



# Adaptive Enterprise Computing in SAP Landscapes



**Ricardo Adarraga / Klaus Brand**  
**Solution Engineers**  
**Hewlett-Packard**

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# Agenda

- Basic considerations
  - SAP landscape (classic / NetWeaver™)
  - HP's Adaptive Enterprise and SAP
- General approach for AE with SAP
- Concrete implementation
- Benefits



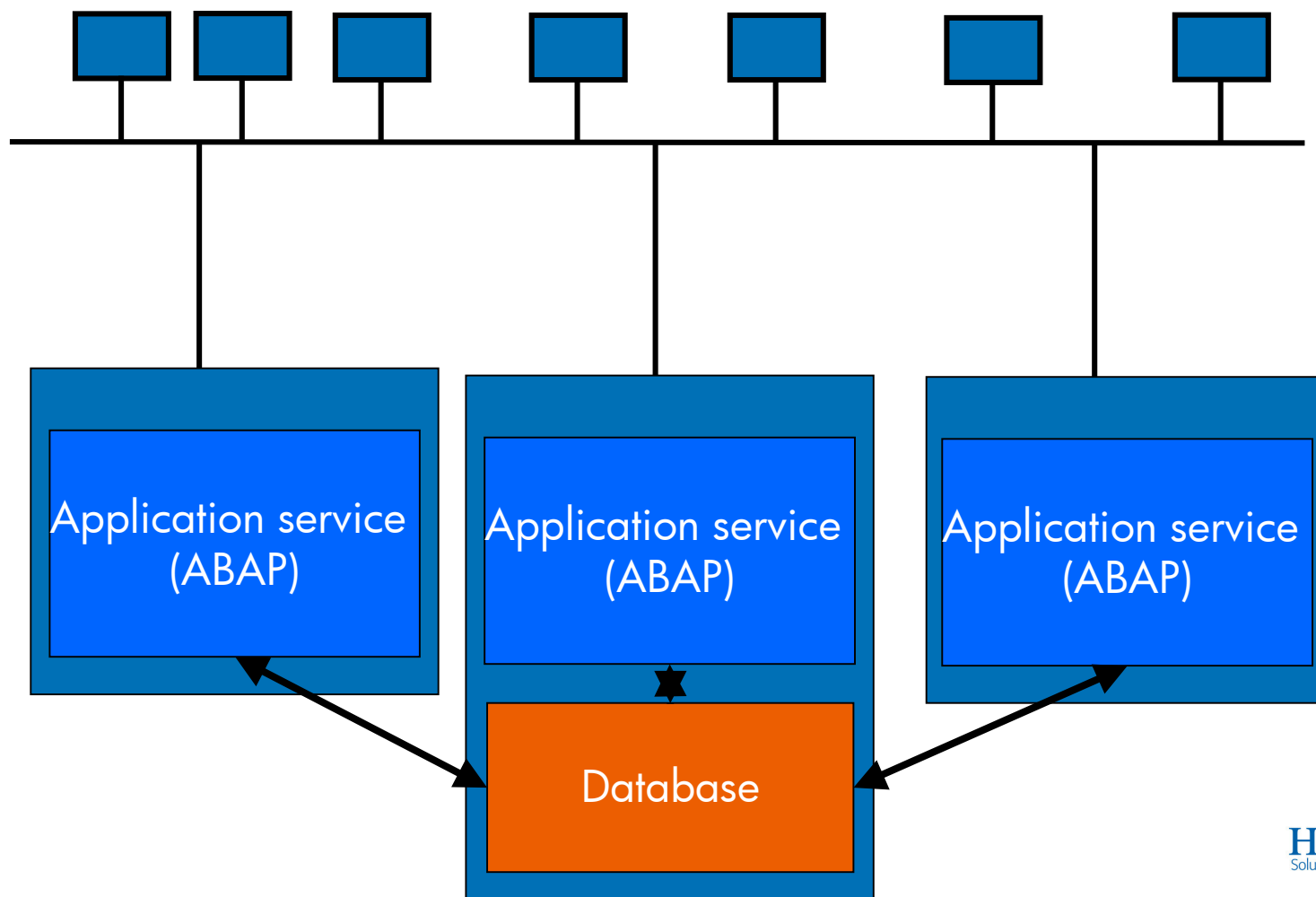
# Basic considerations

# Classic SAP landscape

- mySAP is a set of business software solutions based on a 3-tier client-server architecture
  - 1 database server
  - 1-N application servers (1 central instance)
  - multiple presentation „servers“ = GUI of user
- Usually 3 different system types:
  - development server
  - test system
  - production system
  - transport system for changes included in software

# Classic SAP System Landscape (R/3)

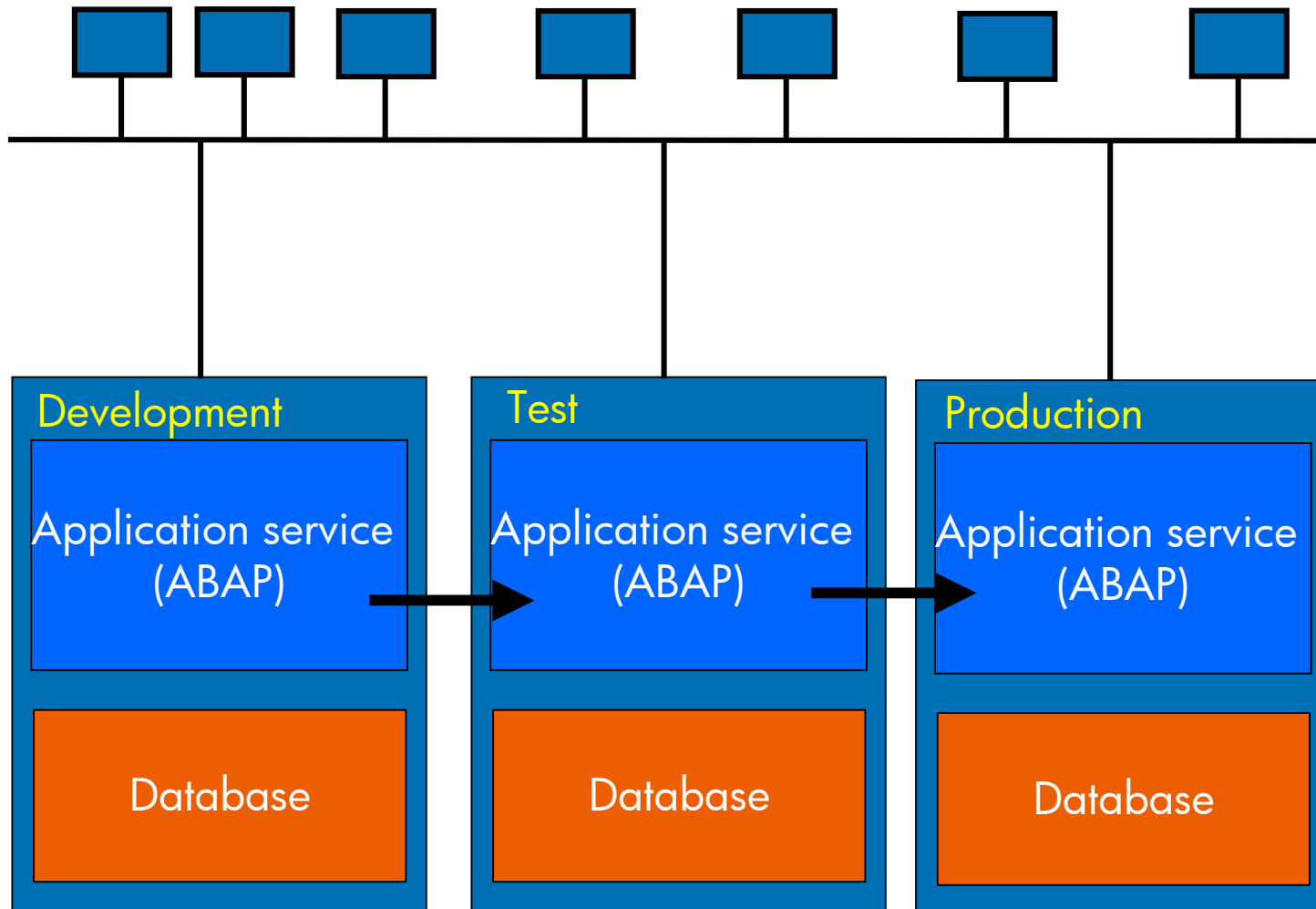
PC Frontends



# Classic SAP 3-System Landscape (R/3)



PC Frontends



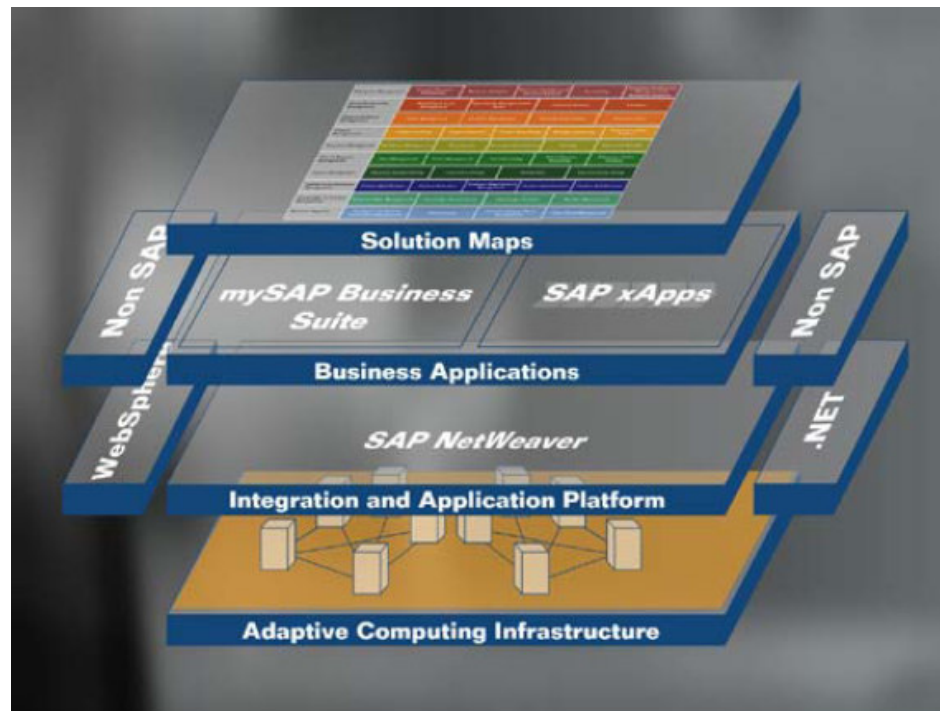
# Classic SAP System

- Monolithic
- Communication through proprietary protocol
- Data are „captured“ in system
- Limited integration with outer world
- Hardware Infrastructure is static („Big Box“)
- Limited infrastructure flexibility according to changing business needs

# SAP NetWeaver™



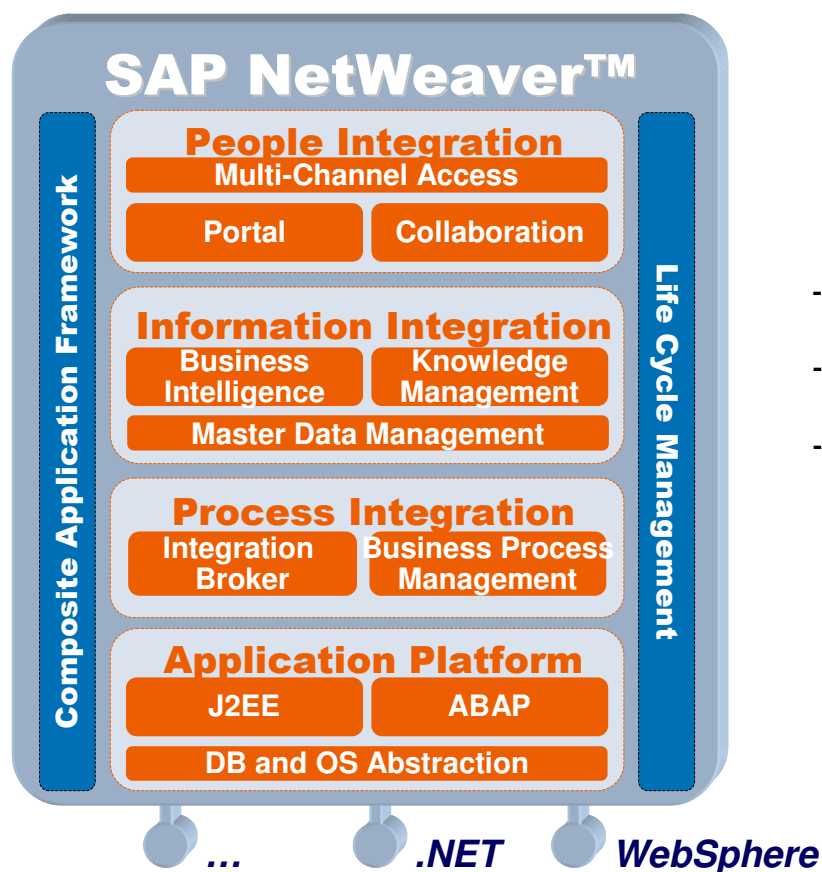
- Enterprise Services Architecture
- Next generation of SAP system landscapes



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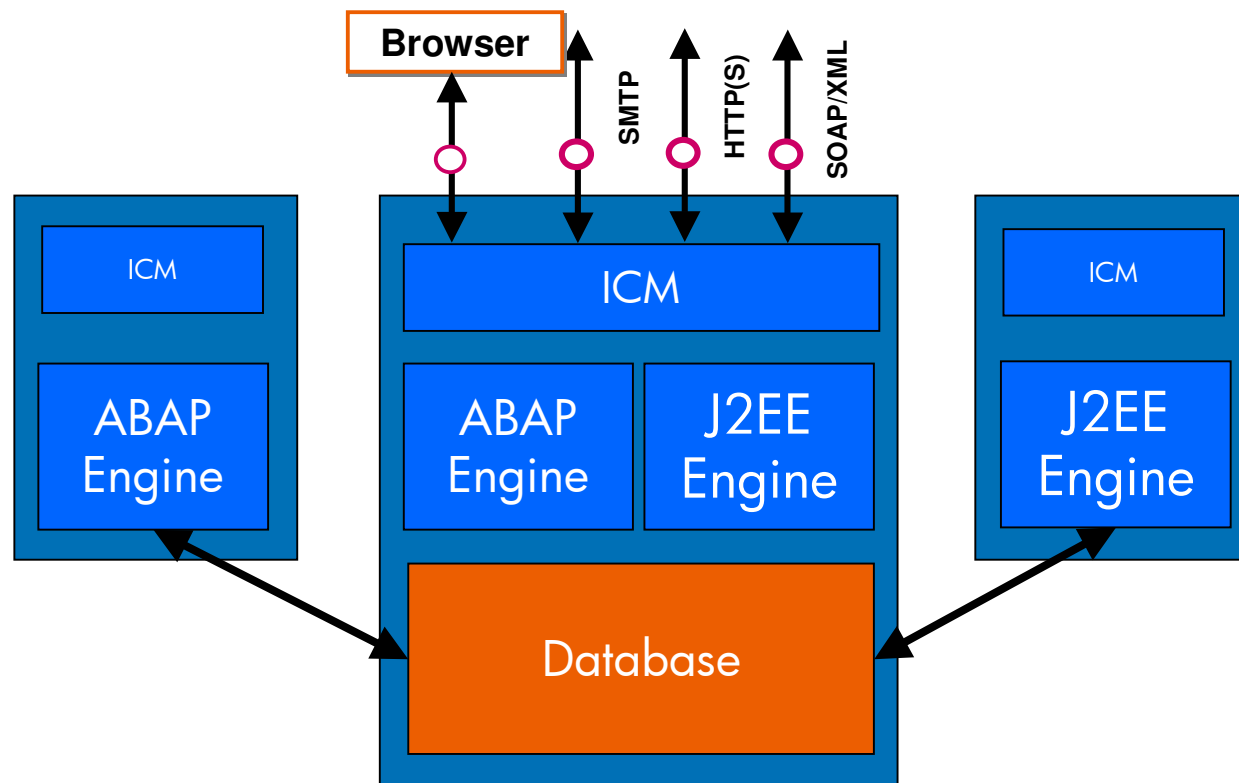
# SAP NetWeaver™



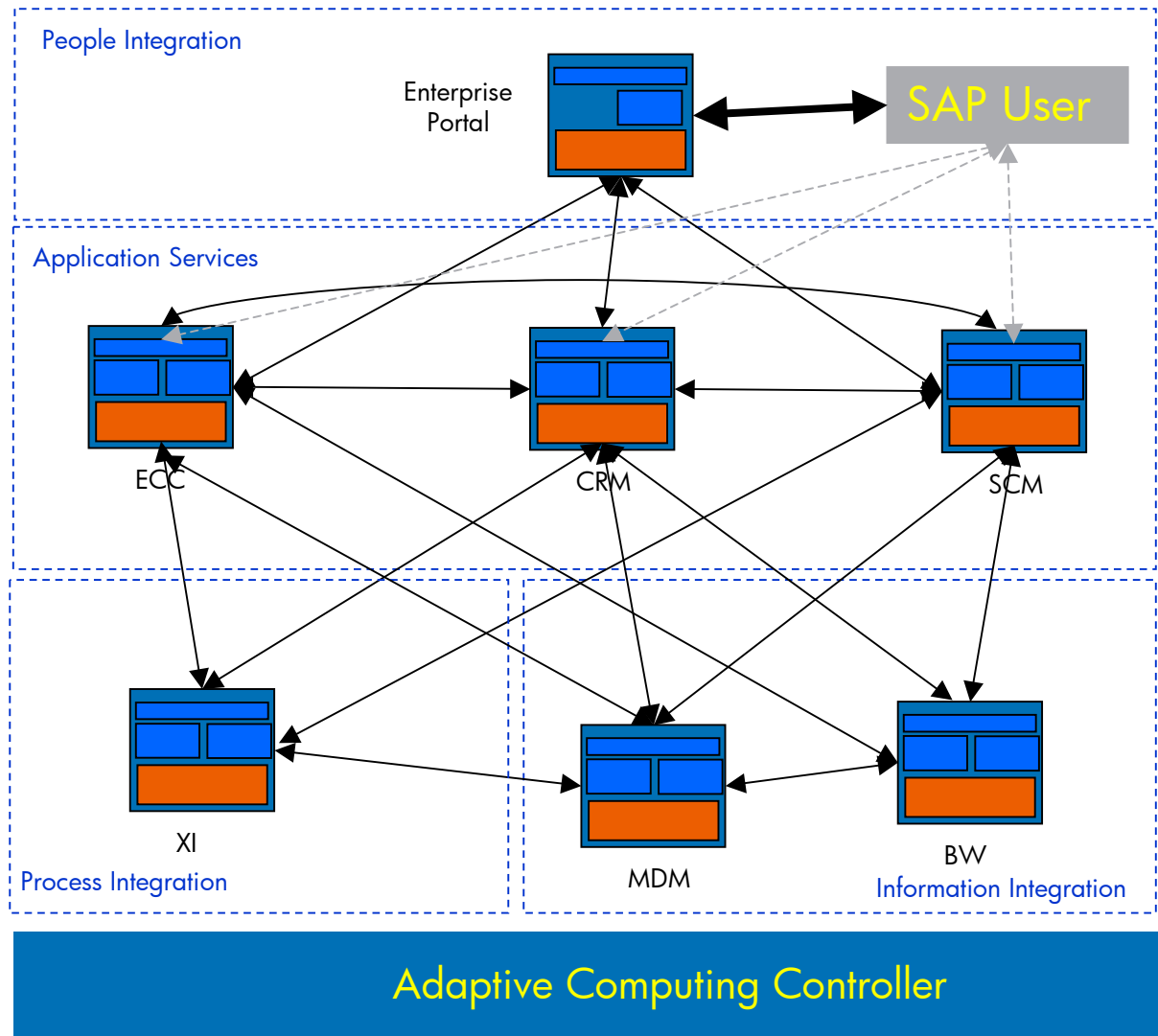
- Enterprise Services Architecture
- Service integration on 4 levels
- includes Web and JAVA technology

# SAP Web Application Server 6.40

- Foundation for SAP Netwaver
- Services can run on 1 or more Servers



# New SAP System Landscape (Netweaver)



# SAP Netweaver Landscape

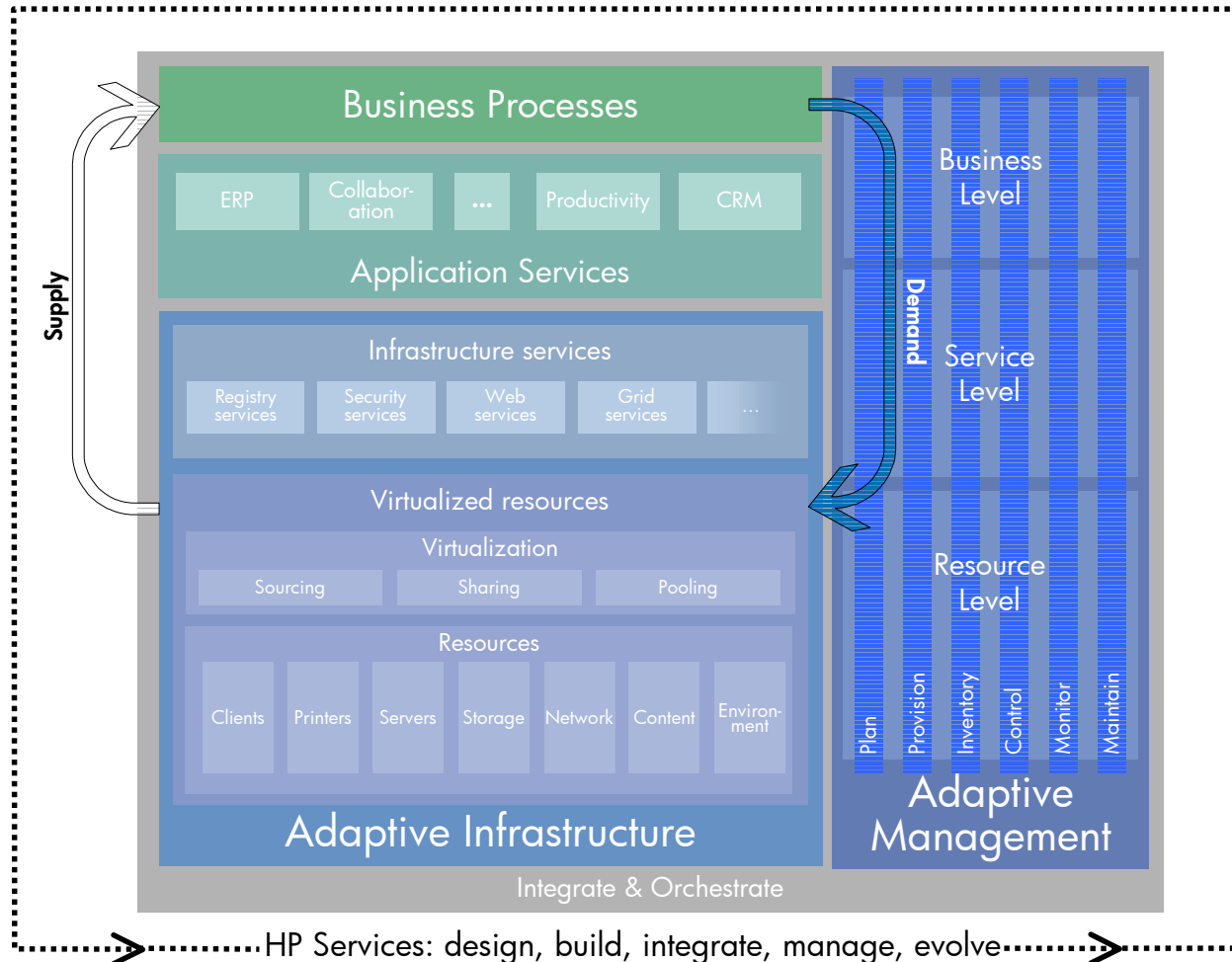
- Enterprise Services Architecture
- Communication through Web Services
- More Servers, Smaller Servers
- Hardware Infrastructure has to be flexible
- Must be

ADAPTIVE...

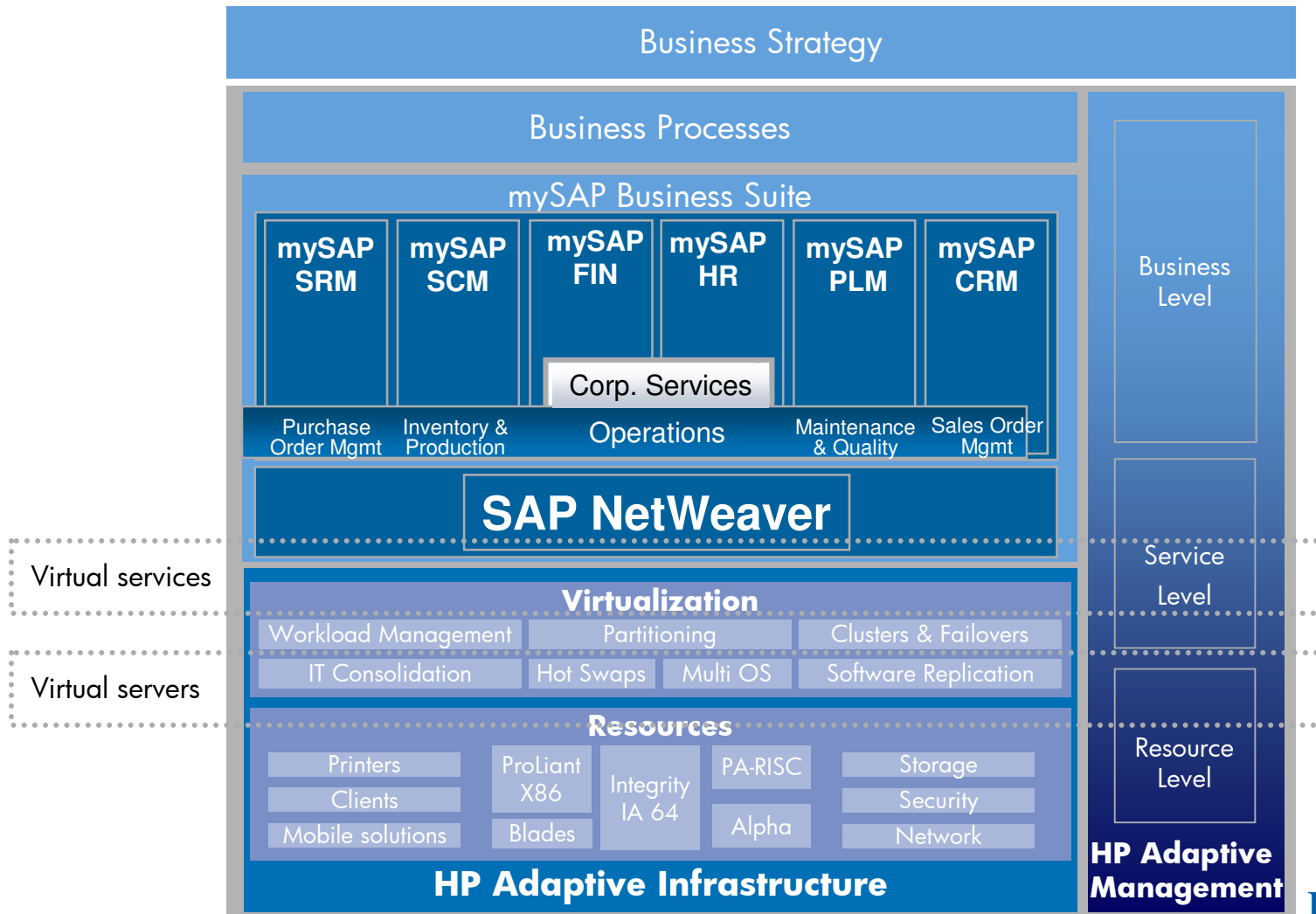


# General approach for Adaptive Enterprise with SAP

# HP's offerings for the Adaptive Enterprise



# Darwin Reference and SAP NetWeaver



# Goals for a General SAP Adaptive solution



- Virtualization of hardware resources
- Virtualization of SAP/DB services

## Challenges for an adaptive infrastructure:

- Decouple logical from physical layer
- In the SAP environment: decouple OS/SAP services from underlying hardware resources
- Dynamic and automatized assignment of services to resources





# Basic Elements for a General SAP Adaptive Solution

- „Hard“ components
  - Disks (storage)
  - Execution units (servers)
  - Network
- „Soft“ components
  - Boot device
  - Operating system
  - Database engine
  - Database files
  - SAP executables
  - General data (eg profiles) to run an SAP service

## 2 Phase development

- 1. Phase
  - Create an environment based on „Virtualized Servers“ running central DB and SAP services
  - Implicit virtualization of SAP Services
  - rapid deployment of SAP application services („dialog instances“)
- 2. Phase
  - Create an environment based on „virtualized DB and SAP services“
  - Explicit virtualization of SAP Services
  - Integration with SAP’s Adaptive Computing Controller



# Implementation Windows and Linux

# First Step: Virtualized Central SAP Server



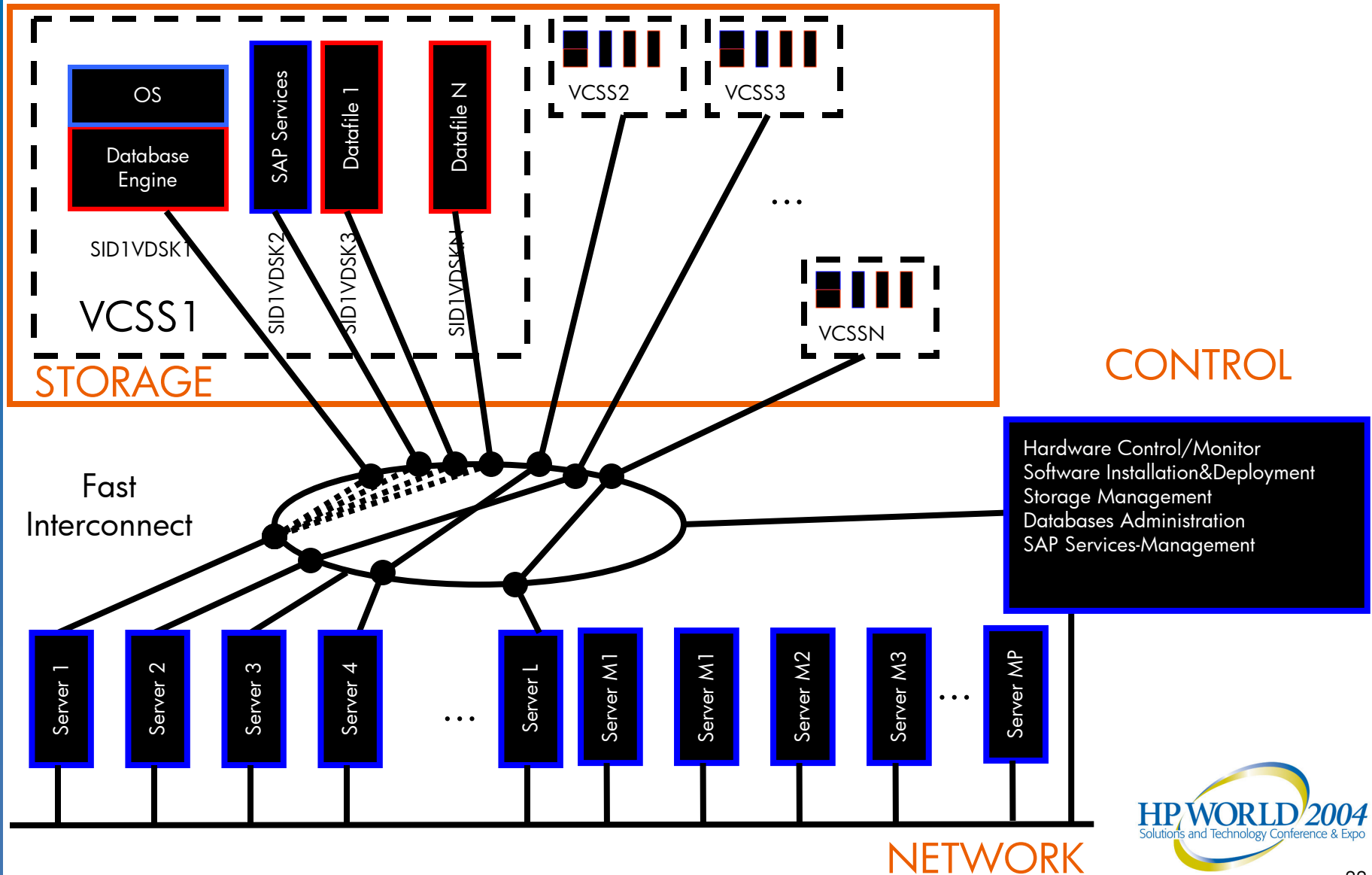
- All SAP services (database, ABAP VM, J2EE VM, etc.) are usually grouped around a unique „SID“
- database + central SAP services belonging to a SID are packed into a bootable OS image
- One central central SAP Server is stored on one or more dedicated (virtual) disks containing:
  - 1 bootable operating system
  - 1 database engine
  - central SAP services
  - N database files
  - sapmnt directory and share



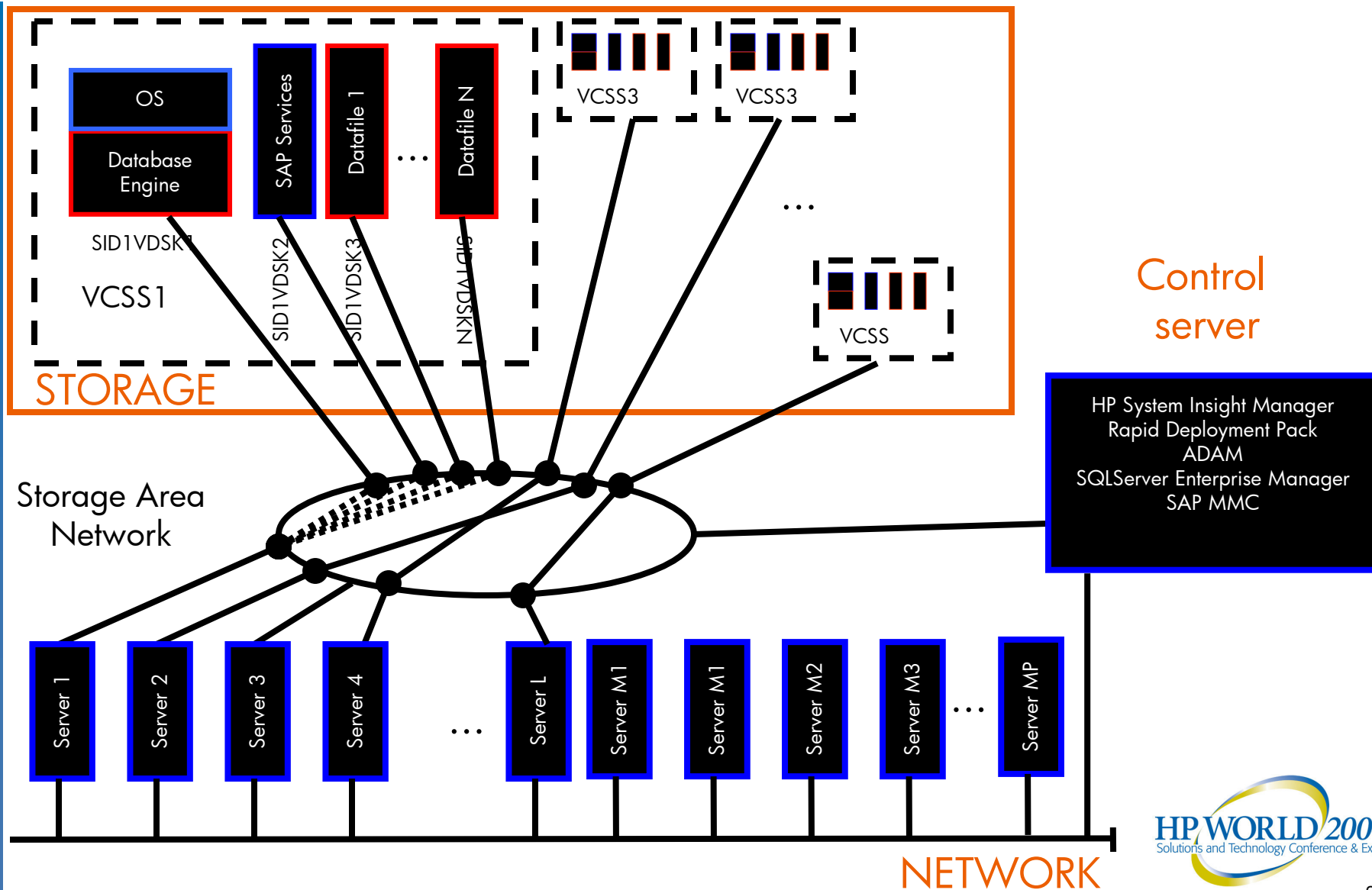
# „Virtualized Central SAP Server“

- Dynamically assign (virtual) disks to servers and boot
- Booting a VCSS, brings up all SID related SAP central services and data
- Implicit virtualization of IP-address, hostname, SID, OS-image, database

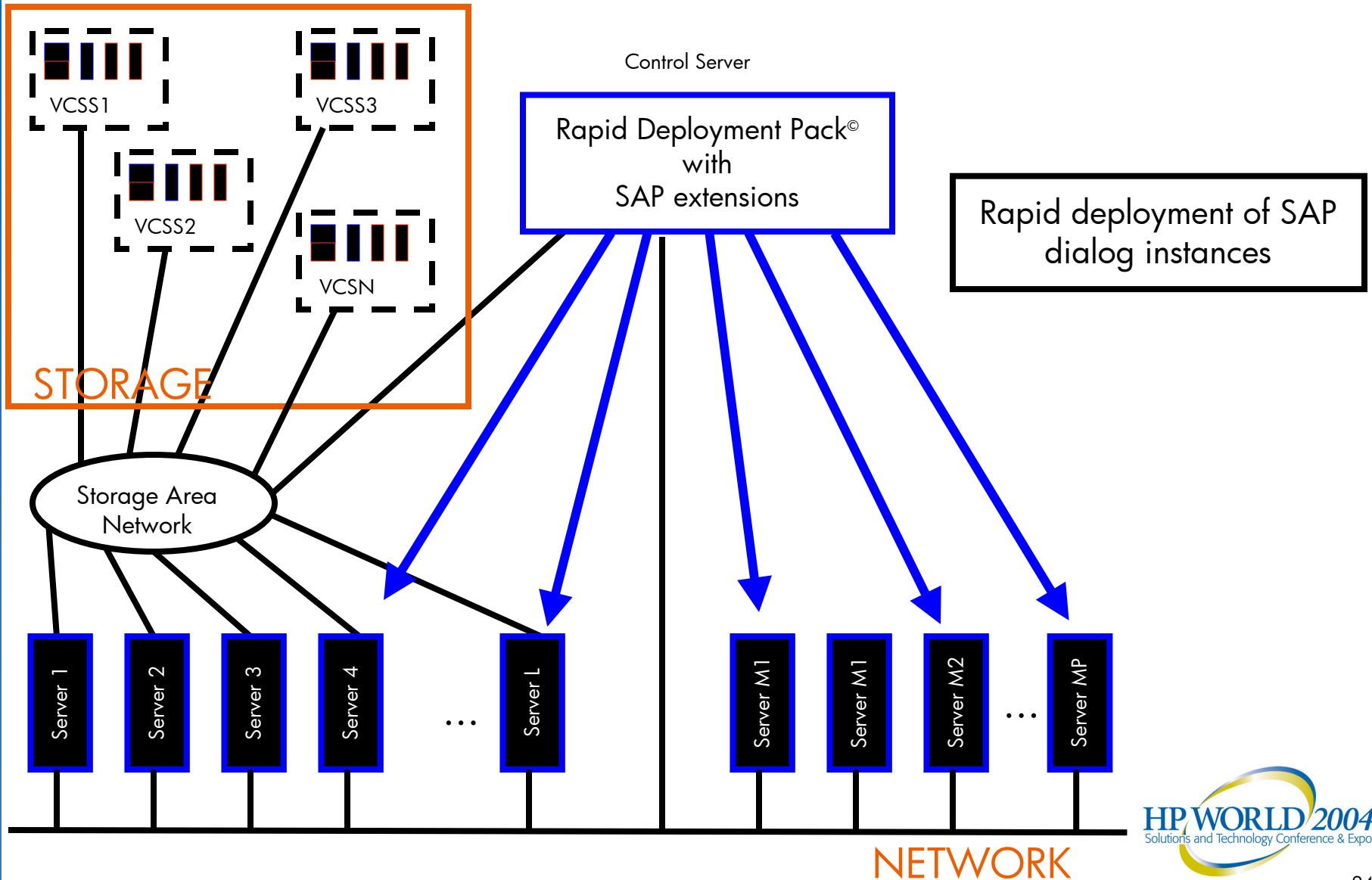
# Abstract Adaptive SAP landscape with virtualized Servers



# Abstract Adaptive SAP landscape on virtualized Servers with SAN



# Scale up with additional SAP instances





# Benefits of virtualized servers approach



- No need of dynamic IP-adresses or hostname administration
- Consistency of OS configuration and data inside a VCSS package is guaranteed
- „Park“ complete consistent systems when not used
- Backup/restore is done cloning/snapshoting (virtual) disks or „VCSS packages“

# Benefits of virtualized servers approach (continued)



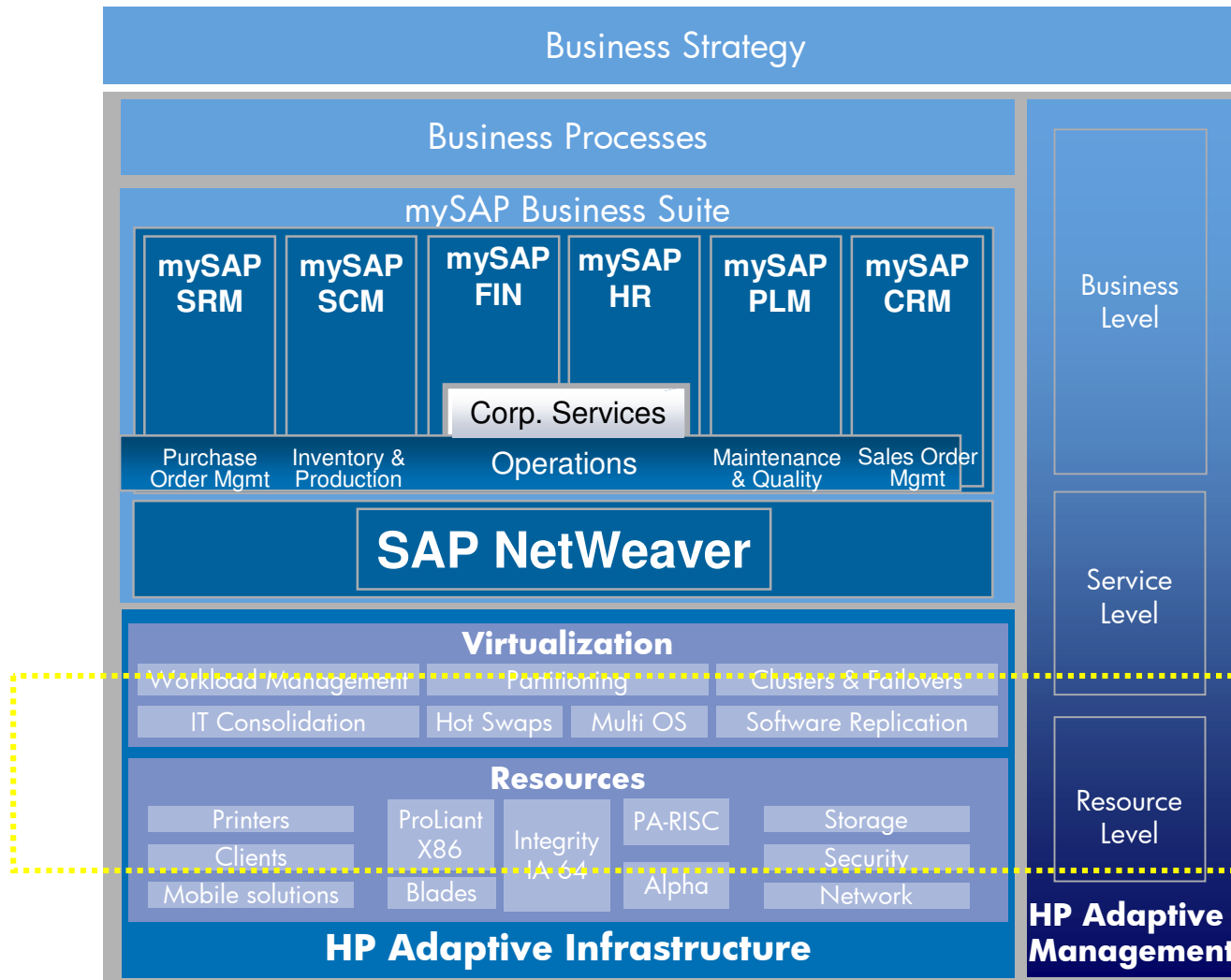
- VCSSs don't share OS image-> no OS-contamination of configurations of other VCSS
- Completely separated security domains on OS level
- Implicit High Availability
- The adaptive SAP landscape can be multi-OS!



# Technologies and versions supported for first prototype

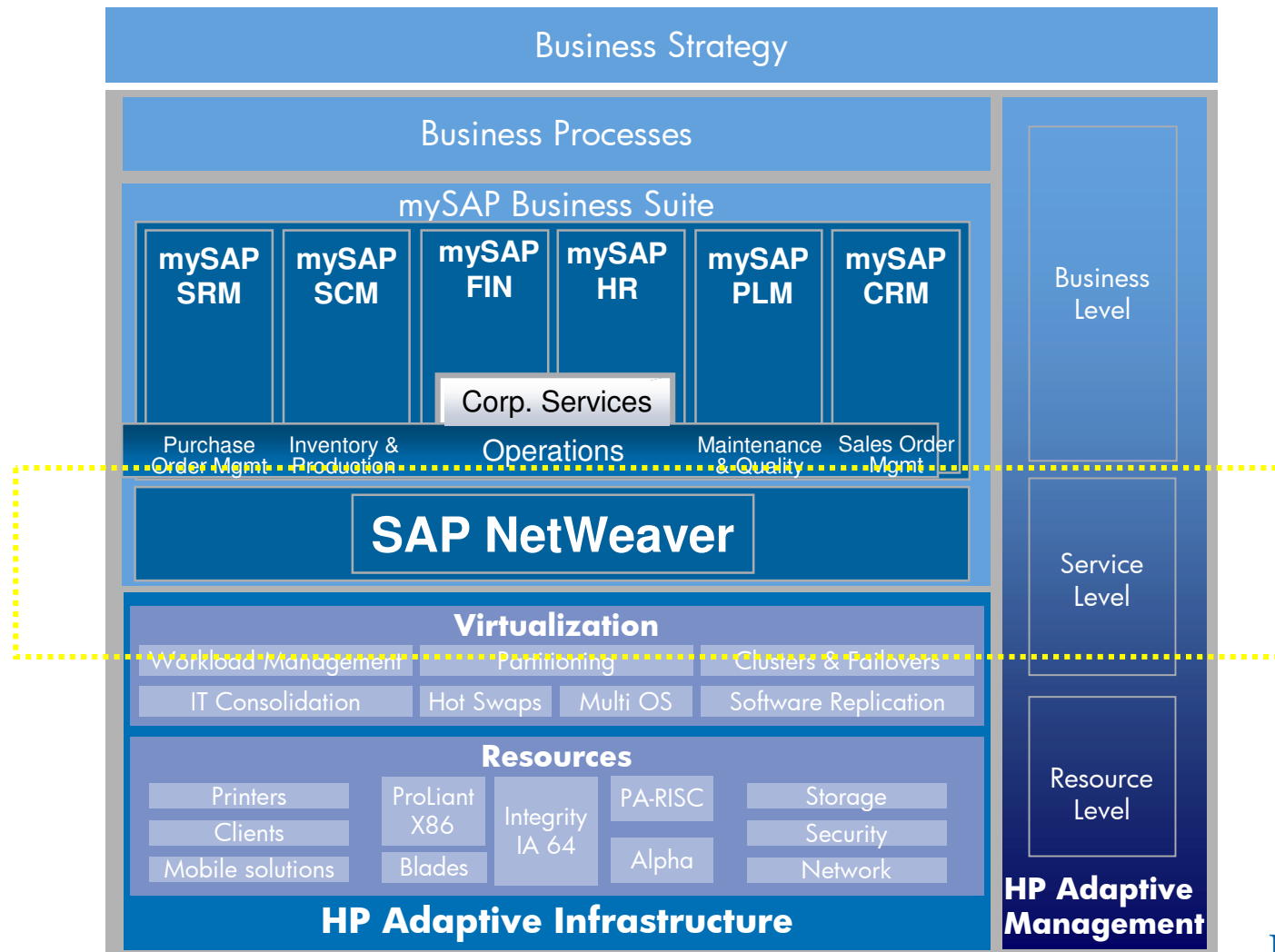
- Hardware:
  - StorageWorks EVA 3000/5000 (SAN based)
  - any x86-based ProLiant server able to host a FC HBA
- Software Windows:
  - Windows 2003 Enterprise Server
  - MS SQL Server 2000
  - Active Directory
  - ADAM 2.5
  - Rapid Deployment Pack 1.6
  - WAS 6.20 based SAP applications
  - MMC snap-in for management and monitoring of SAP
- Software Linux:
  - SUSE SLES8 SP3
  - RedHat EL 3.0
  - Oracle 9.2 / MAX-DB
  - ADAM 2.5
  - Rapid Deployment Pack LE 1.1
  - WAS 6.20 based SAP applications
  - NAGIOS snap-in for management and monitoring of SAP

# First Phase - Virtual Servers running central SAP SID Services





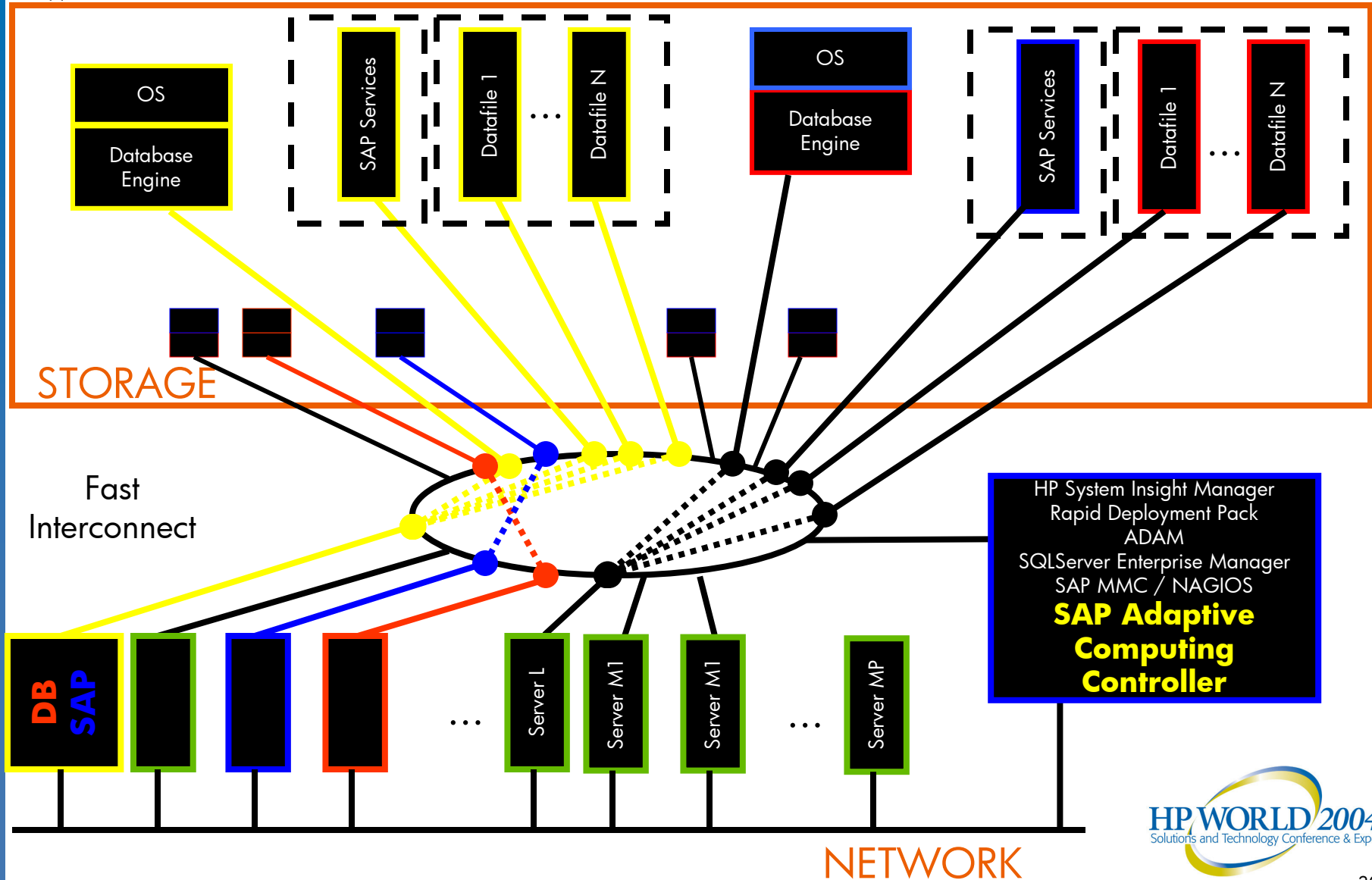
# Second Phase – Virtualized SAP Services



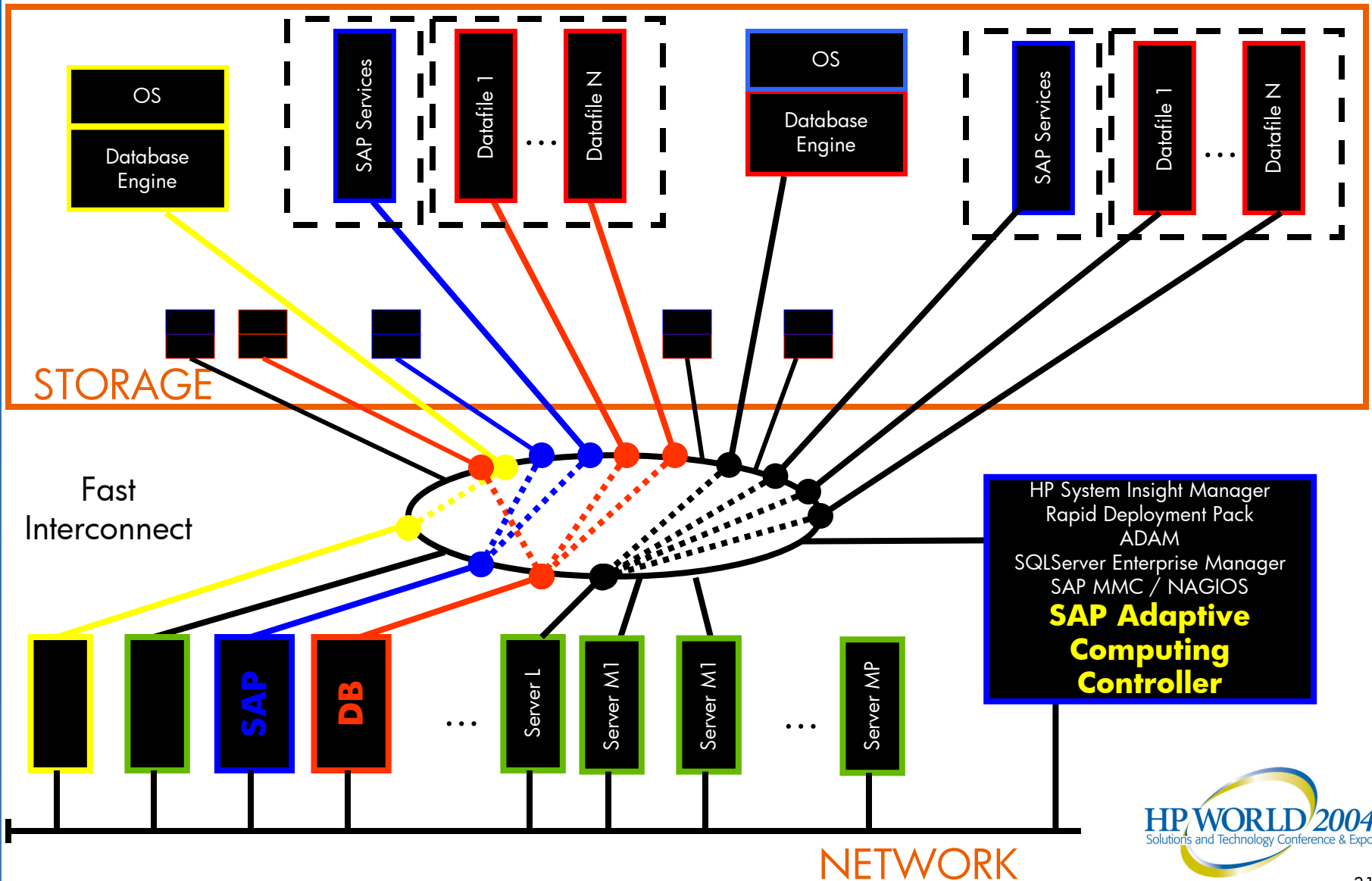
**HP Adaptive Management**



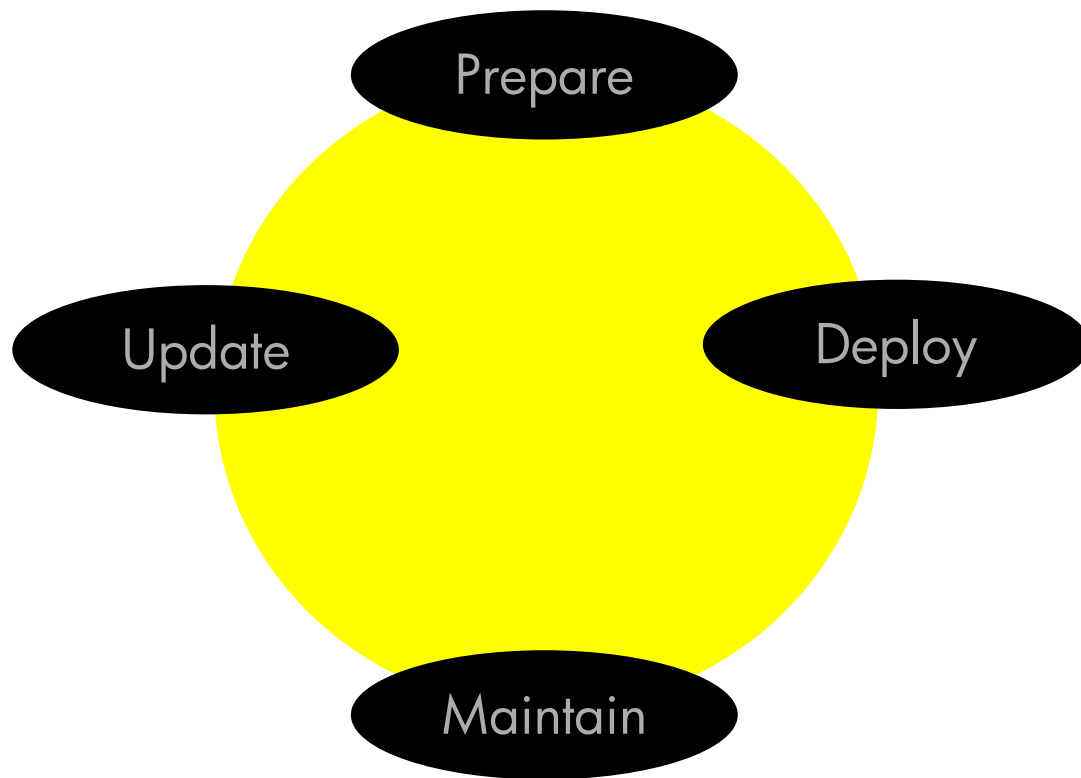
# Abstract Adaptive SAP landscape „Virtualized Services“



# Abstract Adaptive SAP landscape Virtualized Services" (integrated with SAP's ACC)



# HP-UX Deployment by Ignite/UX



Includes:

DNS

DHCP

Spooling

NIS

NFS

Adaptive I/F

Nimbus

Ignite/UX







# Application Services

- Pre-Installed on a single Node into SAN LUN's
- Activated on request of the SAP daemon sapacosprep
- Communication over relocatable IP Addresses
- Can be easily relocated in the managed pool



## Future steps

- Integrate with SAP's Adaptive Computing Controller
- Continue cooperation with SAP
- Integrate with UDC
- General availability on HP-UX, Windows, Linux

# Benefits





# Benefits

- Better ROI
  - Better utilization of existing resources
  - Flexibility
  - Quick reactions to changing business needs
  - Single point of maintenance for complete System Landscape
  - In general lower TCO!!



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