

ROADMAP >

Directions

on Microsoft



issue

Enterprise
Software
Roadmap

January 2011

R O A D M A

POSTER ATTACHED

IMPORTANT! This sample roadmap report includes the Windows section only and is already out of date. The complete and current version of the quarterly Microsoft Product Roadmap report and poster are available at DirectionsOnMicrosoft.com.

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Enterprise Software Roadmap

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ROADMAP

Introduction

The *Directions on Microsoft Enterprise Software Roadmap* summarizes current and planned versions of Microsoft's most important enterprise products. The *Roadmap* provides a single reference for Microsoft customers and partners who need to answer basic planning questions, such as the following:

- What upgrades will I probably get if I cover Office on an Enterprise Agreement this year?
- When will support end for Windows XP?
- When should my company's software product be ready to run on the next version of SQL Server?
- Can I deploy Outlook 2010 before I deploy Exchange Server 2010?
- When should I start training our consultants on the next version of Project?

What This Roadmap Provides

This *Roadmap* supplies information about support retirement dates for past product versions and summaries of features and release dates for current and planned product versions. This information can help Microsoft customers and partners schedule migrations, plan evaluations, arrange training, and budget for purchases.

Planning for Product and Service Pack Retirements

The information provided for past product versions should help organizations prepare for product retirements. Microsoft divides a product's life cycle into phases, the most important of which are Mainstream, Extended, and Online Self-Help. (See the chart "Product Life-Cycle Phases and Options" on page 6.)

During the Mainstream phase, Microsoft offers the broadest set of product support options and maintains the product with hotfixes. Service packs are generally released in this phase, but the company might stop releasing service packs for

a product well before Mainstream support ends. For products nearing the end of Mainstream support, the company might instead release *update rollups*, integration-tested packages of selected fixes for the highest-priority bugs and security vulnerabilities. The Mainstream support phase for a product version lasts five years or until two years after a successor version has shipped, whichever is longer.

In the Extended support phase, which follows the Mainstream phase, Microsoft provides support for a fee (including custom hotfixes, if included in the customer's support contract) and free hotfixes for some security vulnerabilities. However, it does not provide free nonsecurity hotfixes and does not issue further service packs.

In the final phase, Online Self-Help, little support is available other than information at Microsoft's Web site, although customers can negotiate custom support contracts for some products.

The Extended support phase lasts five years after the end of Mainstream, and the Online Self-Help phase lasts 10 years or more after a product's initial availability.

Note that the three phases pertain only to the availability of product support and software updates, not to the availability of product media (such as full product downloads and CD-ROMs) or new licenses. Microsoft generally discontinues media or licenses for a product version after licenses and media have been released for its successor, and this usually occurs before the end of Mainstream support for the version. Consequently, organizations must retain copies of media and ensure that they have license downgrade rights if they are not running the most recent version of a product.

Directions on Microsoft Is Hiring!

We're looking for an analyst to research Microsoft licensing and channel strategy.

See page 75 for details.

In all support phases, Microsoft supports only products that are running the most recent service pack. However, the company provides a grace period for migrating to the most recent service pack. Since Dec. 2007, this grace period has been roughly two years for Windows and Dynamics service packs and around one year for other enterprise products. For example, Exchange Server 2007 SP1 was released in Nov. 2007, but the initial (service pack 0) release of Exchange Server 2007 was supported through Jan. 2009. Because of these rules, organizations must note when service packs are released and plan to move to the most recent service pack during the grace period to avoid a forced migration when a problem occurs for which they require support.

Regardless of support phase, all support is provided at Microsoft's discretion. The company sometimes does not update Mainstream products to work with the latest versions of Windows, and

it does not fix all security vulnerabilities for older product versions, even ones still nominally in Extended support. Organizations should factor this into their upgrade plans, particularly for widely deployed but aging products like Windows XP. (See the sidebar "The Role of Life Cycle in Deployment Decisions" on page 7.)

Preparing for Upcoming Releases

This *Roadmap* also summarizes recent and planned major releases of Microsoft products, listing major features and important dependencies on other products.

All information on future releases is our analysis of the most credible public sources. In general, our information about a planned release will become more accurate as its release date approaches. However, Microsoft does not endorse this *Roadmap*, and its product plans are subject to change at any time.

Product Life-Cycle Phases and Options

Support for business and development software is retired in a series of phases. The phases described below apply to all of the products discussed in this *Roadmap*.

Microsoft's support lifecycle policies are explained at support.microsoft.com/lifecycle. Specific product support deadlines are listed at support.microsoft.com/gp/lifeselectindex.

Microsoft offers customers of business and developer products, which include Windows client and server, the option of entering into a Custom support contract that provides support for legacy products during a product migration.

Life-Cycle Phases and Options	Normal Duration	Product Support Options	Software Updates
Mainstream Support Phase	Five years from the date of general availability or two years after the release of a successor version, whichever is greater	<ul style="list-style-type: none"> Free incident support (per warranty) Online support information Fee-based support options (Professional support, Essential support, Premier support, Microsoft Services Partner Advantage, Software Assurance) 	<ul style="list-style-type: none"> Security updates and hotfixes (free) Nonsecurity updates and hotfixes (free) Service packs or update rollups (free)
Extended Support Phase	Five years from the end of the Mainstream phase or until two years after the second successor version (e.g., Windows 2000 Extended support ends two years after Windows Vista's release)	<ul style="list-style-type: none"> Fee-based support options (Professional support, Essential support, Premier support, Microsoft Services Partner Advantage, Software Assurance) Extended Hotfix Support Agreement (EHSA) 	<ul style="list-style-type: none"> Security updates and hotfixes (free) Nonsecurity hotfixes (requires EHSA)
Custom Support Option	<ul style="list-style-type: none"> No fixed duration Available only while customer is migrating to current products 	Custom support agreement (requires a Premier support or Essential support agreement)	<ul style="list-style-type: none"> Critical and important security updates Hotfixes Workarounds New bug fixes (additional fee) Advisory services, e.g., migration (fee) Problem resolution (fee)
Online Self-Help	Ten or more years from product release	Online support information	For certain products with large installed bases, Microsoft might continue to offer security hotfixes during this phase

How This Roadmap Is Organized

The *Roadmap* is divided into chapters, one for each of Microsoft's major software markets. Chapters are broken into sections about families of related products. We provide a brief description of each product's use and then summarize past, current, and planned versions of the product. *Roadmap* diagrams throughout summarize releases and retirements for specific product releases and show key relationships among them. (See the illustration "Reading Roadmap Diagrams" on page 8.)

The "Resources" sections in each chapter list

past *Directions on Microsoft* reports and useful Microsoft Web pages about particular products and versions. The *Directions* reports appeared in our newsletter, *Update*, or as separate *Research Reports*. Both types of reports are a good starting point for further research on a product, and they list additional resources at Microsoft and elsewhere.

The alphabetical "Index to Products and Versions" at the end of this *Roadmap* (print version only) helps locate particular products, versions, and code names.

The Role of Life Cycle in Deployment Decisions

In determining the risk of continuing to run on an aging product, it is necessary to remember that Microsoft's life-cycle phases are guidelines rather than rules, and the benefits available during different phases are totally at the discretion of Microsoft. This has important implications for how and when customers migrate off aging products, such as Windows XP.

Benefits Determined by Microsoft

When a product is covered by Mainstream support, the guidelines say that customers can get incident support (no-charge incident support, paid incident support, support charged on an hourly basis, and support for warranty claims), security update support, and the ability to request nonsecurity hotfixes (for a bug reported during an incident). Note that being in Mainstream support does not guarantee that fixes will be made or widely distributed. It also does not mean that fixes will be rolled up into an integrated bug fix rollup or service pack. Finally, it does not mean that other products also in Mainstream support will be updated to work with a new version of a dependent product.

Likewise when a product is in the Extended support phase, the guidelines say that organizations are entitled to paid support and that security updates remain available at no additional cost. With an expensive Extended Hotfix Support Agreement and a willingness to pay the full costs of the fix, customers can also report and request fixes to nonsecurity-related bugs. Customers cannot make requests for free or warranty support, design changes, or new features during the Extended support phase.

However, the support life-cycle guidelines are not hard-and-fast rules: if fixing a bug would require extensive changes to a product's architecture or cause compatibility problems, Microsoft may decide to not provide a fix—even

for security bugs that Microsoft classifies as important. For example, the company has recently declined to repair some security vulnerabilities in Windows 2000, saying that fixes would require major architectural changes that would sacrifice application compatibility. The more architecturally distant a product version is from the current version, the more likely these kinds of gaps will appear.

A Case in Point: Windows XP to Windows 7

All this has implications for how organizations migrate from Windows XP to Windows 7. Although many organizations may want to upgrade to Windows 7, economic conditions mean few will be able to perform a single organization-wide deployment close to its availability. The reality is that most organizations will consider rolling Windows 7 out in stages by purchasing new machines with Windows 7 to replace older PCs, and perhaps doing OS updates on newer hardware. Another approach is to update one department at a time.

Regardless of the approach used, on older hardware, organizations may need to wait until those computers would be replaced under the organization's normal computer replacement strategy and policy. As a result, some organizations could be running Windows XP for several years while they transition to Windows 7 at a rate their IT budgets will support.

Many organizations assume this is a relatively risk-free approach, as Windows XP has been around for so long that most bugs have been uncovered, and there are either fixes or workarounds. In addition, Windows XP will be in the Extended support phase until Apr. 2014. However, because there are significant architectural changes between Windows 7 and Windows XP, organizations should calculate the risk of continuing to run on the older OS accordingly. ▶

Information in Product Entries

The bulk of this *Roadmap* describes released or planned Microsoft products. The information provided for past versions and planned versions differs.

For past versions, we list the following:

Version name. The name and any relevant code names for the product version.

Current service pack. The most recent service pack for the product version and its release date. To get full support for a product version from Microsoft, customers generally must be running the current service pack. However, Microsoft will support a product version with an older service pack for one to two years after the release date of the next service pack. For example, Microsoft supported Office 2003 SP1 for over a year after the release date of Office 2003 SP2.

Release history. This listing of a product version's official release date and the release dates of its service packs serves as a rough guide to how frequently a product group releases updates to a product version.

Mainstream support ends. Microsoft provides full

support for a product version at least through this date. This date is approximate because the real date depends on the release dates of future product versions and the timing of Microsoft's regular monthly patch releases.

For planned product versions, we list the following:

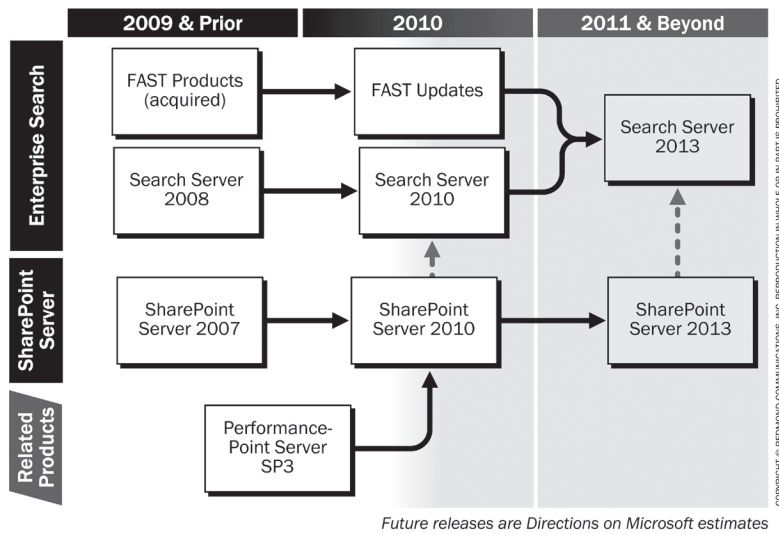
Version name. The name and any relevant code names for the product version.

Goals. A summary of the new features of the product version. For future versions, the features described are our interpretation of public statements by Microsoft; Microsoft has not committed to these features and could change them at any time.

Estimated release date. Our estimate of the product's release date based on publicly available information.

Related products. Major dependencies or system requirements that could affect migration plans to a particular product version. This is not an exhaustive list of system requirements, however. A more complete list of system requirements for a product will typically appear in *Directions on Microsoft* reports on that product.

Reading Roadmap Diagrams



Roadmap diagrams summarize major product releases, retirements, and dependencies. Shown here is a hypothetical roadmap diagram that illustrates the notation. Past releases (e.g., SharePoint Server 2007) are white boxes, and future releases (e.g., SharePoint Server 2013) are gray. Future version names are often unofficial ones, assigned by *Directions on Microsoft* when no official name or code name exists for a version. Placement of events within a time period on the diagram is not always significant—readers should consult the text of the *Roadmap* for more precise estimates of release and retirement dates.

Arrows show important relationships among versions, which in turn can help predict the order and spacing of their release. A heavy black arrow links a product to its successor; for example, SharePoint Server 2007 to SharePoint Server 2010. Black arrows also show bundling relationships; for example, SharePoint Server 2010 incorporates PerformancePoint Server SP3, which might or might not continue as a separate product. Finally, dashed gray arrows show cross-release dependencies or compatibility relationships, which can influence when product versions arrive and which versions are compatible with others; for example, Search Server 2010 depends on technology developed in SharePoint Server 2010.

Windows

Windows client and server OSs, including Windows 7, Windows Server 2008 R2, and derivative products of Windows Server

Windows 7 and Server 2008 R2, the current Windows client and server OSs, share a common set of key files, were developed simultaneously, and share the same general availability date: Oct. 22, 2009. Windows 7 and Windows Server 2008 R2 are the result of evolutionary rather than revolutionary changes to the OS: no major architectural

changes were made to the underlying components of either product; rather, changes concentrated on areas likely to induce large organizations and consumers to upgrade. Work is now under way on the next releases of Windows, referred to here as Windows 8 and Windows Server 2012.

Windows Client OS

The most recent Windows client version, Windows 7, was released to manufacturing in July 2009. Volume customers were able to begin deployments in Aug. 2009 and general availability was Oct. 22, 2009. (See the illustration “Windows Client Overview” on page 10.) A joint first service pack for both the Windows 7 client and Windows Server 2008 R2 server is currently in release candidate stage, with general availability expected in early 2011. Windows Vista remains in Mainstream support. (See the chart “Past Windows Client Versions” on page 11.)

Windows 7

Many of the improvements in Windows 7 address concerns or negative perceptions that organizations and consumers had with Vista. For example, Microsoft has ensured that more third-party drivers and application software was updated for the architectural changes made in Windows in the Vista and Windows Server 2008 SP1 time frame. User Account Control, which requires users to run with the least privilege necessary to perform their work, is less obtrusive.

Applications that created some of the perceived bloat of the OS, such as Windows Mail and Windows Calendar, were replaced by downloadable or OEM-installed Windows Live counterparts. Because these Windows Live counterparts are separate from the OS, Microsoft is free to update them on a different schedule. The next release, Windows Live Essentials 2011, was released for download on Sept. 30, 2010, and includes Windows Live Photo Gallery, Movie Maker, Messenger, Mesh, Mail, Family Safety, and Writer. Although Windows Live Essentials targets consumers, some business users find some of the programs useful, and the new version of Windows Live Mesh (Sync) may be useful to enterprises.


Windows 7 is available for both 32-bit and 64-bit processors, and it has been tuned so that it is

now a viable OS for use with inexpensive laptops (sometimes known as netbooks), such as those based on the Intel Atom processor, as long as they have at least 1GB of memory. The Service Control Manager has been updated so that not all services have to be started while the computer is booting, which can reduce start time. Power Management has been improved, although handling sleep and hibernate transitions correctly still depends largely on the quality of device drivers, and not all support these transitions correctly.

Changes to the Windows user interface include support for multitouch technology, which allows a user to perform certain tasks by touch rather than with a mouse, stylus, or keyboard; the addition of a Ribbon interface (first introduced in Office 2007) to some included applications, such as Paint; and a new feature called JumpLists, which makes it easier to navigate to open an application with a recently accessed document or file.

What's New on the Windows Roadmap

Major developments in the Windows OS since the Sept. 2010 *Enterprise Software Roadmap* include the following:

- The first service pack for Windows 7 and Windows Server 2008 R2 (release anticipated early 2011) and currently in the release candidate stage will deliver two features designed to improve virtual desktop infrastructure: Dynamic Memory and RemoteFX.
- A public beta of Internet Explorer 9 was released in Sept. 2010.
- Windows Live Essentials 2011 was released for download in Sept. 2010.
- Windows Storage Server 2008 R2 was released in Oct. 2010. 

Windows 7 is available in several editions for different market segments and geographies. However, two editions of Windows 7 will likely be of interest to businesses.

Professional is Microsoft’s recommended edition of Windows 7 for businesses and technically sophisticated consumers. It includes all features of the Windows 7 Home Premium consumer edition, including DVD playback, and adds features important for business, such as support for joining a domain, backing up files over the network, and serving as a host for remote desktop access.

Enterprise is Microsoft’s recommended edition of Windows 7 for business customers who have purchased Software Assurance, Microsoft’s optional upgrade rights and maintenance program, for their Windows licenses.

Windows 7 Enterprise adds advanced business-oriented features, such as the following:

- AppLocker, a new way for administrators to restrict which programs can execute

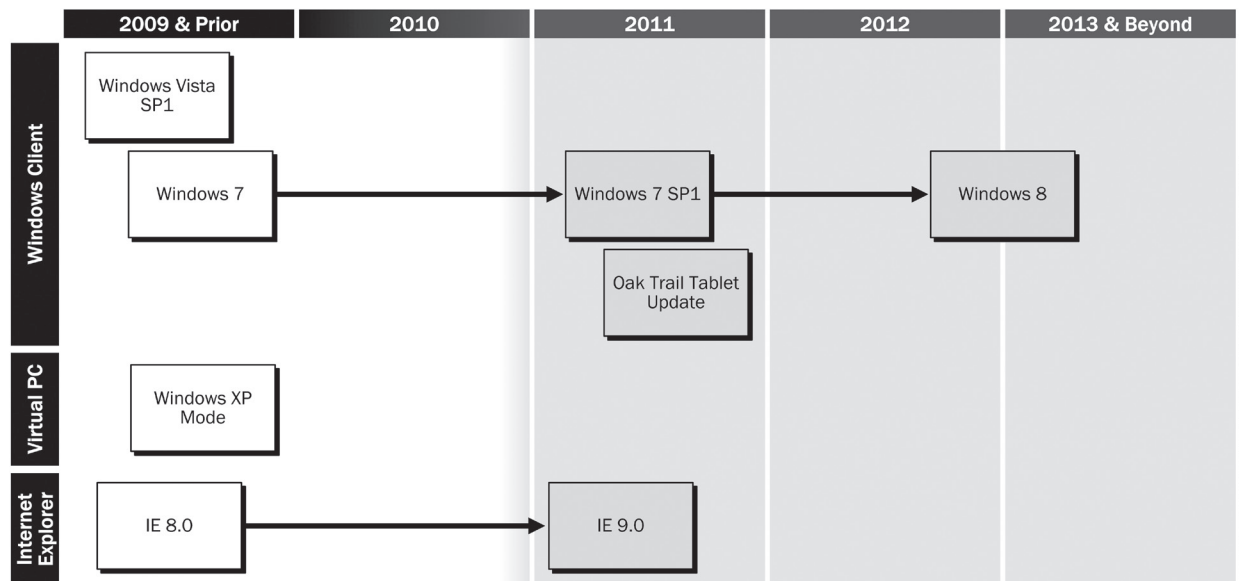
- BitLocker drive encryption, including a new BitLocker-to-Go feature for encrypting removable media, such as a USB drive
- Multilingual user-interface language packs
- Enterprise search scopes, which allow administrators to create links to searchable networked resources (such as intranets or corporate applications) within the Start menu and Windows Explorer

Two features included in Enterprise require clients running Windows 7 Enterprise and servers running Windows Server 2008 R2:

- BranchCache, a new caching system for content served from a remote server, reducing delays and saving network bandwidth
- DirectAccess, a new remote-access technology that allows a user to connect to a server without explicitly setting up a virtual private network connection.

Business customers who want all the features of Windows 7 but do not qualify to purchase the

Windows Client Overview



Future releases are Directions on Microsoft estimates

The current Windows client release is Windows 7, which became generally available in Oct. 2009. Windows 7 include both 32-bit and 64-bit versions. Microsoft also released Windows Virtual PC and Windows XP Mode, a Windows 7 virtualization solution to help with application compatibility problems, to the Web in Oct. 2009.

A joint first service pack (SP1) for Windows 7 and Windows Server 2008 R2 is currently in release candidate stage. Microsoft indicates it will be released in early 2011.

There may be updates to support Windows 7 on tablets built with new power-efficient “Oak Trail” processors from Intel in 2011.

The second Vista service pack (not shown) was released in Apr. 2009. Among other bug and security fixes, Windows Vista SP2 included changes to application compatibility, Bluetooth support, Windows Search, and Blu-ray Disc support for data recording.

Microsoft released Internet Explorer (IE) 8 in Mar. 2009. This release of IE shipped prior to Windows 7 to promote Microsoft technologies (such as the Silverlight run time, a competitor to Flash) and to protect IE market share against competitors such as Firefox and Google Chrome. It runs on Windows XP and Vista and ships as part of Windows 7 (which will not be able to run older versions of IE).

The next version of Windows client, referred to here as Windows 8, will likely be released no sooner than late 2012. An update to IE, referred to as IE 9.0 in the timeline, will likely be released in early 2011 (prior to Windows 8) due to the competitive nature of the browser market.

Enterprise Edition, especially on new computers, such as portables, that are less likely to be reimaged with a standard corporate image, may need to purchase Windows 7 Ultimate.

In general, organizations appear more receptive to Windows 7 than Windows Vista, and Microsoft is focusing on convincing organizations to deploy Windows 7 (and the latest version of Office 2010). To encourage evaluations and deployment, Microsoft has created a free Proof-of-Concept Jumpstart Kit that uses virtualization to help organizations evaluate Windows 7 and Office 2010 features and deployment.

There has been considerable interest in tablet or slate computers since Apple released its iPad. Microsoft says that its tablet strategy continues to be PCs running Windows 7. The current strategy is based on high-end convertible laptop computers with a screen that supports touch and gestures, and the use of a stylus to create digital ink graphics or for handwriting recognition. Several OEMs offer Windows 7–based tablet PCs. But tablets running Windows 7 tend to be heavy, few Windows applications are touch-friendly, and Windows 7–based tablet PCs start slowly and consume significant power, limiting their use on battery power. Microsoft plans to address some of these problems with the future release of the new Intel system-on-chip (SOC) processor platform (code-named Oak Trail). Although it appears that Windows 7 should run on these new power-efficient processors designed for tablets without any major changes, there might be a need to release a series of updates, likely via Windows Update rather than a service or feature pack, to ensure that Windows 7 is optimized for use as a tablet OS running on these SOCs.

Windows 7 SP1

Microsoft has indicated that the first service pack for Windows 7 will be available in early 2011. This service pack, which is currently in the release candidate stage, will include a rollup of all the previously released security updates, as well as patches or hotfixes for bugs reported by users since the product was launched and a few changes to existing features.

The overall impact of SP1 on Windows 7 should be minimal, as the number of updated features included in SP1 has been limited to include support for the WS-Federation passive profile protocol, which should simplify the exchange of identity and authentication information between organizations using different platforms; improved support for printing of XPS documents that have pages in mixed (portrait and landscape) mode; and an updated Remote Desktop Client to make Windows 7 compatible with the RemoteFX feature being added to Windows Server 2008 R2.

Windows 8

Planning and early development has begun on the next version of Windows that *Directions on Microsoft* is calling Windows 8. *Directions on Microsoft* anticipates that Windows 8 will come no sooner than three years after the release of Windows 7, which would be Oct. 2012, but the timing is affected by several factors. First, Windows 8 will probably include more architectural changes than Windows 7 did, as Windows 7 faces stronger competition from alternative OSs and platforms such as Apple iOS on tablets. Second, Windows 7 appears to be remarkably stable, and the first SP1 for Windows 7 is relatively minor and will not

Past Windows Client Versions

Mainstream support for Windows 7 will end in Jan. 2015. Windows Vista left Mainstream support in Apr. 2012, and Extended support for Windows XP SP3 ends in Apr. 2014.

OS service packs also have retirement dates. Once a service pack is retired, Microsoft will no longer make security patches available at that service pack level. In general, a Windows service pack is retired either 24 months after the next service pack is released or at the end of the Extended support phase, whichever comes first.

Since Oct. 2009, Windows 7 Ultimate and Professional shipped with new PCs have included the right to downgrade to both Vista and Windows XP Professional. Microsoft had planned to eliminate the XP downgrade right for PCs sold after a cut-off date of Apr. 22, 2011, or the ship date of Windows 7 SP1, whichever came first. A new policy announced with the release of the Windows 7 SP1 beta in July 2010 eliminates the cut-off date, meaning organizations can deploy Windows XP on Windows 7 PCs regardless of when the PC is purchased.

Product	Current Service Pack or Version	Mainstream Support Ends	Release History
Windows XP Professional	SP3	Ended Apr. 14, 2009; Extended support ends Apr. 2014	Released: Sept. 2001 SP1a: Sept. 2002 SP2: Sept. 17, 2004 SP3: Apr. 2008
Windows Vista	SP2	Apr. 10, 2012	Released: Jan. 2007 SP1: Feb. 2008 SP2: Apr. 2009
Windows 7		Jan. 13, 2015	Released: Oct. 2009

be released until early 2011, so there is no pressure to release Windows 8 quickly as there was with Windows 7 to replace Vista. Finally, Microsoft wants to encourage customers to deploy Windows 7 and not wait for a pending release of Windows 8.

It may be some time before any real details about Windows 8 are public. The Windows team will likely continue to address key areas such as power management and Windows startup times, as well as reliability and stability. Now that a 64-bit version of the Office desktop productivity suite exists, the next version of Windows client OS may be the first version that is available only for 64-bit processors.

Although there has been a previous discussion of a project code-named Midori to create a new managed code OS, there is no information about whether or not Midori will be a part of the next version of Windows client (or server).

Windows Client Features and Add-Ons

Many Windows features, such as the Internet Explorer (IE) Web browser, ship in some versions of the client OS or are licensed with it but are also available separately. The most important ones include the following:

Internet Explorer 8. The current version of Microsoft's Web browser is IE 8, which was released for Windows XP and Vista in Mar. 2009 and ships with Windows 7. (Windows 7 cannot run older versions of IE.) IE 8 boasts improved support for Web standards such as Cascading Style Sheets (CSS), while incorporating new features to help developers debug Web pages and applications and to help users access information more quickly.

Under an agreement between Microsoft and the European Commission, Windows 7 users in European Commission member countries can choose among several browsers from a ballot screen downloaded via Windows Update. The agreement also allows users and OEMs to hide access to the IE UI (browser frame and menus), and OEMs can negotiate with browser makers to hide user access to IE 8 and preinstall a different browser on Windows 7 during manufacturing.

Internet Explorer 9. The next version of IE will probably appear in the first half of 2011, although Microsoft has given no timeline. A first public beta was released in Sept. 2010 and an update was released in Nov. 2010. A series of Developer Platform Previews begun in Mar. 2010 have already revealed some planned improvements to the browser, including a new JavaScript engine, code-named Chakra, that can dramatically improve page loading on Web

pages that use lots of JavaScript; better support for the most commonly used technologies and emerging standards that IE 8 doesn't fully support, including HTML5, Scalable Vector Graphics (SVG), and CSS 3.0; and use of the DirectX 9 APIs to provide hardware-based acceleration for rendering complex interactive graphics written in HTML5, as well as for SVG graphics. Current plans call for IE 9 to run only on Windows Vista and later, not XP.

As the IE 9 release indicates, Microsoft is developing its Web browser on a separate schedule from Windows, with much faster refreshes. IE faces significant competition from Firefox, which has steadily grown in popularity since its introduction in 2004, and an emerging threat from Google's Chrome.

IIS 7.5. Windows 7 includes the latest version of IIS, which features improved management of Web servers and applications, including remote management, and improvements to FTP support.

Windows Virtual PC and XP Mode. Windows 7 Professional, Enterprise, and Ultimate are compatible with Windows Virtual PC and Windows XP Mode, which enables organizations to run older Windows XP-compatible business applications in a Microsoft-supplied, preconfigured virtual machine (VM) with Windows XP SP3. This helps remove application compatibility as a barrier to Windows 7 upgrades. However, this solution means that two OSs will need to be maintained on the computer. XP Mode also has a hardware cost—it requires additional memory in the computer.

A Windows Virtual PC Update, released in Mar. 2010, removes the requirement for either AMD's AMD-V or Intel's VT hardware-assisted virtualization processors, which are typically available only in more expensive desktops.

Windows Search. This search platform speeds the search of desktop content by creating a local index of information on a user's hard drive, including most file types and e-mail. Windows Search will probably see more frequent releases than the Windows client OS as Microsoft tries to keep up with Google in the Web search market. For example, Windows Search 4.0 was released in June 2008 with improvements to query and indexing performance, remote index discovery (also known as PC-to-PC searches), and Group Policy management of search functionality.

Desktop Optimization Pack. This is not a client feature but a suite of desktop virtualization and management applications available only with Software Assurance coverage on the Win-

dows client OS. It costs an additional US\$6 to US\$10 per client per year. (See “Desktop Optimization Pack” in the chapter “Systems Management, Security, and Identity Management” on page 47.)

PowerShell 2.0. The latest version of Microsoft’s command-line and scripting engine for automating the management of Windows is included in Windows 7. It adds improved support for remote management as well as a script editor.

Windows Server

The current Windows Server version is Windows Server 2008 R2, but Windows Server 2008 SP2, Windows Server 2003 SP2, and Windows Server 2003 R2 SP2 are still in Mainstream support. (See the chart “Past Windows Server Versions” on page 14.) Specialized editions of the Windows Server OS support target workloads such as high-performance computing and networked storage, which are typically updated within three to six months after each Windows Server release.

Windows Server 2008 R2

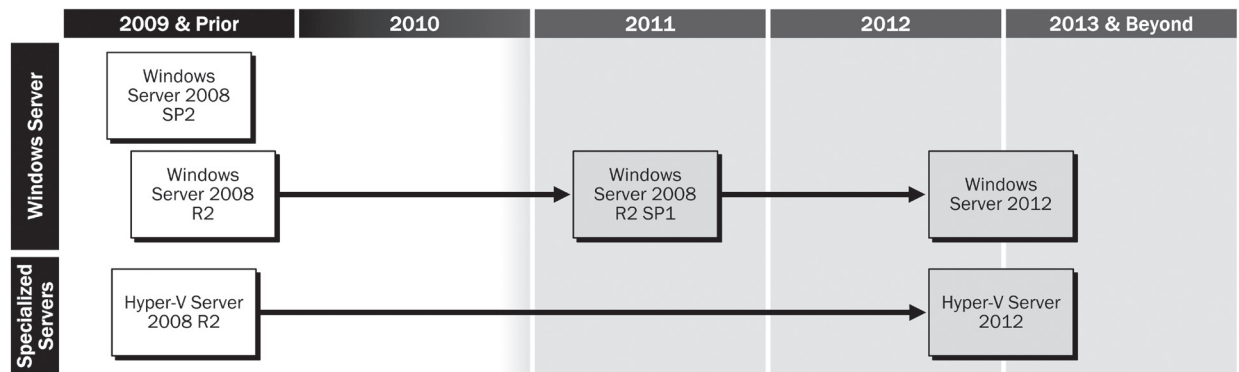
Windows Server 2008 R2 was released in July 2009 and for general availability on Oct. 22, 2009. Windows Server 2008 R2 is 64-bit only.

Windows Server 2008 R2 includes improvements to Hyper-V, Microsoft’s primary hardware virtualization platform to support migration of a running VM between host servers with no perceived interruption to users. Changes to Remote Desktop Services (formerly Terminal Services) support virtual desktop infrastructure (VDI), with features such as a single broker to connect clients

to remote sessions or VMs. Many improvements to Active Directory Domain Services make administration easier, including the ability to completely restore a deleted directory object. A new File Classification system helps locate and control sensitive information on file servers. The IIS 7.5 Web and application server improves management and the FTP service. Windows Server 2008 R2 also includes PowerShell 2.0, with improved scripting abilities for managing Windows-based computers. Power Management can now reduce the power consumption of servers, which rarely if ever sleep or hibernate, by controlling the number of cores that are powered on dependent on the server work load and improving how running software interrupts the processor when it has processing requirements.

Windows Server 2008 introduced a new installation mode that supports a minimal “Server Core,” which includes only the smallest set of files needed for file server, Web server, hardware virtualization, or other infrastructure roles. With Windows Server 2008 R2, the Server Core instal-

Windows Server Overview



Microsoft’s current major release of Windows Server is Windows Server 2008 R2, which was released in Oct. 2009. Windows Server 2008 R2 includes updates to Hyper-V and Remote Data Services (formerly Terminal Services) and improvements to the management of Active Directory Domain Services and IIS, the Windows Web server and application service host. The .NET Framework is now supported on Server Core installations.

A joint first service pack (SP1) for Windows Server 2008 R2 and Windows 7 is currently in the release candidate stage and Microsoft indicates it will be released in early 2011. Windows Server 2008 R2 SP1 will include dynamic memory and graphics improvements for virtual machines.

A stand-alone version of Microsoft’s hypervisor hardware virtualization technology, Hyper-V Server 2008 R2, was released in Oct. 2009.

The next version of Windows Server, referred to here as Windows Server 2012, will likely be released no sooner than late 2012. An update to Windows Hyper-V Server (Hyper-V Server 2012) will likely be released within 90 days of the release of the next server version.

lation can run the .NET Framework application platform, allowing Core to be used for ASP.NET Web application hosting and to support management via PowerShell.

Two new Windows Server 2008 R2 features are tightly coupled with Windows 7 and work only between Windows Server 2008 R2 servers and Windows 7 Enterprise clients:

- BranchCache, a new caching system for content served from a remote Windows Server 2008 R2 server, reducing delays and saving network bandwidth
- DirectAccess, a new remote-access technology that allows a user to connect to Windows Server 2008 R2 without explicitly setting up a virtual private network connection.

Windows Server 2008 R2 SP1

The first service pack for Windows Server 2008 R2 will deliver two features designed to improve VDI: Dynamic Memory and RemoteFX. These features will enable a Windows Server with the Hyper-V virtualization technology to host more VMs running Windows 7 than currently, and those VMs will support high-quality graphic displays.

Dynamic Memory will allow administrators to pool all the physical memory available in the server and dynamically distribute it among VMs running on that server's Hyper-V hypervisor, without interrupting service to the VMs. Memory is a key factor in determining how many VMs a physical server can host, and locking up memory in VMs that are not actually using it prevents the host server from fully utilizing its resources. Dynamic Memory makes initial VM memory allocation less important, reducing management complexity and improving overall server utilization.

RemoteFX gives a user connecting via Microsoft's Remote Desktop Protocol (RDP) user graphics capabilities similar to those available if Windows were running on their local computer.

RemoteFX enables full-fidelity video with synchronized audio; rich media support, including Silverlight and 3D graphics; and the Windows Aero desktop. RemoteFX is not a new stand-alone product but instead is a set of RDP technologies, acquired by Microsoft as part of its Jan. 2008 acquisition of Calista Technologies, that will be included in Windows clients and servers. These technologies leverage graphics processing units (GPUs) in the physical server to virtualize GPUs for the VMs, and these VMs can be accessed from a variety of devices, including thick and thin clients.

Microsoft indicates that Windows Server 2008 R2 SP1 will be a joint service pack with Windows 7 and is currently in the release candidate stage with general availability anticipated in early 2011.

Windows Server 2012

Planning and early development has begun on the next version of Windows Server, which *Directions on Microsoft* is calling Windows Server 2012 and which is likely to be released in late 2012. Because Windows Server 2008 R2 was an important but relatively minor update, Windows Server 2012 will likely include more architectural changes to continue to improve the server's performance, reliability, and stability and expand use of PowerShell to manage server services, including PowerShell-enabled consoles. This release will also likely include improvements to Microsoft's hypervisor for virtualization (Hyper-V 3.0).

Windows Server Specialized Editions and Add-Ons

As with the Windows client, Microsoft has created a number of specialized editions of Windows Server to address market niches, particularly where the standard Windows Server product's price or footprint would impede its competitiveness.

Windows Storage Server and Unified Data Storage Server are OEM-only editions of Windows Serv-

Past Windows Server Versions

Windows Server 2008 R2 was generally available in Oct. 2009. Windows 2008 was generally available in May 2008. This first release was named SP1 to signify a synchronization of the Windows Server code with the code changes in Windows Vista SP1. This means the first service pack with fixes to the released Windows Server 2008 SP1 code was SP2.

Microsoft has announced that Windows Server 2008 R2, SQL Server 2008 R2, and Visual Studio 2010 will be the last versions to run on the Itanium family of 64-bit processors. The existing products will be supported on Itanium according to each product's Microsoft Support Lifecycle Policy. For example, Mainstream support for Windows Server 2008 for Itanium-Based Systems (and R2) will end on July 9, 2013, while Extended support will continue until July 10, 2018.

Product	Current Service Pack	Mainstream Support Ends	Release History
Windows Server 2008	SP2	July 9, 2013	Released: May 2008 SP1: May 2008 SP2: Apr. 2009
Windows Server 2008 R2		July 13, 2013	Released: Oct. 2009

er for storage, file, and print servers. OEMs ship Storage Server on devices ranging from low-end file servers to storage area network and network-attached storage devices. Storage Server has some unique features, such as single-instance storage, which eliminates duplicate files to reduce storage requirements. Storage Server also excludes many Windows services to simplify software maintenance.

The latest edition, Windows Storage Server 2008 R2, was released to OEMs in Sept. 2010. Customers should be able to start purchasing Storage Server 2008 R2-based devices from OEMs such as Dell and HP in late 2010 or early 2011. New features added in this release include support for Server Message Block version 2.1, the File Server Resource Manager (for managing quotas, preventing users from saving unauthorized files on volumes or folders, and storage reporting), and SCSI server boot (including boot for high-performance clusters).

Windows HPC Server 2008 R2, a specialized 64-bit version of Windows Server 2008 for high-performance computing (HPC) applications, was released in July 2010. HPC applications run on multiple processors or computers working in parallel on compute-intensive calculations. HPC Server provides an OS for PC clusters, arrays of identical, commodity servers (compute nodes) working in parallel to solve compute-intensive problems under the control of a management server or head node.

Windows HPC Server 2008 R2 offers improvements in several areas, including the following:

- Scalability, including the ability to deploy, run, and manage clusters with more than 1,000 nodes
- Configuration and deployment, including capabilities for diskless boot and deployment of mixed Windows version clusters)
- System management, diagnostics, and reporting, including a heat map that shows resource use in graphical form
- Communications and networking, including improved debugging for the MPI
- Ability to use Windows 7 workstations as compute nodes
- A validator to verify that deployment of compute nodes occurred correctly
- Windows Imaging Format tools that enable administrators to clone an example node to other nodes.

HPC Server 2008 R2 will also check nodes for correct installation of prerequisites of Excel HPC Services, a component that enables users to run Excel user-defined functions on one or more compute nodes.

Windows HPC Server 2008 R2 is available only for 64-bit systems. A Windows HPC Server 2008 R2 installation will require a Windows Server 2008 R2 HPC license for each head node and a Windows HPC Pack 2008 license for each compute node. (Compute nodes can be Windows Server 2008 SP2 or 2008 R2, or Windows 7.)

Hyper-V Server. In Oct. 2009, Microsoft released an updated Hyper-V Server 2008 R2, a stand-alone product for computers dedicated to hosting VMs. Hyper-V Server 2008 R2 is a bare-metal hypervisor-based server virtualization product and is available as a no-cost Web download. It provides a simplified, reliable, and optimized virtualization solution for customers to consolidate Windows or Linux workloads onto a single physical server or to run client OSs and applications in server-based VMs in the data center. Windows Server 2008 R2 SP1 will be used to update Hyper-V server.

Windows Server AppFabric. This free set of extensions to Windows Server 2008 and later simplifies deploying and managing applications based on the Windows Communication Foundation messaging and Windows Workflow Foundation workflow platforms. The extensions also include an in-memory caching system that distributes data across a Web server farm to scale and speed data access, potentially helping organizations deploy very high-throughput ASP.NET Web applications. Windows Server AppFabric can reduce development and management overhead for applications running on Windows Server. Microsoft has stated that future versions of Windows Server will include the functionality of Windows Server AppFabric out-of-the-box.

Entry-level servers. Although not intended for use by enterprises or midsize organizations, three servers based on Windows Server 2008 R2 are currently in public beta. The first, code-named Vail, is the next version of Windows Home Server. The second, Small Business Server 2011 Essentials (previously code-named Aurora), is a turnkey server solution for small to medium-sized businesses with up to 25 users. The third, Windows Small Business Server 2011 Standard (previously code-named Small Business Server "7"), is designed for up to 75 users.

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