



## Introducing Windows Embedded POSReady 7

Microsoft Corporation

May 2011

### **Windows® Embedded POSReady 7**

Windows® Embedded POSReady 7; built on the strengths of Windows® 7, is a high performance, reliable operating system retailers and OEMs use to deliver point of service (POS) embedded devices that provide a rich, interactive user experience. POSReady 7 readily connects to existing infrastructure and the familiar Windows ecosystem. POSReady 7 advances the capabilities of traditional POS devices to deliver an optimized retail environment while increasing the confidence an enterprise can take in the deployment of embedded devices that satisfy dynamic business requirements.

# Contents

- Introduction .....3
- Leveraging Windows 7 Technologies .....3
- Platform Enhancements In POSReady 7 .....5
- Technologies that Create Rich, Immersive User Experiences .....6
- Recommended Computers and Configurations .....7
- IT Management Advantages .....8
- Connecting to the Windows Ecosystem .....8
- POSReady 7 Solutions for POS Devices .....9
- Conclusion .....11
- Additional Resources .....12



## Introduction

Built on the strengths of Windows® 7, POSReady 7 advances the capabilities and potential of the POS device and the user experience, increasing confidence in enterprise business decision makers and administrators to deploy POS devices that fit dynamic retail business standards.

Windows® Embedded POSReady 7 is designed for retail businesses seeking to evolve their point of service environments to include next generation, attractive point-of-service (POS) devices that enhance customer experience and loyalty.

This white paper covers the features and benefits of POSReady 7. Topics in this white paper include:

- Leveraging Windows 7 Technologies.
- Platform enhancements in POSReady 7.
- Tools for creating rich, immersive user experiences.
- Recommended computers and configurations.
- IT management advantages.
- Connecting to the Windows ecosystem.
- POSReady 7 solutions for POS devices.

## Leveraging Windows 7 Technologies

POSReady 7 provides retailers with a wide range of features and capabilities in addition to connectivity to familiar infrastructure and enterprise management practices. POSReady 7 extends POS environments with the following key features:

- **Microsoft® AppLocker™** Provides application security within your POS environments. AppLocker helps manage what is allowed to run on the POS device including applications, scripts and DLLs. You can use this feature to help ensure that your workforce can only run the programs they need, and that managers and administrators can be granted additional permissions according to their roles to get their work done.
- **Microsoft BitLocker® Drive Encryption and BitLocker To Go™** works with Trusted Platform Module v1.2 hardware to help protect data on POS devices with fixed and removable drives. BitLocker encrypts with a key that persists with the drive, and helps protect sensitive data from unauthorized users. BitLocker To Go extends BitLocker data protection to flash media such as SD and USB flash drives.
- **Microsoft BranchCache™** helps enhance the performance of centralized applications by caching content at branch offices, providing users with streamlined connectivity while reducing wide area network (WAN) utilization. When a POS device on the regional network requests data, the content is downloaded from the



local cache of the nearest branch store to avoid downloading that same content across the WAN, providing users in remote offices an experience more akin to working in the main office. BranchCache also provides:

- Flexible architecture. BranchCache only serves content to users who have the right permissions while verifying it is delivering the latest version of a requested file.
- Versatile and efficient protocols. BranchCache only retrieves data from the main office when requested by a remote office user.
- **USB flash drive support.** Newer POS devices can use a USB flash drive (UFD) as their primary system drive. The device boots the operating system stored on the UFD, and uses the remaining space on the UFD for programs and data. POS devices using flash storage media can be compact in size and applicable to rugged environments.
- **Enhanced multiple monitor support.** POSReady 7 can detect multiple device monitors and works with Windows Touch. You can deploy multiple monitors in your POS environment; for example, a POS station where one monitor faces the employee and the other the consumer. Considering the adoption of touch-based monitors, multiple monitor environments increase consumer involvement, trust, and confidence, providing a better user experience as a result.

**Note:** Windows Touch is addressed later in this paper.

- **Improved power management.** Consumers and workers are increasingly concerned with devices that save energy and resources. POSReady 7 provides effective power management tools that include the ability to disable screen savers, and put devices in a sleep state after a specified time of non-use. These power management options allow the device processor to conserve power by remaining idle, and turn off power to an Ethernet adapter when it is not in use. POSReady 7 also offers smart power management application programming interfaces (APIs), which developers can take advantage of to build power efficient applications.
- **32-bit and 64-bit integration.** POSReady 7 supports both 32-bit and 64-bit architectures, supporting the hardware investment you have made now and will make in the future.
- **Windows Update.** POSReady 7 allows retailers to take advantage of automatic security updates, better enabling your own management practices and PCI compliancy efforts. Updates can also be deployed as packages to collections of POS devices if your enterprise uses System Center Configuration Manager.



## Platform Enhancements In POSReady 7

POSReady 7 provides enhanced platform feature and function enhancements that are well suited to your business needs. Some of these enhancements include:

- **Keyboard Filter support.** Point Of Service devices can be made more tamper resistant if shortcuts to the operating system are disabled. Keyboard filters allow POS device administrators to suppress common key combinations that grant access to the operating system. Single or groups of key combinations such as CTL+ALT+Delete, ALT+F4, Windows+L, Shift+PrtSc and more can be rendered inactive, reducing potential to bypass POS applications and tamper with the operating system.
- **Dialog Box Filter support.** There are POS scenarios where human-machine interaction is very well-defined. Dialog filters available in POSReady 7 provide the ability to predefine default actions that and dismiss the dialog box without presenting it to the user. The result can be streamlined POS application use for the consumer and the employee.
- **Shell Launcher and custom shell support.** These features enable you to replace the default Windows Explorer shell with a custom shell that better fits the POS application environment you want to create and present. Security is enhanced as well through the suppression of the default desktop and access to files, folders and the operating system itself.

**NOTE:** Shell Launcher handles scenarios such as executing the **Run** and **RunOnce** registry keys, and restarting the custom shell if it fails. The **RunOnce** key is useful when performing service on POS devices.

- **Enhanced Write Filter (EWF) support.** EWF provides the ability to write-protect a run-time image, creating a semi-stateless environment where specific volumes are read-only. The volume level protection provided by EWF redirects writes to an overlay that persists during the machine session, but is discarded when the machine is restarted. EWF maintains your predictable boot environment. For POS systems that use Solid State Drives (SSDs) EWF aids in extending the life of the drive itself.

**Note:** EWF is not active by default. You must add it as a package to your image build.

- **File-Based Write Filter (FBWF) support.** This feature allows POSReady 7 to protect device media at the file system level, increasing security, and making the POSReady 7 operating system, applications and data tamper resistant.



## Technologies that Create Rich, Immersive User Experiences

POSReady 7 enables you to design, build, and implement rich, immersive user experiences for your POS devices at both the enterprise and user level by working with familiar, popular tools used by developers worldwide. Some of these technologies include:

- **Microsoft POS for .NET**, a class library available to POS application developers, POS for .NET allows Microsoft .NET applications to easily integrate with POS peripheral devices and provides an open device driver architecture that is based on the Unified Point of Service (UnifiedPOS) industry standard. POS for .NET allows for quick deployment of POS device peripherals using plug-and-play and easier peripheral updates, and lowers system support costs through streamlined integration.
- **Windows Aero®**, which brings the latest Windows 7 graphics technology to POSReady 7 and helps bring rich experiences to POS devices.
- **Windows Touch**, which allows users to interact with the POS device through multitouch capabilities, making users' activities easier and more convenient. Touch enables mouse-free computing, support for touch input by using more than one finger, and recognizes concurrent touches on the screen.
- **Windows Presentation Foundation (WPF)**, a next-generation user interface (UI) framework for building Windows-based client applications with visually powerful user experiences. With WPF, you can create a wide range of both stand-alone and browser-hosted applications. WPF applications can target the desktop or the browser, and enables rich control for those applications. WPF included a comprehensive set of application-development features, such as Extensible Application Markup Language (XAML), controls, data binding, layout, two- and three-dimensional graphics, animation, styles, templates, documents, media, text, and typography.
- **Windows Internet Explorer® 8 and 9**, which bring the latest browser technology to POSReady 7. Internet Explorer 9 adds the SmartScreen filter, additional protection based on a dynamic list of reported phishing and malicious sites.
- **Windows Media Player 12**, which provides POS devices with a strong, robust multimedia experience and features like bandwidth reservation for a seamless user experience.
- **Windows 7 Language Packs** address the needs of global retailers by providing the ability to have multiple languages installed on the same device, usable to multi-national users and staff. MUI support provides OEMs the ability to build a device that can be deployed worldwide.



- **Input Method Engine (IME)**, which provides the ability to collect input from international language sets and keyboard layouts.
- **Windows Sensor and Location platform**, which enables POS devices to better detect the environment they are put in and to become aware of their surroundings, based on location. For location awareness, a specific set of location APIs is used to help retrieve location while helping to protect user privacy by prompting for users' permission to publish their location data to the application, define which types of sensors to use, and determine the preferred order to use if there are multiple location sensors.
- **Virtual Hard Disk (VHD) boot**, which enables another operating system (OS) image for maintenance or updates without having to create multiple partitions for each OS image on the POS device hard drive.

## Recommended Computers and Configurations

POSReady 7 can run on a variety of computers and work in a number of different scenarios. For optimum flexibility and performance, this section includes computer and configuration recommendations.

Recommended computers:

- **Computers with multicore processors.** POSReady 7 is designed to work with today's multicore processors. All 32-bit versions of POSReady 7 support up to 32 processor cores while 64-bit versions support up to 256 processor cores.
- **Computers with multiple processors.** POSReady 7 can support two physical processors.

Recommended configurations:

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 32-bit systems:
  - 1 gigabyte (GB) of random access memory (RAM)
  - 16 GB available hard disk space
- 64-bit systems:
  - 2 GB of RAM
  - 20 GB available hard disk space
- Microsoft DirectX® 9 graphics device with Windows Display Driver Model (WDDM 1.0) or later version driver
- Bootable DVD-ROM drive

**Note:** Various features in POSReady 7 can quickly increase the disk space requirements. For optimal performance of the hard disk, you need at least 15 percent free space available on the hard disk at all times, and sufficient space for the paging file, which in some cases might be as much as two times the size of the system's RAM.



## IT Management Advantages

POSReady 7 provides an optimized operating system that reduces costs through advanced device development and greater IT automation. IT management advantages include:

- **Windows OEM Preinstallation Kit (OPK)**, a set of tools and documentation for OEMs that support automated installation and customization of operating systems including POSReady 7.
- **Windows Automated Installation Kit (AIK)**, tools and documentation designed to help IT pros and administrators deploy POSReady 7.
- **Integration with Windows PowerShell™ 2.0**, which provides advanced scripting and automation capabilities that can reduce the costs of managing and troubleshooting your POS device.
- **Image deployment**, which can be done using Windows Deployment Services (WDS) or a Pre-Boot Execution Environment (PXE) and includes deployment to properly formatted USB flash drives.
- **Windows Update integration**, which allows for POS devices to be current with any required security updates.

## Connecting to the Windows Ecosystem

POSReady 7 makes it easy to integrate POS devices into your enterprise network and current management practices. Some of these connections include:

- **Microsoft Remote Desktop Protocol (RDP) 7.1**, combined with RemoteFX, provides an improved remote experience for POS device solutions in scenarios where IT support personnel and administrators are not always on site.
- **Internet Protocol version 4 (IPv4), IPv6, and Network Access Protection (NAP) support:**
  - Supports full IP v4 and v6, better enabling network security.
  - NAP is a feature in Windows Server 2008 that controls access to network resources based on a client computer's state of resource health compared to corporate policy. NAP allows administrators to define fine levels of network access based on the degree to which that client is compliant with corporate policy. If a client is not compliant, NAP provides a mechanism to automatically bring the client into compliance, and then dynamically increase its level of network access.
- **POSReady 7 powered devices can join a domain that uses Active Directory® Domain Services (AD DS)**. AD DS policies can be applied to the POS device and used with Group Policy settings to help improve IT compliance and reduce costs by supporting critical retailer enterprise scenarios.



- **System Center Configuration Manager 2007** provides centralized, enterprise level management and reporting to POS devices. POS devices can be managed through System Center Configuration Manager 2007 similar to desktops, laptops, and servers.

## POSReady 7 Solutions for POS Devices

POSReady 7 better enables a point of service environment where the modern consumer feels connected and involved. Consumers are as comfortable working with a POS device as they are with their own equipment at home, at work, and on the go.

POS devices can be feature rich, creative, immersive and attractive presenting nearly endless possibilities:

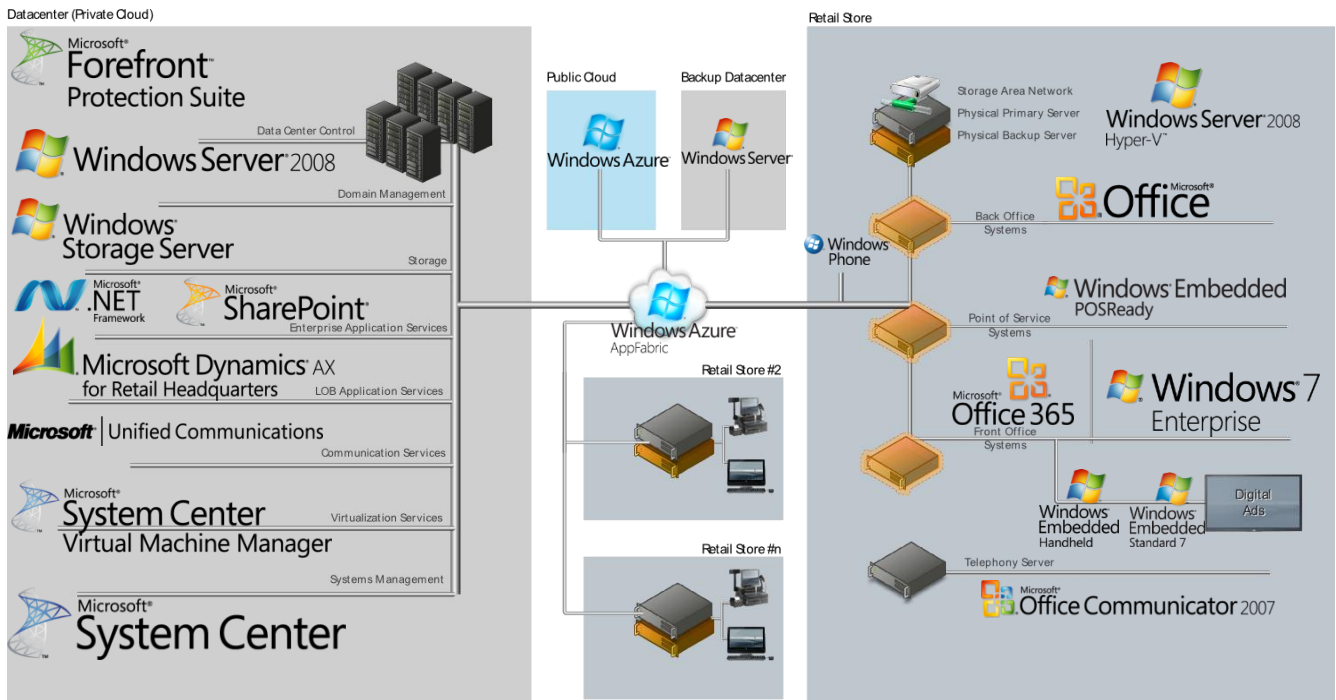
- **Self-service checkout kiosk.** A next generation UI built on Windows Presentation Foundation delivers the ability for the consumer to get in-depth information on a product or service. Using a common set of Silverlight Expression Blend® generated controls, multiple presentation skin overlays can be applied to the same control suite. For example, a retail application showcasing a “beach” theme and another one with an “alpine” theme can both use the same controls.
- **Bank teller terminal.** Using Windows Touch, the application can prompt for language choices, including non-Western language sets such as Kanji and Chinese (Simplified and Traditional). The terminal application is fast and nearly tamper proof as administrators can remove components from the operating system image that are not required.
- **Food services order processing terminal.** A polished and attractive UI sorted by food service type is easy for workers to use and requires little if any training. Managed with System Center Configuration Manager 2007, POSReady 7 images are deployed and updated at a pace that meets business requirements. On the back end, SQL Server continuously tracks sales and inventory, and drives trending reporting by region and time.
- **Hotel guest service digital signage.** A hotel POS application built with stunning Silverlight presentation on not only aids in identifying, scheduling, and purchasing additional services, it also presents information on local events at the hotel and in town with the ability to schedule a reminder to be sent to your room, email, or mobile device. A preconfigured browser connects to local businesses to facilitate the purchase of tickets, looping back to add the charges to the hotel’s accounting system.
- **Retail information kiosk.** Monitored by System Center Configuration Manager 2007, an interactive retail information kiosk informs the customer when the store is out of stock of an item being searched on. It prompts the business to send the item directly to the customer’s home or notifies the customer when the



item will be available at the present store location or another location. A preconfigured web browser provides links to the item manufacturer, providing additional product depth.

- **Gift registry kiosk.** Using a common set of Silverlight Expression Blend generated controls, multiple presentation skin overlays and themes can be presented to customers and gift suggestions that they can use to participate in a gift registry.
- **Payment kiosk.** Deployed worldwide and usable to multinational personas through MUI support. The machine runs within a custom application shell with pre-configured dialogs in multiple languages, and is protected with AppLocker and BitLocker.
- **ATM.** Responses to customer inquiries are fast and efficient after components not needed for the operating system have been stripped from it. ATMs that run POSReady 7 are Payment Card Industry (PCI) compliant, and equipped with the ability to allow customers to choose the language want to use to operate them.

POSReady 7 connects Point Of Service devices into the enterprise Windows ecosystem.



## Conclusion

Windows Embedded POSReady 7; built on Windows 7, delivers a high performance, reliable operating system optimized for retail and hospitality that retailers and OEMs can use to deliver POS devices that provide a rich, interactive user experience. POSReady 7 readily connects to existing infrastructure and the familiar Windows ecosystem while increasing confidence in the enterprise to deploy embedded devices that satisfy dynamic business requirements.



## Additional Resources

- Windows Embedded  
<http://www.microsoft.com/windowseembedded/en-us/windows-embedded.aspx>
- Windows Embedded POSReady 7: Addressing Common Retail and OEM Scenarios  
<http://www.microsoft.com/presspass/presskits/embedded/pageResources/01-11WEPOS7-white.pdf>
- PCI Security Standards Council  
<https://www.pcisecuritystandards.org>
- Windows Embedded Device Manager 2011  
<http://www.microsoft.com/windowseembedded/en-us/evaluate/windows-embedded-device-manager.aspx>
- Windows Presentation Foundation  
<http://windowsclient.net/>
- Microsoft Silverlight  
<http://www.silverlight.net/>
- Windows 7 Technologies  
[http://msdn.microsoft.com/en-us/library/ee461766\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/ee461766(VS.85).aspx)



**Copyright:**

This document is provided "as-is". Information and views expressed in this document, including URL and other Internet Web site references, may change without notice. You bear the risk of using it.

Some examples depicted herein are provided for illustration only and are fictitious. No real association or connection is intended or should be inferred.

This document does not provide you with any legal rights to any intellectual property in any Microsoft product. You may copy and use this document for your internal, reference purposes.

This document is confidential and proprietary to Microsoft. It is disclosed and can be used only pursuant to a non-disclosure agreement.

© 2011 Microsoft Corporation. All rights reserved.

