System Management for Virtualization and Automation in a Dynamic Data Center

SVM'08 Munich 2008-10-21
Karsten Beins, Sen. Director Infrastructure Technology   Munich, Oct 17, 2008

Objectives of this talk

Contribute an Industry View on Virtualization Management

Key Questions

- How relevant is Virtualization Management for Commercial IT Users?

- What are major pain points for Commercial IT Users?

- What are promising approaches for Virtualization Management?

How relevant is Virtualization Management for Commercial Users?

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Relevance of Virtualization Management for Commercial Users

Major analysts predict

- strong increase of Virtualization in x86 Market

- more competition between Virtualization Vendors and Technologies

- Virtualization Management as key for differentiation and success

FSC is seeing similar trends from our customers and partners

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By 2009 almost half of x86 servers will run virtualized[*]. Coexisting physical servers will continue to play a big role.

2007   **2009**

Enterprise Market

24% → 45%

SME-Market
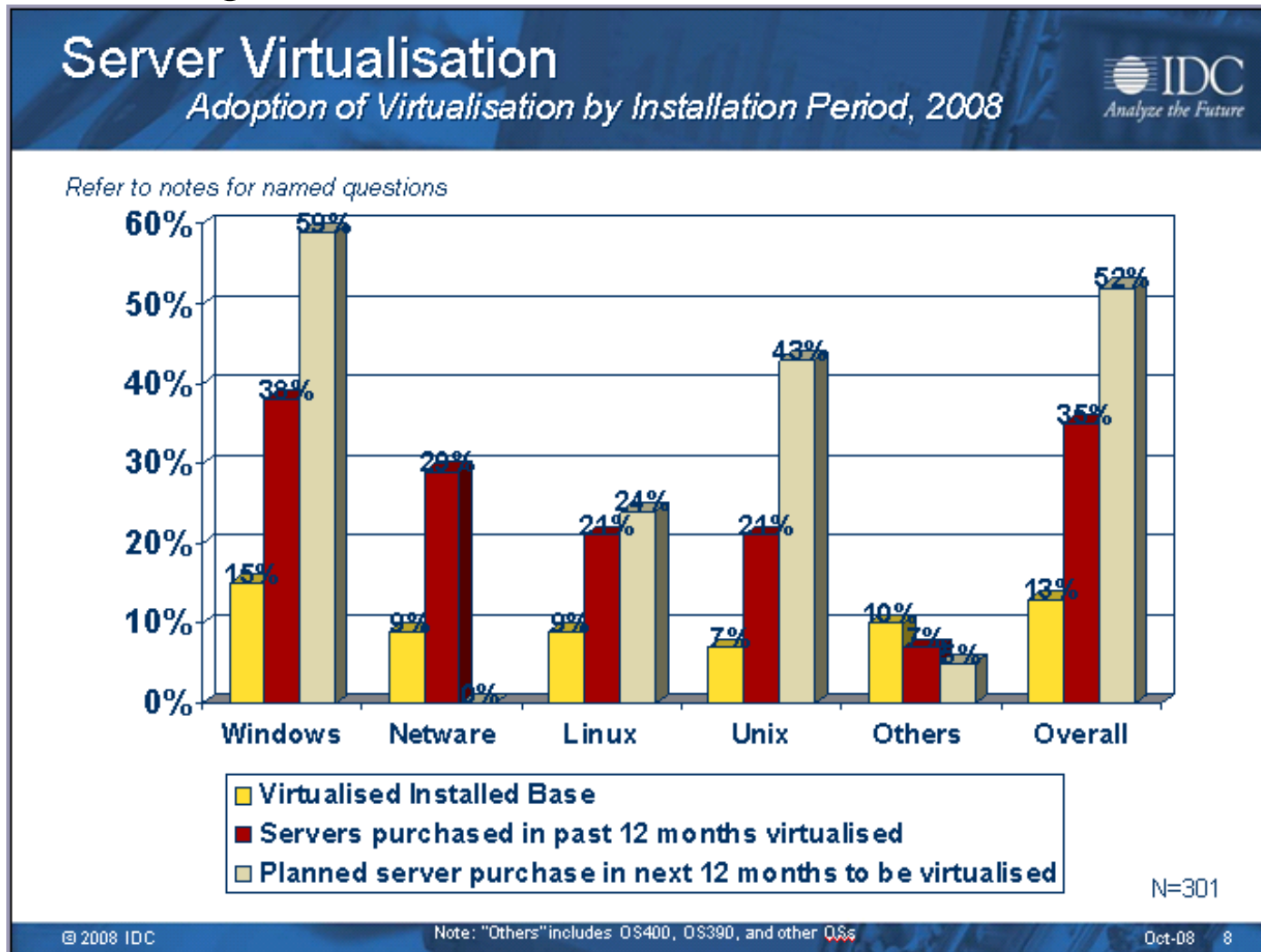
23% → 38%
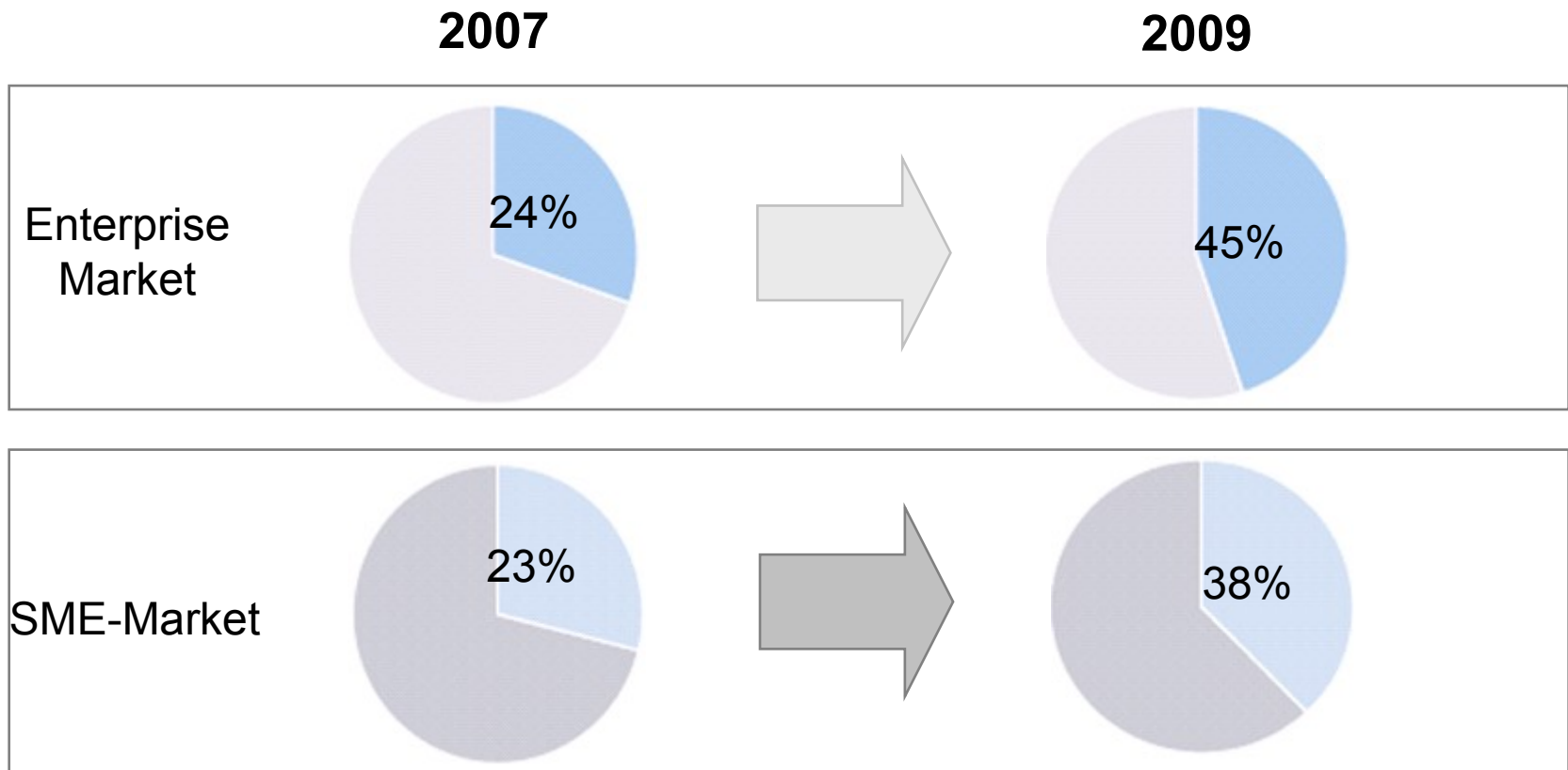
*in Enterprise Market
Quelle: Forrester Research, x86 Virtualization Drives New Buyer Behavior, 2008

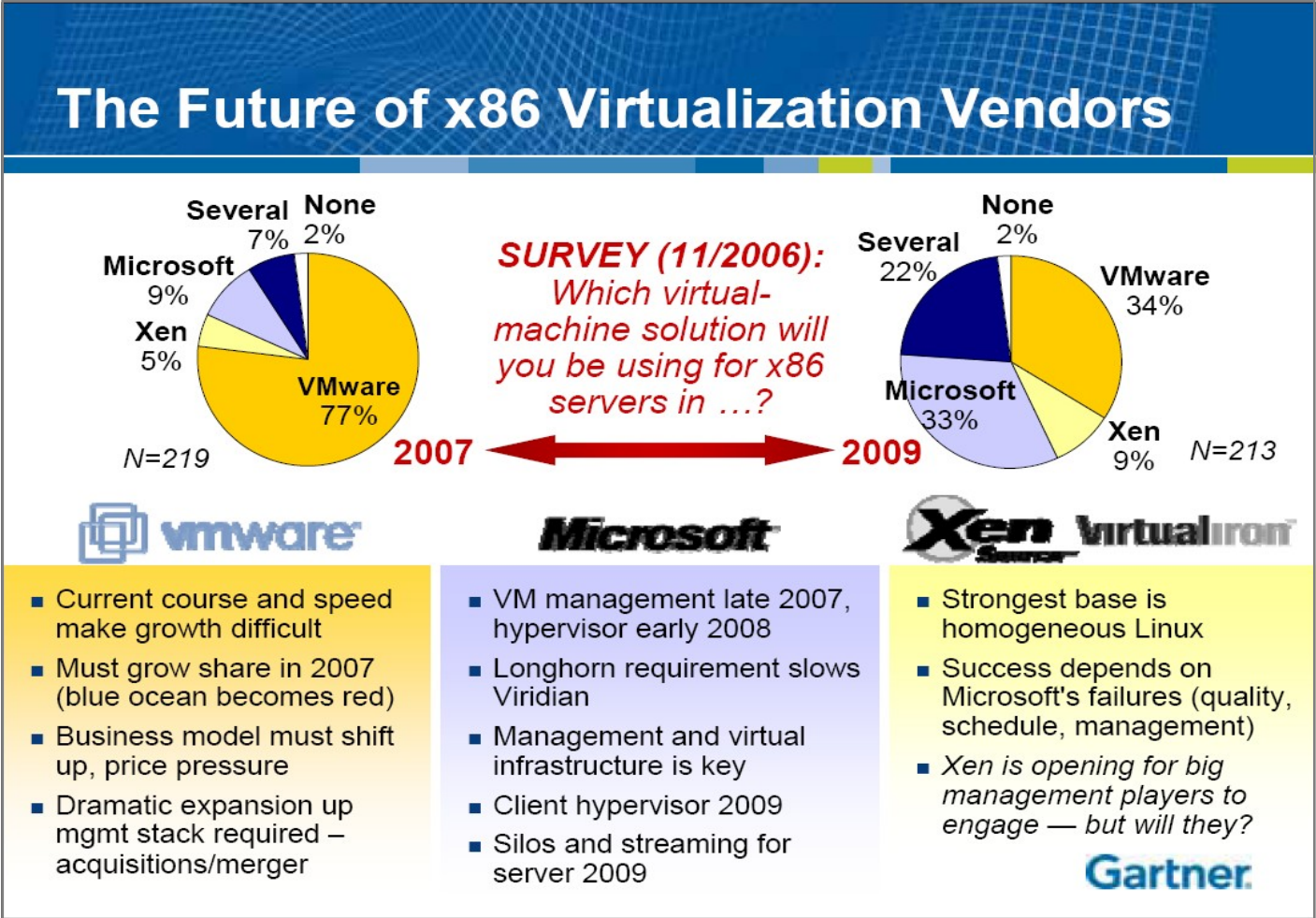# IDC (2008) projection on Growth Potential for new x86 Server Installations

Strong increase of Virtualization in x86 Market

Server Virtualisation
Adoption of Virtualisation by Installation Period, 2008

●IDC
Analyze the Future

Refer to notes for named questions

	Windows	Netware	Linux	Unix	Others	Overall
Virtualised Installed Base	15%	9%	9%	7%	10%	13%
Servers purchased in past 12 months virtualised	38%	29%	21%	21%	7%	35%
Planned server purchase in next 12 months to be virtualised	59%	0%	24%	43%	6%	52%

☐ Virtualised Installed Base
☐ Servers purchased in past 12 months virtualised
☐ Planned server purchase in next 12 months to be virtualised

N=301

© 2008 IDC   Note: "Others" includes OS400, OS390, and other OSs   Oct-08   8

We make sure

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MS Hyper-V gaining real market share will delay until 2010

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The VM is becoming an application platform ➔ new method of software packaging, delivery and management ➔ SaaS.

Server Virtualization Trends:
A Boiling Market, Lots of Moving Parts

Competition
- Viridian (Hyper-V) = market discontinuity

Thin and Cheap
- Default, embedded, free

Client Virtualization
- Virtualizing clients on servers will become common by 2009
- Client virtual machines will become the hot trend by 2010

Importance of Management
- Costs shift to management tools
- Benefits shift to agility and value
- Revenue will moderate to steady growth management market
- Security will become greater concern

Software Platform Shift
- Software pricing/licensing will lag technology through 2010
- Virtual software packages and appliances mainstream by 2010
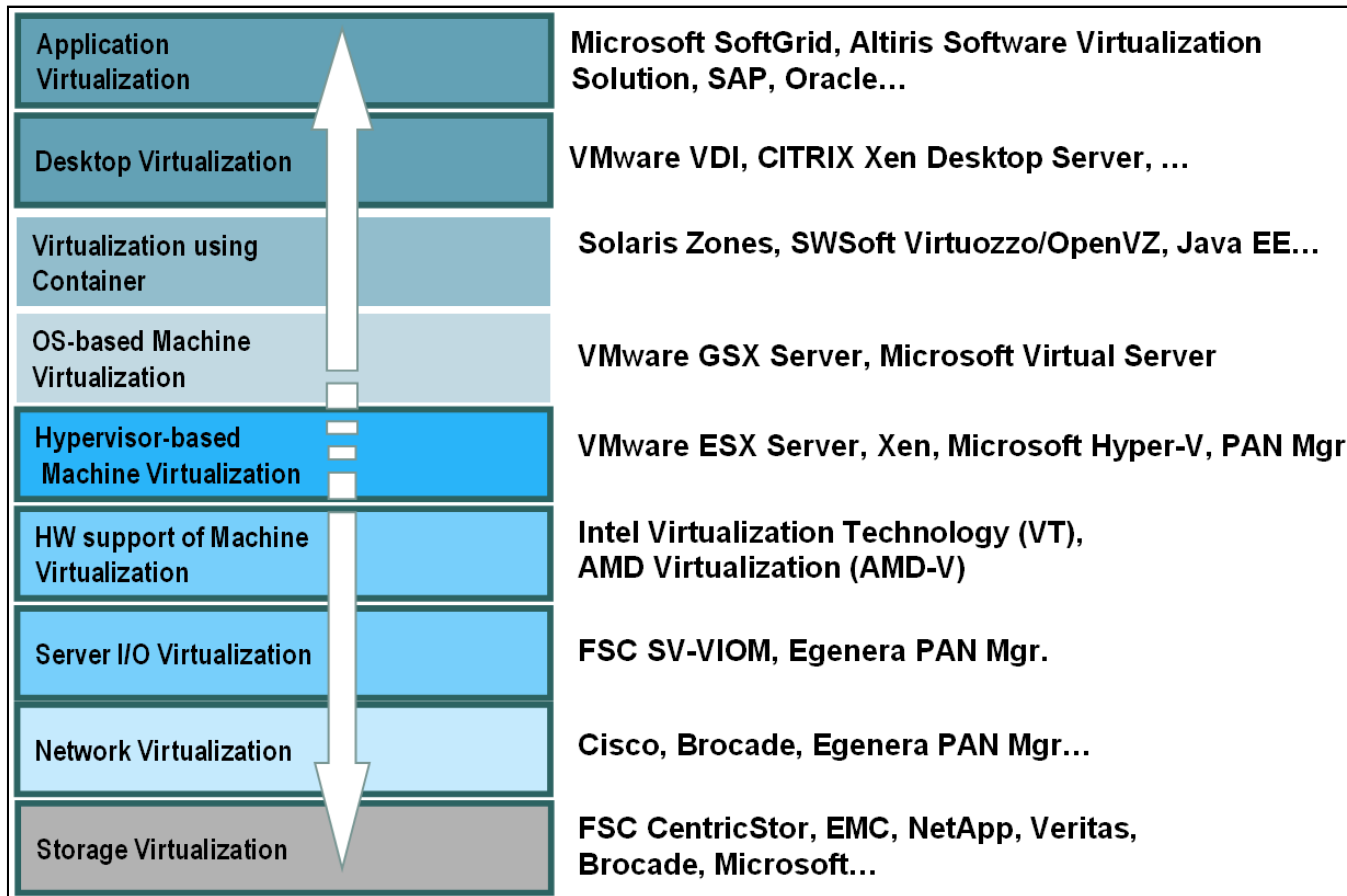- Balance of power tilts from Microsoft to OEMs, software vendors

Market of the Future | Gems 222238230 | 20 August 2008
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What are major pain points for Commercial IT Users?

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Virtualization at many Data Center layers

Combinations are possible and highly useful…

Application Virtualization	Microsoft SoftGrid, Altiris Software Virtualization Solution, SAP, Oracle…
Desktop Virtualization	VMware VDI, CITRIX Xen Desktop Server, …
Virtualization using Container	Solaris Zones, SWSoft Virtuozzo/OpenVZ, Java EE…
OS-based Machine Virtualization	VMware GSX Server, Microsoft Virtual Server
Hypervisor-based Machine Virtualization	VMware ESX Server, Xen, Microsoft Hyper-V, PAN Mgr.
HW support of Machine Virtualization	Intel Virtualization Technology (VT), AMD Virtualization (AMD-V)
Server I/O Virtualization	FSC SV-VIOM, Egenera PAN Mgr.
Network Virtualization	Cisco, Brocade, Egenera PAN Mgr…
Storage Virtualization	FSC CentricStor, EMC, NetApp, Veritas, Brocade, Microsoft…

Customer
Pain Point
#1

Complexity

…but also add Complexity

Maturity of Virtualization Management

Singular Virtualization Management is fairly advanced.
Pain Point: Holistic Resource Management still in infancy stage.

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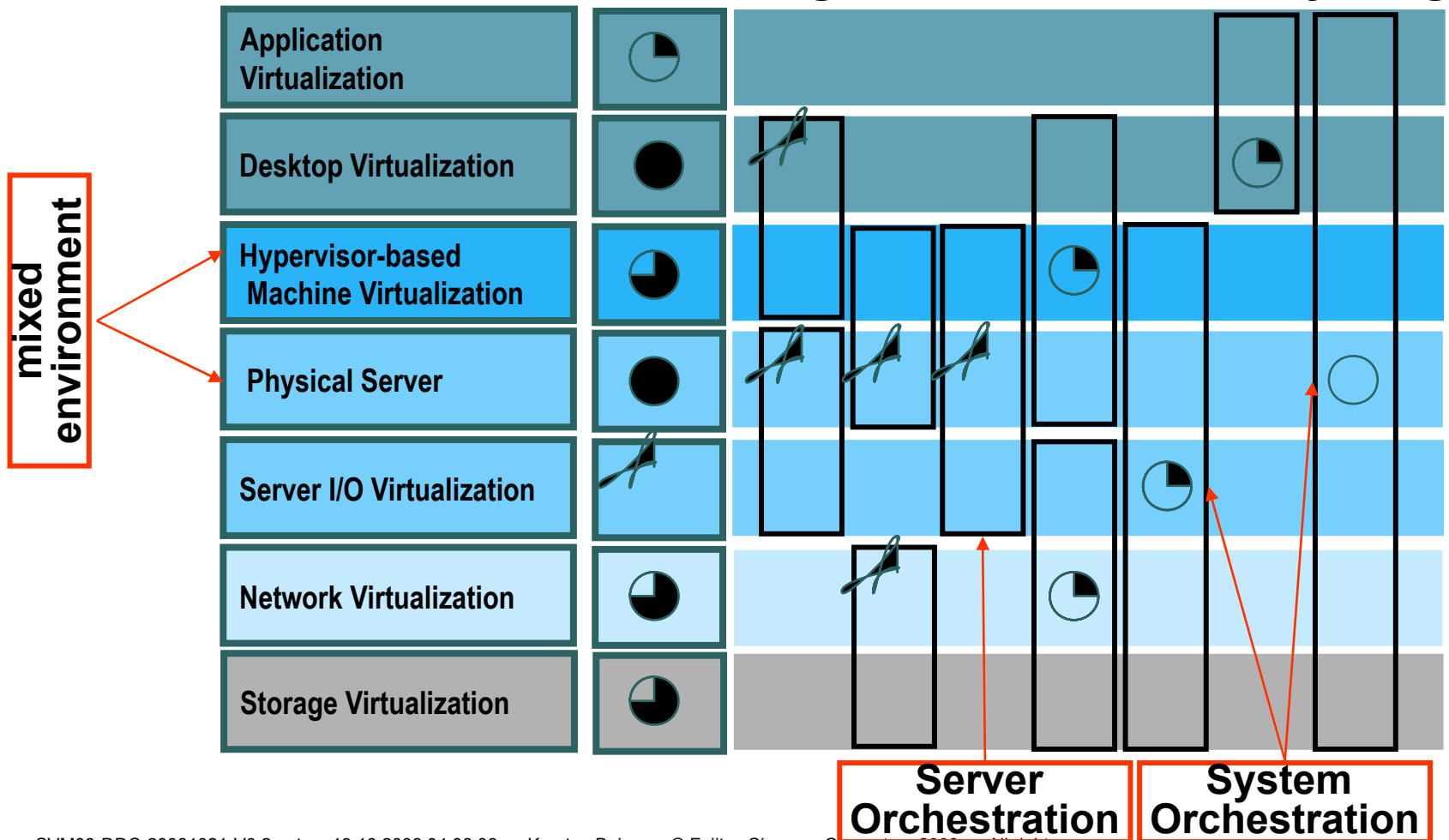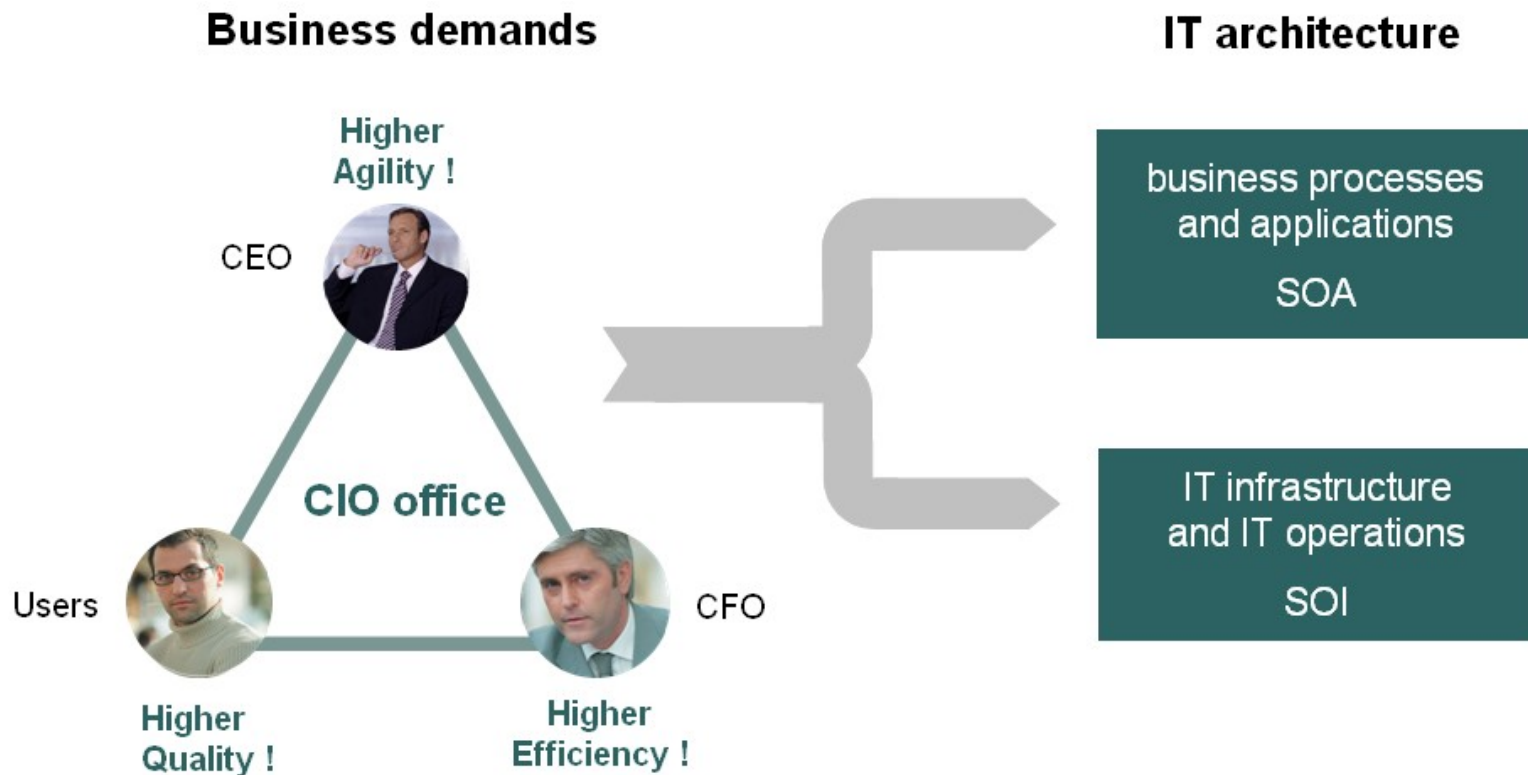
Promising approaches for Virtualization Management

Business Value of Virtualization

Virtualization is cool technology – but is no business value by itself!

➢ Understand how Virtualization can be turned into business value

➢ Put Virtualization & Management into a broader scope

Business demands

Higher Agility !

CEO

CIO office

Users

CFO

Higher Quality !

Higher Efficiency !

IT architecture

business processes and applications

SOA

IT infrastructure and IT operations

SOI

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SOI is in focus of Fujitsu Siemens Computers

Service Oriented Architecture

Business Process

Service 1 | Service 2 | Service 3
Service 4 | Service 5 | Service 6

Virtualization

Server Pool — WEB | APP | DB

Storage Pool

Service Oriented IT Infrastructure
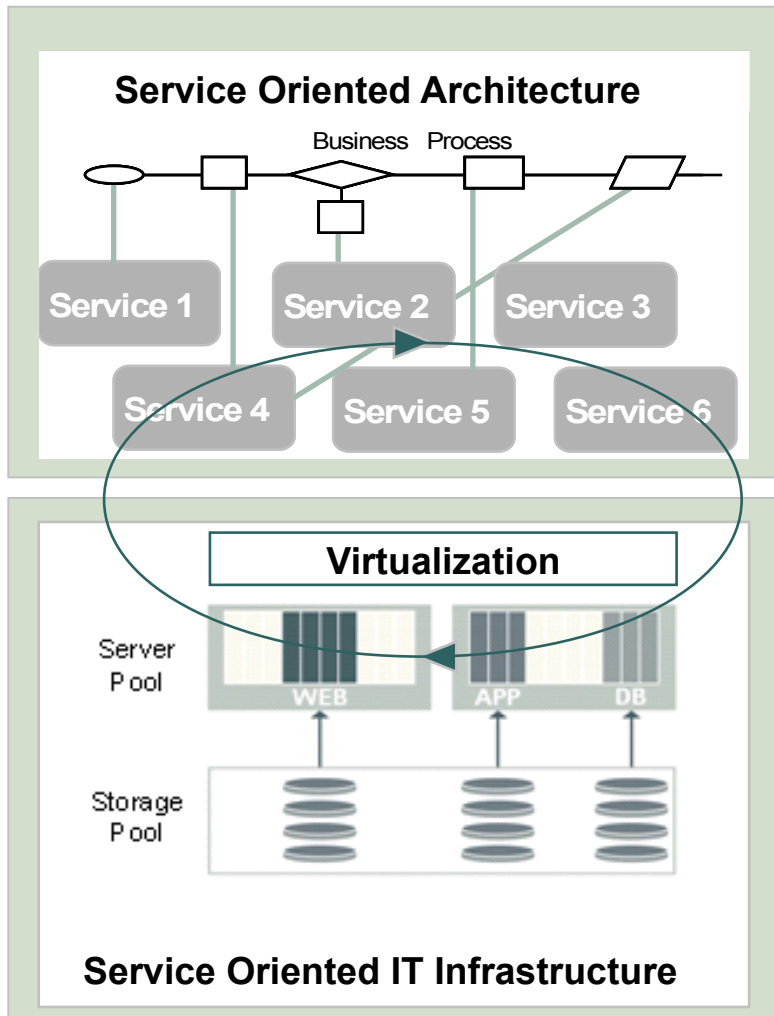
Service Oriented Architecture (SOA)

■ Combining application services to support business processes

■ Increased business agility

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Service Oriented IT Infrastructure (SOI)

■ System resources are assigned to applications dynamically on demand

■ Higher flexibility, quality and efficiency

FSC Dynamic Data Center (DDC) Strategy and High Level Architecture
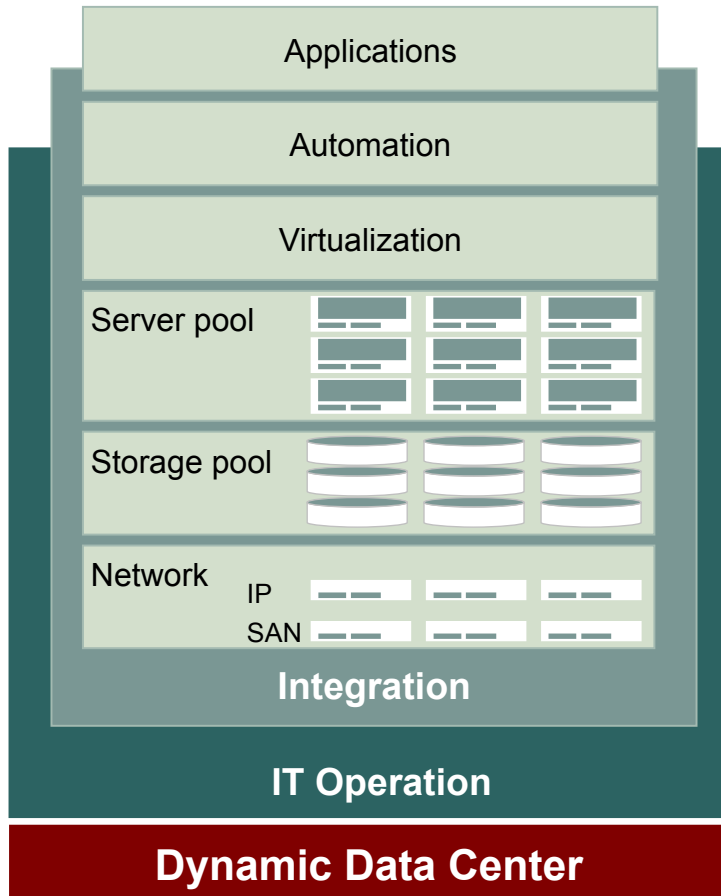
- **Automation –** resources allocation to applications on demand.

- **Virtualization** – pooled IT resources, shared for best usage, transparent to applications

- **Integration -** industrialized solutions and modular services for rapid implementation

- **IT Operation** - highly industrialized IT infrastructure and processes

# Architectural Characteristics of a Service Oriented IT Infrastructure

Application   Application   Application

Application Service Manager

↕

Dynamic Resource Manager

phys. & virtual. Server pool

Network

Storage pool
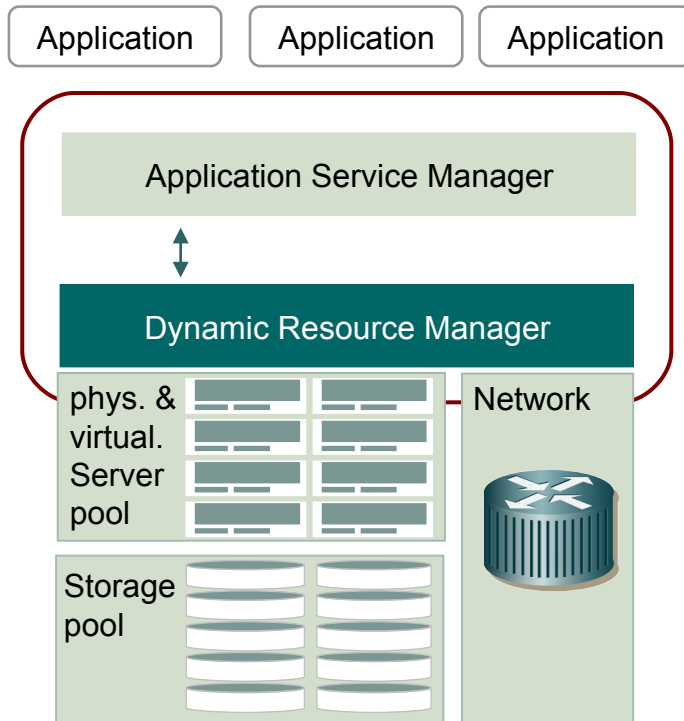
The IT infrastructure dynamically meets the resource requirements of applications

- Systems are allocated automatically to applications based on service levels, possibly under autonomic control

- Integrated application and resource management

- Usage of industry standards ensures maximum compatibility and flexibility

- Optimized IT operation through automation
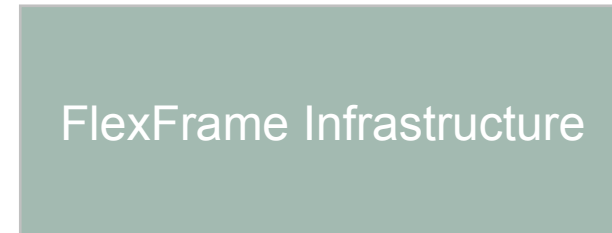
Types of DDC Solutions

Application specific

- IT infrastructure is aware of an application and fulfills its resource demands

- Servers are shared within an application suite

FlexFrame for SAP

FlexFrame for Oracle
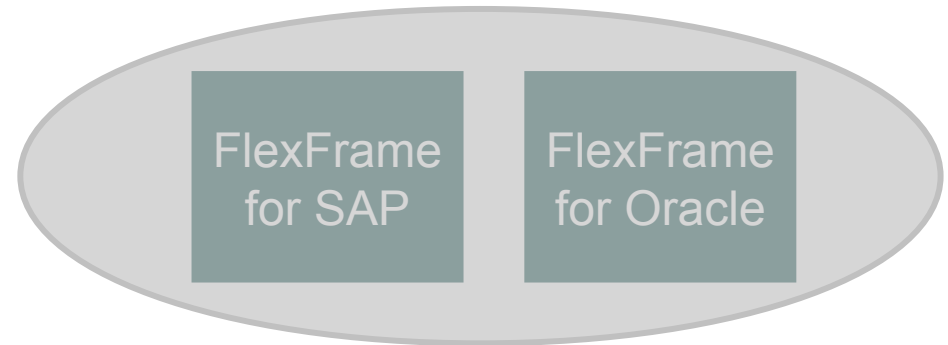
Application independent

- IT infrastructure is not aware of applications

- Real and virtual servers are shared across applications

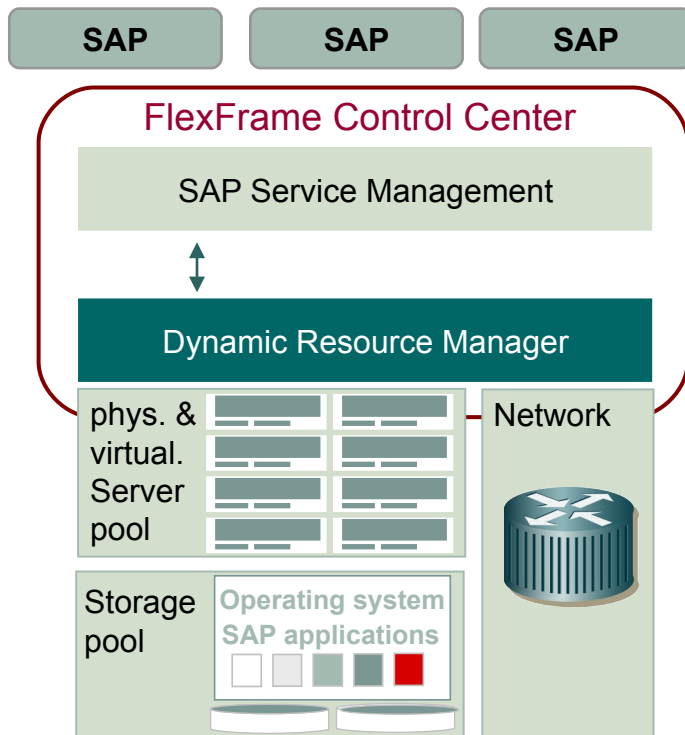FlexFrame Infrastructure

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Some DDC Experiences

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FlexFrame for SAP –
SOI for a dynamic SAP environment

SAP	SAP	SAP

FlexFrame Control Center

SAP Service Management

↕

Dynamic Resource Manager

phys. &
virtual.
Server
pool

Network

Storage
pool

**Operating system
SAP applications**

Virtualization & Automation Concept

- The operating system and the SAP software are located centrally on a storage system

- A SAP service can be started on any physical server in a FlexFrame server pool

- Fast deployment of new / additional physical or virtual servers, fast exchange of physical servers

- All active SAP services are centrally managed by the FlexFrame control center

- In case of a system failure the SAP service is re-started on another system automatically

Benefits

- Flexibility and Agility

- Significant TCO Reduction

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FlexFrame Infrastructure: standardized SOI platform for any application

Application	Application	Application

FlexFrame Infrastructure
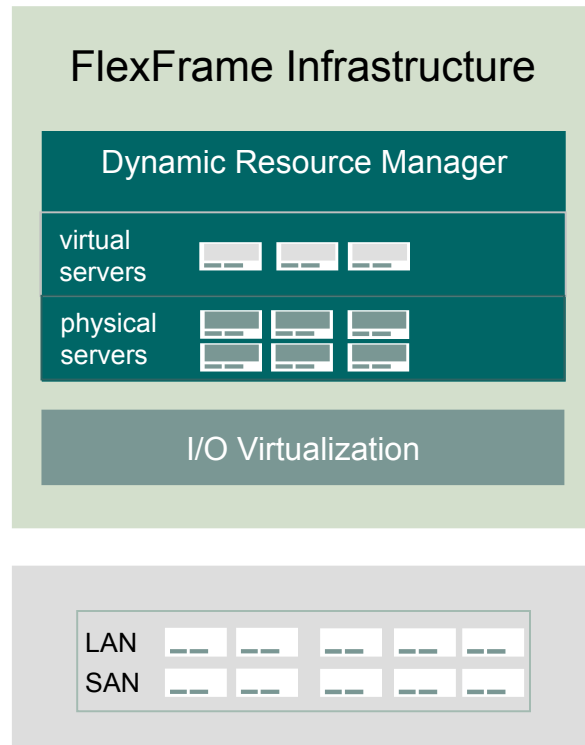
Dynamic Resource Manager

virtual servers

physical servers

I/O Virtualization

LAN
SAN

FlexFrame Infrastructure (FFI)

Deployment platform for a customized, service oriented IT infrastructure

- Independent of applications

- It assigns applications to physical and virtual servers on demand

- Reduces the complexity of underlying virtualization technologies

- Optimizes the management and operation of IT infrastructures

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Major step towards mature compound Virtualization Management
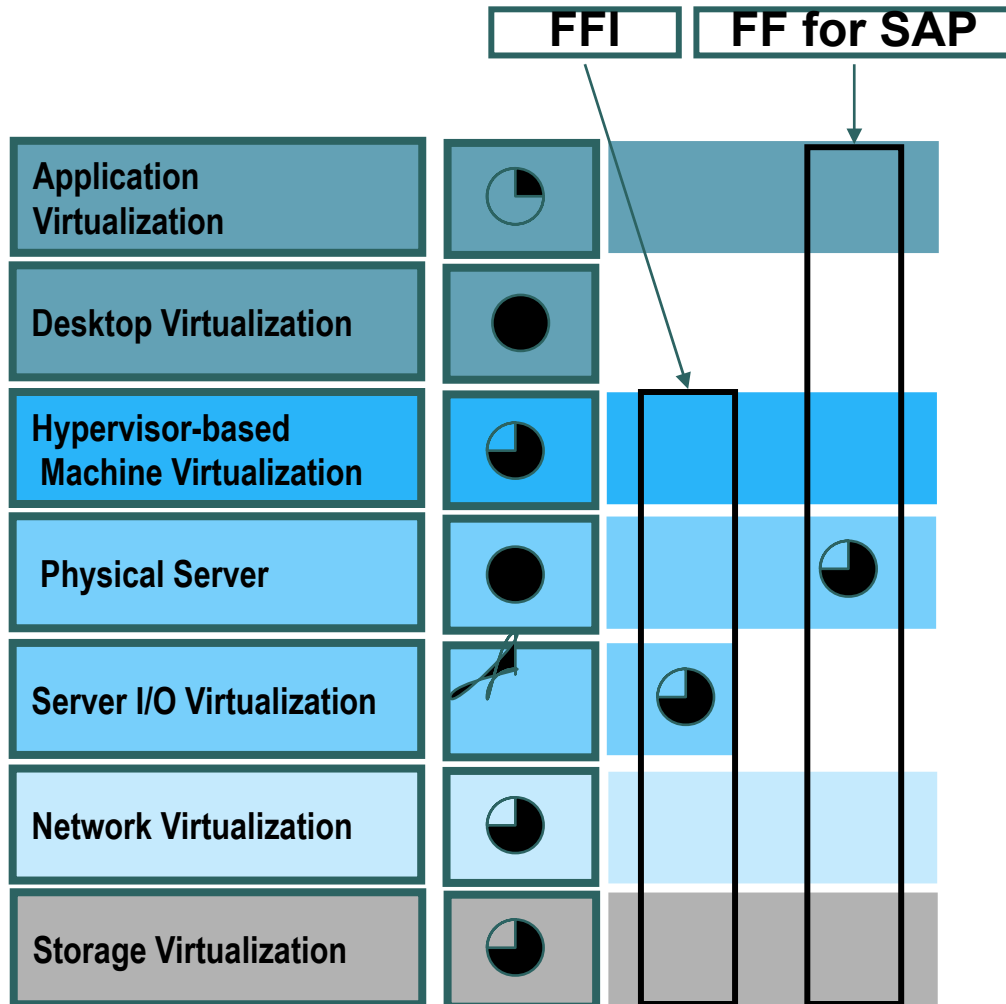
| FFI | FF for SAP |

Very positive feedback from many customer implementations

Future opportunities

- leverage FFI for additional environments

- sediment proven FF for SAP concepts into FFI building blocks

- increase use of industry standards (e.g. CIM, WS-MAN)

- leverage virtualization technology innovations

Conclusions

Conclusions

- For Dynamic Data Centers Virtualization should be leveraged at many layers

- Holistic Virtualization & Automation Management Solutions are key to control complexity

- Fujitsu Siemens Computers will further broaden concepts of FlexFrame Infrastructure and integrated dynamic IT solutions

Thank You!
Questions?

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