

Linux Use At Georgia-Pacific Corporation



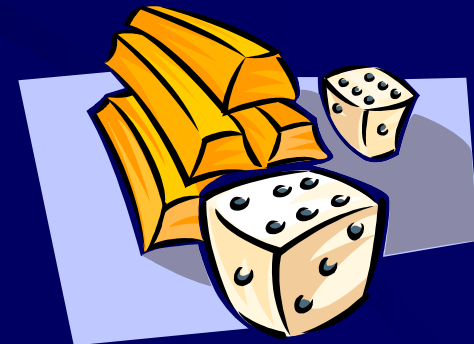
Georgia-Pacific

Linux Initiatives

Summer 2003 – present

Four separate efforts

1. Migrate from UNIX hardware to x86 hardware (SAP Linux Pilot)
2. Migrate from old platform at Packaging locations (Kiwi Upgrade)
3. Open Source Messaging solution
4. Windows Server Virtualization



SAP Linux Pilot

Business Issue - 08/03

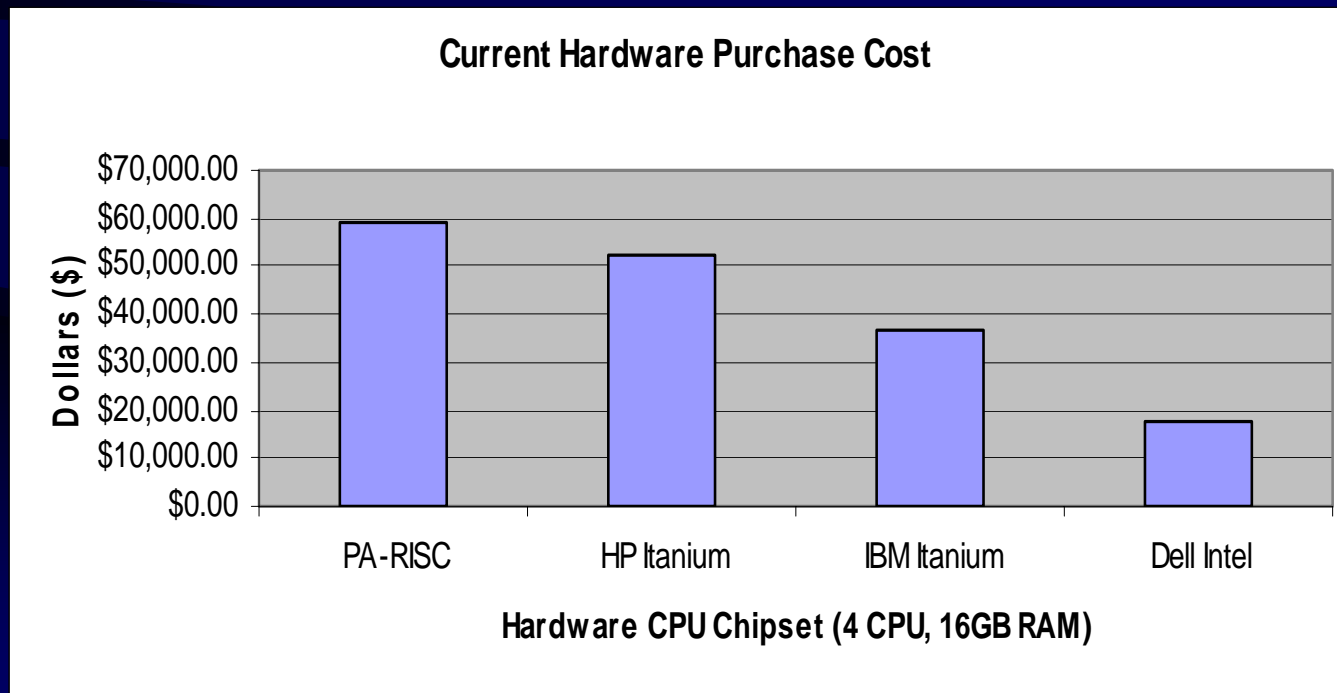
- 20 current SAP Application Servers (HP-UX) at or approaching the end of their current leases.
- Replacement costs for HP9000 HP-UX SAP Application Servers \$60,000 each.
- Itanium platform an interesting alternative to PA-RISC
- GP strategy shifting from leased to low cost commodity based hardware



SAP Linux Pilot

Baseline Information 08-03

- Replacement costs for HP PA-RISC servers = \$60,000.
- Linux on Intel based hardware available for < \$20,000



SAP Linux Pilot

Proposed Solution - 08/03

- Loaner hardware and software from Dell, HP, and IBM
- Detailed testing
 - Redhat vs Suse and compare with HP-UX
 - Current UNIX Mgt Tools
 - SAP Basis functionality
 - SAP application performance



SAP Linux Pilot

Achievements - 10/03

Conclusions

- Itanium platform support from key software vendors was immature
- New 2-processor **IA-32** Linux application server will sufficiently replace 4-way **PA-RISC** HP-UX application server
- Hardware cost savings dramatic for IA-32 platform (\$17K versus \$60K per server)



SAP on Linux at G-P

Significant Achievements - 03/04

- 90% SAP application servers running RedHat Enterprise Server v2.1 Linux on x86 hardware (2 remain for high memory requirement transactions)
- Validated purchase vs lease hardware strategy
- End user response time has slightly improved
- Significant budget reductions achieved due to lease elimination, hw/sw maintenance reduction.



SAP on Linux at G-P

Lessons Learned

- Heterogeneous environment required upgrading management tools. Significant effort.
- UNIX patch management policies and windows may need to be adjusted.
- Security administration differences between UNIX and Linux OS present additional workload, though not significant.
- HW/SW vendors created support partnerships with specific Linux vendors, tried to heavily influence customers to buy a turnkey solution.



Kiwi Upgrade to Linux

Business Issues – 01/03

- Old server technology
 - Marginal reliability
 - Susceptible to long outages (remote plants, hard to find parts)
- Hard to manage SCO/UNIX operating system
 - Difficult to upgrade and manage
 - Operating system out of support
- Limited in-house knowledge
- Limited off-site fail over capability
- Poor performance



Kiwi Upgrade to Linux

Proposed Solution – 01/03

- Work with vendor to design/build a pilot installation of Kiwiplan software on Linux
- Detailed testing
 - Operating System and hardware management
 - Kiwiplan software load and configuration
 - Application interface and data conversion
 - Restore plans
- Pilot at a Packaging plant in 2003



Kiwi Upgrade to Linux

Achievements – 12/03

- Reduced scheduling time, faster “what-if” scenario processing, and less plant waste.
- Refreshed server hardware technology delivered improved performance, reliability, and integration.
- Refreshed hardware and operating system dramatically reduced support costs.
- Overall standardization within the plant improved/enabled integration with other systems



Kiwi Upgrade to Linux

Lessons Learned

- Significant savings enabled by using commodity based IA-32 hardware.
- Interfaces with most related systems needed attention.
 - Significant effort involved by multiple support groups.
- Software vendor certified platform combinations key to reducing support issues.
- Linux more secure than older SCO/UNIX operating system
- Linux expertise much easier to find/fund.



Open Messaging Pilot

Business Issue – Summer 2003

- Nearing the end of Microsoft Enterprise Agreement
- Desire to look at alternatives to Microsoft products
- Promise of free or inexpensive messaging solution
- Requirements for certain types of users or locations much less than knowledge workers or office workers



Open Messaging Pilot

Proposed Solution

- Select a remote location willing to participate
- Replace local Exchange server and Outlook client with open source messaging system (Cyrus - IMAP solution from Carnegie Mellon)
- Integrate with Corporate messaging systems, gateways, and global address book
- Monitor usage, performance, user acceptance



Open Messaging Pilot

Achievements – 06/04

- Medium sized (~100 users) Building Products site completely converted to Cyrus in February 2004
- Clients upgraded to Outlook XP to minimize training and ease user acceptance
- Outlook XP client configured to use LDAP connectivity to Exchange Global Address List (no need for directory synchronization)
- Since 02/04 implementation 37,500 messages processed through system
- Strong user acceptance



Open Messaging Pilot

Lessons Learned

- Server hardware requirements lower
- Performance (send/receive) comparable to MS client/server
- No calendaring software or Office Suite integration available
- Increased administration for an 'external system' interacting with corporate messaging system
- Accounts are duplicated in corporate directory and Cyrus server. Scripted creation of accounts helps.
- Probably a good fit for small/medium locations if users are accepting of decreased functionality and integration with Office suite



Windows Server Virtualization

Business Issue – 08/03

- Windows server 'sprawl'
 - Two data centers with 900 Windows servers
 - New application/function/utility = new server!
- Dramatically underutilized assets (average <30% utilization for data center servers)
- Tremendous amount of effort to maintain hardware (firmware upgrades, refresh, break/fix)
- Issues with planned/emergent change windows due to hardware considerations



Windows Server Virtualization

Proposed Solution – 09/03

- VMWare ESX hosts (business case estimated 5 to 1 consolidation ratio)
 - Reduce base support costs
 - Immediate capital cost avoidance
 - Increase asset utilization and facilitate server consolidation
 - Reduce server provisioning time
 - Speed the deliver of standard, supportable server platform
 - Quickly build DR environments
- Target dev/test test servers first, determine manageability and resource requirements, then...
- Begin virtualization of production servers



Windows Server Virtualization

Achievements – 06/04

- Consolidation ratio = 11 to 1 physical to virtual host
(224 OS on 22 hosts, 45 production operating systems)
- Utilization of VMWare host servers ~ 65%
- Better access to servers for application support groups via virtual console
- Templates reduced server provisioning time to 15 minutes
- VMotion tool allows for literally seamless moves between virtual hosts on same subnet
- Time to patch 224 VMWare hosted servers
(Sasser Worm) = 1.5 hours
- 2004 YTD – eliminated 64 pieces of hardware
and provisioned 160 new server requests



Windows Server Virtualization

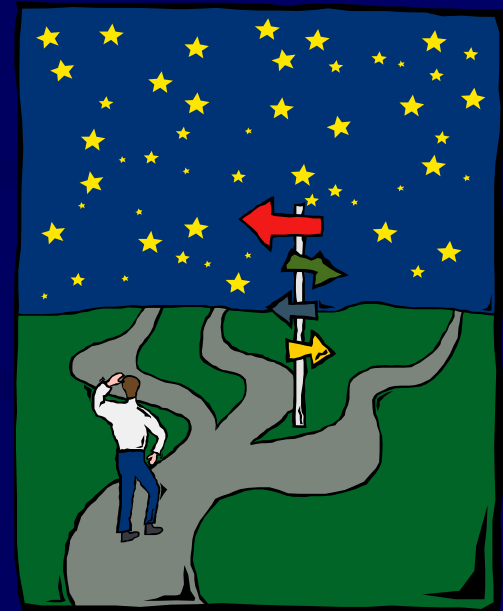
Lessons Learned – 06/04

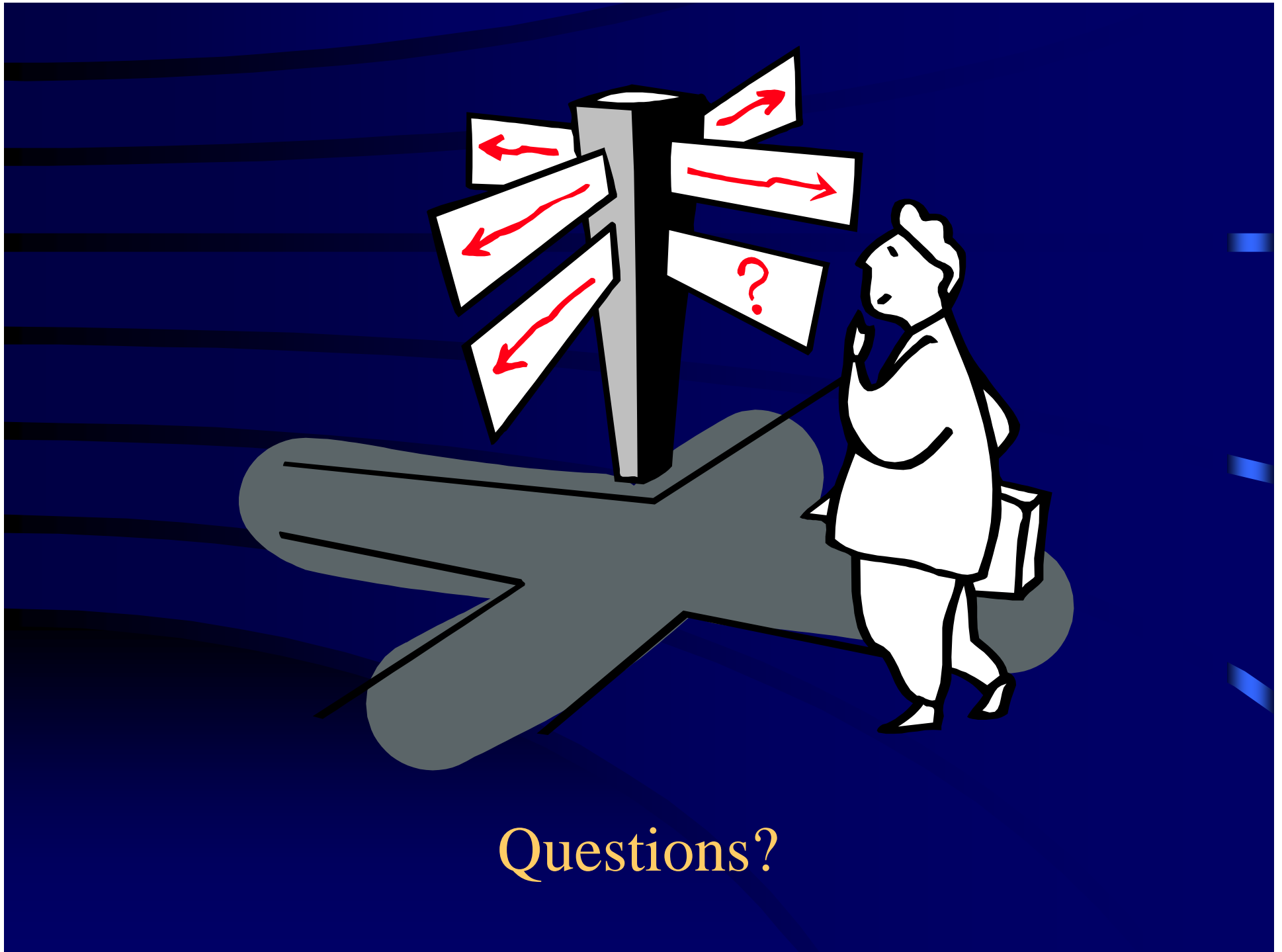
- VMWare ESX training required
 - Theory of virtual servers new concept for most Windows admins
 - Expertise needs to be developed and nurtured (dedicate a team)
- SAN connectivity
 - Boot from SAN highly desirable for guest OS
 - Interaction of VMWare and SAN switches should be carefully tested
- Socialize new technology
 - Windows administrators nervous due to Linux kernel
 - Application groups nervous about performance/supportability issues



Linux Experience

- Enables low cost commodity hardware
- Very effective bargaining tool
- Natural fit for UNIX team
- Youth movement
- Heterogeneous environment requires upgrades of virtually all tools
- Vendor partnerships shift over time – be careful and develop expertise/support in-house.





Questions?