Windows To Go and USB Boot

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Agenda

- Windows To Go Overview
- Key Enhancements
- Device Requirements
- System Requirements
- Common Issues
What is Windows To Go?

Windows To Go, Your Portable Workspace

Windows To Go is an Enterprise feature that enables users to boot and run enterprise managed Windows 8 image from an externally connected USB storage device.
Windows To Go:
Windows for the Enterprise

Best Business Tablets and PCs

Windows Apps for Business

Enterprise Grade Security

Empower BYOD

Mobility: Productive and Connected
## Windows To Go: Windows 8.1 Enterprise Scenarios

<table>
<thead>
<tr>
<th>Best Business Tablets and PCs</th>
<th>Windows Apps for Business</th>
<th>Enterprise Grade Security</th>
<th>Empower BYOD</th>
<th>Mobility: Productive and Connected</th>
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<tr>
<td>Best Business Tablets</td>
<td>Windows apps across the Enterprise</td>
<td>Modern Access Control</td>
<td>Device Management</td>
<td>Windows in your back pocket</td>
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<tr>
<td>Great on all PCs</td>
<td>Developing and delivering apps</td>
<td>Malware Resistance</td>
<td>Simplify Virtual Desktops</td>
<td>Work Anywhere on Any Windows Device</td>
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<td></td>
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<td>Secure Corporate Data</td>
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</table>

- **Windows in your back pocket**
- **Work Anywhere on Any Windows Device**
Core Scenarios
Windows To Go: Windows in your back pocket

Contractors
Bring Your Own Device (at work)
Travel Light / Work from Home
Shared PCs / Disaster Recovery
Up and Running on Windows 8.1
Windows To Go Enhancements

• Windows 8.1
  – Enabled Windows Store
  – Boot support for composite USB devices

• Windows 8
  – Boot support in USB 2.0 and USB 3.0 stacks
    • Paging, Sleep/Hibernate, Crashdump etc.
  – Turning on USB boot w/o firmware changes aka Windows to Go Startup Options
    • Uses USB Class boot entry for UEFI
  – Surprise Removal recovery
  – Roaming to multiple PCs
    • Roaming device configuration
    • Password based bitlocker support
    • Roaming across firmware (BIOS & UEFI)
  – Data leakage prevention between host and Windows to Go OS
    • New storage policy on Windows to Go OS keeps host disks offline
    • Volumes on Windows to Go drives hidden when plugged-in to a host OS
  – Identifying Windows to Go environment programmatically
    • Win32_OperatingSystem::IsPortableOS WMI interface
Device Requirements in Windows 8.1 HCK

• USB 3.0 spec compliant
• USB-IF certified
• Min size – 32GB
• Report as FIXED media (RMB=0)
• High throughput and low latency
  – Random 4k write IOPS >= 200
  – Random 4k read IOPS >= 2000
  – Sequential read speed >= 80 MB/s
  – Sequential write speed >= 80 MB/s
  – Max IO latency < 500 milliseconds
• High endurance
  – Min 2 year warrantee under typical Windows workload
## Windows To Go Certified Drives

Optimized for booting and running Windows 8 Enterprise on hardware certified for use with Windows 7 or Windows 8.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Storage size</th>
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</thead>
<tbody>
<tr>
<td>Kingston® DataTraveler® Workspace</td>
<td>32, 64, 128 GB</td>
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<tr>
<td><a href="http://www.kingston.com/wtg">www.kingston.com/wtg</a></td>
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<tr>
<td>Imation IronKey® Workspace W300</td>
<td>32, 64, 128 GB</td>
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<td>Super Talent Express RC8</td>
<td>32, 64, 128 GB</td>
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<td><a href="http://www.supertalent.com/wtg">www.supertalent.com/wtg</a></td>
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<td>SPYRUS Portable Workplace™</td>
<td>32, 64, 128 GB</td>
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<td><a href="http://www.spyruswtg.com">www.spyruswtg.com</a></td>
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<tr>
<td>WD My Passport Enterprise</td>
<td>500 GB</td>
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USB Boot Test in the HCK

- Boot from USB Test have significant improvements
  - x86/x64 Client test require a certified WTG drive
  - Requires a full Windows 8.1 image during test execution
    - Image should include all necessary drivers to boot and function on the system being tested
  - No manual intervention is required once the image and drive are in place

- Test Overview
  - Drive is provisioned by the HCK tests using the provided image
  - Set UEFI USB Class Entry
  - Reboots the machine, which should trigger USB boot
  - Runs power tests (sleep/hibernate) based on system capabilities
  - Clears UEFI USB Boot entry, and reboots into the system’s host OS
System Recommendations

• Performance
  – Include USB 3.0 boot support

• Reliability
  – Minimize hub depth to external ports
  – Make USB 3.0 port easily accessible to ensure SuperSpeed enumeration
  – Validate USB boot reliability with multiple USB devices
  – Handle Multi-LUN support
  – Handle composite USB boot support

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Common USB Boot Issues

• Enable correct UEFI support for the USB Class entry
  – Generic entries must be respected, and not altered to be a device specific entry
  – Generic entries should be persisted across reboots
  – USB Class entries should keep their place in the boot order after a reboot
  – USB Boot entries should be honored when they are active in the boot order (can not be ignored due to other settings, like boot optimizations)

• All external USB ports must support USB boot
• Support Multi-LUN boot devices
• Support composite USB boot devices
Common HCK Issues

• Windows 8.1 image must be accessible to the HCK client
  – Use a standard image from install media
  – Inject the necessary drivers and configuration to enable power management and proper boot functionality, including access to UEFI variables

• Use a certified Windows To Go drive

• Testers should not manually intervene to enable USB boot during testing

• Failure to boot into a certified WTG drive is often a symptom of USB boot support failures in the UEFI firmware, or port power issues

• USB Boot does not conflict with POST time requirements, since the default configuration won’t have a USB Boot device at the top of the boot order
Learn more

For more information on Windows To Go, including deployment and testing materials, visit

http://www.microsoft.com/windowstogo
Thanks for attending the UEFI Summerfest 2013

For more information on the Unified EFI Forum and UEFI Specifications, visit http://www.uefi.org

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