'll need additional adapters on the mainframe side. (Can be used for FICON *or* FCP, not both.)
- Who do you need to work with to make that work correctly?

Application Selection

- What applications are you going to run?
  - Not everything that runs on Linux is available for Linux/390. (Open Source included!)
- All Open Source, all commercial, or a mixture?
- Keep your packages to a minimum
- Who needs to be involved in deciding?

Application Selection (2)

- What kind of system(s) are you going to be installing?
  - Servers
    - Web, Web Application
    - FTP
    - Database
    - Other?
  - Workstation
  - Router, Firewall, Proxy

Application Requirements

- What are the virtual/real storage requirements for the applications to be run?
  - Oracle can be a tremendous storage hog
    - But the per-processor licensing can give big savings on the mainframe
  - WebSphere is a well-known resource hog
    - Some companies have had to fall back to “plan B,” running Linux on Intel
- Does the application require *no* downtime, ever?
  - Linux for System z
  - High-availability clustering (HA)
    - Multiple mainframes
    - Multiple Intel/midrange boxes
    - Find someone who knows what they’re doing
  - Coming (someday): Live Guest Migration on z/VM
    - VMMotion-like facility for System z

File System Selection

- What kind of file system should you use? (Red Hat only ships ext2 & ext3)
- Common file system types
  - ext2 (not recommended)
  - ext3
  - reiserfs (ongoing maintenance is in question)
  - XFS
  - JFS (Deprecated in SLES10)

File System Layout

/ (root)

/bin

/boot *

/dev

/etc

/home

/lib, lib64

/mnt

/opt

/proc

/root (Not to be confused with / root)

/sbin

/srv

/sys

/tmp

/usr

/var

File System Layout

- How are you going to lay out your file systems?
  - May want to do a “trial” install first to see how much space is needed in which file systems
- What are you going to be using for backup and restore?
  - Does this need to work with current facilities, including tape libraries?
    - What additional software will be required?

File System Layout

- # df -h

```
Filesystem      Size  Used Avail Use% Mounted on
/dev/dasda1     388M  119M  250M  33% /
/dev/dasda2      97M  4.2M   88M   5% /home
/dev/dasda3      74M   21M   50M  30% /opt
/dev/dasdc1     1.2G  1.1G  100M  92% /srv
/dev/dasdb1     291M   17M  260M   6% /tmp
/dev/dasdb2     1.2G  915M  183M  84% /usr
/dev/dasdb3     245M   69M  164M  30% /var
```

Network Requirements

- How is this system going to be connected to your existing network?
  - OSAs
  - Some other kind of hardware?
  - For z/VM guests, seriously look at VSWITCH and Guest LANs.
- For Linux/390, are you going to be using any internal networking within the same box?
  - HiperSockets to talk to z/OS
  - HiperSockets to talk to Linux Guests on another z/VM LPAR?
  - Use OSAs to forward traffic without going outside the box?
- Are you going to have enough network traffic to require link aggregation? (Available in z/VM 5.3)

Network Requirements (2)

- Will your backup data be going across the network?
  - Don't use your primary network interfaces
- How are you going to be doing routing?
  - Static
  - Dynamic (RIP, RIP2, OSPF, BGP?)
- Is this system going to be exposed to the Internet?
  - How is it going to be protected?
    - Firewalls, etc.
    - Intrusion Detection Systems (IDS)
- Layer 2 requirements?
  - Non-IP traffic, such as IPX
  - DHCP
  - You may have others

Ongoing System Support

- Who is going to be administering the Linux system after installation?
  - Midrange support
  - Midrange security
  - Mainframe support (if Linux/390)
  - Some combination? (probably best)

System Management Tools

- What system management tools will you be using?
  - What are you using for your existing platforms?
  - Will those be applicable to the Linux systems?
  - Are they also available for Linux/390?
    - Again, don't assume anything
- Will Open Source health-checkers be sufficient?
  - Hobbit
  - Big Brother
  - Etc.

Data for Installation

- For most Linux/390 platforms, most of the following values can be specified in the installation kernel “parmfile”
  - This means you won’t have to type them in during installation
  - Very handy on the 2nd, 3rd, 4th, etc. installs
    - What, you thought you were going to do this once and be done?
- Fully Qualified Domain Name, e.g., linuxtest.novell.com
  - You may be asked to supply this in two parts: hostname and domain
- For VM Installs
  - VM userid of your system
  - VM password
  - VSWITCH or Guest LAN name(s)

Data for Installation

- Network interface type, and driver
- Network mask (255.255.?.?)
- Broadcast address (likely not needed)
- IP Network address (likely not needed)
- MTU size
- Domain name search list
- OSA portname (if on old microcode or old installer requires it)

Data for Installation

- IP Addresses
  - Your system
  - DNS Server(s)
  - FTP/HTTP/NFS/SMB Installation Server
  - Default gateway
  - CTC/IUCV "peer" (essentially a default gateway)

Data for Installation

- Device Numbers
  - DASD
  - CTC/ESCON virtual or real (uses 2)
  - OSA card, virtual or real (uses 3)
  - HiperSocket, virtual or real (uses 3)
  - FCP adapter for SCSI disks

- WWPN/LUN for SCSI

Questions?