

Linux - Managing Large Installations

Important Information

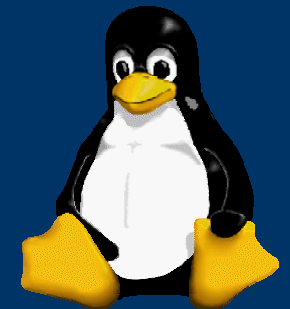
The information presented in these slides and during the associated talk are based upon personal experiences in very particular circumstances which may not necessarily reflect those of others.

Any view or opinions are personal ones of the author and must not be taken to express or imply any warranty or statement of fitness for purpose for your particular circumstances.

It is incumbent upon anyone considering the implementation of any computer system or software to ensure it is appropriate to their own needs and circumstances. A full and careful examination must be carried out by anyone considering the use of Linux, or any other computer software, and you must not rely upon the contents of this presentation or any associated materials as your decision making tool.

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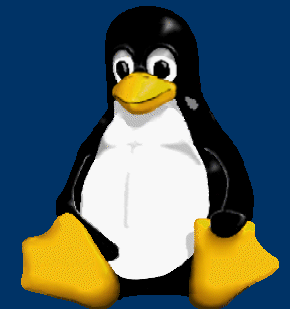
- What Will Be Covered
 - Why Choose Linux ?
 - Can Linux Scale To Support The Enterprise ?
 - How Can It Scale ?
 - What Are The Limits ?
 - Where Do You Want To End Up Tomorrow ?
(European Union/UK Government Use Of Open Source)



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Why Choose Linux ?

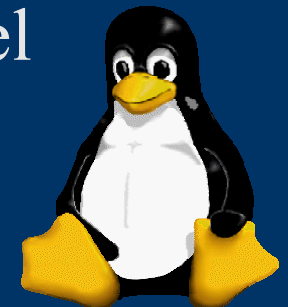
- Large number of proponents on either side of the Proprietary Vs Open Source Debate
 - Even BCS Edinburgh Has A Debate Scheduled For 14 May 2003
- Debates Largely Irrelevant From A Business Perspective
 - What Linux Actually Delivers Is Key...



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What Does Business Receive ?

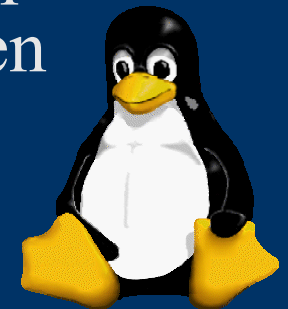
- Security
 - Robust Design Reviewed Openly By, Literally, Thousands Of Skilled Developers
 - Efficient System Footprint – Lower Hardware Specification For Given Performance Level
 - Up-Front Escrow – Source Code Available, Before Anything Goes Wrong
 - No Vendor Lock-In; Open Source Provides Level Playing Field For Multiple Vendors With No Monopoly Opportunities



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What Does Business Receive ?

- Reliability
 - Peer Review Results In Efficient Code With Fewer Crash Level Bugs And Overall Improved Systems Reliability. e.g. > 700 Day Uptime Achieved On Servers.
- Low Financial Outlay
 - Open Model Permits – Even Encourages – Multiple-Use And Legitimises Sharing Of Linux And Open Source Under The Auspices Of The GPL



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Enterprise Ready ?

- Current Deployment :
 - 1,000 Users Spread Over 30 Sites
 - 0.5Tb Primary File Storage: Projected 1-2Tb In 2 Years
 - SAMBA File Services To Windows Clients
 - Mission Critical Oracle Database
 - 0.5Tb Oracle Database: Projected 4Tb In 3 Years
 - Required 24x7 To Support Command & Control
 - E-Mail Service – Traffic > 150Mb Per Week And Still Growing
 - Intranet & Internet Web Service



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Enterprise Ready ?

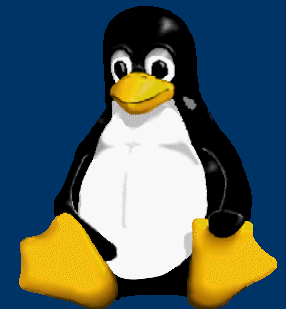
- Reliability & Scaleability
 - SAMBA File Service
 - Typically 900 Active File Share Connections With 10,000 Open Files
 - RAID1 & RAID5 Disk
 - Logical Volume Manager (LVM) Managing 0.5Tb
 - Journaled Filesystems With > 3,000,000 Files
 - System Load Typically < 25% On Dual P-III 1Ghz Processors
 - Uptime > 300 Days (Even Linux Needs Restarted When Upgrading The Kernel)



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How Does It Scale ?

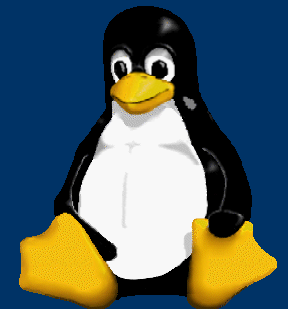
- Changes From “Stock”
 - Increased Open File Descriptors
 - Hot-Tuned Via `/proc/sys/fs/file-max`, Set At 262,144
 - Increased Network Buffers
 - Hot-Tuned Via `/proc/sys/net/core/rmem_max` etc.
 - SCSI Devices Hot-Add/Remove Support
 - All Parameters Tuneable Live – No Need To Reboot Or Recompile Kernels



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What Are The Limits ?

- Linux Is Not Magic
 - Systems Administration Is *Still* Required
 - Routine Housekeeping Is No Different From Other Operating Systems
 - Hot Fail-Over Is Still In Early Stages
 - Hot-Plug Devices, RAID etc. Tried & Tested
 - Complete Server Fail-Over Still Work In Progress (But It Does Exist – Both Red Hat & SuSE Have Implementations Currently Available)



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A Real Life Example ?

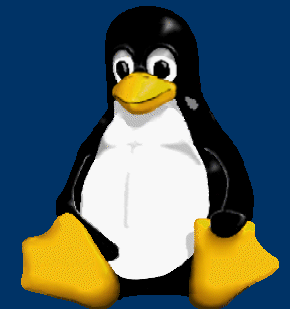
- Command & Control System
 - Supported By Oracle 8i Database Running On Linux
 - Primary Server
 - Backup Server
 - 24x7 Operation
 - 99.9% Uptime Required
(i.e. No More Than 9 Hours Downtime Per Year)
 - 1 Working Day Per Year To Perform Upgrades
(Database Software & Hardware)
 - In 2 Years, Failures Have Been Due To Hardware Faults



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When Do You Want To End Up Tomorrow ?

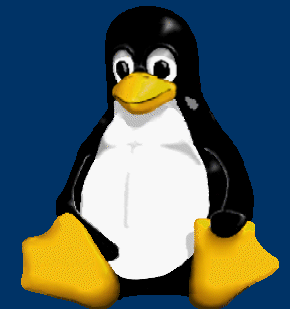
- IBM £1Bn Investment
- Oracle Supported Platform
- Sun Microsystems Now Supply Linux Servers
- Support From Major Enterprise Suppliers
 - More Announce Support Each Week
(Linux Weekly News - <http://lwn.net>)
- Linux Now Placed Firmly In The Enterprise



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When Do You Want To End Up Tomorrow ?

- UK Government “Open Source” Announcement
 - In Line With European Policy
 - “Officially Sanctions” Open Source In Public Sector
 - Tested On The Basis Of Ability To Meet Requirements On An Equal Basis With Proprietary Software
 - Applies Not Only To Linux, But To Any “Open Source” Programs



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Questions ?

