

# Unit OS1: Overview of Operating Systems

## 1.4. Microsoft Windows Roadmap

Windows Operating System Internals - by David A. Solomon and Mark E. Russinovich with Andreas Polze

# Windows 2000 Professional

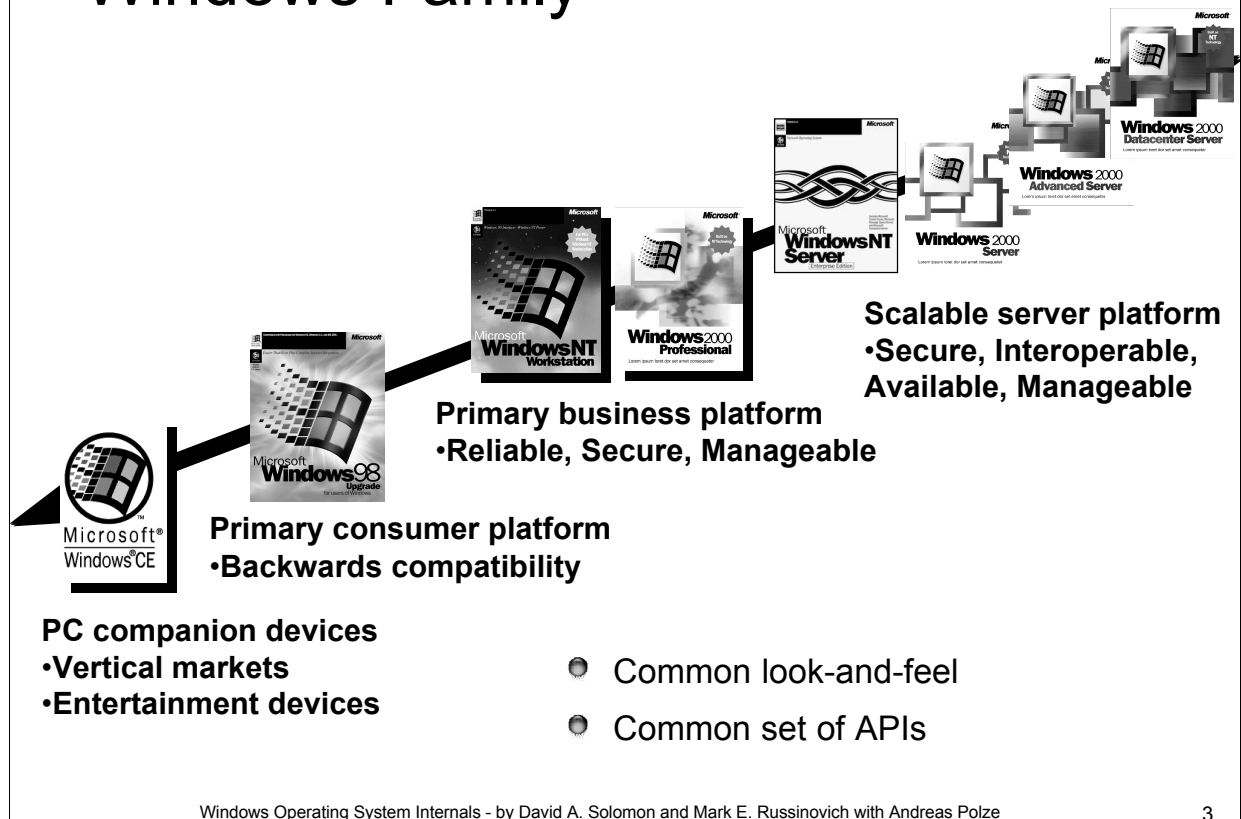
The mainstream business desktop for all organizations



(This set of slides states Microsoft's view on the role of the Windows 2000 operating system as expressed at the mid of year 1999. Time goes on, but many of the statements presented herein give motivation to a number of technical issues addressed in the Windows 2000 operating system family.)

Windows 2000 Professional is the premier desktop operating system for organizations of all sizes, designed to replace Windows 95 as the standard business desktop. This next-generation desktop operating system turns the PC into a more powerful productivity tool for every corporate user.

# Windows Family



Microsoft's roadmap for desktop OS (as of Summer 1999) is as follows:

Windows 98 is clearly for consumers and Windows NT Workstation is the desktop OS for businesses of all sizes.

We recommend that customers with capable machines migrate to NT Workstation 4.0, and customers who are buying new machines have NTW preinstalled. To ensure your desktops have the horsepower to run NTW in the future, we recommend all new machines purchased have a Pentium II, 64mb of RAM, 3GB hard drives and are ACPI compliant. This may sound significant and expensive, but the market has clearly shifted...the majority of machines shipping to businesses today meet these requirements.

We only recommend deploying Windows 98 in organization when the hardware isn't capable of running NTW, or the devices and applications aren't supported by NTW. If your current hardware is not powerful enough to run even Windows 98, we recommend purchasing new machines, or using the Windows Terminal Server client to give those machines access to 32bit applications.

For more information on this topic, read the "Which to Choose" paper in the [microsoft.com](http://microsoft.com) web site.

## Goals For Windows 2000



- **Windows 2000 Professional**  
**The mainstream business and mobile desktop for all organizations**



- **Windows 2000 Servers**  
**Multipurpose servers that enable the widest range of business solutions**



- **Combined: Best Platform**  
**Lowest cost and the next generation of applications**



## Customer Challenges on the Desktop

- Add Value
  - Allow users to be more productive in a variety of scenarios: mobile, work-from-home, global, web
  - Ensure highest level of security for user data
  - Deliver the functionality necessary for a new generation of apps
- Reduce Overall Costs
  - Deliver standardized desktops quickly
  - Reduce the number of “touches” to the desktop
  - Decrease number of crashes, re-boots
- Difficulties
  - Hard to install apps
  - Complexity of UI
  - Workforce is going mobile
  - DLL nightmares
  - Helpdesk overburdened

# Windows 2000 Professional

The mainstream desktop OS for organizations



- Easiest Windows Yet
  - Simpler, more intelligent user interface
  - Easier to configure the system
- Power of Windows NT
  - Industrial strength reliability
  - Standards-based security
  - Faster overall performance
- Best of Windows 98
  - State-of-the-art mobile support
  - Support for next generation hardware
- Lowest TCO Desktop
  - Faster deployment options
  - Easier to support and manage

# Windows 2000 Professional

## Easiest Windows Yet

### Make users more productive

- Simplified user interface
  - Personalized menus adapt to the way you work
  - Balloon help to make functionality discoverable
- Fewer steps to complete common tasks
  - Fewer steps to creating a new dial-up connection
  - Easy to add printers from the File/Print dialog
- Single location to access common components
  - Integrated Search of Web, Files, Network, Directory
  - All configuration tools located in Control Panel
  - All Network Connections in common folder
  - History Folder now tracks document, share history

# Windows 2000 Professional

Easiest Windows Yet

## Easier to configure your PC

- **Wizards throughout the system**
  - Add New Hardware, Map Network Drive, Add Printer
  - User Account Wizard to validate computer name and logon on first boot
- **Multiple language support**
  - Single binary supports over 60 languages
  - Edit, view and print multiple languages in same doc
  - Multilingual version allows for UI, Help to switch based on logon
- **Easier to add or remove applications**
  - Improved Add/Remove Programs applet
  - New user permissions allow for install of apps

# Windows 2000 Professional

Easiest Windows Yet

## Next-generation web integration

- **IntelliSense automates the most common tasks**
  - AutoComplete completes network shares, URLs
  - AutoCorrect fixes simple errors like http:// or http:??
  - IntelliForms recalls form data (name, address, etc)
- **Making the Web easier to use**
  - New Search Assistant to rotate search engines
  - Improved Favorites organization
  - Better History detail of visited Web sites
- **Intelligent recognition of connection type**
  - Individual proxy settings per LAN/dial-up connection
  - Auto-proxy settings based on connection

# Windows 2000 Professional

## Power of Windows NT

### Industrial strength reliability

- More stable computing environment
  - Increased uptime of the system
  - 75 fewer OS reboot scenarios
  - Flagging of un-signed device drivers
  - Addressed numerous memory-leaks & blue screens
  - Better memory management
  - Devices automatically allocate IRQs
- Self-healing, protected applications
  - Windows Installer tracks applications and recognizes and replaces missing components
  - Memory protection of individual apps and processes to avoid a single app bringing the system down
  - System files & components updated only by the OS

# Windows 2000 Professional

## Power of Windows NT

### Standards-based security

- More secure access to information
  - NTFS requires authentication to access file system
  - Encrypted File Systems protects sensitive data
  - Native support for Kerberos authentication
  - Public Key infrastructure to pass digital certificates
  - IP Security to avoid access to sensitive data traveling across the wire
- More secure access to resources
  - Latest machine access support via Smart Cards
  - Secure Virtual Private Networking (VPN) support to tunnel in to private LAN over public
  - Easier management of security settings with Security Configuration Manager

# Windows 2000 Professional

Power of Windows NT

## Highest level of performance

- Faster overall performance
  - Faster than Windows 9x in 64Mb of RAM
  - Scalable memory (2GB) and processor (2-SMP) support
  - Registry caching to improve access to common settings
  - Merging of process, services and thread pools to speed up loading of system services
- Faster access to information
  - Faster web page rendering with internet integration
  - Content indexing for faster searching of file contents

# Windows 2000 Professional

Power of Windows NT

## Interoperates with what you have today

- Supports key networking infrastructures
  - Windows Server networking client
  - Novell NetWare redirector in the box
  - Services for UNIX as an add-on for UNIX connectivity
- Broader support for high speed networking devices
  - Native ATM, cable-modem support
  - NAT provides internet/device sharing for SOHO
- Advanced Remote Access and Communications
  - TAPI 3.0 and NetMeeting integration
  - More efficient, faster TCPI stack
  - Easier, more intelligent remote dial-up

# Windows 2000 Professional

Best of Windows 98

## State-of-the-art mobile support

- Supports the most advanced mobile PCs
  - Latest Power Management support via ACPI
  - Stand-by and Hibernate for quick boot
  - Hot docking and undocking of laptops
  - Hot-swapping of PCMCIA Cards
- Ability to access information when disconnected
  - Offline Files allows for access to files located on network shares when disconnected from the network
  - Synchronization Manager enables one place to synchronize files, email, web pages, databases
- Support for APM and PC Cards on legacy laptops

# Windows 2000 Professional

Best of Windows 98

## Support for next generation hardware

- Supports the new class of devices
  - Universal Serial Bus (USB) and IEEE 1394 for greater bandwidth devices
  - Digital devices such as DVD, cameras and scanners
  - Infrared download and synchronization of data
  - Support for 9 simultaneous video cards/monitors
  - Device Bay support for hot swapping of devices
  - Windows Driver Model (WDM) allows for common driver for Win98 and Win2000Pro
- Support for high-end, multimedia workstations
  - DirectX 7.0 OpenGL 1.2, AGP, VPE
- Broader support of legacy hardware than NTW4

# Windows 2000 Professional

Lowest TCO

## Easier deployment options

- Built in support for disk duplication
  - System Preparation Tool to prepare disk image to be duplicated
- Automated installation tools
  - Graphical Setup Manager to easily create automated setup scripts
  - Centralized deployment via SMS
- Upgrade support from existing systems
  - Windows NTW 3.51, 4.0
  - All versions of Windows 95 and Windows 98
- Slipstreaming of Service Pack releases

# Windows 2000 Professional

Lowest TCO

## Increased manageability

- Support for management standards
  - Windows Management Instrumentation (WMI)
  - Web-Based Enterprise Management (WEBM)
  - More extensive scripting ability with the Windows Scripting Host
  - Single interface for all management tools with the Microsoft Management Console
  - Year 2000 and Euro tested
- Comprehensive set of supportability tools
  - Safe Mode to correct common configuration issues
  - Command Console to access NTFS, no-boot system
  - Integrated browser management via IEAK

## Preparing for Windows 2000 Professional

Windows NTW 4.0 will provide the smoothest path

### Hardware Considerations

- Purchase Windows 2000-Ready PCs
  - Provides clear recommendation for today & future
  - Preinstalled with Windows NTW 4.0 & SP4
  - 64 MB RAM minimum
  - Desktops: 300 MHz PII; Notebooks: 233 MHz PII
  - ACPI-ready

### Application Considerations

- Test applications on Windows NTW 4.0 today
- Upgrade from Win9x may require Migration DLL
  - Adjusts for differences based on OS
  - Top 200 will ship on Windows 2000 CD
- Utilize the Software Compatibility List (SCL)

### Technical Requirements

- Preinstalled with Windows NT Workstation 4.0, SP3 and OPK supplements
- 64 MB RAM minimum

#### Desktops

Minimum 300 MHz processor with 256k L2 cache or equivalent performance

Pass Designed for Windows logo for Windows NT Workstation 4.0 and Windows 98 requirements (PC97a or higher)

#### Notebooks

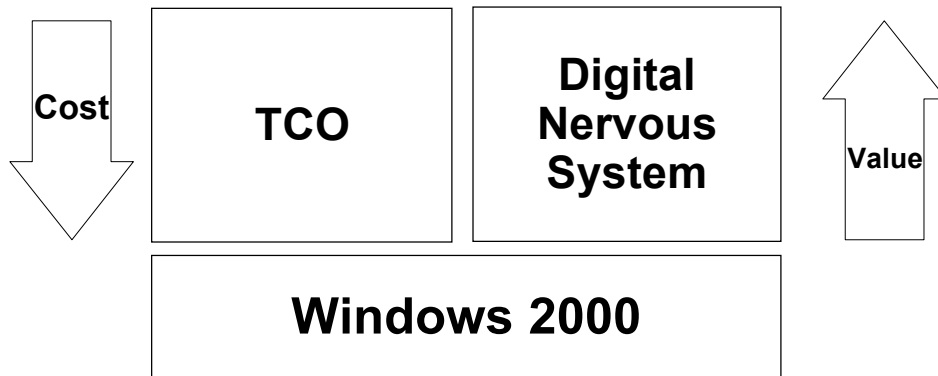
Minimum 233 MHz processor with 256k L2 cache for laptops or equivalent performance

Pass Designed for Windows logo for Windows NT Workstation 4.0 and Windows 98 requirements (PC97a or higher)

ACPI - Ready

## Windows 2000 Platform

Infrastructure to drastically reduce costs and efficiently enable your Digital Nervous System



# Windows 2000 Platform

- Client & Server have great standalone benefits
- Combination of the two provides most powerful platform

## Windows 2000 Pro

- \* Easiest Windows Yet
- \* Power of Windows NT
- \* Best of Windows 98
- \* Lower TCO

## Windows 2000 Server

- \* Most Manageable
- \* Most Comprehensive
- \* Best Investment
- \* Higher Scalability and Availability

## Windows 2000 Platform

- \* Dramatically reduces Total Cost of Ownership
- \* Best platform for a new generation of applications
- \* Most efficient way to enable your Digital Nervous System

Windows 2000 Professional is the premier desktop operating system for businesses of all sizes and designed to be the standard business

desktop. Microsoft Windows 2000 Server, the next release of the best selling server operating system, is the multi-purpose server operating system designed to connect, run and manage every part of the digital business. Together, Windows 2000 Professional and Windows 2000 Server provide the platform that lowers the total cost of ownership, enables a new generation of distributed applications, and provides the infrastructure for companies to build their Digital Nervous Systems.

## Windows 2000 Platform

- Provides the lowest Total Cost of Ownership
  - IntelliMirror
  - Remote OS installation
- Platform for a new generation of applications
  - Fastest client-server applications
  - “Clean”, more manageable applications
  - Directory-enabled applications
  - Best platform for distributed applications
- The most efficient way to enable your DNS
  - Most efficient, secure networking
  - Most efficient way to distribute business solutions
  - Integrated multi language support

## Windows 2000 Platform IntelliMirror

- “Follow Me” is a common theme
  - My Personal Settings follow me
  - My Applications follow me
  - My Documents follow me
- IntelliMirror is the “follow me” attribute of:
  - Centralized Configuration Management
  - Centralized Software Management
  - Roaming User Management
- So, what if my PC fails?
  - Reload the OS, then IntelliMirror restores your Personal Settings, Applications, and Documents
- Requires both Windows 2000 Pro and Server

# Intellimirror

## Centralized Configuration Management

- Customer Requirements
  - Administrator defines settings for groups of users
  - New users automatically inherit policy of group
  - Administrator applies changes for groups of users
  - If user's PC fails, settings must be restored
  - If user moves, settings must follow user
- Customer Value
  - Provides for policy-based central administration and control
  - Provides standard client configuration across common groups

# IntelliMirror

## Centralized Software Management

- Customer Requirements
  - Policy-based deployment of software to users/PCs
  - Invocation of a doc (e.g.: XLS) starts / installs app
  - Administrative rights not required
  - Software lifecycle management
    - Install, uninstall, repair, rollback, upgrade
  - Resolution of shared component problems
  - Applications must follow user
- Customer Value
  - Simplified end user installation experience
  - Simplified control over software deployment for users/PCs
  - Applications are always available

# IntelliMirror

## Roaming User Management

- Customer Requirements
  - User settings resides on the server for mobility
  - Data resides on the server for protection
  - If user moves, data and settings must follow user
- Customer Value
  - Increased protection: via IT managed backup
  - Increased access: Use of any PC on the network
  - Increased availability: Caching maintains data on local machine even when disconnected from LAN

# Windows 2000 Platform

## Remote OS Installation

- Customer Requirements
  - Ability to wipe PC clean and install selected OS, image
  - Ability to install an OS on a repaired PC
  - Ability for non-IT staff to install OS without staging
- Customer Value
  - Reduced cost of deploying new hardware
  - Flexibility to setup OS based on different scenarios
  - Not limited by need for exact hardware image
  - Basic disaster recovery ability

## Windows 2000 Platform

### New Generation of Applications

- Client-server applications run 15-30% faster
  - Caching of both application services and security
  - Efficiency of network protocols (TCP/IP)
- “Clean”, more manageable applications
  - Windows Installer manages installations
  - Windows 2000 Logo ensures meet high standards
- Directory-enabled applications
  - Single network sign on for all applications
  - Business rules reflected in the behavior of the app
- Best platform for distributed applications
  - Distributed, component-based apps that utilize standardized based web protocols

# Windows 2000 Platform

Efficiently Enable Your Digital Nervous System

- More efficient, secure networking
  - Native ATM support for higher bandwidth, faster networking
  - Integrated, easier VPN, PPTP communication support
  - IPSEC, Kerberos, Extensible Authentication Protocol, Smart-Card, Public Key support for enhanced security
  - Easy, automatic setup of networking components
- Most efficient way for sharing & distributing business solutions
  - Quality of Service to reserve network bandwidth
  - Better voice/data integration with Direct Show
  - Dfs, web services, Windows media services
- Integrated multi language support

No sniffing of network packets  
application independant

WHERE DO YOU WANT TO  
**go**  
**TODAY?**

*Microsoft*