Windows 2000 for Service Providers

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HP Services M SO /G lobalInitiative Manager
xSP

P.A du Bois Briard

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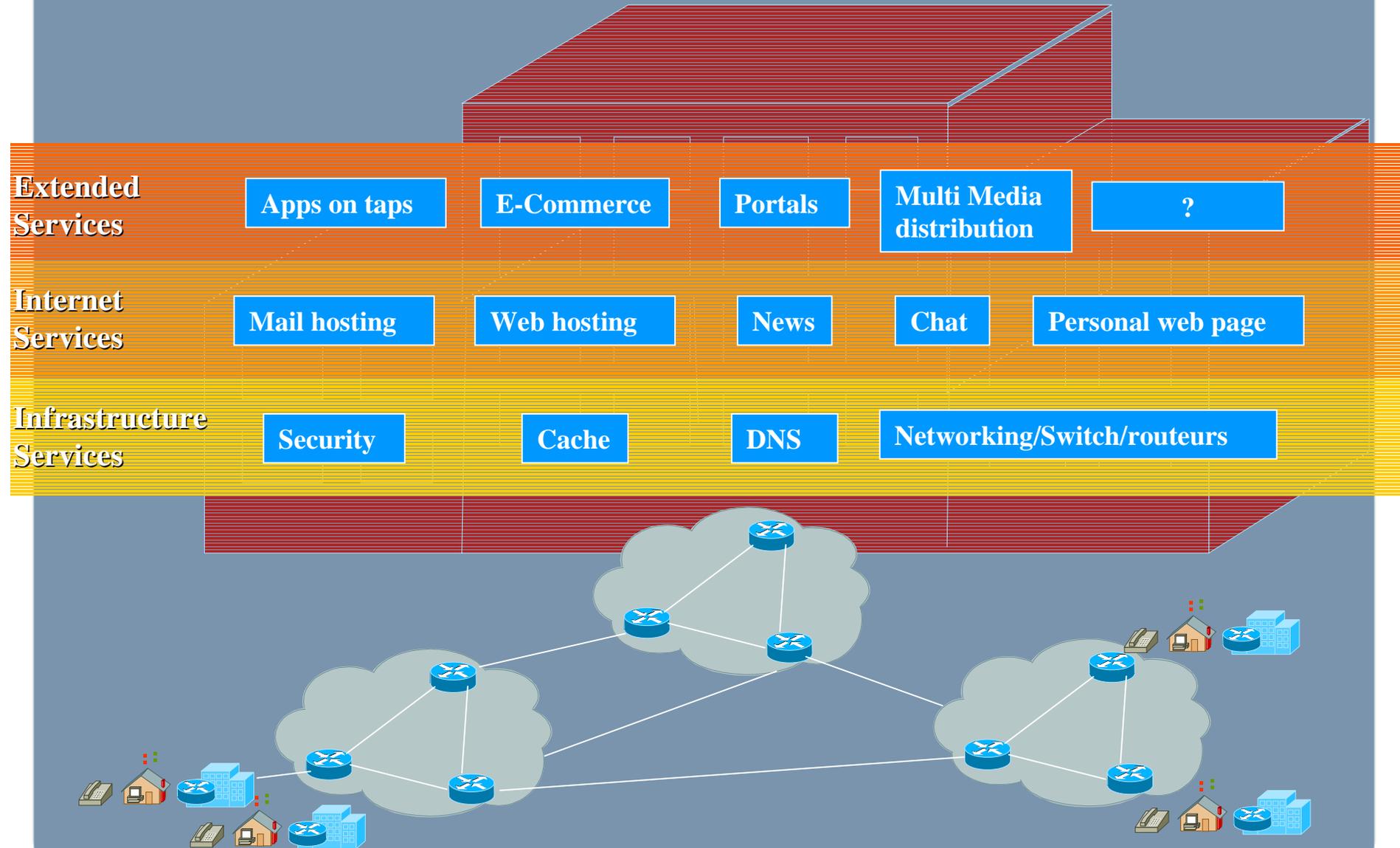91040 Evry Cedex

France

Tel: +33 169648304

Fax:+33 169648128

Windows 2000 for Service Providers

–xSP Environnement

–xSP Solutions NT vs 2000

–Why 2000

–More infos...

xSP Data Center

Extended Services

| Apps on taps | E-Commerce | Portals | Multi Media distribution | ? |

Internet Services

| Mail hosting | Web hosting | News | Chat | Personal web page |

Infrastructure Services

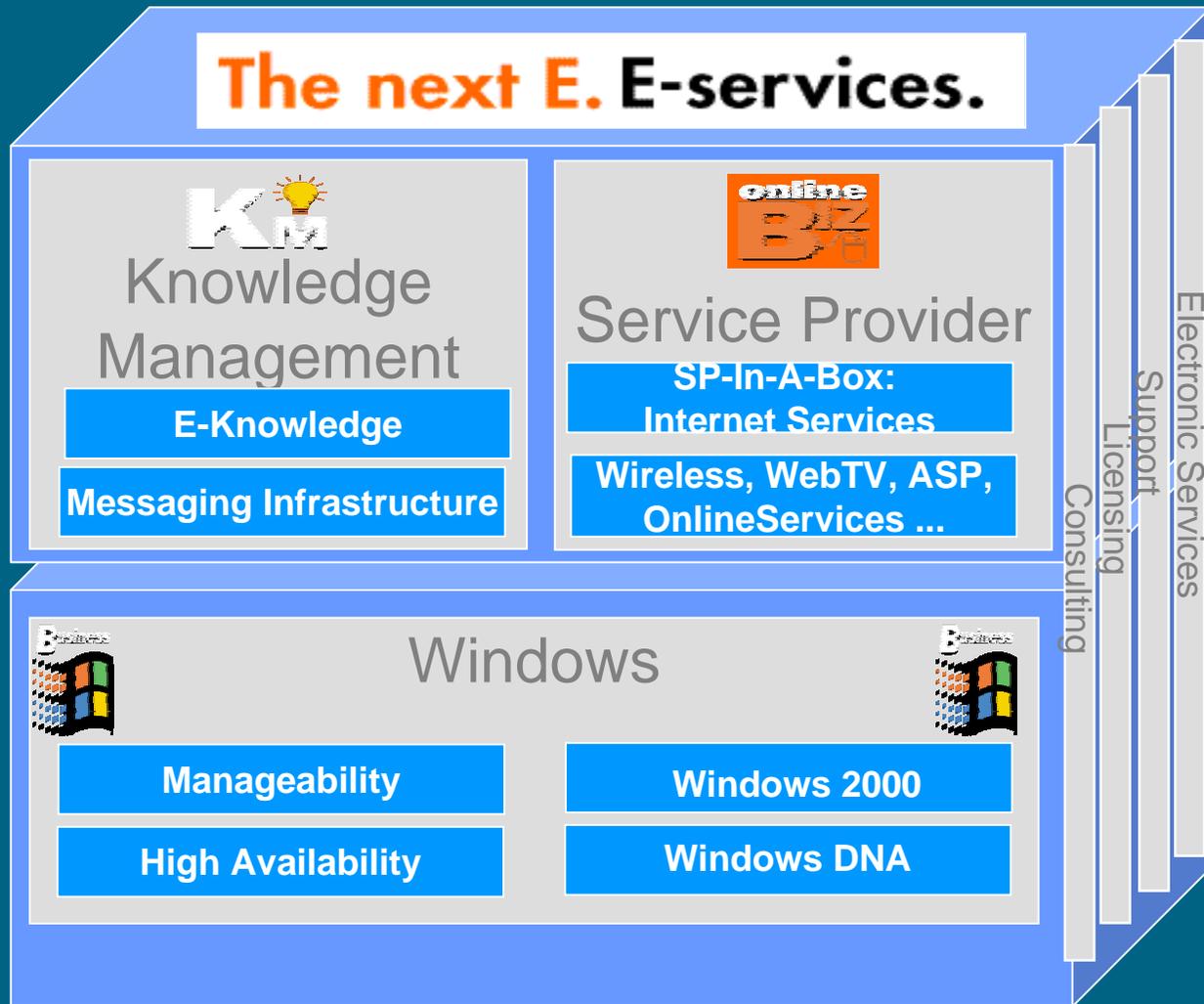| Security | Cache | DNS | Networking/Switch/routeurs |

Service Provider Challenges

Respond quickly and cost-efficiently to changing business needs and growth opportunities.

- Increase revenues
- Gain/retain customers
- Reduce costs (TCO)
- Add new services quickly
- Handle new devices, new transports
- Scalable, flexible, secure architecture
- Alternate business models
- Mission critical support
- Manageability
- End-to-end quality of service
- Usage metering (flexible billing)

HP Services/MSO
SMART Microsoft Solutions from HP

The next E. E-services.

Knowledge Management

- E-Knowledge
- Messaging Infrastructure

Service Provider

- SP-In-A-Box: Internet Services
- Wireless, WebTV, ASP, OnlineServices ...

Windows

- Manageability
- High Availability
- Windows 2000
- Windows DNA

Electronic Services

Support

Licensing

Consulting

Windows 2000 for Service Providers

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- Why 2000
- More infos...

SP-In-A-Box

Internet/Extended Services

Consumer/residential

InternetSvc

✓ Email (POP3/IMAP4/WebMail)
✓ News
✓ Chat
✓ MultiMedia Content
✓ PWP
✓ InstantMess.

Wireless Access

Portals COINS E-Com

Game ,..

Corporate/SME services

Communication & Collaboration
✓ wireline/wireless
✓ UM
✓ MultiMedia Content (E-learn)

E-Commerce
✓ B2B,
✓ B2C,
✓ B2E

Managed applications

Apps on Tap

Core services :VPN ,...

Infrastructure services

Security	Management	Load balancing High Availability	Cache	DNS/Directory	WebQOS/SLA	E-service Broker	Wireless

Windows NT / Windows 2K

Servers & Storage

Network

Customer Care, Service & Support

Billing & Subscriber Mgt

IP/Apps Metering Svc

Svc Provisioning insurance

Svc mgt

Network & System Mgt

SP -In-A-Box

Internet/Extended Services

Consumer/residential

InternetSvc
- ✓ Email (POP3/IMAP4/
- ✓ MCIS
- ✓ Chat
- ✓ MultiMedia Content
- ✓ PWP
- ✓ InstantMess.

Wireless
MICSA

Portals
COINS
E-Com
Commerce Server
Game...

Corporate/SME services

Communication & Collaboration
- ✓ wireline/wireless
- ✓ UM
MCIS
Content -Com)

E-Commerce
- ✓ B2B,
- ✓ B2C,
- ✓ B2E
Commerce Server

Apps on Tap

Managed applications

Core services :VPN ,...

Customer Care, Service
PORTAL Real Time No Limits

Billing & Subscriber Mgt
Portal/Infranet

IP/Apps
HP SIU

Svc Provisioning insurance

Svc mgt

Network & Svc
HP OV MgeX/Vantage

Infrastructure services

Agilent

Security

Management
HP WMI/ TopTools

Load Balancing High Availability
NLBS MSCS Switches...

Cache

Directory
MCIS SQL MBS

WebQOS/
Firehunter
WebQoS

E-service Broker

Wireless
MICSA

Microsoft Windows NT / Windows 2K

Servers **Storage**
hp invent
HP Netservers LT6K LPRs/SAN

Network

Cisco Systems
EMPOWERING THE INTERNET GENERATION
CISCO Pix
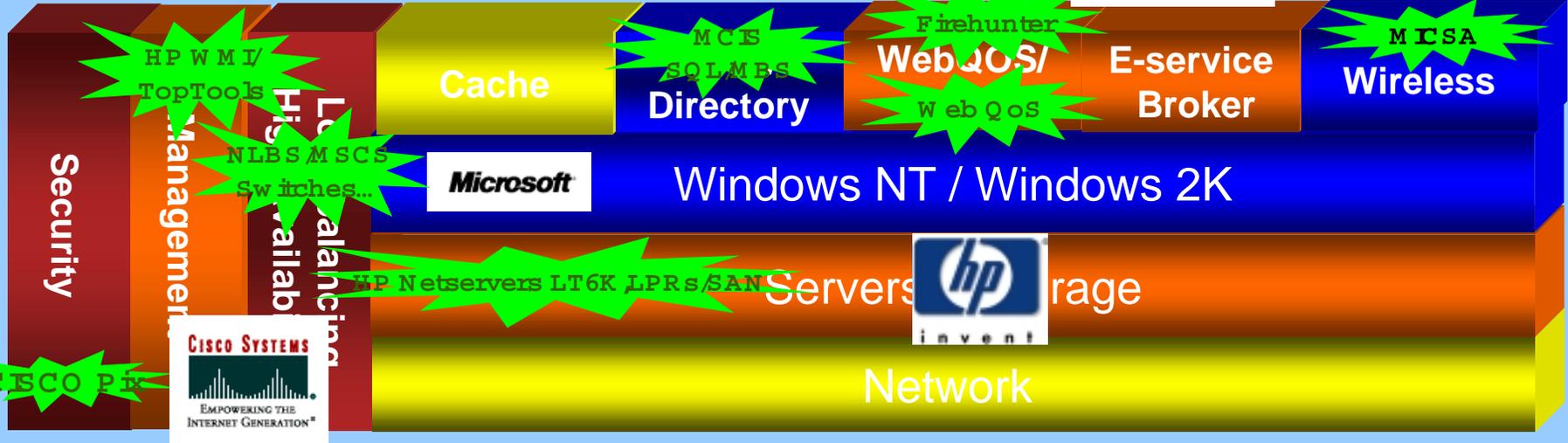
Service Provider limits/Boundaries

Time to implement
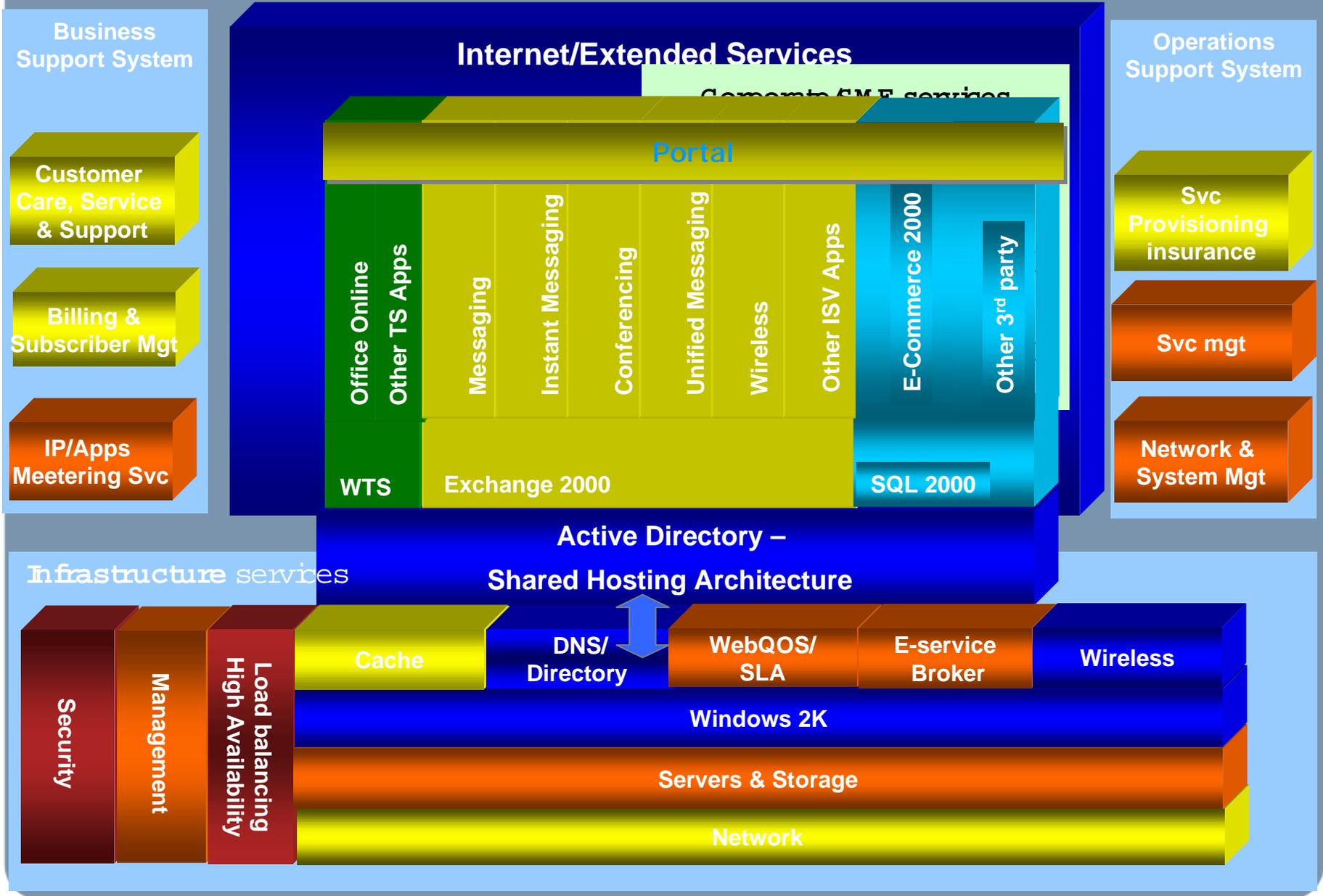
Scalability

Stability

Dynamicity

- Time to implement -> # reboot
- Support of new hardware (Netserver/SAN)
- Security
- Handle new devices, new transports
- Scalable, flexible, secure architecture
- Alternate business models
- Mission critical support
- Manageability
- End-to-end quality of service
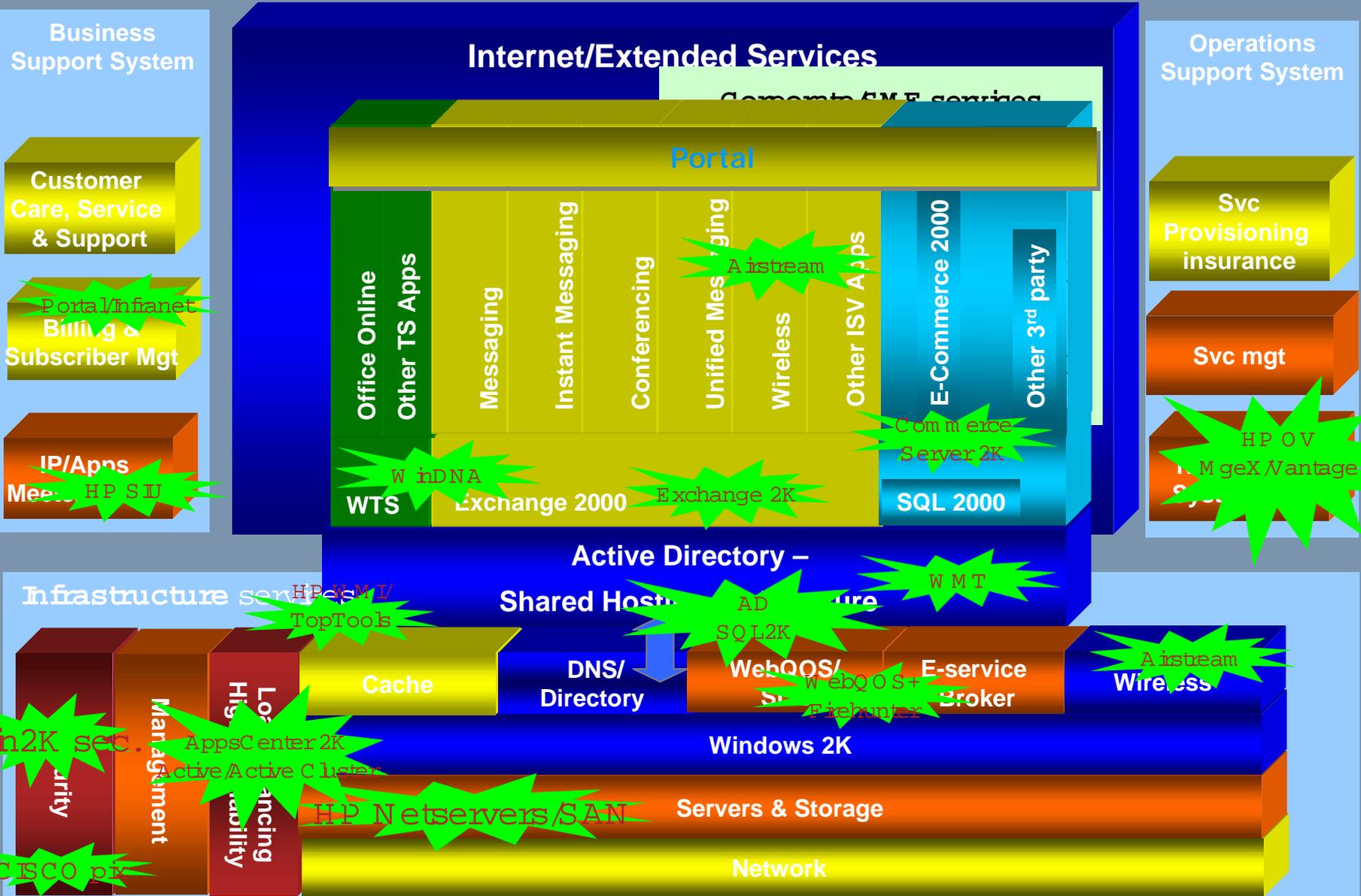- Usage metering (flexible billing)

SP-in-a-Box 2000

Based on Windows 2000

& Exchange 2000

(to be announced Mid July)

SP –In–A–Box 2000

Business Support System

Customer Care, Service & Support

Billing & Subscriber Mgt

IP/Apps Meetering Svc

Internet/Extended Services

Consumer/SME services

Portal

Office Online Other TS Apps

Messaging

Instant Messaging

Conferencing

Unified Messaging

Wireless

Other ISV Apps

E-Commerce 2000

Other 3rd party

WTS **Exchange 2000** **SQL 2000**

Active Directory –

Shared Hosting Architecture

Operations Support System

Svc Provisioning insurance

Svc mgt

Network & System Mgt

Infrastructure services

Security

Management

Load balancing High Availability

Cache

DNS/ Directory

WebQOS/ SLA

E-service Broker

Wireless

Windows 2K

Servers & Storage

Network

SP–In–A–Box 2000

Business Support System

Operations Support System

Internet/Extended Services

Generate SME services

Portal

- Customer Care, Service & Support
- Portal/Infranet
- Billing & Subscriber Mgt
- IP/Apps
- Meeting
- HP SIU

Office Online
Other TS Apps

Messaging

Instant Messaging

Conferencing

Unified Messaging

Wireless

Other ISV Apps

E-Commerce 2000

Other 3rd party

Airstream

Commerce Server 2K

WinDNA

WTS

Exchange 2000

Exchange 2K

SQL 2000

- Svc Provisioning insurance
- Svc mgt
- HP OV IT MgeX Vantage ...

Active Directory –

Shared Hosting Infrastructure

Infrastructure services

HP WMI/ TopTools

AD SQL2K

WMT

DNS/ Directory

Cache

WebQOS/ SL

WebQOS+ Firehunter

E-service Broker

Airstream

Wireless

Win2K sec.

AppsCenter 2K
Active/Active Cluster

Windows 2K

Security

Management

Load High ... Balancing Facility

HP Netservers/SAN

Servers & Storage

CISCO pix

Network

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–xSP Environnem ent

–xSP Solutions N T vs 2000

–W hy 2000

–M ore infos...

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–xSP Solutions NT vs 2000

–Why 2000-> HW

–More infos...

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Windows 2000 Server Products

Datacenter Server
Up to 32-way SMP
Up to 64GB memory
4 node clustering
Process Control Manage

Advanced Server
8-way SMP
8 GB RAM
2-node clustering
Load balancing
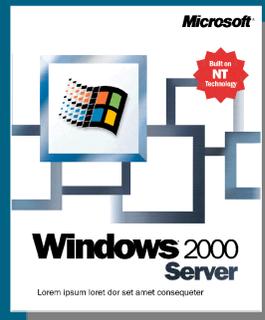
Server
4-way SMP
4 GB RAM
IIS CPU & bandwidth throttling

Windows 2000 Future Directions
Scaling up and out

Scale Up ↑

32P — Windows 2000 Datacenter Server

Partitionable

8P — Windows 2000 Datacenter Server / Advanced Server 2000

4P — Windows 2000 Server → Windows 2000 Advanced Server → Windows 2000 Advanced Server / Microsoft AppCenter

Scalable clusters

Scale Out →

- ✓ **Windows 2000 Server – for businesses of all sizes**
- ✓ **Windows 2000 Advanced Server – e-Commerce, LOB**
- ✓ **Windows 2000 Datacenter Server – highest scalability**
- ✓ **Automatic Optimizations**
- ✓ **Cost-effective Growth**
- ✓ **Investment Protection**

New Hardware Supporting Win2K:
HP First to Ship the Power of a 6-way Server...
for the Price of a 4-way

LXr 8500

New!

LT 6000r

New!

LH 6000r

LH 4r

LH 6000

New!

LPr

Corporate L-Series Rack-Optimized

LH 3000r

LC 2000r

LH 4

Corporate L-Series Rackable

LH 3000

LC 2000

Corporate L-Series Pedestal

E 60

Small to Medium Business E-Series

HP Year 2000 Hardware Compliant
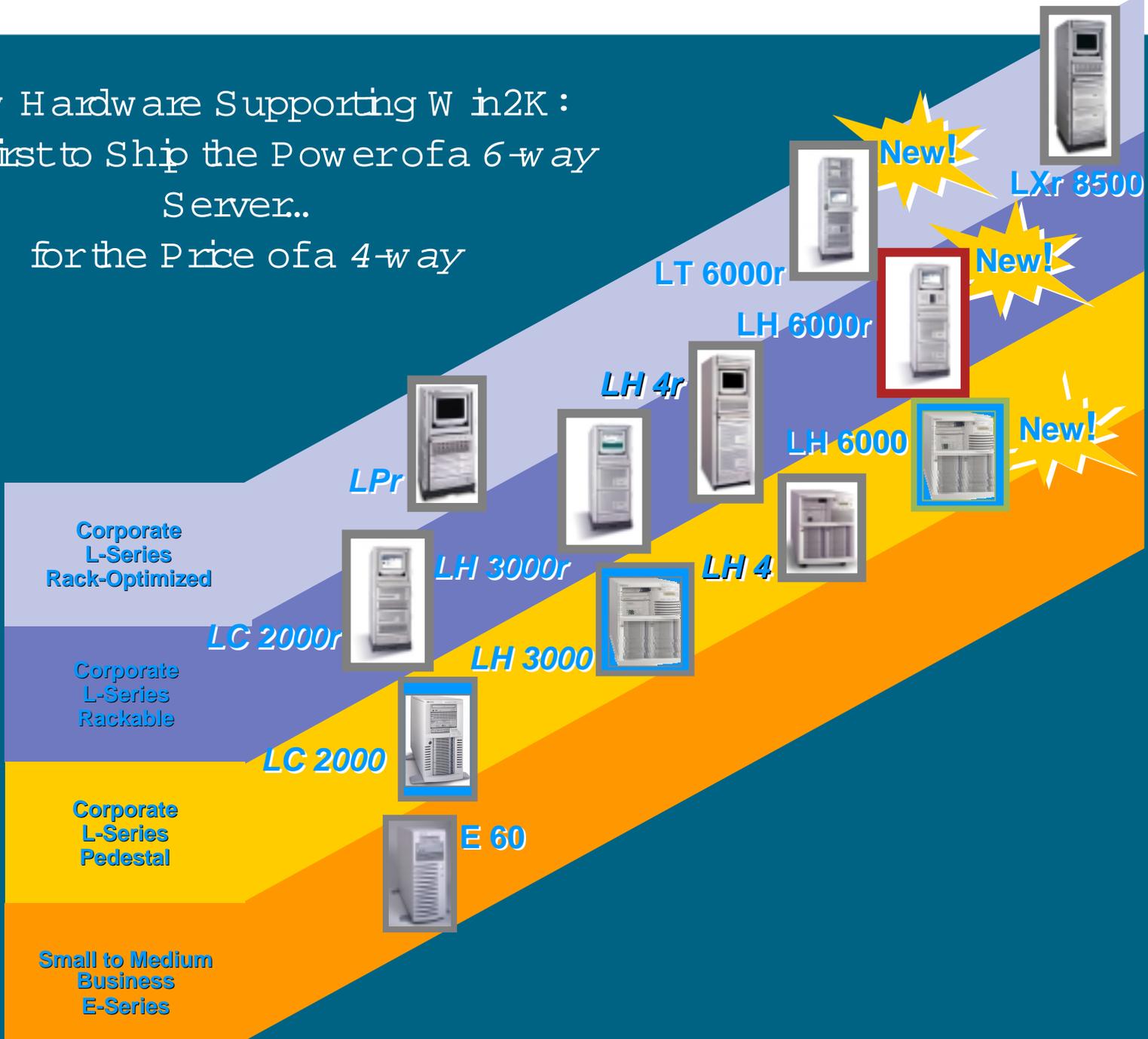
Faster than a Proliant 6400
More Powerful than a Sun E 450
ZD Labs Test Results

**LH 6000 Performance
Relative to Compaq ProLiant 6400r**

**LH 6000 Performance
Relative to Sun Enterprise 450**
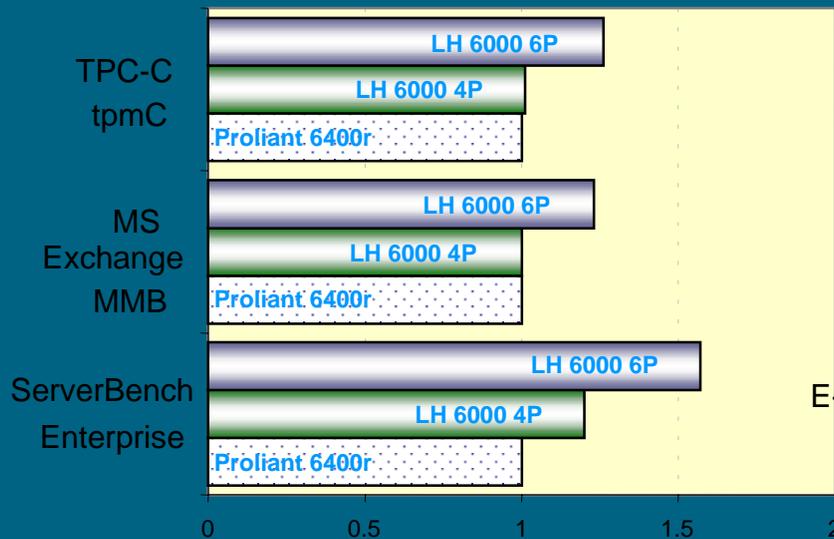
Compaq Proliant 6400r 4-way,
Pentium III Xeon 550MHz 1MB L2 cache,
1 GB RAM, 10 9GB disks
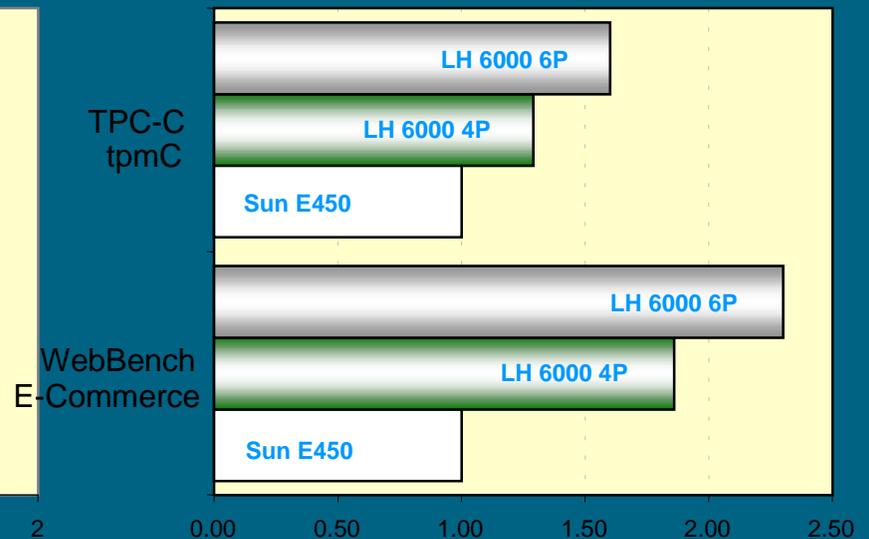
Sun Enterprise 450 4-way,
Ultra SPARC II 400MHz 4MB L2 cache,
4 GB RAM, 10 9GB disks

SP-in-a-box-schema.ppt

HP NetServer LH 6000 and LT 6000r
Highlights

	HP NetServer LH 6000	**HP NetServer LT 6000r**
Number of Processors	Up to 6 Intel PIII Xeon Processors	
Memory Type	PC-133 SDRAM	
Maximum Memory	8 GB	
Bus Speed	100MHz	
I/O Slots	All 64-bit Slots; Two 66MHz Slots	
Network Interface Card	Integrated 10/100TX	
Hot Swap Internal Storage	216 GB (6x36GB)	72 GB (4x18GB)
Number of Hot Swap Hard Drive Bays	12 Front Accessible	4 Front Accessible
Number of I/O Slots	8 PCI (4 Hot-Plug PCI)	6 PCI (Hot-Plug PCI)
NetRAID Controller	Integrated dual channel, 64-bit wide Ultra2 SCSI expandable to 128MB	Integrated dual channel, 64-bit wide Ultra2 SCSI expandable to 128MB
Rack Density	8U	4U (60 processors in 2 meter (40U) rack

SP-in-a-box-schema.ppt

Customer Choice
Why Qwest Chose the
6-way HP NetServer System

Similar profile to the HP NetServer LH 6000 customer but...

- **Space is a major concern**

  - Data center environments where space is expensive and limited

  - Rack density is a critical factor

- **Bullets on customer environment and how server met those challenges**
- **Customer Quote**

SP-in-a-box-schema.ppt

HP NetServers Innovation
Enabling External Storage

NEW!!

Storage Area Networks

- HP SAN Manager Software for Storage Management

- **HP SureStore Tape Backup Solutions**

- HP SureStore E Disk Array XP256 for Server/Storage Consolidation

- Disk Arrays at Lower Price Points to be Supported in H2-2000

- **HP SureStore E Disk Array FC60 for Mainstream SAN Configurations***

HP NetRAID 4M

- **High-Performance, Maximum Availability RAID Controller for Critical Enterprise Applications**

- **4-Channels, Wide Ultra3 SCSI, 64-128MB Cache**

* HP SureStore E Disk Array FC60 available in May 2000

W indows 2000 for Service Providers

- xSP Environnem ent

- xSP Solutions NT vs 2000

- W hy 2000 -> O S

- M ore infos...

Windows Reliability, Availability, and Scalability

Reality O ver M yth
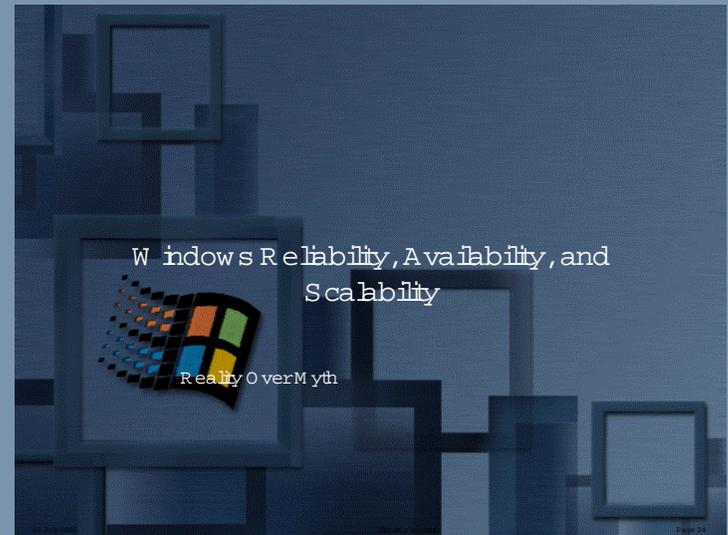
Causes Of Downtime

- **Untested**
- **Change Management**
- **Overloaded**
- **Weak Problem Detection**

- **Forget Something**
- **Lack of Procedures**
- **Backup Errors / Security**

Application Failure 40%

Operator Error 40%

Other 20%
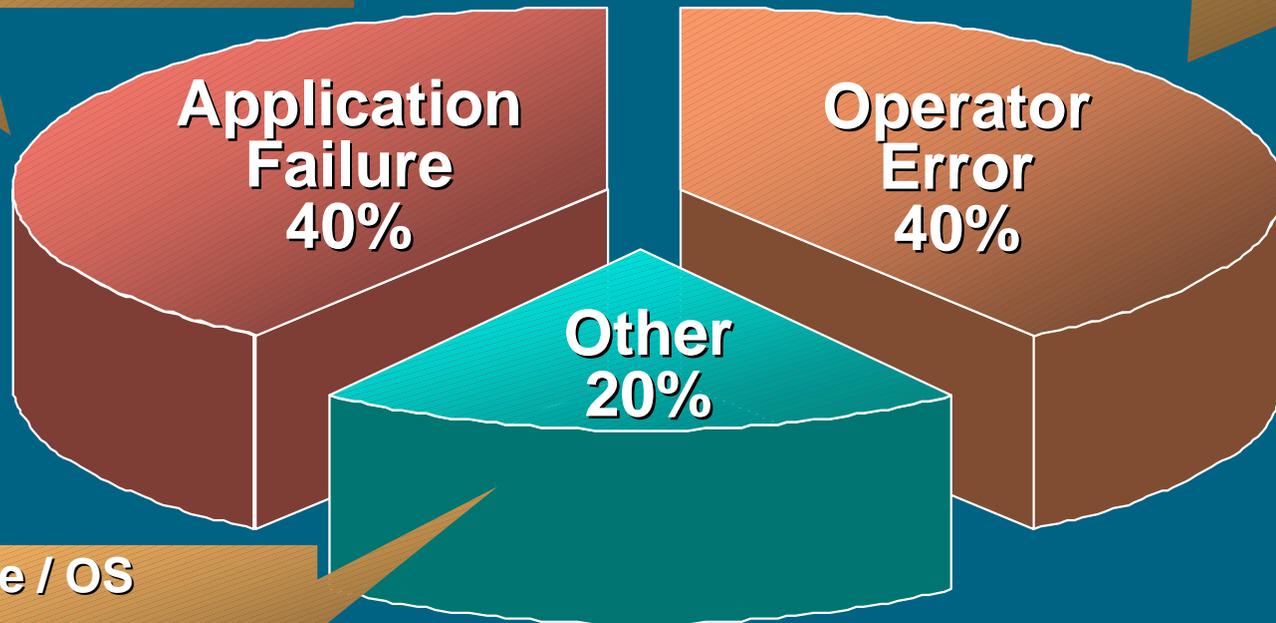
- **Hardware / OS**
- **Network**
- **Power and Disaster**

Gartner Group, 1998

Delivering high availability takes people, process, and technology

SP-in-a-box-schema.ppt

NT4 Server Reboot Causes

65% of outages are planned

35% of outages are unplanned

- Application install/config 8%
- OS Configuration 7%
- OS install 27%
- Hardware install/config 3%
- Preventative reboots 20%
- Application Failure 21%
- System failure 14%
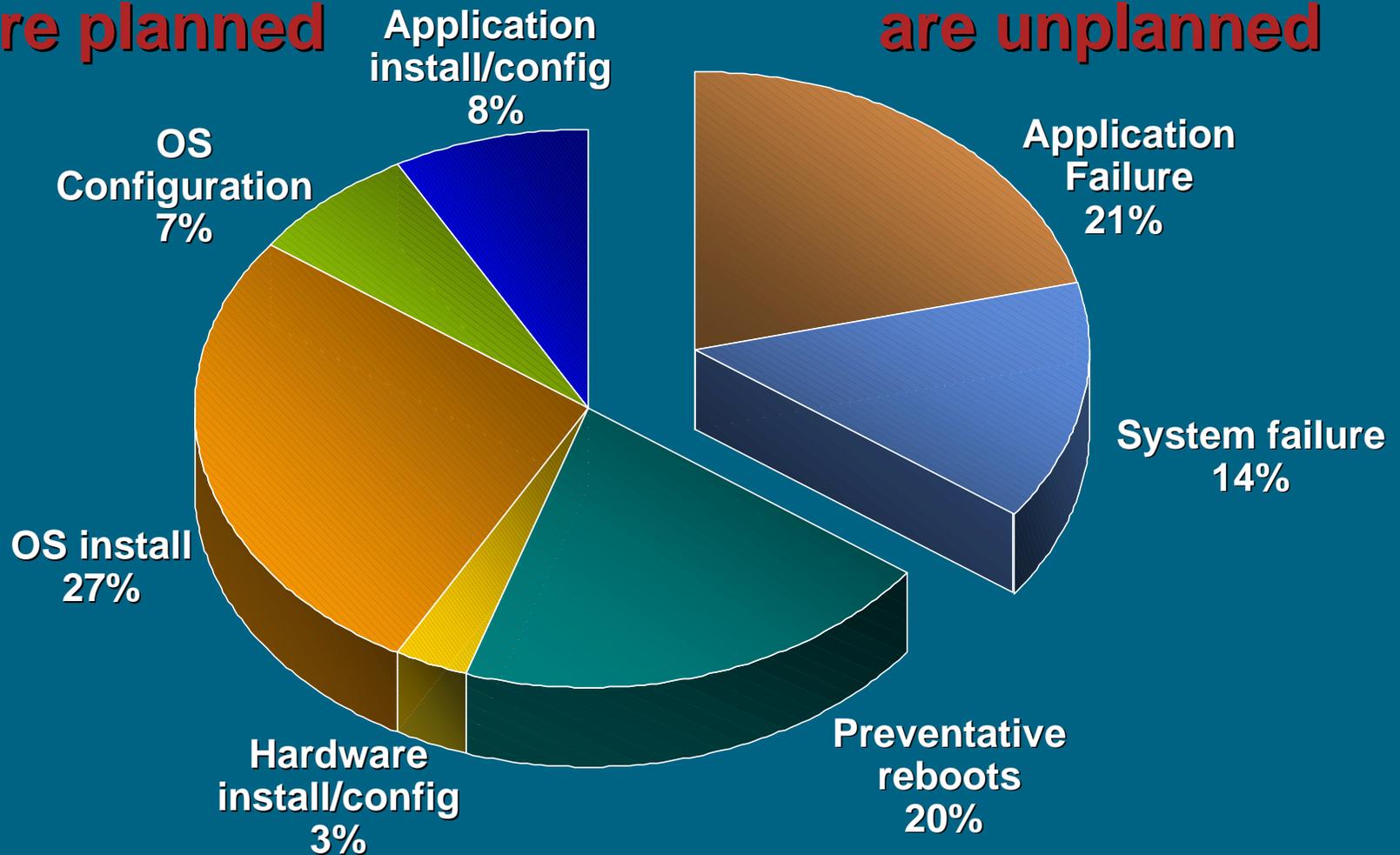
Source: One site, 1,180 servers, 9/1/98-5/7/99, SP3/SP4

SP-in-a-box-schema.ppt

NT4 System Failure Causes

Hardware Failure 13%

Core NT 43%

Device drivers 16%

Other third-party drivers 16%

Anti-virus 12%
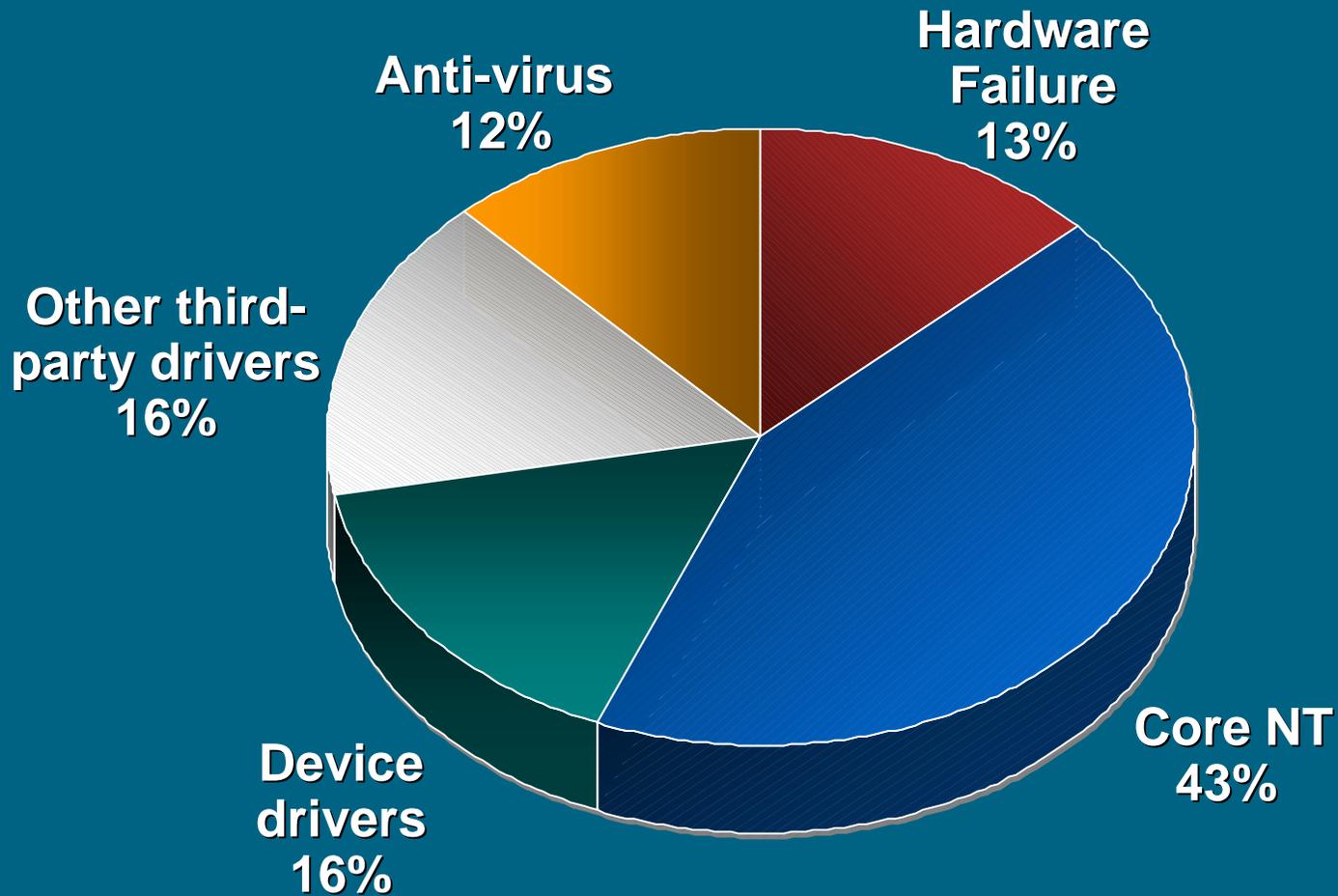
Source: Sample from PSS Incidents: NT Server 4.0 8/5/96-4/7/98

Evaluating High Availability

Can Compare

- Mean Time to Failure (MTTF)

  - Reduce by design & test of hardware & software

- Mean Time to Recover (MTTR)

  - Reduce by using fail-over mechanisms (e.g., clustering)

Can't Compare

- Hardware vs. Application availability

  - Switch hardware fails too, but redundancy ensures non-stop operation

- Desktop environment vs. Datacenter environment

  - Windows NT prevalent in BOTH

HP Critical Systems Support for Windows Servers
Reactive Services: "Fix it fast"

Hardware Call to Repair

➢ Ensures hardware repair completion (not just response commitment) within 6 hours.

➢ Coverage for HP, Compaq and Dell PC servers

➢ Immediate engagement of an HP engineer with hardware, software, and network expertise, immediate response from a certified resolution engineer

➢ Specialized parts inventory

➢ Up-front server audit to obtain key system information and inventory

Priority Software Recovery

➢ 24x7 software support, unlimited calls

➢ BackOffice support is now included

➢ Immediate access to highest-level software engineers

➢ End-to-end problem ownership

➢ Priority Escalation to Microsoft with time based commitments for workarounds, hot fixes and permanent patches

➢ Access to HP/Microsoft virtual lab: HP Support staff onsite at Microsoft

HP Critical Systems Support for Windows Servers

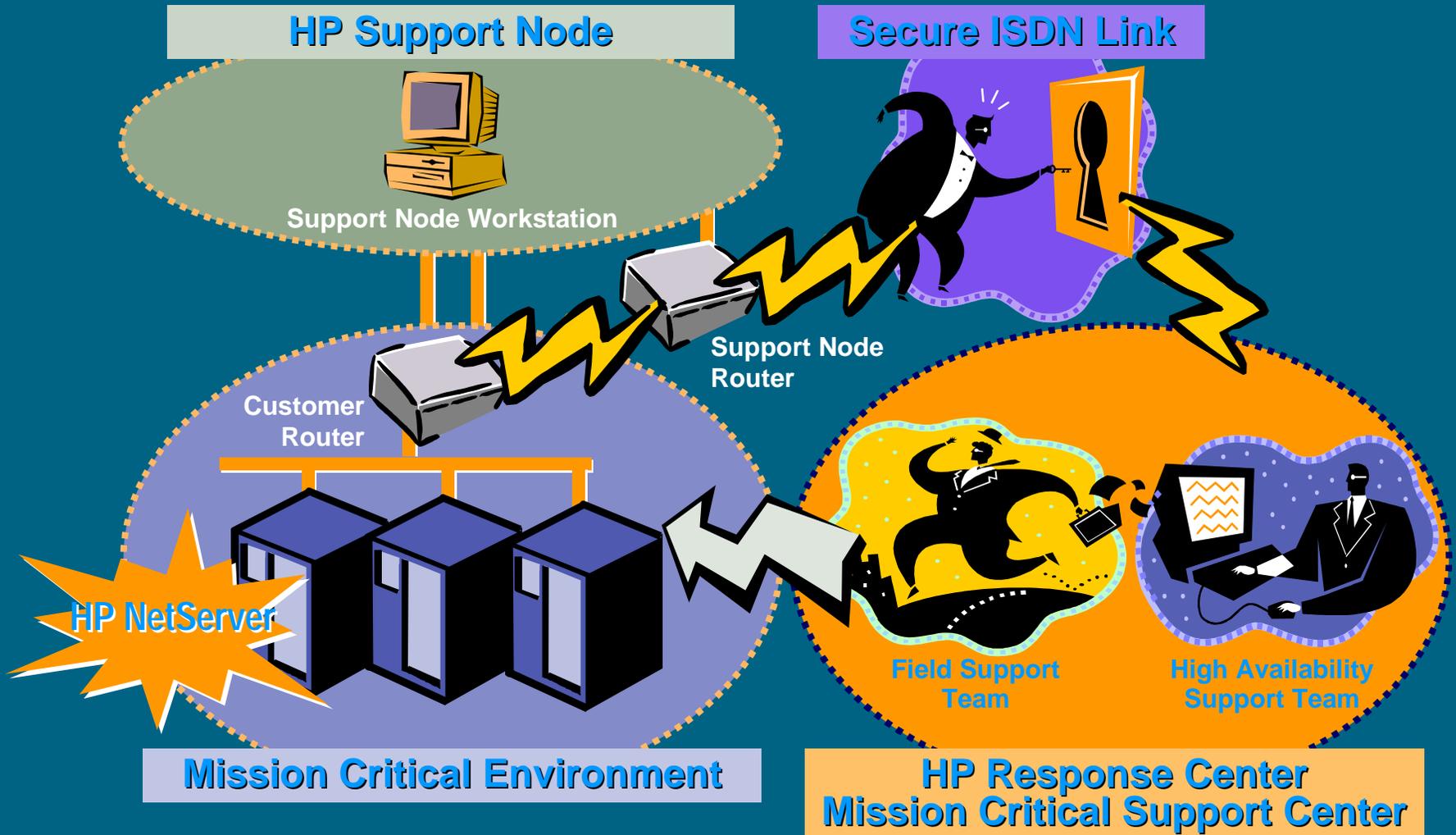## *Proactive Services: "Keep it running"*

Priority Management

- ➢ Assigned Account Support team -- Account Support Plan

- ➢ Quarterly availability reviews with recommendations—including three months of problem analysis, availability tracking, and reporting

- ➢ Anticipatory problem monitoring, detection, and notification

- ➢ Proactive patching and proactive notification of critical problems

- ➢ Detailed, documented ServicePack briefings on Windows and BackOffice

- ➢ ServicePack recommendations unique to your environment

Operations Check-up

Assessment of availability readiness and identification of downtime risks
Evaluates technology, operations processes, staffing, and physical environment
Recommendations for readiness improvements, best practices and service offerings

HP High Availability Observatory

HP Support Node

Secure ISDN Link

Support Node Workstation

Support Node Router

Customer Router

HP NetServer

Field Support Team

High Availability Support Team

Mission Critical Environment

HP Response Center
Mission Critical Support Center

SP-in-a-box-schema.ppt

Hardware and O/S
MCSS

- Hardware: 99.9% up to 99.999%

  - http://www.hp.com/go/AssuredAvailability

  - urlCSSG

SP-in-a-box-schema.ppt

Hardware and Software

- Windows System Family Reliability Support Features

  ✓ Microsoft Cluster Services

  ✓ Load Balancing Services (WLBS)

- Windows 2000 Enhanced Reliability

  ✓ Dependability Enhancements

  ✓ Windows 2000 Advanced and Datacenter Server

  ✓ Plans to extend Windows 2000 Datacenter server to Support 64-bit Addressing.

Windows 2000 for Service Providers

– xSP Environnem ent

– xSP Solutions NT vs 2000

– W hy 2000 –> Application Solution and Architecture Design

– M ore infos...

Factors affecting
Scalability / Reliability / Availability

- Public Perception

- Hardware and Operating System

- **Application Solution / Architecture**

- Operational Procedures

Factors affecting Availability – Architecture

- Scalability and Availability are inter-related

  - Architecture decisions affect availability of system (scale up vs. scale out)

- System Design and Operation

- Development environment

  - Visual Studio tools are tuned for Rapid Application Development (RAD)

    - Defaults must be over-ridden by skilled developer to leverage high availability features
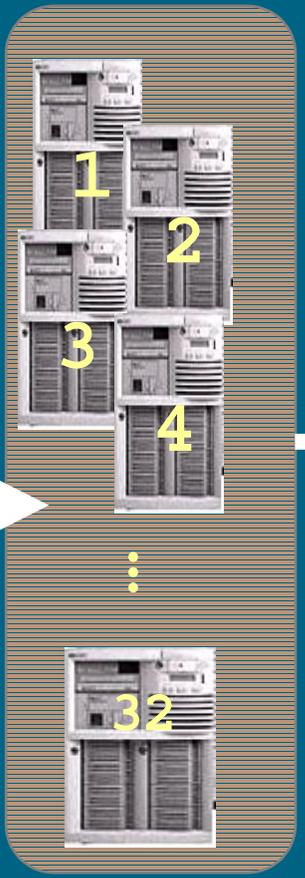
SP-in-a-box-schema.ppt

Scaling 'out'

Clients

Network Load Balancing

Component Load Balancing (COM+)

Cluster & Storage Service

1
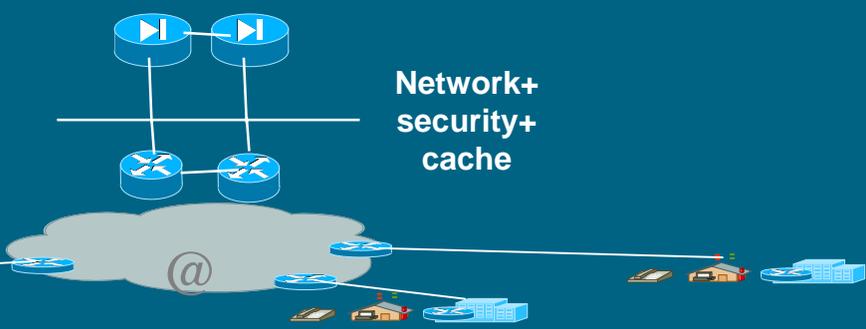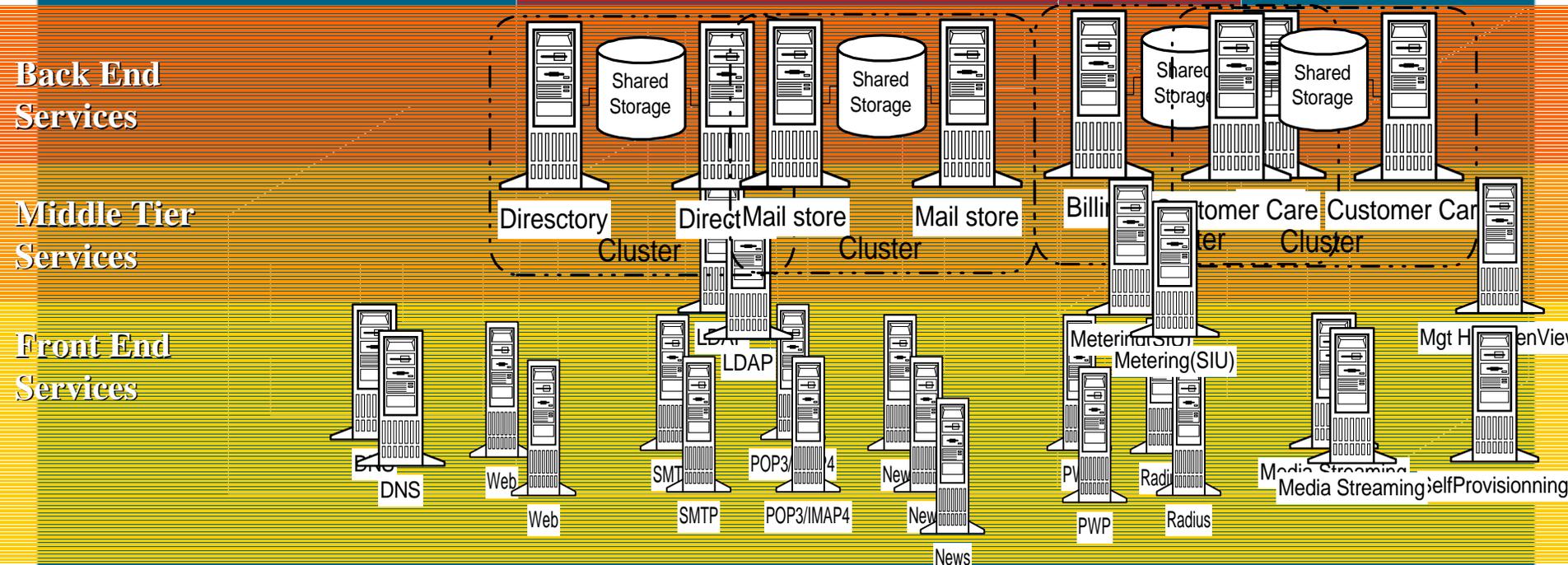2
3
4
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32

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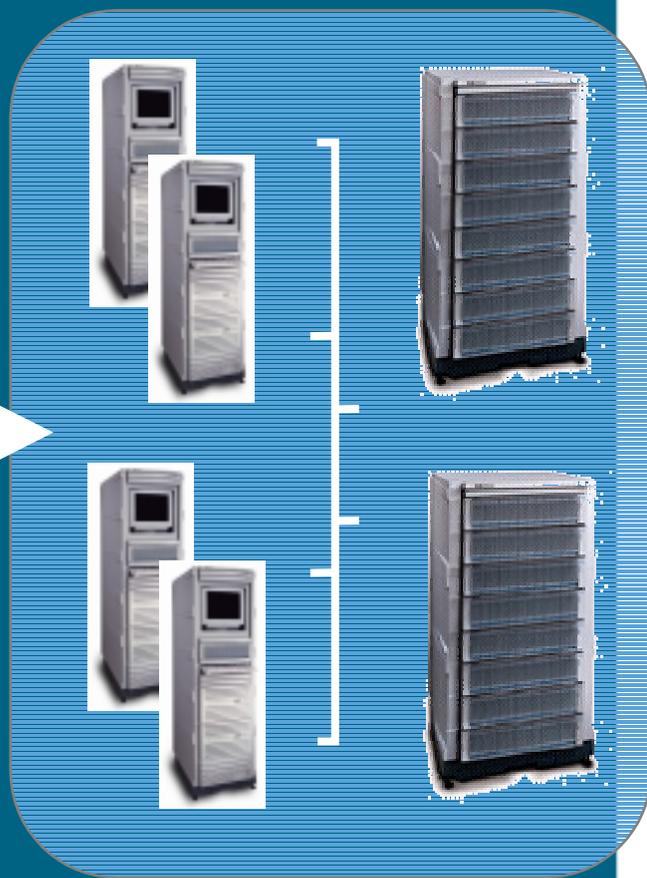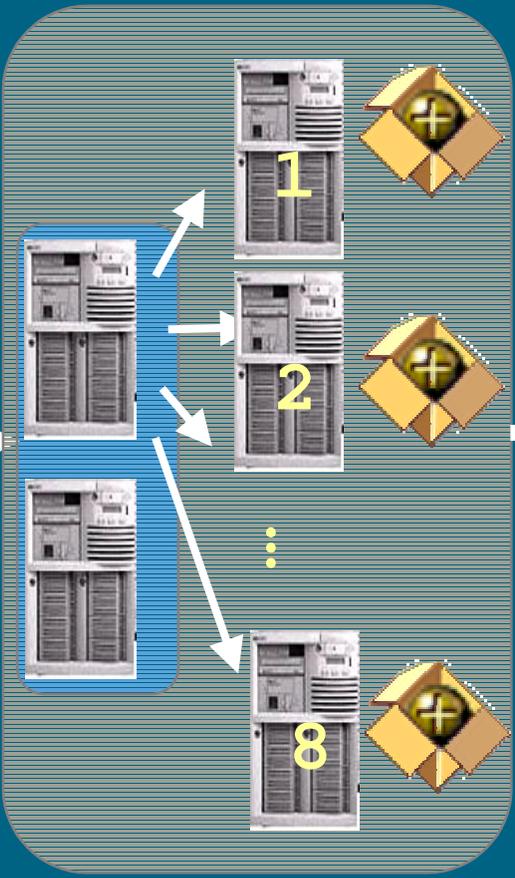
IIS Web Server
or other IP based services

COM+ Components
Application Servers

Data Servers
SQL, Exchange, File

xSP dataCenter PhysicalArchitecture

Back End Services

Middle Tier Services

Front End Services

Shared Storage

Shared Storage

Shared Storage

Shared Storage

Diresctory

Direct

Mail store

Mail store

Billing

Customer Care

Customer Care

Cluster

Cluster

ter

Cluster

LDAP

LDAP

Metering(SIU)

Metering(SIU)

Mgt HP OpenView

DNS

Web

SMTP

POP3/IMAP4

News

PWP

Radius

Media Streaming

SelfProvisionning

Web

SMTP

POP3/IMAP4

News

PWP

Radius

Media Streaming

News

Network+ security+ cache

@

SmartDesign and Operation

- Design for needs of Business Application

  - Redundant hardware

  - Redundant data

  - Use queues for inter-server communication

- Proactive Management and Monitoring Infrastructure

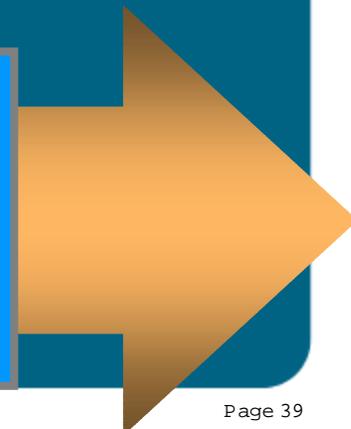- Investigate Failures and Perform Root Cause Analysis

SP-in-a-box-schema.ppt

Achieving InternetScale
Two Complementary Approaches
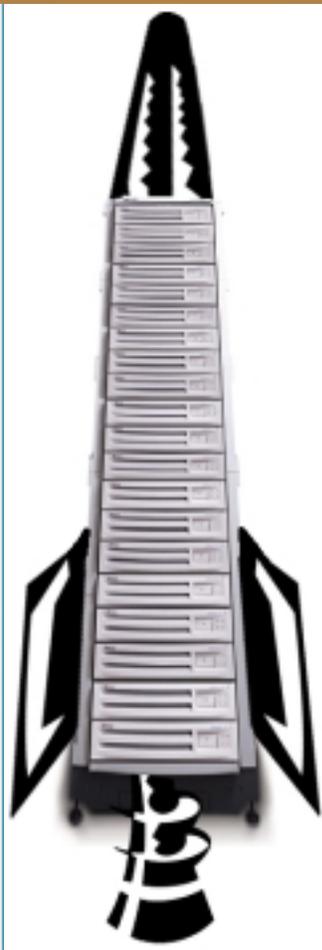
Scale Out via "farms" of servers

Scale Up via bigger individual servers

Windows 2000 Reliability Improvements

- Eliminated most configuration reboots. 25 reboot classes have been eliminated

- Driver Verifier and Driver improvements reduces the potential source of failures

- File System Enhancements and File Protection

- Faster Problem Recovery

- High Availability White Papers

  - http://www.microsoft.com/ISN/hot_topic_high_availability.asp

  - http://www.microsoft.com/windows2000/library/howitworks/management/relavail.asp

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- Why 2000 -> Servicibility/Manageability

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Management Challenges

Customers	Description
Desktop Management	◆ **User focused** ◆ **Goal: Reduce desktop visits,** ◆ **Barriers: user control, mixed environments**
Network Management	◆ **Device focused** ◆ **Goal: Reduce wiring closet visits** ◆ **Barriers: multiple points of failure, no end-to-end view of network**
Data center Management	◆ **Data focused** ◆ **Goal: Reduce server visits** ◆ **Barriers: distributed data and servers**

Windows Aids Manageability

- Easy Yet Powerful Management Capabilities Built into Windows NT Server 4.0

- Broad Industry Support for Add-on Management Applications for the Windows Platform

- Windows 2000 Server and AppCenter Enhance Manageability

- Vantage Point for SP

SP-in-a-box-schema.ppt

W indows N T Server 4 .0

- M icrosoft M anagem ent C onsole

- M icrosoft Instrum entation (W M I)

- M anagem ent Task A utom ation Through S cripting

- G roup Policy M anagem ent

Common Instrumentation

- Windows Management Instrumentation

  - Common access and control mechanism

  - Maps all standard and proprietary management protocols into a single scheme

  - Remote interface for centralized management

  - Simple instrumentation model for application developers

  - Instrumentation modeled in Common Schema (DMTF CIM v2.0)
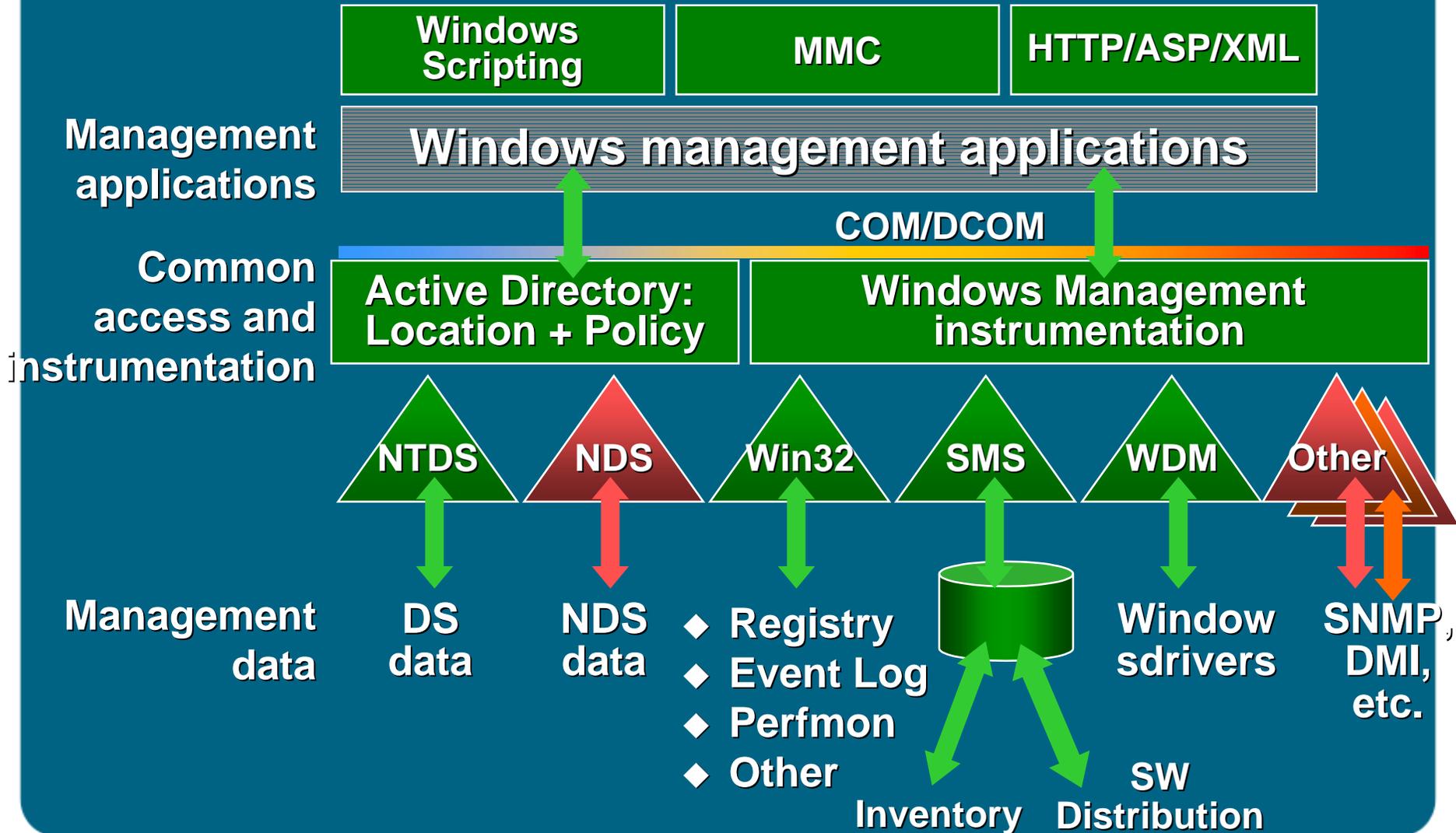
SP-in-a-box-schema.ppt

Presentation: Common UI

- Microsoft Management Console

  - MMC is a common console for NT5 and SMS administration

  - MMC supports Win32 Snap-ins and web pages

  - MMC should be used to provide an interface for the administrator to management functions

  - The heavy lifting for management should be done by the Standard Management Tools and Common Services

- XML

  - XML should be used to provide web-based administration tools

Presentation: Scripting
Windows Scripting Host

- Scripting has been problematic in the past

  - Batch commands too limited

- Pick your scripting language:

  - VBScript

  - JavaScript

  - PERL

  - Others (that support Windows Scripting Host)

- Windows 2000 and NT offer script management that customers need today

Windows 2000 Management

Management applications

Windows Scripting	MMC	HTTP/ASP/XML

Windows management applications

COM/DCOM

Common access and instrumentation

Active Directory: Location + Policy	Windows Management instrumentation

NTDS — NDS — Win32 — SMS — WDM — Other

Management data

DS data	NDS data	◆ Registry ◆ Event Log ◆ Perfmon ◆ Other	Windows drivers	SNMP, DMI, etc.

Inventory   SW Distribution

Introducing AppCenter

- New product as part of WinDNA services form iddle-tier applications

- Full management of applications on the middle tier

  - Management framework for the many parts of today's web applications from business logic to web server config

  - Availability through monitored applications and services on redundant arrays of servers

  - Scalability through component load balancing, and management of http-based load balancing on arrays of servers

  - Controlled deployment from the development workstation through stagers, to the production environment and across arrays of servers

  - Application load testing tools for functional and load verification testing

  - Analysis tools for capacity, business flow, application usage, and performance

W hy Appcenter?

- D ifficult to m anage applications, which are com prised of
m any difference pieces

- D ifficult to bring application from developm ent to
production

- D ifficult to m onitor applications for proactive m anagem ent

- D ifficult to scaling applications beyond a single m achine

- D ifficult to test applications as would consum ers of that
application

AppCenter – 1.0

- Single Application Image

  - Ability to manage all parts of a Windows 2000 web-based application as a single unit (IIS 5/COM+1 applications)

- Deployment

  - Replication moves applications from development and staging to production and across an array of servers

- Monitoring

  - Using WMI and HealthMon 2.1, applications and services can be monitored for proactive fault detection and automated recovery

- Availability

  - Automatic configuration of deployment, monitoring, Network Load Balancing, and Component Load Balancing provides arrays of servers for scalability and fault-tolerance

- Reliability

  - Application testing tools, analysis of runtime performance data, and capacity worksheets ensure good application behavior

VentagePoint - 1.0

- Single Application Image

  - Ability to manage all parts of a Windows 2000 web-based application as a single unit (IIS 5/COM +1 applications)

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–M ore infos...

http://www.hp.com/go/sp

http://www.microsoft.com/isn

http://www.microsoft.com/ISN/ind_
solutions/Windows_2000_service_
providersP44048.asp

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More Infos

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