

*presented by*



# Windows To Go and USB Boot

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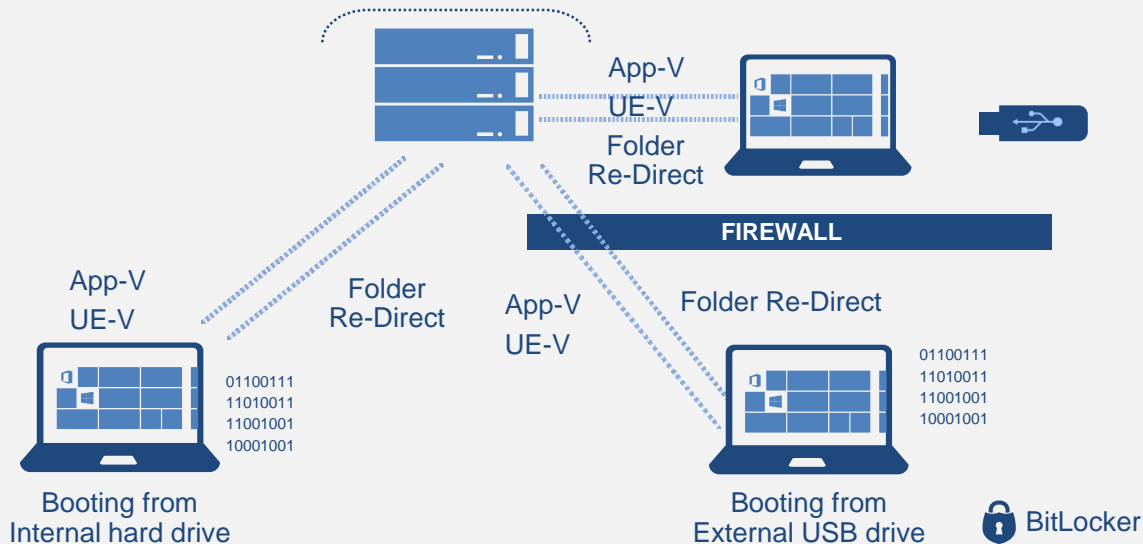
# Agenda



- 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



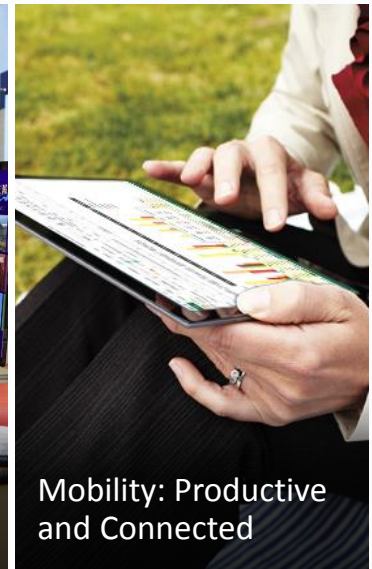
Windows Apps  
for Business



Enterprise  
Grade Security



Empower  
BYOD













Mobility: Productive  
and Connected

# Windows To Go:

## Windows 8.1 Enterprise Scenarios



Best Business Tablets and PCs	Windows Apps for Business	Enterprise Grade Security	Empower BYOD	Mobility: Productive and Connected
 Best Business Tablets	 Windows apps across the Enterprise	 Modern Access Control	 Device Management	 Windows in your back pocket
 Great on all PCs	 Developing and delivering apps	 Malware Resistance	 Simplify Virtual Desktops <sup>2</sup>	 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  $\geq 200$
  - Random 4k read IOPS  $\geq 2000$
  - Sequential read speed  $\geq 80$  MB/s
  - Sequential write speed  $\geq 80$  MB/s
  - Max IO latency  $< 500$  milliseconds
- High endurance
  - Min 2 year warranty 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.



Manufacturer	Storage size		Manufacturer	Storage size	
Kingston® DataTraveler® Workspace <a href="http://www.kingston.com/wtg">www.kingston.com/wtg</a>	32, 64, 128 GB		Super Talent RC4 <a href="http://www.supertalent.com/wtg">www.supertalent.com/wtg</a>	32, 64, 128, 256 GB	
Imation IronKey® Workspace W300 <a href="http://www.imation.com/wtg">www.imation.com/wtg</a>	32, 64, 128 GB		SPYRUS Portable Workplace™ <a href="http://www.spyruswtg.com">www.spyruswtg.com</a>	32, 64, 128 GB	
<i>Beta:</i> Imation IronKey® Workspace W500 <a href="http://www.imation.com/wtg">www.imation.com/wtg</a>	32, 64, 128 GB		SPYRUS Secure Portable Workplace™ <a href="http://www.spyruswtg.com">www.spyruswtg.com</a>	32, 64, 128 GB	
Super Talent Express RC8 <a href="http://www.supertalent.com/wtg">www.supertalent.com/wtg</a>	32, 64, 128 GB		WD My Passport Enterprise <a href="http://www.wd.com/wtg">www.wd.com/wtg</a>	500 GB	

# 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

# 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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