



Future Directions for the HP-UX 11i Operating Environments



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What will we be covering

- HP-UX Operating Environments: what are they
- Define their benefits and their structure
- Release history of HP-UX 11i Operating Environments
- Improvements to date
- Planned Improvements to the HP-UX 11i
 Operating Environments
- Review
- Questions



What is an HP-UX 11i Operating Environment?



- An operating environment is a collection of HP-UX Base Unix, associated network and mass storage drivers and other software components all targeted to a specific customer segment
- Each HP-UX 11i Operating Environment has been tested as a unit
- Delivered as a solution to meet the customers needs
- Continually updated with new products and updated revisions to existing software products
- Maintenance releases are provided with updateability in mind
- First released in December 2000



HP-UX 11i Operating Environments Benefits



- Greatly simplified software deployment
 - Only one reboot needed to install the Operating Environment (OE) of your choice
 - No codewords are necessary to access any of the functionality/application components resident on the OE media
 - Comprehensive offering of Network, Mass Storage, and I/O Drivers available during the install process
 - Online Diagnostics loaded during cold install
- Simple to purchase license
 - Each OE license product contains licensing for the base HP-UX O/S and all of the included HP applications

HPWORLD 2004

HP-UX 11i Operating Environments Benefits



- Attractive pricing
 - Pricing of the OE licenses reflects a built-in advantage over purchasing individual OE components separately
- Published testing results
 - Testing results of application products in the OEs will be published on docs.hp.com for worldwide access both inside and outside HP
- Simple to purchase software support
 - Simplification in Software Support ordering and contract administration has been achieved in parallel with the introduction of HP-UX 11i Operating Environments



HP-UX 11i Operating Environment Architecture



Customer Selectable products

OE bundles

Default Installed products

Always Installed products

HP-UX BaseAux bundle

HP-UX Base

Mission Critical OE bundle

Enterprise OE bundle

Foundation OE bundle

Technical Computing OE bundle

Minimal Technical OE bundle

Superset Structure of OE bundles

- Each higher OE contains the lower OE(s)
- Separate stack for servers and workstations

^{*} Does not include any patch or HW Enablement bundles

Current HP-UX 11i Operating Environments (11i v2 03 2004)



				Workstations		
	Se	rvers		Customer HyperFabric (PCII) PayPerUse Selectable MUX (PCI) JavaOOB		
	Mission Critical Operating Environment			Stand Alone TokenRing (PCI) Software 3 HP-UX Install Utilities Security Level 20 IDS 9000 (Servers only) Security Level 30 RAID Server		
	bundle 1 ECM Toolkit MC/ServiceGuard	Enterprise Operating Environment		Perl IP Filter MySQL Secure Patch Check Default Security Tools ParManager Installed ServiceControl Manager Java JRE v1.3	Technical Computing Operating	
	ServiceGuard NFS Cluster Object Manager Workload Manager	bundle 1 EMS HA Monitors	Foundation	Stand Alone Judy Libraries Java JRE v1.4 Software 3 GNOME 1.4 GTK+ Lib Java SDK v1.3 Bastille Java JDK v1.4 (ISUs can be Secure Shell HPUX Apache webserver deselected at Mozilla HPUX TOMCAT	Environment bundle 1 CIFS/9000 Server	
	Workload Manager Toolkit	MirrorDisk/UX Online JFS (v3.3) OV GlancePlus Pak (English+Japanese) Process Resource	Operating Environment bundle	cold install) Mozilla Source HPUX Webmin HPUX XML Minimal Technical Operating	CIFS/9000 Client Java JPI v1.3 Java JPI v1.4 Java 3D for 1.3	
		Manager	CIFS/9000 Server CIFS/9000 Client Java JPI v1.3 Java JPI v1.4	Online Diagnostics Base-VXVM iCOD nPartition Provider WBEM Services Always Installed Stand Alone NW Drivers 3 Environment bundle 3D Graphics DK	Java 3D for 1.4 MLIB MPI PAM Kerberos	
	Notes:		PAM Kerberos	Base FDDI (PCI) FibreChannel (PCI) ScsiU32000 USB Gigabit Ethernet (PCI, NextGen PCI) ScsiU32000 USB and RTE TechSysConf		
]	Each higher level OE contents of the bundle	previous OE	Base	Install 2 Base Aux bundle Contents Casey Peripheral Device Tool EMS Framework Software Distributor ONC Update UX		
3	Each OE includes the contents All Stand Alone softw removed after	vare can be easily	OE Install	SWGETTOOLS HP-UX 11i Core Functionality HPUXBaseOS (64-bit)	KIIJ2001	

Release History of HP-UX 11i Operating Environments



- Initial release, December 2000: 11i v1
 - Four operating environments: Foundation OE, Enterprise OE, Mission Critical OE and Technical Computing OE
 - Nine maintenance releases have occurred since the initial release for the 11.11 (11i v1.0) release stream
 - An additional operating environment, Minimal Technical OE, was added in 2001
- Second release, July 2002: 11i v1.6
 - Three operating environments were released to support the first Itanium HP-UX release: HP-UX OE, Minimal Technical OE and Technical Computing OE
 - First IPF OE release



Release History of HP-UX 11i Operating Environments



- Third release, 2H 2003: 11i v2
 - Five operating environments were released: Foundation OE, Enterprise OE, Mission Critical OE, Minimal Technical OE and Technical Computing OE
 - Second IPF OE release
 - Updating in Q3 2004 to add PA support
 - providing parity between IPF and PA
 - First HP-UX release to unify IPF and PA



Improvements to the HP-UX 11i Operating Environments

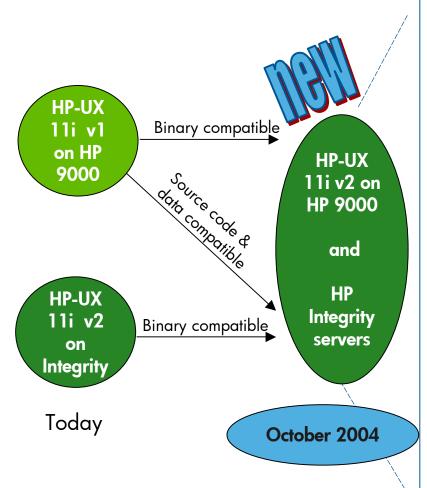


- Added IPF support, August 2002 (11i v1.6)
- Added additional installation options with addition of the Default Installed category allowing the ability to remove software components, June 2003 (11i v1), 2H 2003 (11i v2)
- Added additional install time security features, 2H 2003 (11i v2)
- Added kernel tuning sets to the server and workstation OEs, 2002 (11i v1)
- Adding uniform IPF and PA support, 2H 2004 (11i v2)
- Added additional software products, Ongoing



Common Release smoothes evolution HP-UX 11i v2 on HP 9000





Applications just work – No retesting required

- binary compatibility guarantee (for same hardware architecture)
 - no recompile required on same architecture

Easier system administration

- same install, patch, update processes for both architectures

Performance/scalability enhancements for HP 9000

- 15-25% performance up to 2x plus
- large file system to 32 TB
- 1-128-way support

Scalability enhancements for HP Integrity servers

-1-128-way support

Integrated partner testing

 verified configurations for SAS and Business Intelligence stacks

HP-UX 11i Operating Environment Enhancement Goals



- Improve Return on IT Investment
- Deliver More
- Create an Adaptive Enterprise Design

simplicity

Reduce number of elements

Automate change

agility

value

- Break down monolithic structures
- Create reusable components
- Implement logical architectures
- Use standard technologies and interfaces
- Adopt common enterprise architecture
- Implement standard processes





Disclaimer

- Improvements to the HP-UX 11i Operating Environments represent directions and areas of discussion
- No commitment is made with respect to when or if these improvements will ever be released



OE Future Improvements



- OE Modularization and Software Selection
- Integration of VSE Components
- Design for more install time choices
 - Security
 - Kernel Tunables
- Integration of TruCluster and AdvFS technology
- Improved Update features
- Unify dependencies on common products
- Modularization of the HP-UX Core
- Market Segment SW Management





OE Modularization

- Modularize OEs to provide finer granularity
- Deliver, Install and Update most OE software components as individual components rather than bundles
 - Offers customers more flexibility and choice
 - Allows for easy identification of installed OE components
 - Individual OE bundle tags will remain with the software component and will be listed when swlisted
 - Facilitates easy removal of installed components in the future
 - Because bundle tags will remain, customers can more easily choose components for removal or update



OE Modularization (continued)

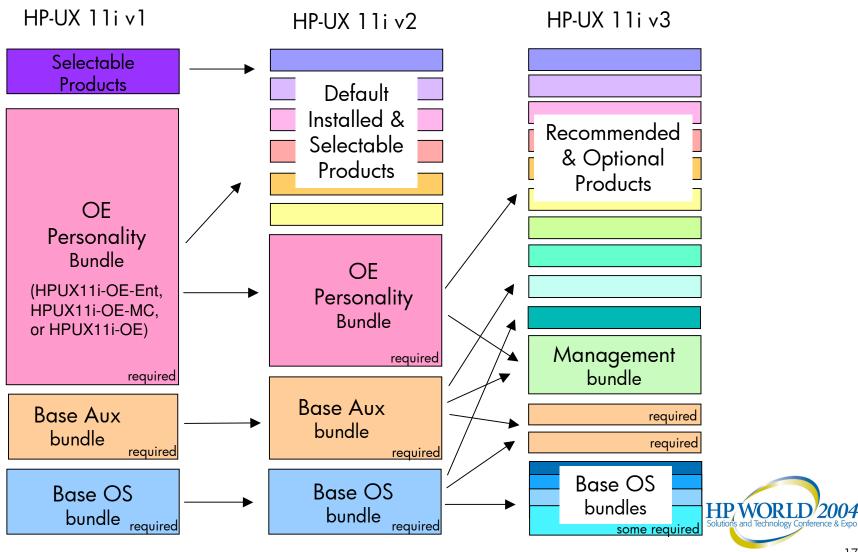
- Provide consistent bundle structures between software in the OE and software from the AR media and the web
- Makes it easier and more reliable for customers to minimize their OE configurations

Flexibility without complexity!



Operating Environment Modularization Roadmap

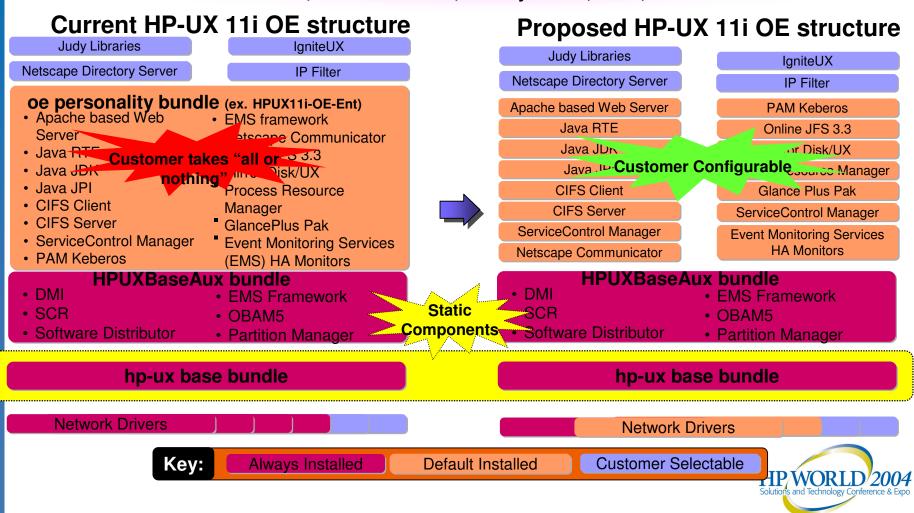






Modularized OE Structure

ISUs, Software Packs, Quality Packs, HWE, etc.



OE Modularization and Software Selection



- Components will continue to be tested together as an operating environment
- OEs will be setup with defaults which will allow quick install utilizing default selections if the customer chooses not to make any changes
- OE components will continue to be available as a package with respect to Support and Licensing
- All the benefits of an integrated solution with the flexibility of a la carte customization

Flexibility without complexity!



OE Modularization and Software Selection (continued)



- Offer OE components as:
 - Required
 - Recommended
 - Optional

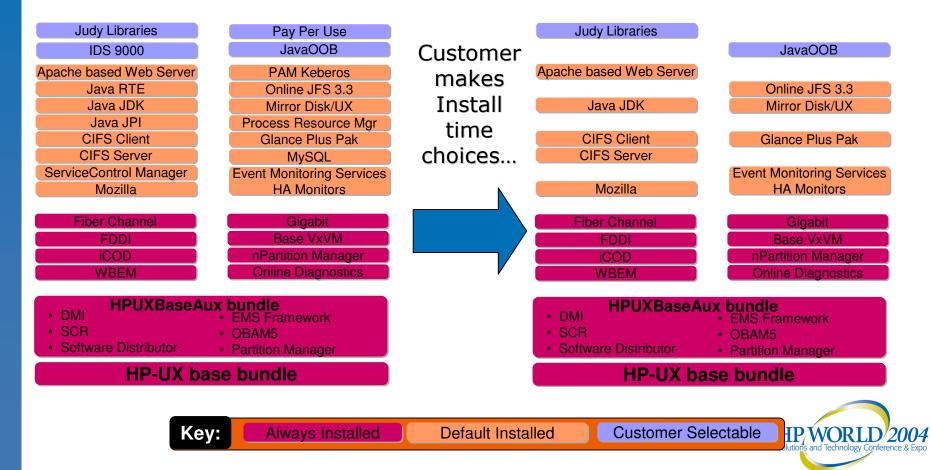


Modularized OE Structure: Customer Tailored Install



Components offered on OE Media

Installed result on customer system



Integration of Virtual Server Environment Components into the OEs



- Addition of VSE components such as vPars elements, HP System Insight Manager and gWLM
- Integration of Control, Availability, Partitioning and Utility Pricing elements in the OEs

HP Virtual Server Environment (VSE) Control **Utility Pricing Availability Partitioning** Systems Insight Serviceguard **n**Pars Instant Capacity Manager Serviceguard Temporary Instant pSets Global Manager Capacity **HP** Integrity Workload Virtual Machines Pay Per USE Manager with sub-CPU and shared I/O



New Install Time Choices: Security

- Add install time security (Bastille) to earlier 11i release streams as well as new operating environments for future release streams
 - Three security levels
 - Selectable at initial system install, modifiable at a later date
- Allow customers to "lock down" their system to prevent uncontrolled access when system first boots
- All OE components are/will be compatibility tested with the security scheme

New Install Time Choices: Kernel Tunables



- Additional application specific kernel tunables will be added to the operating environments
- Will provide defaults to setup a general purpose kernel
- Changes will be implemented at install time but may be modified using kernel configuration tools



Support for TruClusters and AdvFS Technology



- Integration of Tru64 features into HP-UX 11i
 Operating Environments: TruClusters and AdvFS –
 bringing the best technology from Tru64 UNIX into HP-UX 11i
- New file system defaults
- Complexities are being worked
- Planned Release with 11i v3





Improved Update Features

- Continued support for Update from previous release streams, varies by release
- Continued support for update from one OE to another, specifics vary by release
- Automatically update what has been installed on the customer system- Match Target
 - Controllable by customer
 - More flexibility on what will be updated
 - Opportunity to add newly released OE components
 - Software components and patches (bundles) will be supported by update
- Allow customers to more easily and reliably make incremental OE component updates

Unify Dependencies on Common Products



- Currently many software components include their dependent components within their own package
 - Results in potential inefficiencies and growing media and system space concerns
 - Increases system management overhead
 - If security defects are identified, must be fixed in multiple places
- Create a strategy where dependencies: Java, perl, HP Apache based web server, and others; will always be made available within the OE, rolling their versions on a periodic basis
- Customers can always install newer versions of these components; however, specified versions will always be made available

Unify Dependencies on Common Products



 Components will be "default installed or recommended" such that customers can de-select individual components at initial install based on specific customer requirements, i.e. customer does not want a web server product due to security demands





Modularization of the Core

- Movement of Core products out of Core and into individual OE components
 - Offer greater install flexibility
 - Ability to tailor install and update
 - Products will be updated rather than patched
- Core broken up into multiple bundles, some required some optional
 - Allows for a more minimal install
 - Man Pages offered as optional





Market Segment SW Management

- Tune system to support personality
- Pre-select default Installed or Customer Selectable components for installation based upon OE Personality
- Configure installed components based upon OE Personality
- Manage systems based upon OE Personality
- Possible Market segments planned: Technical, Database, Financial, etc.



Review of improvements



- OE Modularization and Software Selection
- Integration of VSE Components
- Design for more install time choices
 - Security
 - Kernel Tunables
- Integration of TruCluster and AdvFS technology
- Improved Update features
- Unify dependencies on common products
- Modularization of the HP-UX Core
- Market Segment SW Management





How are we doing?

- Are we addressing your needs?
- Is there anything else we can do?
- What are your specific problems?
- Your chance to give HP feedback
- Survey



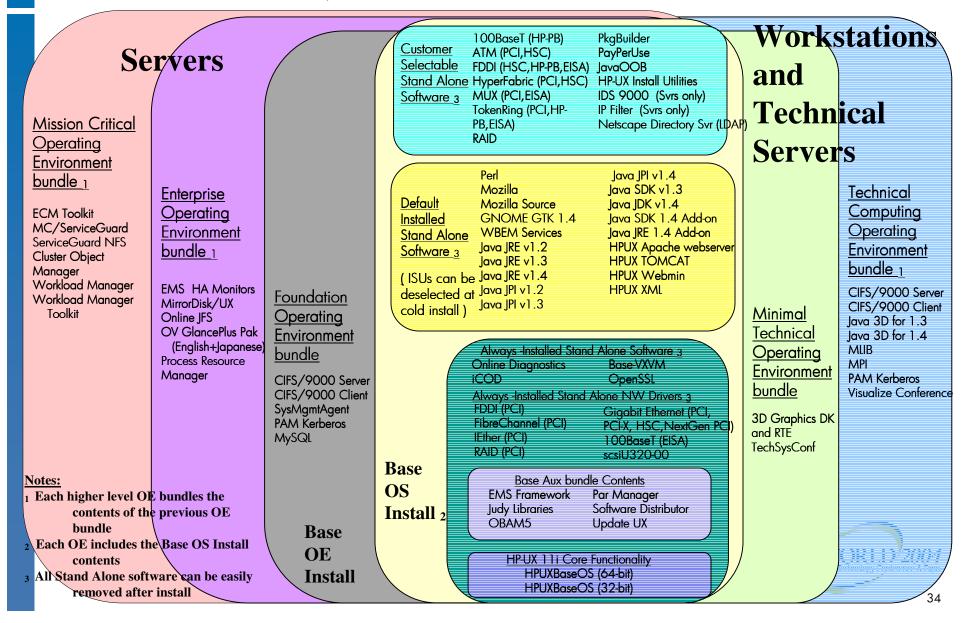


Backup slides



HP-UX 11i v1 Operating Environments, 0604 version





HP-UX 11i v2 Operating Environments, releasing 2H 2004 (includes PA support)



/	Servers			/ Customer HyperFabric (PCII) PayPerUse	tations
				Selectable MUX (PCI) JavaOOB Stand Alone TokenRing (PCI) Security Level 10	
	Mission Critical			Software 3 HP-UX Install Utilities Security Level 20 IDS 9000 (Servers only) Security Level 30 Techni	cal
	Operating			KAID ISCSI	Cai
	Environment			RAID Utilities Netscape Directory Svr (LDAF) Mobile IPV6 Refrectory Svr (LDAF) Server	S
	<u>bundle 1</u>	Enterprise		Perl Secure Patch Check	Technical
	ECM Toolkit	Operating		MySQL ParManager Default Security Tools Java JRE v1.3	Computing
	MC/ServiceGuard	Environment		Installed ServiceControl Manager Java JRE v1.4	Operating
	ServiceGuard NFS Cluster Object	bundle 1		Stand Alone Judy Libraries Java SDK v1.3	Environment
	Manager Splect	<u>-</u>		Software 3 GNOME 1.4 GTK+ Lib Java JDK v1.4 Bastille Java SDK 1.4 Add-on	bundle 1
	Workload Manager	EMS HA Monitors	Foundation	(ISUs can be Secure Shell Java JRE 1.4 Add-on	CIFS/9000 Server
	Workload Manager Toolkit	MirrorDisk/UX Online JFS (v3.3)	Operating	HPLIX TOMCAT	CIFS/9000 Client
		OV GlancePlus Pak	Environment	Cold Install) OpenSSL HPUX Webmin Minimal	Java JPI v1.3 Java JPI v1.4
		(English+Japanese) Process Resource	<u>bundle</u>	IP Filter HPUX XML IECHNICAL	Java 3D for 1.3*
		Manager	CIFS/9000 Server	Operding	Java 3D for 1.4* MLIB
			CIFS/9000 Client	Always -Installed Stand Alone Software 3	MPI
			Java JPI v1.3 Java JPI v1.4	Online Diagnostics VVBEW Services Base-VXVM ————	PAM Kerberos
			PAM Kerberos	00.0 1: 0/	
			PRM Libraries	Always Installed Stand Alone NW Drivers 3 FDDI (PCI) USB Gigabit Ethernet (PCI) Fibre Channel (PCI) sosii 1320	
N	otes:			FibreChannel (PCI) scsiU320 Ether (PCI) TechSysConf	Base
1	Each higher level OI			Base Aux bundle Contents	OS
	contents of the	e previous OE	Base		Install 2
2	Each OE includes th	Base OS Install	OE	UpdateUX Software Distributor SysMgmtBase * IPF only	
	contents		Install	HP-UX 11i Core Functionality	JHC1 JL J/2()()// /
3	All Stand Alone soft removed after		Histan	HPUXBaseOS (64-bit)	
	removed after	mstan			35



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