



HP Tru64 UNIX & TruCluster Server Version 5.1B and beyond!



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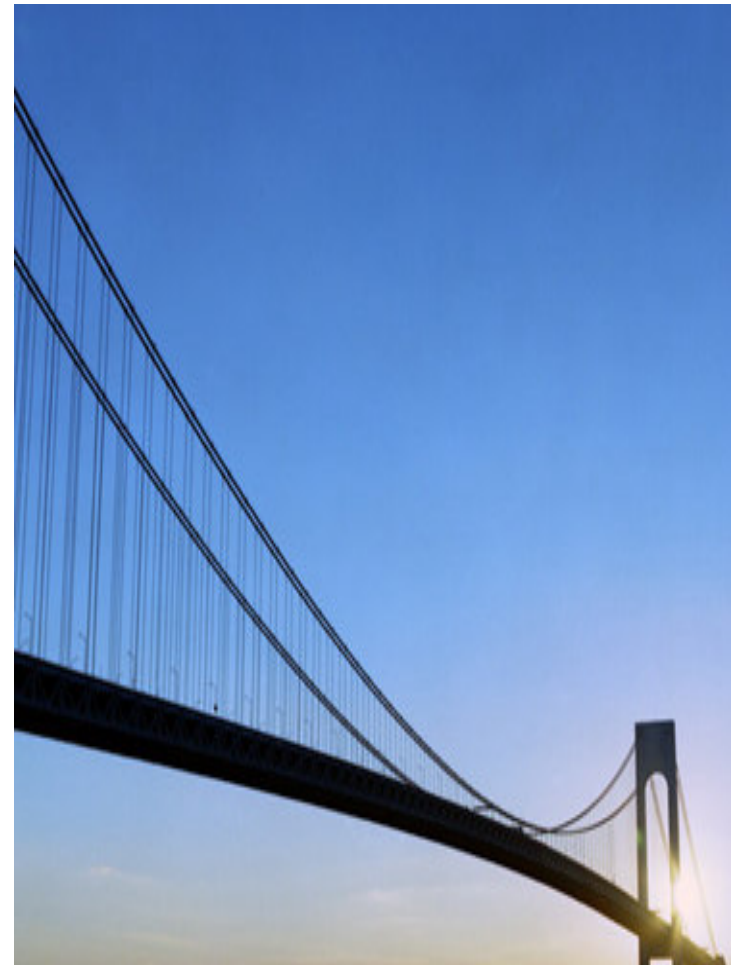


Agenda

Tru64 UNIX ® Roadmaps

5.1B and its enhancement
dash releases

Wrap up





Tru64 UNIX® roadmap

V5.1B, with its enhancements, will be sold through at least 2006,
with support through at least 2011

V5.1B-2 "Utah" 2004

- Support EV7z AlphaServers
- Improved storage management; new storage options
- Resiliency enhancements
- HP-UX 11i compatibility tools

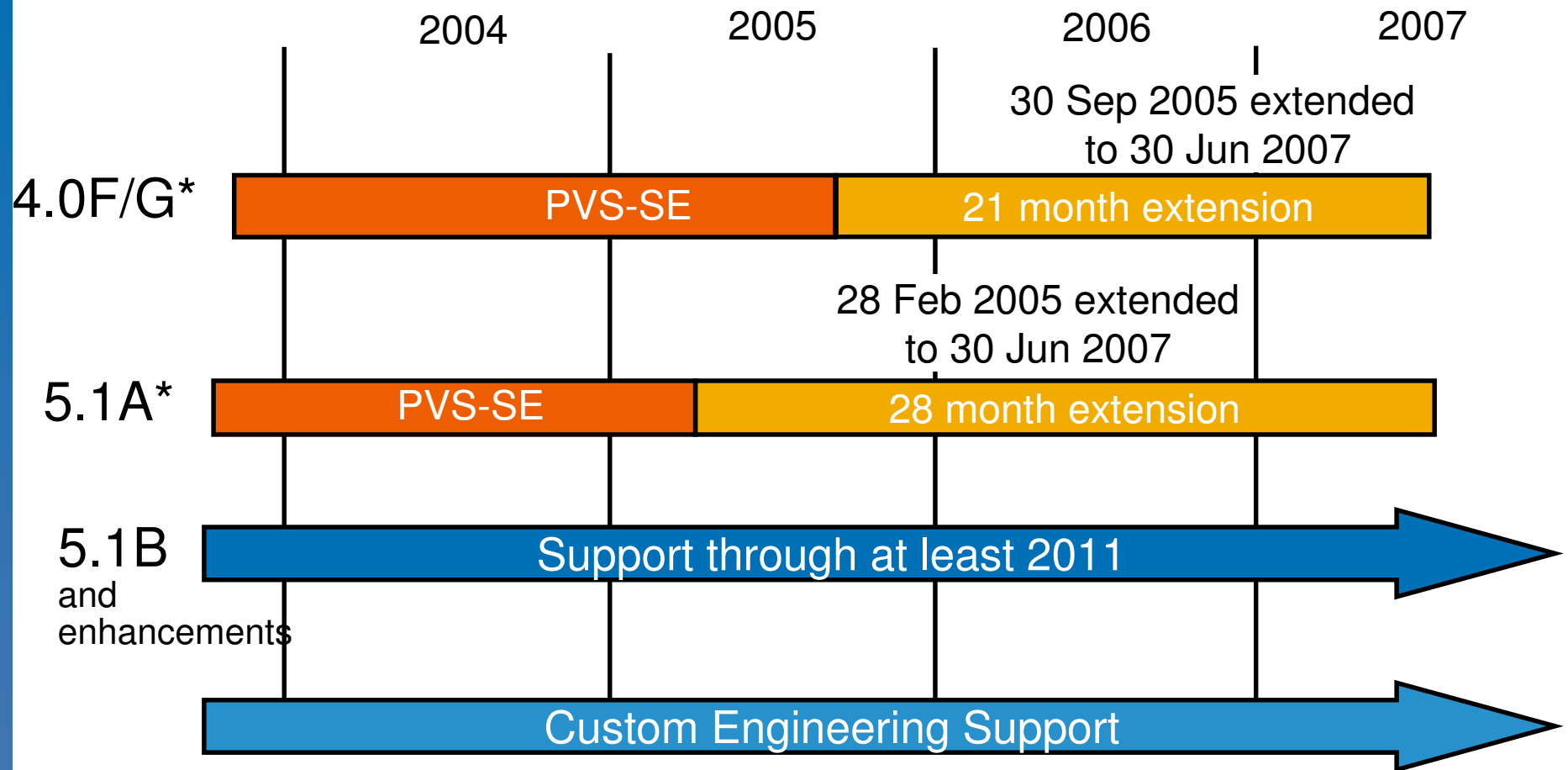
V5.1B-3 "Tahoe" 2005

- I/O enhancements
- ISV enablement
- Resiliency enhancements
- HP-UX 11i compatibility tools

Maintain binary compatibility,
Continue focus on quality and stability



Tru64 UNIX® O/S support roadmap



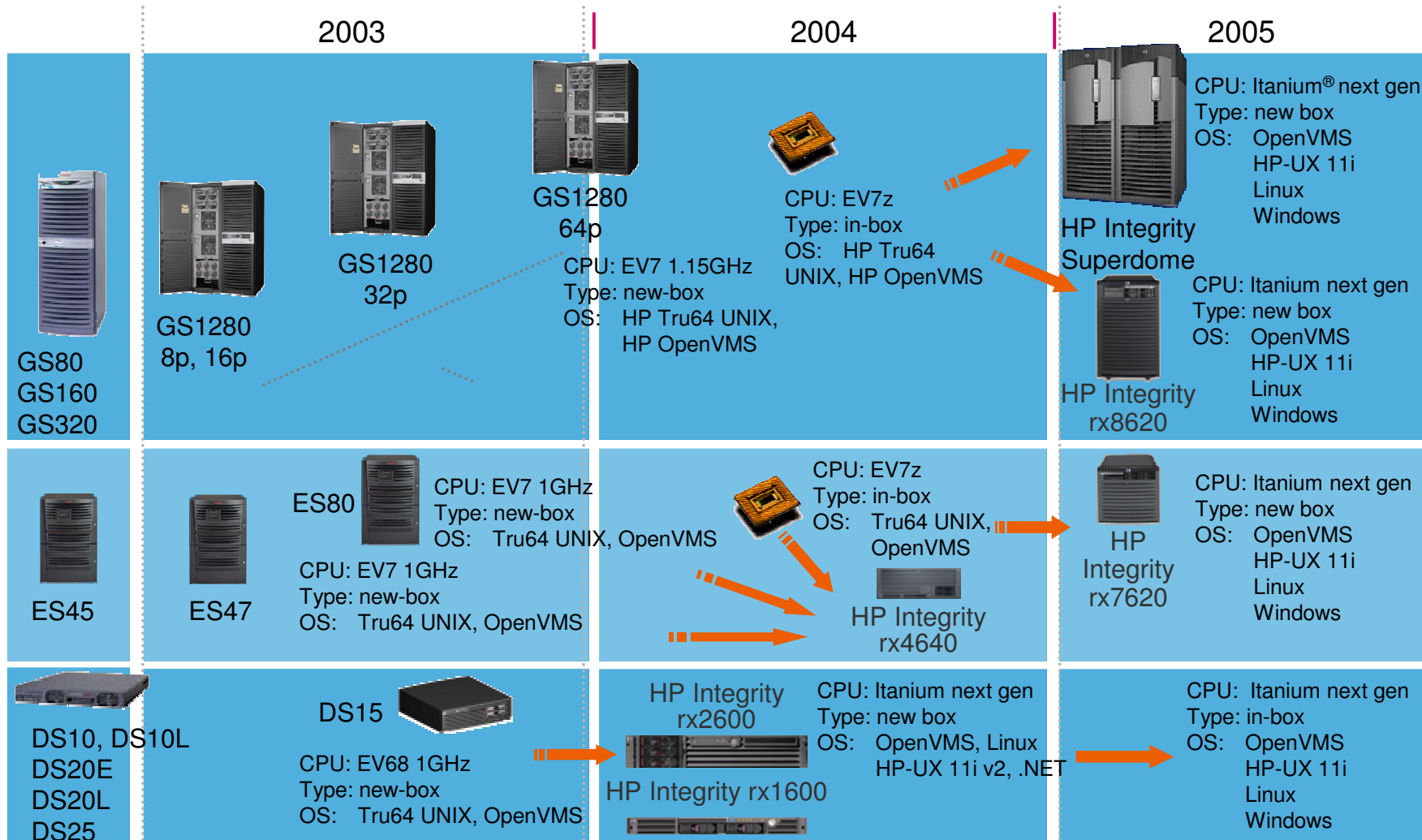
PVS-SE: Prior Version Support – Sustaining Engineering

* - Restricted Configurations



HP AlphaServer evolution

Sales through 2006, with support at least until 2011



HP Tru64 UNIX® Internet Express Roadmap



Internet Express V6.2 FCS: Dec-03 (Actual)

- New Components:
 - Bogofilter
 - Snort
- Cluster support
 - webmin
- Update
 - Open Source components

Min OS - V5.1A

Internet Express V6.3 FCS: Jul-04 (Actual)

- Updated versions:
 - Apache
 - PostgreSQL
 - OpenLDAP
 - Bind
 - OpenSLP
 - OpenSSL
 - Mozilla
 - Perl
 - Squid
 - SmartFilter
 - Plus others

Min OS - V5.1A

Internet Express V6.4 Q2-Q3 CY05 (Target)

- Updated versions:
 - Apache
 - PostgreSQL
 - OpenLDAP
 - Bind
 - OpenSLP
 - OpenSSL
 - Mozilla
 - Perl
 - Squid
 - SmartFilter
 - Plus others

Min OS - V5.1A

Q4-2003

Q3-2004

Q2-Q3 2005

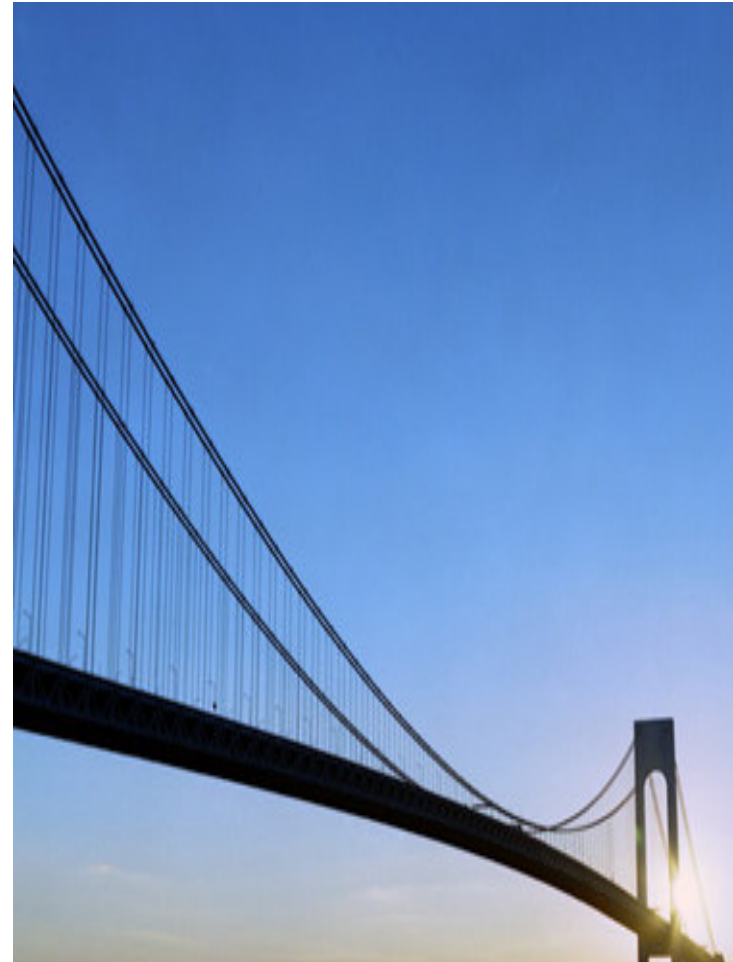


Agenda

Tru64 UNIX[®] Roadmaps

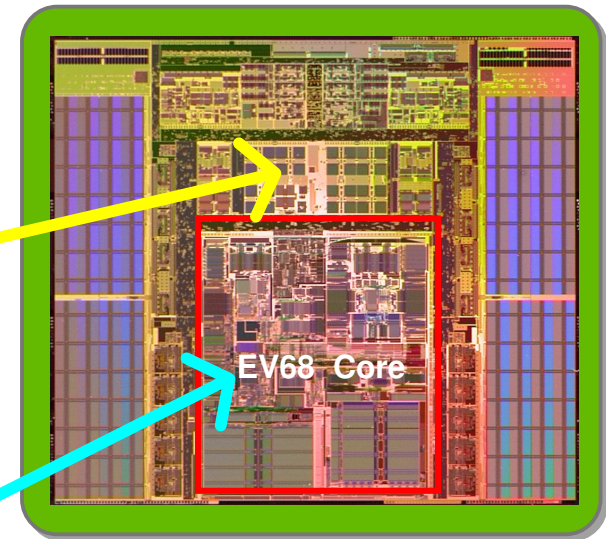
5.1B and its
enhancement
releases

Wrap up



Version 5.1B EV7 Infrastructure

- EV7 platform support 2-8, 16, 32 and 64 (Sept 03) CPUs
- Indictment
 - CPU
 - PCI
- On Chip Controllers
 - memory and I/O
 - Transparent to applications
- Processor Scheduler
 - mesh scheduler
 - NUMA gravity
- EV6 core processor
 - No changes to compiler or code scheduling
 - Completely transparent to software



Security Hardening

- Unprecedented Memory Attack Protection (in V.5.1B PK2)
 - Heap Buffer Overflow Protects Any Area of Program Memory from Executing Malicious Code
 - Even Apps Vulnerable to Heap Buffer Overflows Become Impenetrable
 - Optional Activation
- Bundled SSH replaces traditional less secure commands
 - Based on application from SSH Communications Security.
 - Allows System Admins to force use of SSH instead of rsh.
 - root may set **EnforceSecureRutils=Yes** in /etc/ssh2/ssh2_config
 - User may set EnforceSecureRutils=Yes in \$HOME/.ssh2/ssh2_config
- Pseudo Random Number Generator.
 - Captures, stores and shuffles timing of HW interrupts (like a deck of cards)
 - Produces a random number when requested from deck.
- OpenLDAP Directory Server now available via the APCD
- Common Data Security Architecture

LSM Enhancements

- Fast Plex reattach:
 - Create a 'FPA' capable volume using top-down (TD) or bottom-up (BU) approach
 - `volassist` (TD)
 - `volplex`, `volsd`, `volmake`, `volume` (BU)
- LSM & HW snapshots
- **`volclonedg`** will allow hardware clones/snaps to be included in their own disk-group
- `# volclonedg -g dg1 dsk14 dsk15 dsk16`
 - LSM creates the clone disk group and starts its volumes.
- **Clone_disk_name:** Has to be device, not partition

File System Enhancements

- ADVFS Freeze/Thaw Domains
 - /sbin/freezefs
 - metadata-consistent state until thawed, reads continue
 - /sbin/thawfs
- AdvFS growth of volumes
 - If the fileset is not already mounted, enter:
 - **mount -o extend domain#fileset /mountpoint**
 - If the fileset is already mounted, enter:
 - **mount -u -o extend domain#fileset /mountpoint**

Filesystem Enhancements continued



- AdvFS vFast: Automatic Background Defragmentation
 - Command **/sbin/advfs/vfast**
- AdvFS Utilities License required for vFast
 - **/sbin/defragment** enabled as part of base OS
- Parallel SCSI Bus Probe: (***disabled*** by default)
 - To enable
 - **parallel_edt_scan=1**
 - To disable
 - **parallel_edt_scan=0**

Networking



- IPv6 Production Mode
- Continued support of IPv4 Networks
- Dual Stack IPv4 and IPv6
- IPv6 Porting Tools
- IPSEC supported on IPv6
- Update POP and IMAP
- Updated via Internet Express
 - Bind 9 and Sendmail (July 2004)

IPv6
Networking for the 21st Century

TruCluster Server V5.1B

Balancing CAA App resources



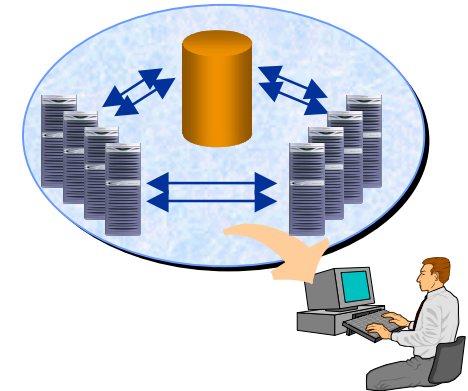
- **/usr/sbin/caa_balance -all [-q]**
 - Attempts to find optimal member for all apps
 - -q Suppress output from the command.
- **/usr/sbin/caa_balance -s *source_member* [-q]**
 - Optimal placement for apps on current member
- **/usr/sbin/caa_balance *resource_name* [...] [-q]**
 - /usr/sbin/caa_balance testapp

TruCluster Server V5.1B

CFS Dynamic Load Balancing



- Dynamic rebalancing based on
 - User defined policy and preference / connectivity / memory consumption / failover events / analysis
- Managed by `cfstd`
 - One `cfstd` per member
 - `cfstd` startup
 - Read config file (`/etc/cfstd.conf`)
 - Select leader
 - Ready to track statistics and do the work
- Use **`kill -HUP <cfstd.pid>`** to force re-read of config file
 - Recommend, considered, not considered, preferred
 - Results from analysis are logged in `/var/cluster/cfs/analysis.log`





TruCluster Server V5.1B

CFS Mount Affinity

- Allows admin to specify a cluster member as initial server for a file system.
 - Provides same functionality as the Sierra Cluster's member fstab feature (aka `fstab_member`)
- Most useful for NFS client file systems which cannot be relocated after they've been mounted
- Command

```
# mount -o server=<hostname>
```

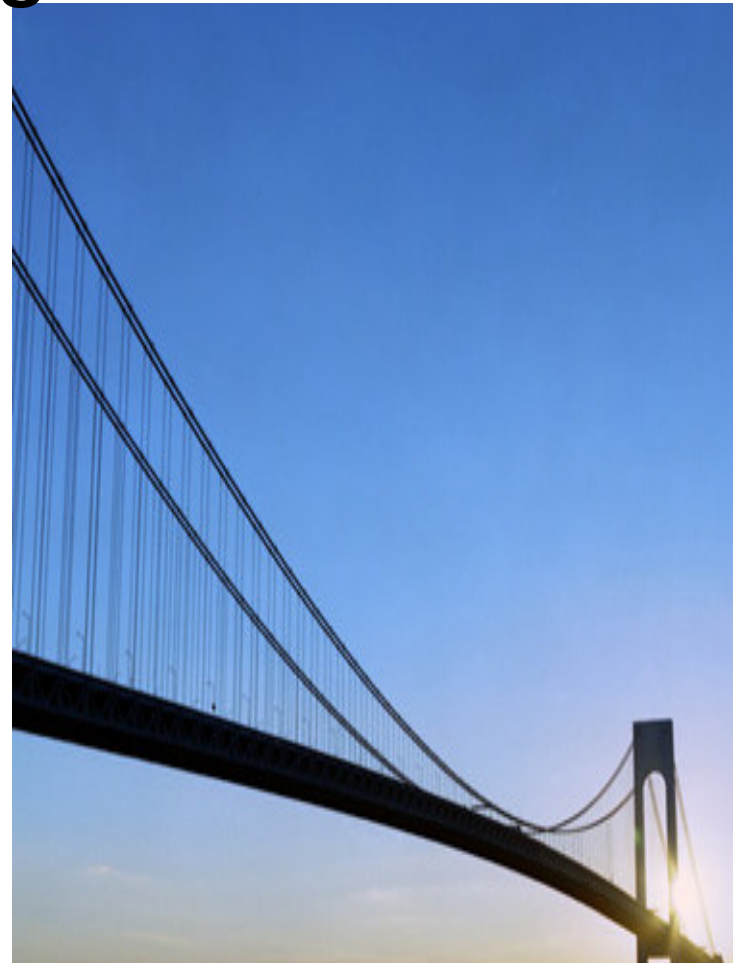



HP Tru64 UNIX® V5.1B-1 Highlights

- High Performing Platform for 64 CPU EV7 Systems
- The New DS15 AlphaServer
- Enhanced Storage Manageability
 - Via support for additional SNMP trap events
- Greater file system scalability
 - Higher LSM I/O throughput
 - AdvFS panic avoidance

Enhancement Releases

Dash Releases



Binary Compatibility with V5.1B

Tru64 UNIX® V5.1B and V5.1B-2 Compatibility

- *“Version 5.1B-2 is a minor, update release of Tru64 UNIX®, consisting of V5.1B base components, which remain unchanged, and updated components for Version 5.1B-2.”*
- *“It does not require the ‘update installation’ procedure of the operating system. As a result this release preserves total binary compatibility with Tru64 UNIX 5.1B and does not require ISV application recertification or recompilation.”*

From the binary compatibility statement for Tru64 UNIX 5.1B

Summary of dash release

Release type	Numbered release e.g. 4.x, 5.x	Lettered release e.g. 5.1A, 5.1B	Dashed release e.g. 5.1B-1
Purpose	Introduce significant new functionality, i.e. failover clusters to SSI clusters. It includes APCD updates et al.	Ship a consolidated kit that merges bug fixes and updated functionality. It includes APCD updates et al.	Ship all updated components in an annual updated kit. Updates include fixes and minor functionality within patch kits, updated APCDs, Updated NHD et al.
New functionality	Major changes	Medium changes	Minor changes
Binary compatibility	ISVs traditionally recertify	Some ISVs recertify	No impact To ISVs

Contents of version V5.1B-2 part I

- Items which remain the same as V5.1B
 - Base OS CDROM is V5.1B the foundation for V5.1B-2
 - V5.1B Doc CDROM
 - V5.1B Release notes and various manuals
 - Open Source SW CDROM
 - Linux Portability Toolkit

Contents of version V5.1B-2 part II

- Items which are new to V5.1B-2
 - Release notes for V5.1B-2
 - Drop latest NHD into kit
 - V5.1B-2/PK4 CD-ROM (contains fixes & functionality)
 - Sources CDROM for Open Source components
 - APCD 1 (Associated Product CDROM 1)
 - APCD 2 (Associated Product CDROM 2)
 - “Read this first” letters

Associated Products V5.1B-2 Vol I

APCD I	Updated Components	Unchanged
Advanced Printing SW		•
Advanced Server for UNIX	•	
Cobol RT Library		•
Development Enhancements		•
Fortran RT Library		•
Hypersort		•
Java TM	•	
LDAP Client Utilities	•	
DataDirect (ODBC/JDBC Driver)	(updated via the Web) •	
Mozilla		•
Multimedia Services	•	
OpenLDAP		•
Pascal RT Library	(updated via 5.1B-2/PK4)	
Worldwide Language Support		•
Tru64 UNIX to HP-UX STK vX		•
Appscan v2.2		•
hpuxman v1.1		

Associated Products V5.1B-2 Vol II



APCD II	Updated Components	Unchanged
Perl	•	
Collgui	•	
DECevent		•
Extended System V	•	
GNU Source		•
Graphical Program TK		•
Legato Networker	•	
Motif	•	
Porting Assistant		•
Powerstorm Graphics		•
Secure Web Server	•	
Sysman SW Manager ADK		•
TruCluster Server	(updated Via 5.1B-2/PK4)	
UniCensus check	•	
Visual Threads	•	
WEBES (EV7z work)	•	
Windows 2000 SSO		•
Xemacs	•	
Retired components		•

Performance Improvements

- Support for GS1280 EV7 1.3GHZ based systems
 - Circa 12-13% performance improvement with Tru64
 - Exceptional scalability
- Improved Large SMP & NUMA System Performance via Unified Buffer Cache Scaling
- Quicker patching of systems (40% approx)
- Faster boot time via improved LSM booting

V5.1B-2 Resiliency Enhancements

- Faster Problem Diagnosis (HP Services tool)
- Improved Cluster Efficiency For Bad Disk Detection
 - Ability To Differentiate Path Or Device Failure Reduces Time & Overhead From Devices Gone Bad
- Improved Troubleshooting Efficiency from Cluster Alias Information
 - Enables Run Time Information Retrieval From Cluster Alias Daemon
- Improved Memory Channel Performance During Peak Utilization

V5.1B-2 Resiliency Enhancements cont

- Performance improvements for Databases and Web Server Responsiveness via Sticky Cluster Alias
 - Client Connections To Same Cluster Node Creating *Stickiness* Between Servicing Cluster Member & Specific Client/Port
- Process Management through Clusterized Commands
 - SYSCONFIG now clusterized

Networking & Patching

- Networking Standards Updated
 - Mobile IPv6 Update in Line With Latest RFCs
 - IPv6 Advanced API Conforms To Latest Specification (RFC 3542)
- Major Patch Kit Quality Improvement
 - Quicker patching of customer systems (40% approx)
 - All or nothing
 - Can uninstall
 - V5.1B-2/PK4 contains fixes and functionality



Worldwide Language Support

- Updated localized Messages
- Improved Asian TTY subsystems
- Enhanced Chinese support
- Improved iconv converters

Free 3rd party products

- BEA Weblogic from BEA
 - Pointer to BEA Weblogic's site for Tru64 UNIX users
 - BEA Weblogic Workshop
- Stalker CommuniGate Pro from Stalker
 - Pointer to Stalker site
 - Free trial of full product
 - Stalker provides support



YOUR FAST TRACK

BEA Weblogic Workshop, Free Edition
TO DEVELOPMENT SUCCESS.



Benchmarks—CommuniGate Pro running on HP Tru64 UNIX and AlphaServer:

Try a fully functional, fully supported evaluation version of CommuniGate Pro. Simply download and install from <http://www.stalker.com/download>.

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Free 3rd party products with 5.1B-2 cont...



- Dataprotector
 - HP OpenView Storage Data Protector 60 Day Trial
 - For HP StorageWorks SSL1016 Tape



- Datadirect (Now owned by Progress) (ODBC and JDBC drivers)
 - New versions of drivers for Oracle 10g Support
 - HP and Datadirect Commitment to new drivers for the next 3 years
 - Extended 6 year support commitment
 - Enables continued data access and cross platform interoperability
 - Available via web download
 - <http://h30097.www3.hp.com/data-access/download.htm>



Free 3rd party products with 5.1B-2 cont...



- *EnterpriseSCHEDULE* (TBD)
 - Pointer to the ISE product site
 - 60 day trial copy
 - Enterprise Batch Scheduler
 - Ships with every new HP-UX server today
- *Console Works*
 - Pointer to the TDI site
 - 3 month trial version of product
 - Used to ship with Wildfires
 - Includes Marvel Support



Common Management for Tru64® UNIX and HP-UX 11i environments



Enterprise Management



Multi-system Management

- Tru64 UNIX agents

HP Systems Insight Manager (HP SIM)

OpenView
Systems
Management
(Console)

- HP OVO Agents for Tru64 UNIX

OpenView
Storage
Management

- HP OpenView Storage Data Protector
- HP OpenView SAM

OpenView
Network
Management

- HP OpenView TeMIP

Expanded I/O Options Tru64 UNIX® V5.1B-2



- FibreChannel 2Gb HBA
 - LP10000: Dual Channel



EVA



XP

- Continued connectivity to SAN
 - SAN Infrastructure:
 - Firmware, switches, etc.
 - Planned support for next Generation StorageWorks arrays:
 - MSA, EVA, XP (CY05)



MSA



General Information



- Update Paths

- 5.1A → 5.1B*

- 4.0F → 4.0G → 5.1 → 5.1B*

(Note: 5.1B* = 5.1B, 5.1B-1, 5.1B-2, 5.1B-3 etc)

- Licensing

- 5.1B → 5.1B-* requires update license

- 5.1A → 5.1B requires update license

- 4.0x → 5.0x requires update license

- Base OS Isaac.chute@hp.com

- Clusters bob.grosso@hp.com

- Storage Tom.Wolklin@hp.com

- HW and Product Planning Dennis.bak@hp.com



Best Practice info

- **Security**

- http://h30097.www3.hp.com/docs/best_practices/sec_bps.html
- <http://h30097.www3.hp.com/docs/techtips.html>
- http://h30097.www3.hp.com/docs/pub_page/doc_list.html

- **Sys admin**

- http://h30097.www3.hp.com/docs/best_practices/revised.html

- **Internet express**

- http://h30097.www3.hp.com/docs/best_practices/osis_63bps.html

- **Cluster**

- http://h30097.www3.hp.com/docs/best_practices/clus_bps.html
- http://h30097.www3.hp.com/pdf/cluster_interconnect_wp.pdf

- **Global**

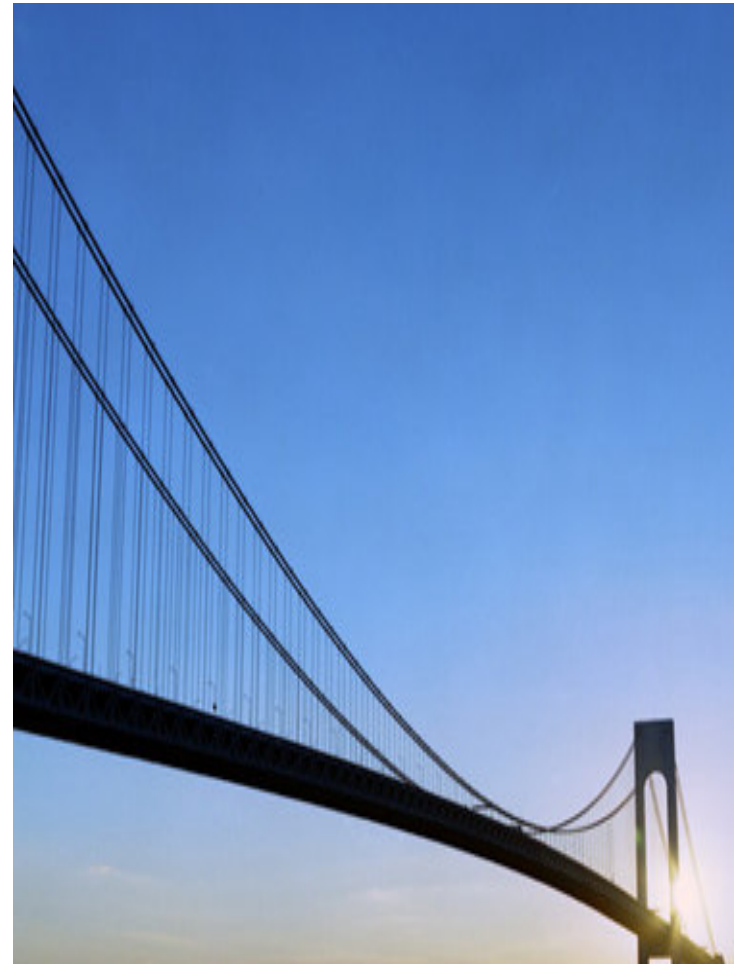
- http://h30097.www3.hp.com/docs/best_practices/

Agenda

Tru64 UNIX[®] Roadmaps

5.1B and its enhancement
releases

Wrap Up



Tru64 UNIX® Summary

- ✓ Delivering on the Tru64 UNIX Roadmap
- ✓ Maintaining a stable Tru64 version target (V5.1B*) for our ISVs and partners
- ✓ Focusing our improvements on quality, resiliency, stability and system expansion capabilities



Questions and Answers?





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