



Microsoft Terminal Services Progress and Commitment

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Agenda

- **Microsoft Roadmap**
- **Windows Server Systems**
- **Windows Server 2003 Overview**
- **Windows Server 2003 Terminal Services**
- **The future of Terminal Services**
- **Windows “Longhorn” Server**
- **Windows Fundamentals for Legacy PCs**

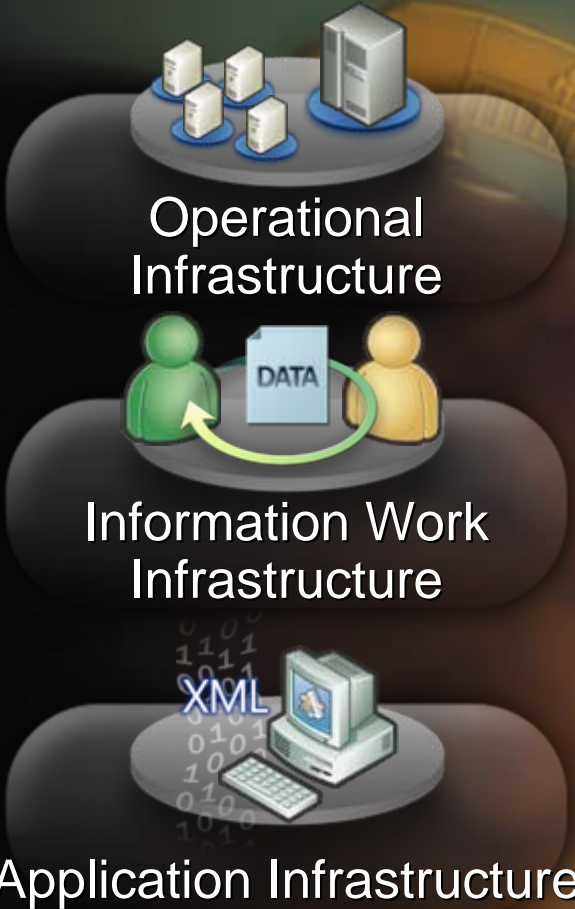
Microsoft Roadmap





Microsoft

Windows Server System



Integrated Innovation

Interoperability



Microsoft Integrated Platform

Messaging & XML
Web Services
Integration



BizTalk Server 2004



BizTalk Server 2004



Host Integration Server 2004



AS400



OS390



Unix



Linux

Windows Server 2003



Windows Server 2003

Vision → Goals → Product

Windows Servers provide the foundation for connecting people, technologies and businesses



A platform for productively developing, deploying and operating applications & services that federate seamlessly and scale without limits



Out
by adding
machines

Up
any large
systems



Down
deliver
services to
any device



Away
to span
geography,
organizations



Windows Server 2003

Vision → Goals → Product

Productive

**Easier for you to deploy, manage
and use**

Dependable

**Enables you to deliver a reliable, secure
and scalable platform for applications
and network services**

Connected

**Empowers you with a complete server
platform to quickly build connected
solutions**

Economical

**Enables you to maximize business value
by leveraging the largest partner
solution ecosystem**

Windows Server 2003

Vision → Goals → Product

Security

- 60% less exposure area than Windows NT4 and Windows 2000 Server
- 9 vulnerabilities in 150 days (23 on Windows 2000 Server, 44 on Redhat v9)

Reliability

- 8x less downtime than Windows NT4
- 4x less downtime than Windows 2000 Server

Interoperability

- MIIIS, Services for UNIX & NetWare
- Web Services, .NET platform

Scalability

- TPC-C non-clustered Leadership (4th)
- 786K tpmC

Manageability/ Migration

- Remote Terminal access
- 187 common tasks fully remoted
- 10 new MMC snap-ins

Windows Server 2003

What version do I need?

Windows 2000

Windows Server 2003 family

Microsoft
Windows 2000
Datacenter Server



Microsoft
Windows Server 2003
Datacenter Edition

32-bit

- 32-way MP, 64 GB RAM
- 8-node clustering
- WSRM
- TS w/Session Directory

64-bit

- 64-way MP, 512 GB RAM
- 8-node clustering
- WSRM
- TS w/Session Directory

Microsoft
Windows 2000
Advanced Server



Microsoft
Windows Server 2003
Enterprise Edition

32-bit

- 8-way MP, 32 GB RAM
- 8-node clustering
- WSRM
- TS w/Session Directory

64-bit

- 8-way MP, 64 GB RAM
- 8-node clustering
- WSRM
- TS w/Session Directory

Microsoft
Windows 2000
Server



Microsoft
Windows Server 2003
Standard Edition

- 4-way MP, 4 GB RAM
- Terminal Server (No SD)



Microsoft
Windows Server 2003
Web Edition

- 2-way MP, 2 GB RAM
- No Terminal Server

The Desired State of IT

Today's IT

Desired IT

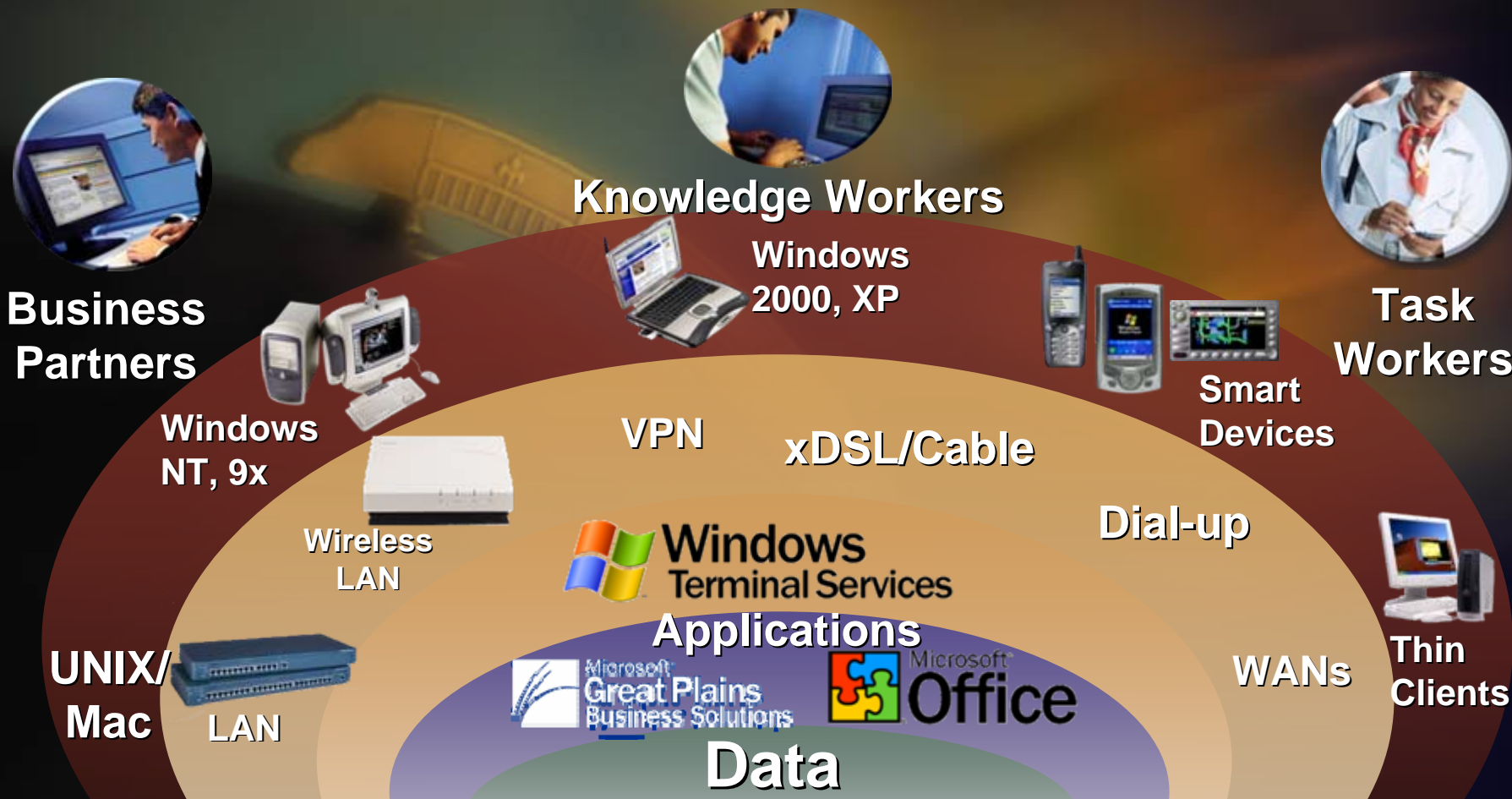


Windows Terminal Services



Windows Terminal Server

Rapid access to data and applications from anywhere



Centralized access to Windows-based applications

Faster application performance over constrained network connections

Experience Windows on virtually any computing device

Terminal Server Benefits and Improvements

- **Centralized access to applications**
 - Rapid Deployment
 - Centralized Updates and Support
 - Data Security
- **Better performance over low bandwidth**
 - Remote Access
 - Better User Experience
 - Minimize Networking Costs
- **Extend Windows to any device**
 - Legacy desktops
 - Non-PC Desktops (WBT, Mac, UNIX)
 - Lightweight devices (PDA, etc)

Run Applications Locally or Remotely?

Scenario	Execute Application Locally	Execute Application Remotely
Offline access to data	✓	
Processor economy of scale	✓	
Resource- or processor-intensive applications	✓	
16-bit applications for Windows and MS-DOS	✓	
Self-installed applications	✓	
Access to diverse peripherals	✓	
Infrequently used/frequently updated applications		✓
Low-bandwidth access		✓
'PC-unfriendly' environments		✓
Non-Windows-based desktops		✓
Applications in transition		✓
External business partners and users		✓

Terminal Services Positioning Summary

- **Not competitive to Windows Client**
- **TS is ideal for specific customer scenarios**
- **TS should be one element of customers application deployment technology portfolio**
- **Thin Clients are appropriate for some customer scenarios despite their limitations**
- **Citrix is key value-add not a competitor**

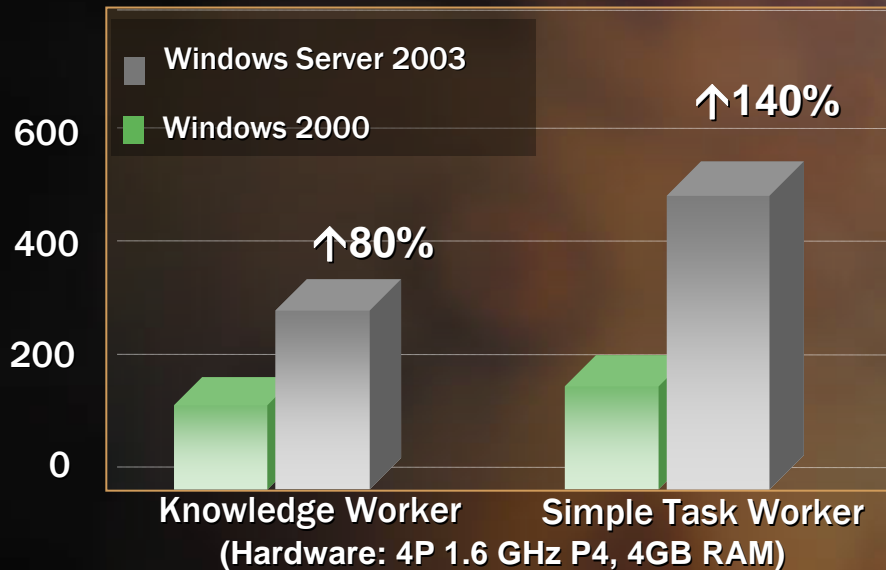
Citrix and Microsoft

- **Signed 5 Joint Technology Agreement**
- **Citrix is a Gold Certified ISV Partner**
 - **2005 WW ISV Partner of the Year**
- **Majority of Citrix business is on Windows Server & XP Clients**
- **Presentation Server (Metaframe) is Value-Add to TS**
 - **Extends TS functionality**
- **Closed over 6,000 joint deals WW in FY05**
- **Support Citrix in Launch of Citrix Access Essentials**

Windows 2003 Server Performance Improvements

- Up to 80% improvement in Microsoft® Office users per server...

Terminal Server Performance



80-140% more users
than Windows 2000

*Tested in
cooperation with*



Improvements to Terminal Server in Windows Server 2003

- **New and Improved RDP Client: 5.2**
 - Advanced Resource Redirection: (Disk drives, Local and Network Printers, Serial devices, Smart card, Clipboard, Time zone, Audio output, Windows key combos,)
 - Hi Color (Up to 24-bit), High Resolution (1600x1200)
- **Enhanced Manageability**
 - WMI, Group Policy, ADSI, MMC Snap-In, Software Restriction Policy
 - Windows System Resource Manager (WSRM)
 - Included in Windows Server 2003, Enterprise Edition
- **Increased Scalability**
 - Scale-up
 - Scale-out (Session Directory)
- **Enhanced Security**
 - 128-bit bi-directional RC4 encryption
 - FIPS 140-1 Encryption Level
 - Smart Card Support

Improvements to Terminal Server in Windows Server 2003 SP1

- **SSL Support**
 - Server Authentication
 - Industry standard encryption
- **Improved Printer Support**
 - Fallback Printer Driver
 - Re-use a PCL/PS existing driver: 300 dpi B/W
- **Mitigation for Licensing Issues**
 - Explicit License Server discovery
- **Windows Server 2003 64bit Extended Systems**
 - 64-Bit Extensions Support
 - Increased support for 32 bit apps on 64 bit HW

Terminal Server Management

■ Farm Management

- TS configuration settings discoverable and settable via WMI
- Group and Local Policy for most configuration option
- ADSI interface for scripting TS user properties
- Remote Desktop Users Group
- Enhanced TS Admin and built-in TS client MMC snap-in
- Software Restriction Policies prevent unauthorized applications from executing on the terminal server
- SMS and MOM for software distribution and monitoring/eventing

■ Print Management

- Enhanced print driver matching in near-miss cases
- Trusted Driver Path

■ License Management

- Simplified License Server Activation
- More intuitive to add licenses
- License Server Security Group

■ Resource Management

- WSRM: Windows System Resource Manager- manages CPU and RAM for applications or TS users.
- Makes sure that all users get the best possible experience or that mission critical applications get priority.

Historic Issues with Scale

■ 32-bit systems

- Servers often run out of kernel virtual memory rather than CPU
 - All applications must share the same 2 GB kernel address space
 - Adding RAM does not help
- Most customers run 1P and 2P servers
 - Administrators must deploy and manage many servers
 - Reduces effectiveness of server consolidation

■ IA64 systems

- Cannot run 32-bit applications without high overhead of WOW emulation
- Incremental users/server outweighed by cost

WoW64 Support

- **Windows on Windows 64 (WoW64)**
- **Isolates 32-bit Applications on a 64-bit machine**
 - **Notably file and registry isolation**
- **Performance hit?**
 - **Substantial on Itanium**
 - **Little to none on x64**

x64-bit Customer Benefits

■ Key value

- Extends return on investment in 32-bit applications
- Provides evolutionary path to 64-bit technology with greater price-performance

■ Single code-base

- AMD-Opteron, Intel Xeon EM64T supported with one product

■ Impact

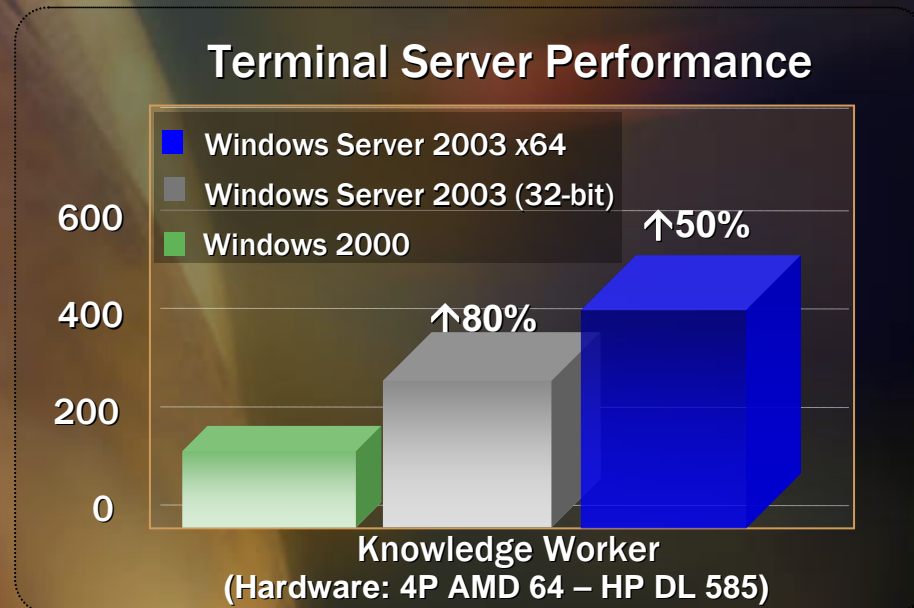
- Runs most existing 32-bit apps with increased performance
- 64-bit app platform for best performance & scalability
- Eliminates Virtual Memory limitations in 32-bit

“First mover” Workloads: Preliminary Testing

Workload	Performance and Scale
32-bit Database	up 17%
32-bit Business Apps	SAP 10% more users
Networking	Record 7Gbit/sec xfer
File	111% higher user capacity
Active Directory	2x higher throughput
Terminal Services	50% more Users

X64 Performance Benefits

- Lab testing indicates increased performance
 - Up to 50% improvement in users/server on comparable hardware
 - Knowledge worker simulation
- Largest benefit will be with 4P servers in limited virtual kernel memory scenarios
 - Opportunity for server consolidation



Other Benefits

- Fully utilize CPU resources without rewriting applications
- Run 64-bit and 32-bit applications side by side
- Gradually migrate applications
- Increased user density

Windows Terminal Server Value-Add Comparison

Feature	Windows 2000	WS 2003	Citrix MetaFrame	Others
HTTP Gateway/Firewall Traversal			✓	Whale
Pass-Through Authentication/ Password Management			✓	
Portal Integration			✓	
Universal Printer Driver			✓	TriCerat, ThinPrint Jetro
Application Publishing			✓	Jetro
Seamless Windows			✓	Jetro
Application Monitoring/Eventing		✓ (MOM)	✓	Lakeside
Software Distribution		✓ (SMS)	✓	
Non-Windows Clients		✓ (Mac)	✓	HOB
Integrated Load Balancing		✓ (NLB)	✓	Jetro
Session Directory (Load Balancing Support)		✓	✓	
File System/Drive Redirection		✓	✓	
COM Port Redirection		✓	✓	
Per-User Time Zone		✓	✓	
24 bit High Color/ High Resolution		✓	✓	
Audio System Redirection		✓	✓	
Auto-Reconnect		✓	✓	
Network Printing		✓	✓	
Local Printing	✓	✓	✓	
Clipboard Copy/Paste	✓	✓	✓	
Web Browser Client	✓	✓	✓	
Remote Control	✓	✓	✓	
Disconnect	✓	✓	✓	
Low Bandwidth Support	✓	✓	✓	

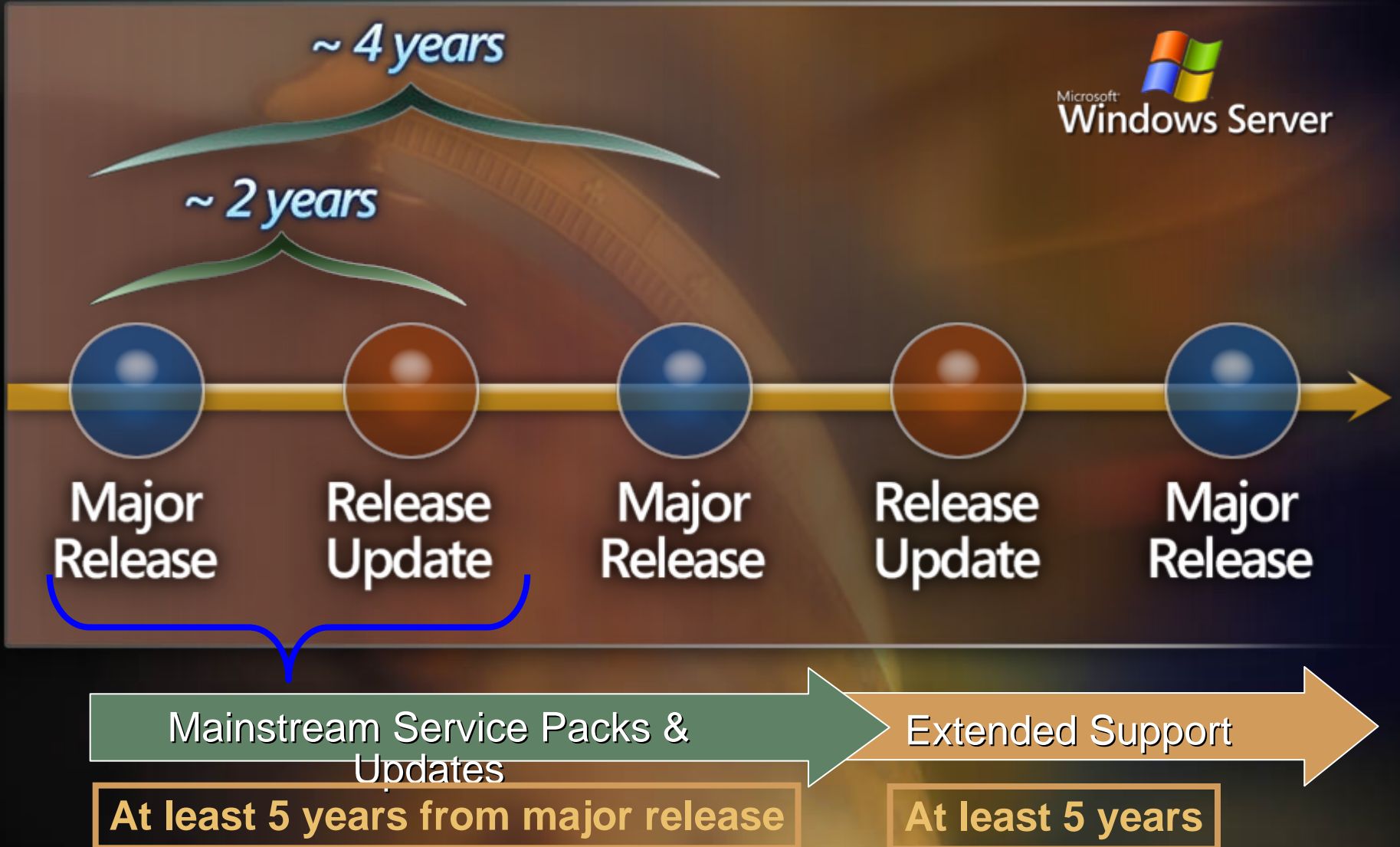
Terminal Server MOM Pack

- **Management Pack for Windows Server 2003 Terminal Server**
 - **Monitors key services and events**
 - **Terminal Server, Session Directory and TS License Server**
 - **Alerts administrators about adverse changes in the system**

The future...



Target Release Cycle





Microsoft®
Windows Server
Release Roadmap



Longhorn Server Planning

- **Terminal Services Proxy**
- **Terminal Services Remote Programs**
- **Better entry-level solution for TS customers**
- **User Experience**
- **Manageability**
- **...**

Terminal Services Proxy

- **Microsoft Windows Terminal Services (TS) Proxy acts as a gateway that allows users within your enterprise to log on to terminal servers from outside the network, using HTTP. TS Proxy allows you complete control of Terminal Server security by allowing you to create network access policies (NAPs) and resource access policies (RAPs), granting specific users and groups access to specific servers.**

Terminal Services Remote Programs

- Remote Programs provides a seamless program or application experience. These programs although accessed remotely through Terminal Services appear and behave as if they are running on the end user's local computer. Users can run Remote Programs side-by-side with their local programs. If a user is running more than one remote program the Remote Programs will share the same Terminal Services session.

A new Windows...



Windows Fundamentals
for Legacy PCs

Windows Fundamentals for Legacy PCs (WinFLP)

- **WinFLP is...**
 - ...a new, fully supported operating system
 - ...designed to run as a terminal services client
 - ...a thinned-down operating system
 - ...built from the Windows XP Embedded SP2 Toolkit
- **WinFLP is NOT...**
 - ...a general purpose operating system
(most apps won't run locally)
 - ...limited to emerging markets
 - ...available as a standalone SKU, or available from OEMs
 - ...free

What is WinFLP?

- **Designed to run limited set of workloads/applications:**
 - **Microsoft Remote Desktop Client, Citrix's ICA Client, Terminal emulation software**
 - **Security and Management software (MS, ISV)**
 - **Web browser (MS, ISV)**
 - **Media player (MS, ISV)**
 - **Instant messaging client (MS, ISV)**
 - **Document viewers (Office, Acrobat)**
 - **.NET Framework, JVM**

WinFLP – The Locked Down PC

- **Windows Managed Desktop**
 - Set of features to better lock down OS
 - Implemented as a Windows Service
 - Managed through Group Policy Objects
- **Disk Protection**
 - Redirect OS partition changes to an hidden overlay partition
 - Changes can then be discarded, committed or kept separately
- **Desktop Customization**
 - Profile-based desktop customization based on local groups membership
 - Leveraging Software Restriction Policies
 - Prevent access to drives, registry editor, command prompt, etc
- **Automatic Logon**
 - Ability to enforce automatic logon using GPO

A close-up, artistic photograph of a CD-ROM. The disc is partially visible, showing its reflective surface and the center hole. The background is a soft, out-of-focus gradient of colors, including shades of blue, green, and yellow. The Microsoft logo is prominently displayed in the center of the image, rendered in a bold, white, sans-serif font with a registered trademark symbol (®) to the upper right of the word.

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