Future Directions for the HP-UX 11i Operating Environments

Melissa Burns

HP-UX Operating Environment Program Manager

Integrated Solutions Deployment Lab

Hewlett-Packard

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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*

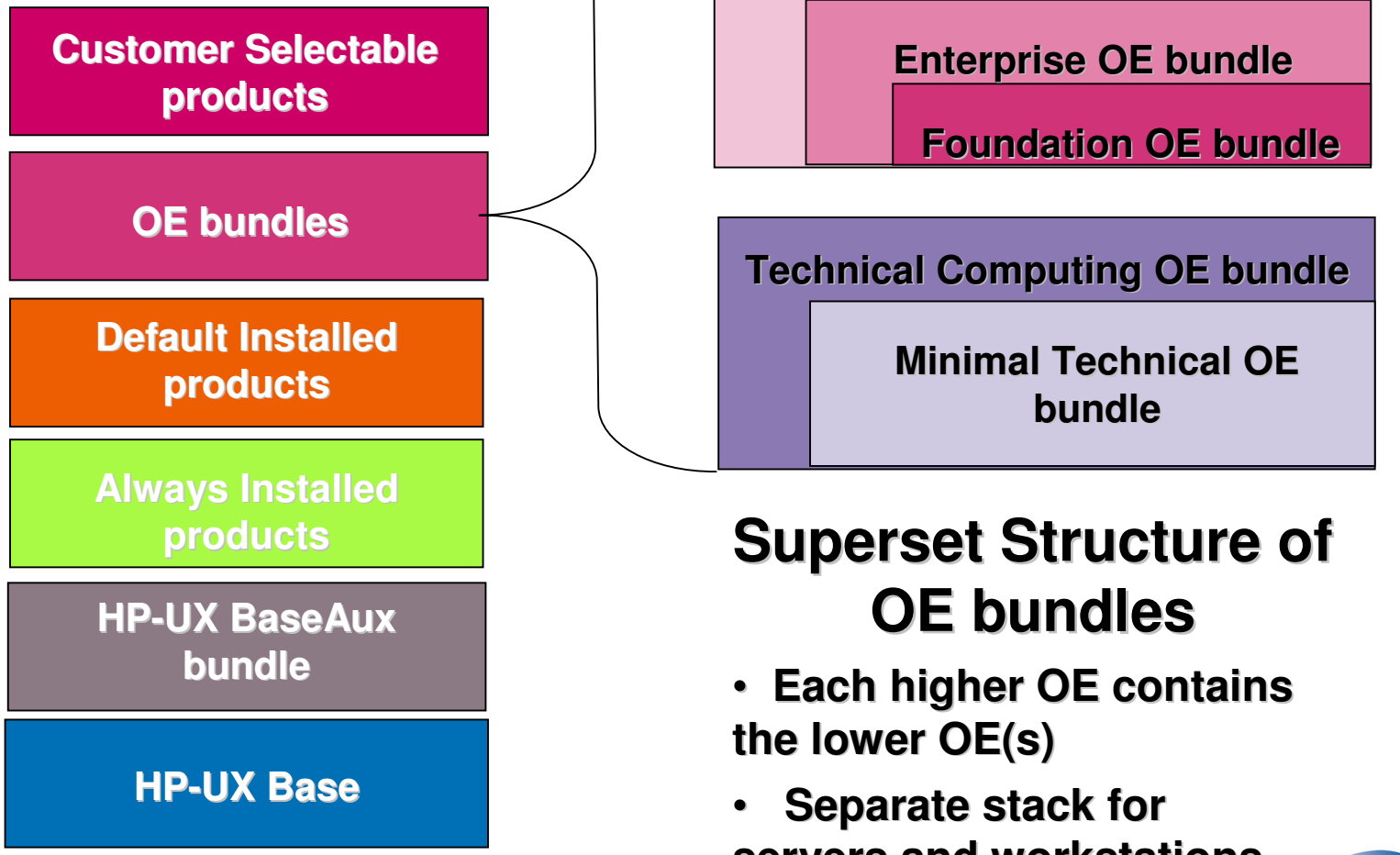
HP-UX 11i Operating Environments Benefits

- *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

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

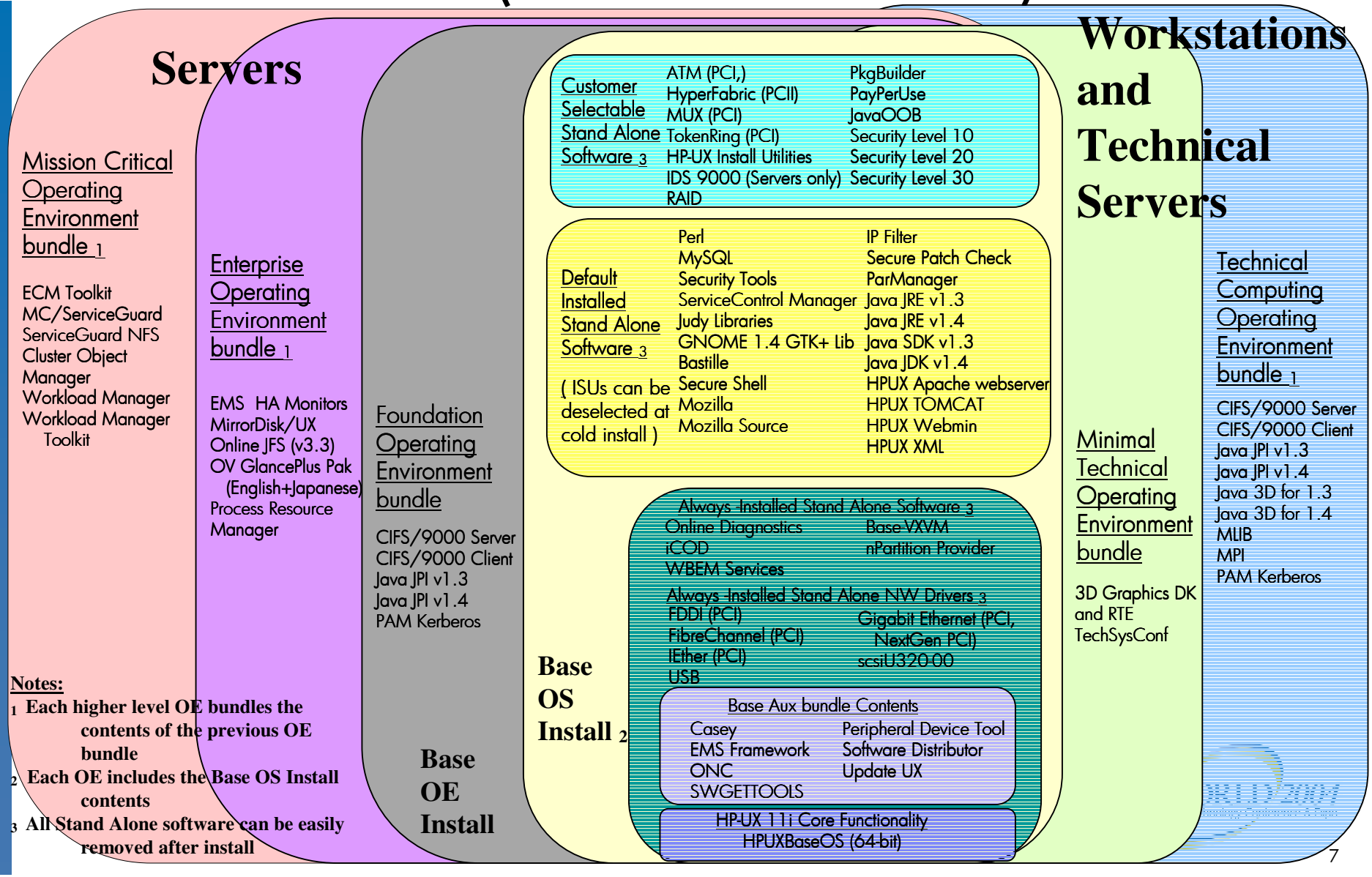


Superset Structure of OE bundles

- 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)



Notes:

1 **Each higher level OE bundles the contents of the previous OE bundle**

2 **Each OE includes the Base OS Install contents**

3 **All Stand Alone software can be easily removed after install**

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

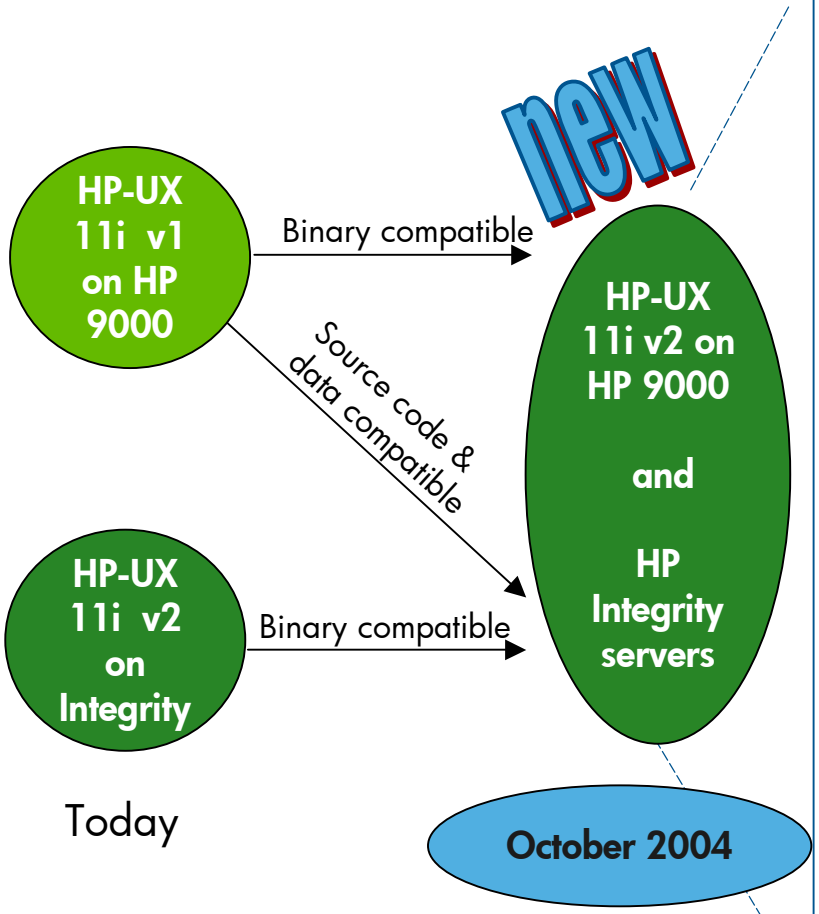
Release History of HP-UX 11i Operating Environments

- *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

- **Break down monolithic structures**
- **Create reusable components**
- **Implement logical architectures**

+

value

- **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

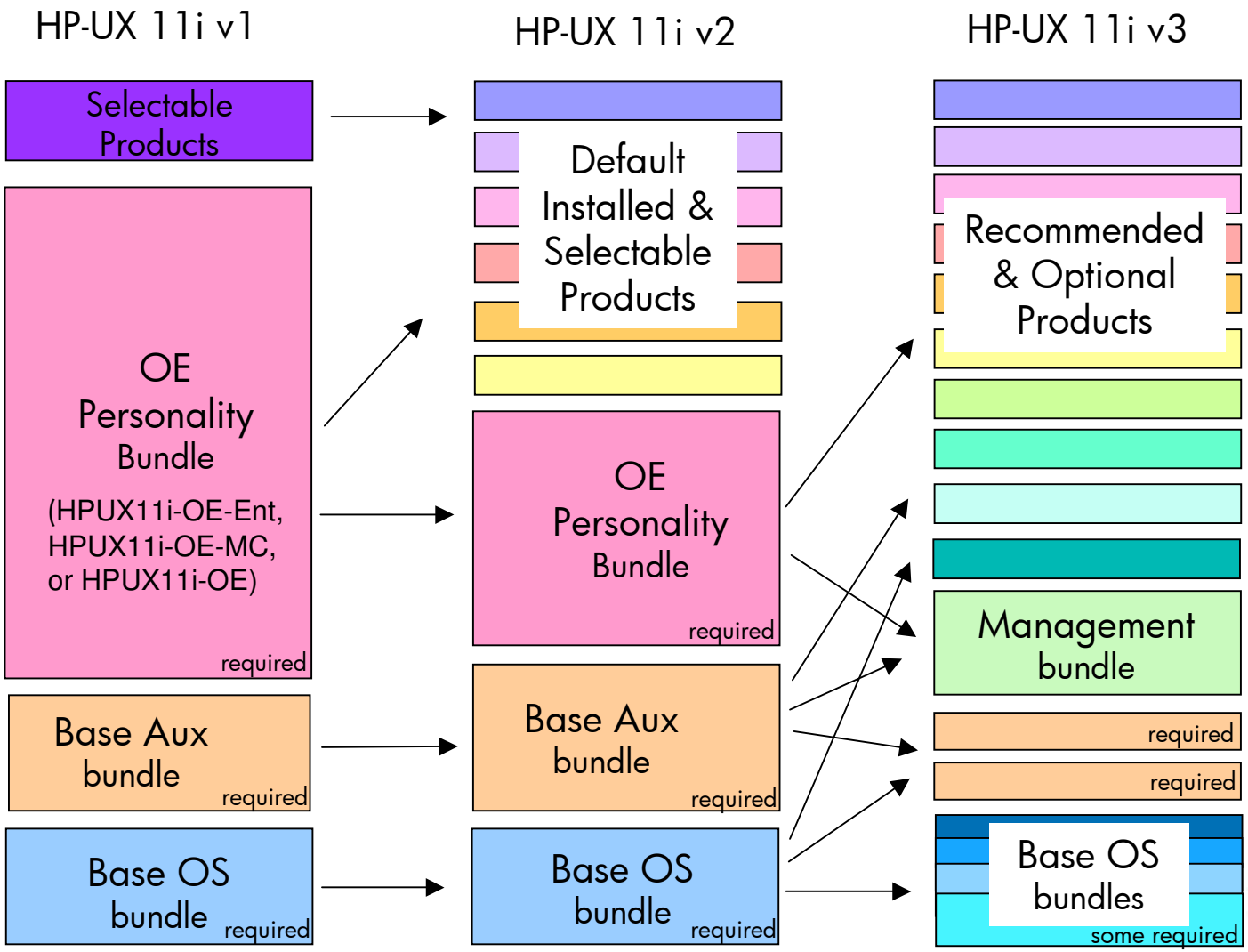
- *Modularize OEs to provide finer granularity*
- *Deliver, Install and Update most OE software components as individual components rather than bundles*
  - Offers customers more flexibility and choice
  - Allows for easy identification of installed OE components
    - Individual OE bundle tags will 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)

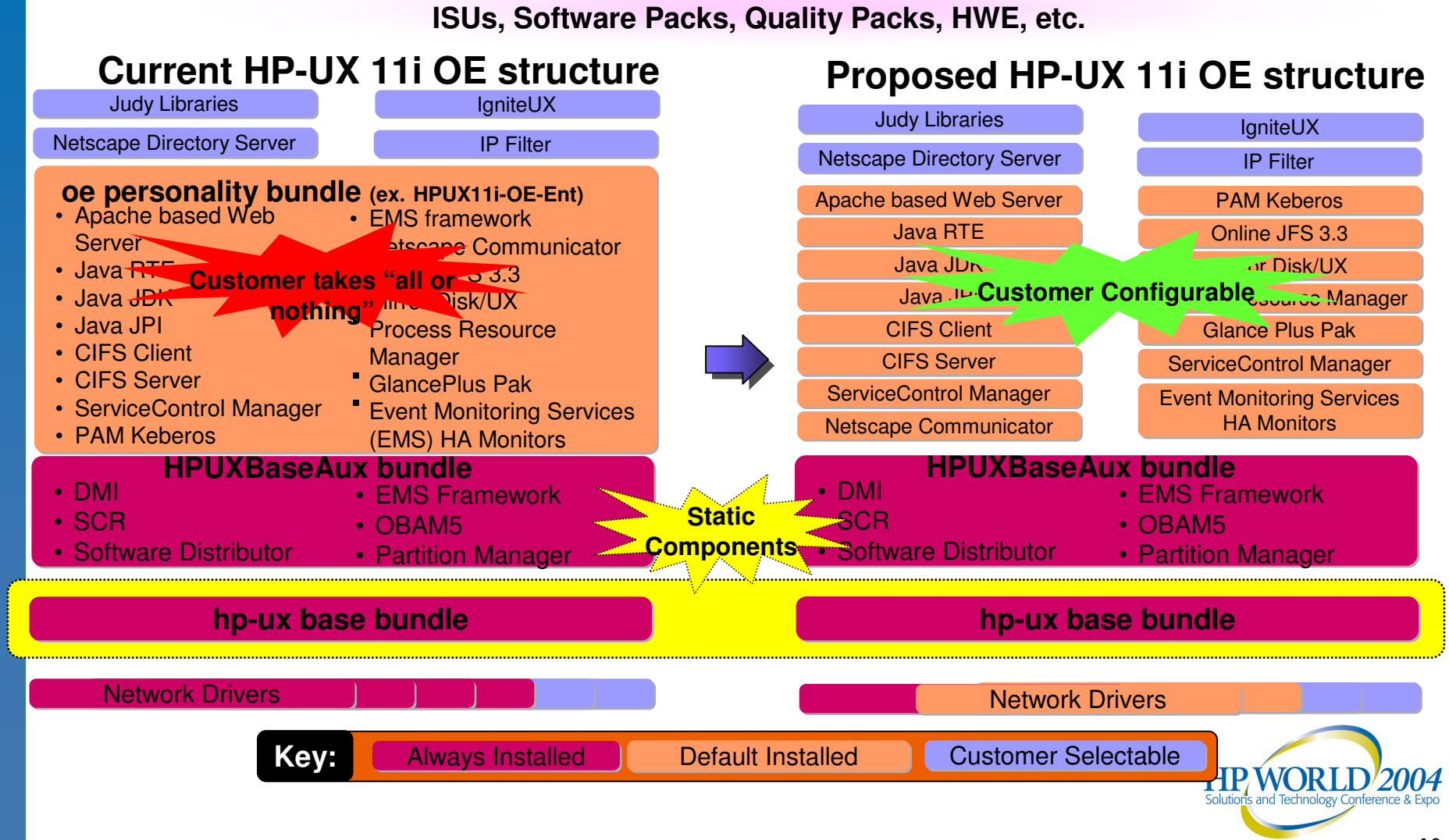
- *Provide consistent bundle structures between software in the OE and software from the AR media and the web*
- *Makes it easier and more reliable for customers to minimize their OE configurations*

Flexibility without complexity!

Operating Environment Modularization Roadmap



Modularized OE Structure



OE Modularization and Software Selection

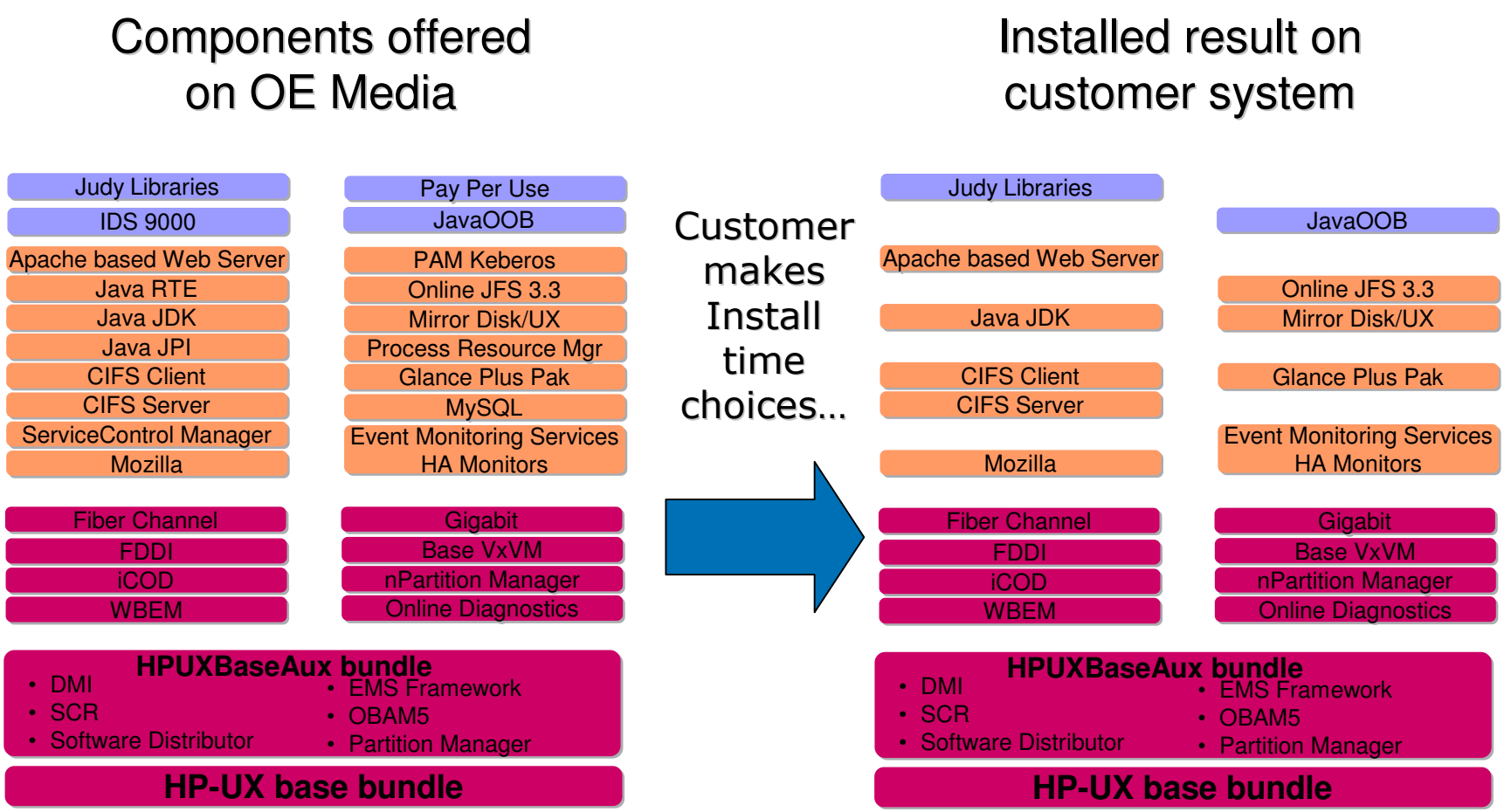
- *Components will continue to be tested together as an operating environment*
- *OEs will be setup with defaults which will allow quick install utilizing default selections if the customer chooses not to make any changes*
- *OE components will continue to be available as a package with respect to Support 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*

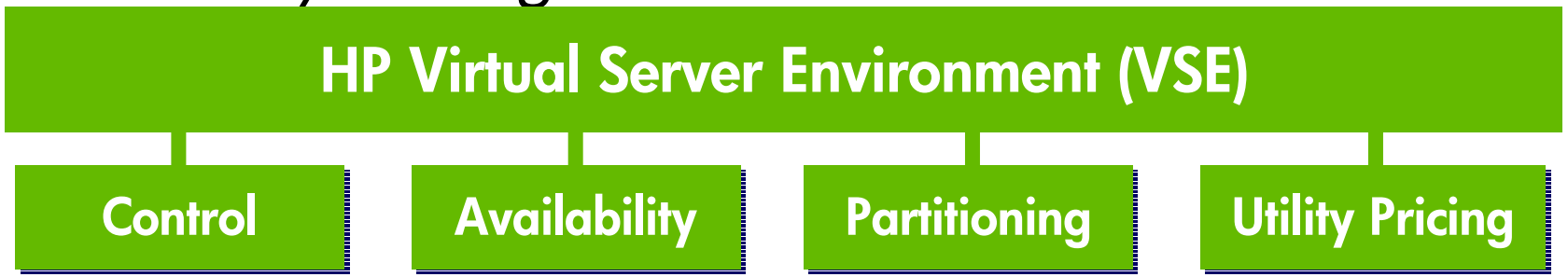
Modularized OE Structure: Customer Tailored Install



Key: Always Installed | Default Installed | Customer Selectable

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*



Control	Availability	Partitioning	Utility Pricing
Systems Insight Manager	Serviceguard	nPars	Instant Capacity
Global Workload Manager	Serviceguard Manager	pSets	Temporary Instant Capacity
		HP Integrity Virtual Machines with sub-CPU and shared I/O	Pay Per USE

Components in Blue are in the OEs today

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

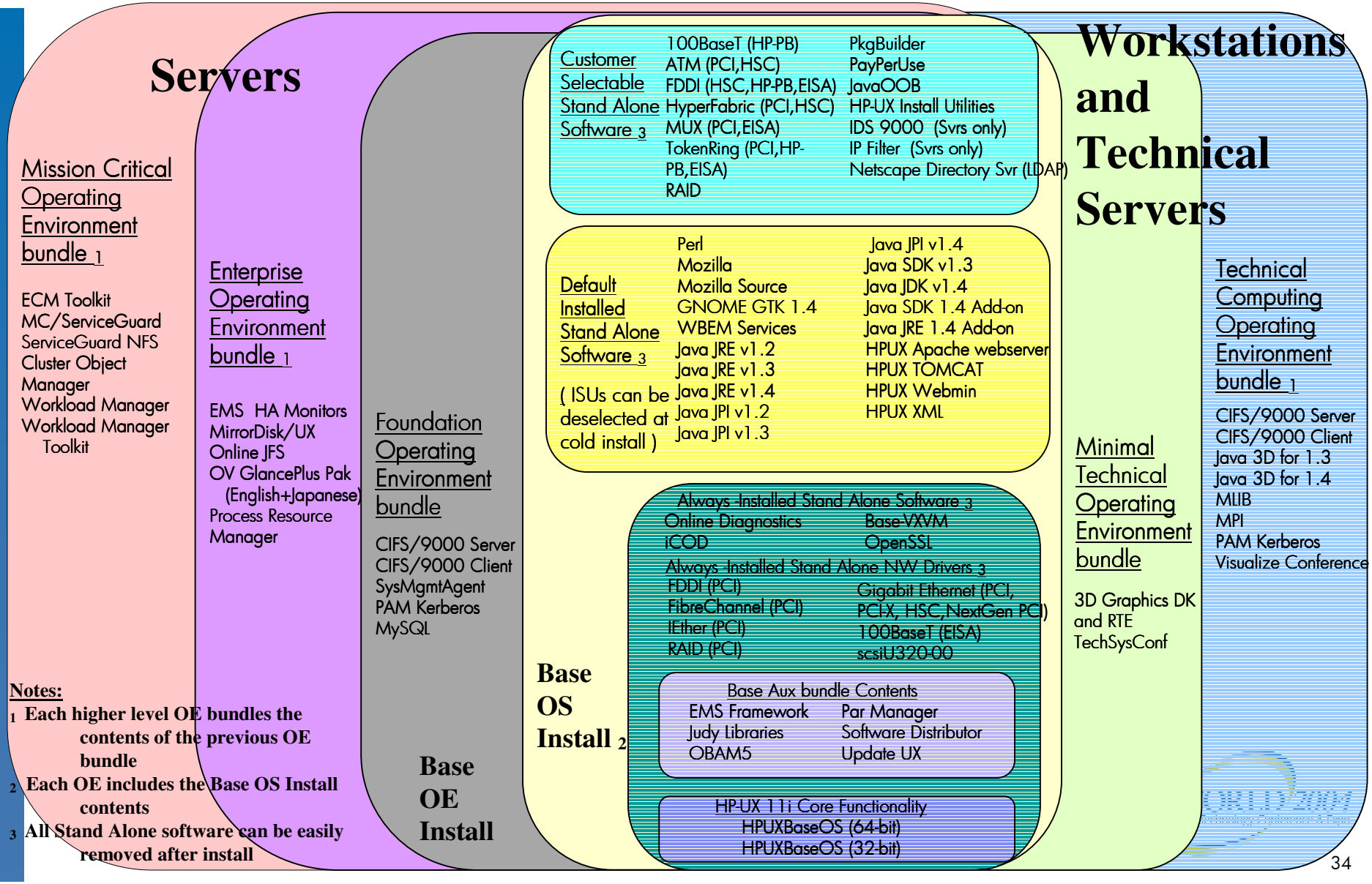
- *OE Modularization and Software Selection*
- *Integration of VSE Components*
- *Design for more install time choices*
  - Security
  - Kernel Tunables
- *Integration of TruCluster and AdvFS technology*
- *Improved Update features*
- *Unify dependencies on common products*
- *Modularization of the HP-UX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



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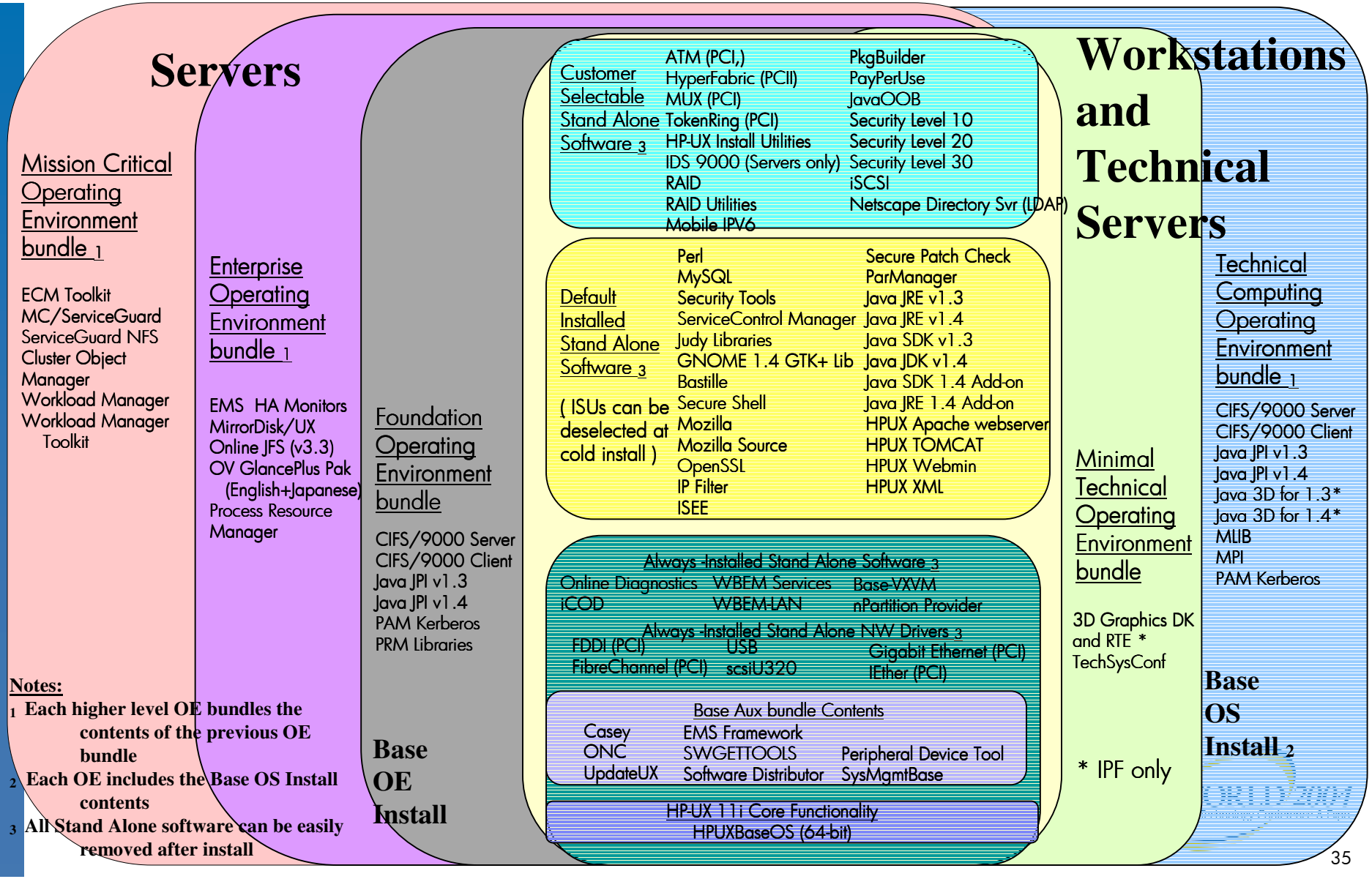
HP-UX 11i v2 Operating Environments, releasing 2H 2004 (includes PA support)



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