Contents

Introduction

WHCK

What is WHCK? Windows Hardware Certification Kit replaced WLK (Windows Logo Kit) after Windows 7, beginning with Windows 8. WHCK is a driver testing framework that Microsoft released to enable hardware vendors to validate hardware and driver functionality. Microsoft requires an 80% pass rate in order to receive the Windows logo, but Intel internally requires a 100% pass rate.

There are five geographic locations working on WHCK testing for CWS. The sites are JF, SC, RP, CH, and Nice. The JF and the SC sites have a screen room that is optimized for Wireless testing because the wireless spectrum is not polluted with a myriad of SSID's. Your device (e.g. cell phone) wireless should be turned off before entry into the screen room to prevent test result distortion.

There are three ways to interact with the WHCK application framework. The basic and most common interaction is with WHCK Studio, which allows for the scheduling of automated and manual jobs. WHCK Manager can be used for intermediate tasks like creating jobs and changing device state to manual, debug, or unsafe. The API is used for advanced framework scheduling and interaction, and must not be used concurrently while WHCK Studio or WHCK Manager are open.

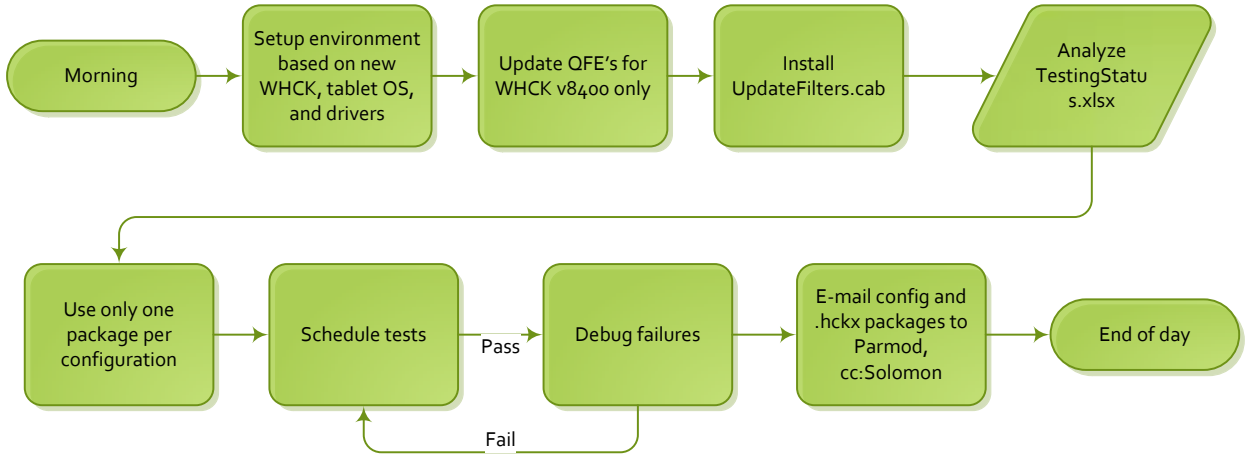
There are five domains of interest for CWS. The domains in CWS are WiFi, GPS, NFC, BT, and WWAN. The expectation is that comprehensive test results are sent out at the end of every day. We are keeping track of our test results in two ways: 1) a consolidated spreadsheet that all teams are using called TestingStatus.xlsx, and 2) our own local test results.

The test environment must be setup prior to running a single test. WTT.chm describes how to set up the environment by following the applicable pre-requisites section. At the start of every day, care MUST be taken to ensure the QFE's, the FilterUpdates, and the devices are current and up to date. The WHCK version can be checked using Control Panel Add Remove Program, and the FilterUpdates can be checked using UpdateFilters.cab file size and checksum.

When sending out daily results at the end of every day, two things must be sent: 1) *.hckx package(s), 2) complete configuration details for repeatability, and 3) a list of passing/failing tests with any special notes.

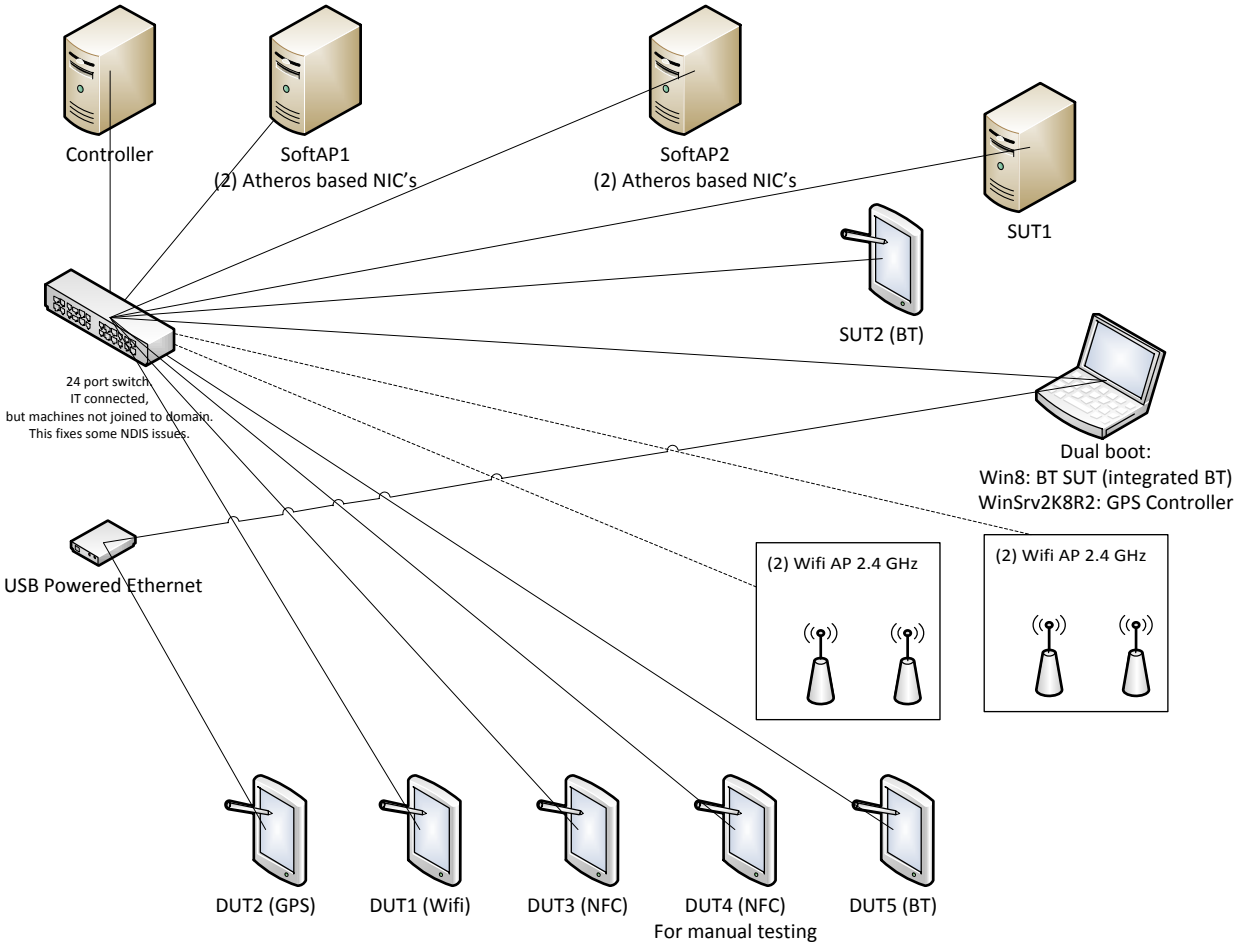
Process

Execute the following workflow daily:



Installation

Overview



Requirements

Please note that the SOC version is 16388 and the non-SOC version is 16384. The SOC version is designed to be installed on PC2 tablets. The recommended way to install on tablets is to flash the latest BKC, then upgrade the OS with the RTM version. I also recommend re-installing Windows Server 2008 R2 before installing the new WHCK version. Click here to see the complete installation workflow. Windows 8 RTM CD key: NDG4F-KY6MR-37W8W-3HQJK-9HF9Q.

Hardware	Version	Build	SOC	Location
Controller	Windows Server 2008 R2		non-SOC	\\tsiewin1\share\Windows\OS\Windows Server 2008 R2
DUT	Windows 8 RTM	9200.16388	SOC	\\tsiewin1\share\Windows\OS\SOC
SUT	Windows 8 RTM		SOC or non-SOC (HW-dependent)	
SoftAP	Windows 8 RTM	9200.163	non-SOC	\\tsiewin1\share\Windows\OS\non

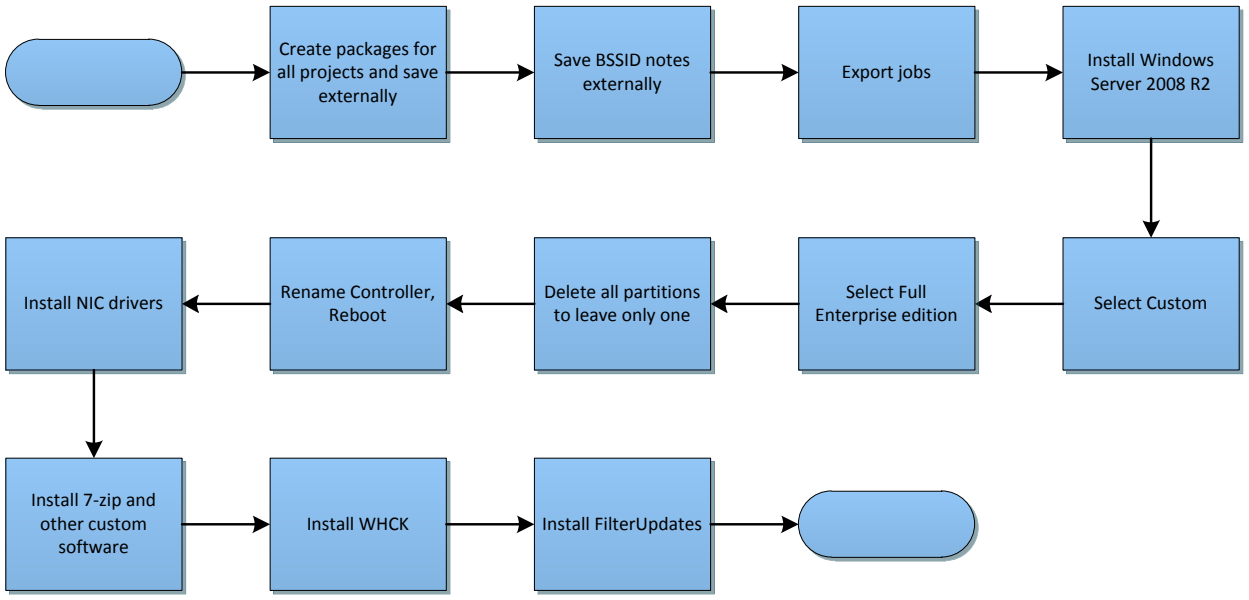
		84		-SOC

Steps

Install WHCK 8400 + QFE's or WHCK Engineering release by doing the following:

1. Re-install Windows Server 2008 R2
2. Change name and reboot (important!)
3. Install WHCK Controller and Studio on top of fresh installation of Windows Server 2008 R2
4. If WHCK version 8400 is installed, install QFE's.
5. Install FilterUpdates.
6. Install BKC on DUT
7. Rename DUT, then reboot
8. Power management:
    a. Power Options in Control Panel or powercfg.cpl
    b. Change when the computer sleeps
    c. Set the device to never sleep, both on battery and plugged in
9. On client machines (e.g. DUT), install \\<Controller>\HCKInstall\Client\setup.exe
10. Move client out of default machine pool
11. Ensure device is set to ready

Diagram



User Account

Username:

Target Machine	Username
Windows Server 2008 R2	Administrator
Windows 8	admin

Password:

- Intel386

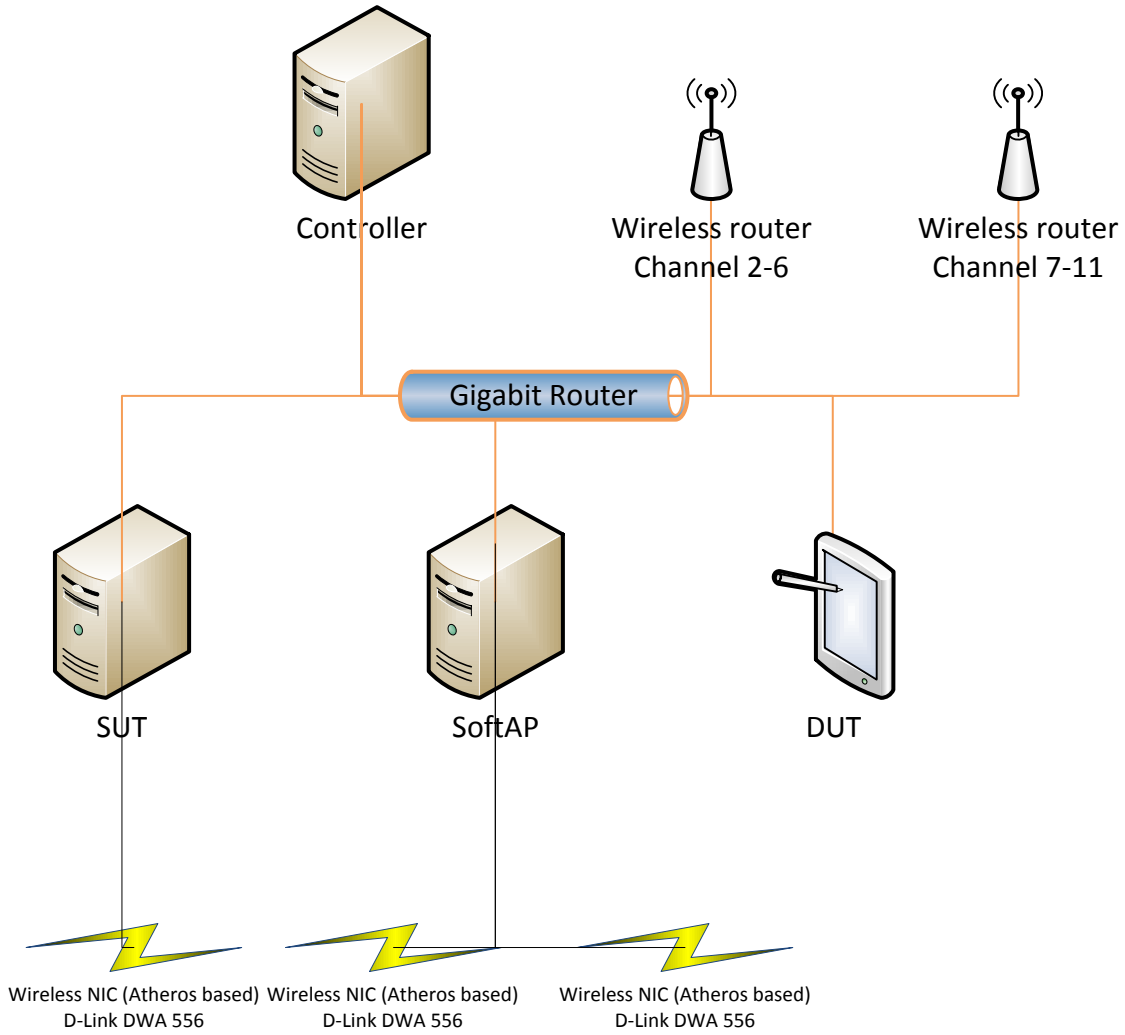
Naming conventions

- Note:
    a. Windows Server 2008 R2 and WHCK must be re-installed if the Controller system name is changed after WHCK installation.
- Project
    a. <WIFI,NFC,GPS,BT>-<building>-BKC<bkc>-OS<####>-WHCK<#.##.#####>-<Driver><v##>
- Controller:
    a. TSIE<four letter word><CTRL,DUT,SUT,SAP><#>
- Package:
    a. <date yyyymmdd>-<building>-BKC<bkc>-OS<####>-WHCK<#.##.#####>-<Driver><v##>

Option	+	-
Create a project based on the configuration and use this project until all tests for a given subsystem is complete. Then create a new project only if the configuration changes.	1. Easy to track big picture for a given sub-system. 2. Easy to see all failures and passes for a given configuration in HCK Studio. 3. View the whole test result with just opening a single file, as long as there's enough hard-drive storage.	1. .hckx package file size grows linearly. 2. Difficult to view exactly which tests were run each day in HCK Studio. 3. Much harder to submit just the tests run today to be included in package submission.
Create a new project every day and include the configuration in the project name	1. Focused view on the test results from the day without mixing results. 2. Easy submission parsing if sending daily	1. Need spreadsheet to track overall results for a given configuration. 2. Hard to see big picture using HCK Studio

Components

WiFi



Wireless Adapter settings:

1. HCK Manager, Right click on DUT and select schedule
2. Execute Configure network device for LAN Testing.

Network check:

1. Control Panel, Network Adapters or Cmd, ncpa.cpl
2. LAN should be named MessageDevice
3. WLAN('s) should be named SupportDevice0 (and SupportDevice1)

WHCK Client
WiFi Drivers
Need to make settings for Remote Desktop
Need to make settings for Renaming SupportDevice0 and MessageDevice

Need to install netmon on SUT for DoCoaleasing feature test

SAP, we need to install NDIS Drivers Location for NDIS Drivers

\\tsiepurlctrl1\Tests\x86\NDIS\NDISTest.Net\SoftAPMiniport This is very important

Driver Location for SUT and DUT
\\tsiewin1\share\Windows\Drivers\WiFi

Two Share locations
\\ntg-ch6-tfsdb\BKC_Releases\WHCK\Packages\OR_ScreenRoom\JF3-2-BKC20120720-WHCK8515-DUTOS8515-v62

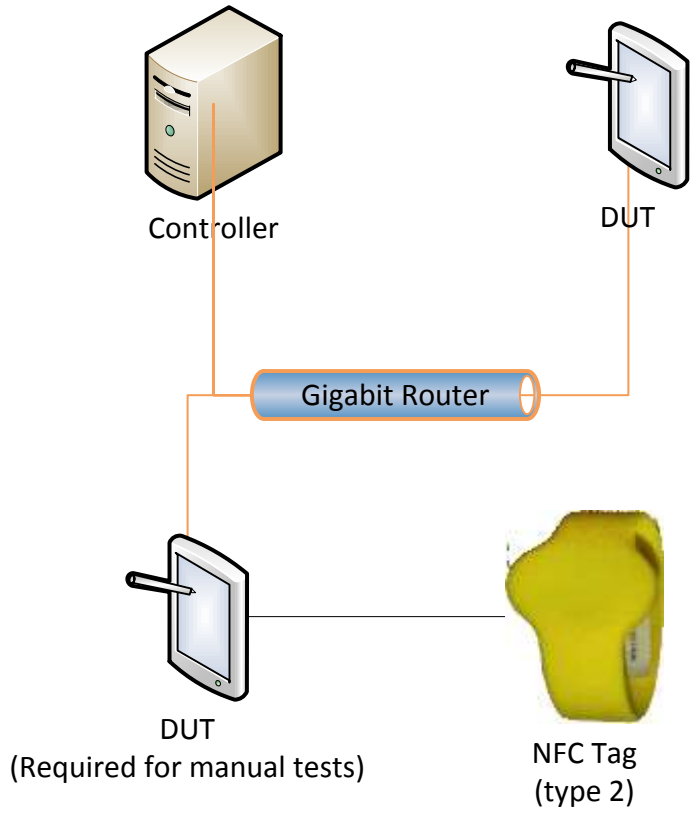
First run WLAN Preminum Test for sanity check whether everything is working fine.

Dan Created a new Directory for results along with one text file and new spread sheet. i am supposed to update that spread sheet.

Windows @K R2 we need to select 2008 R2 Enterprise(Full Installation)-> this is at step 3

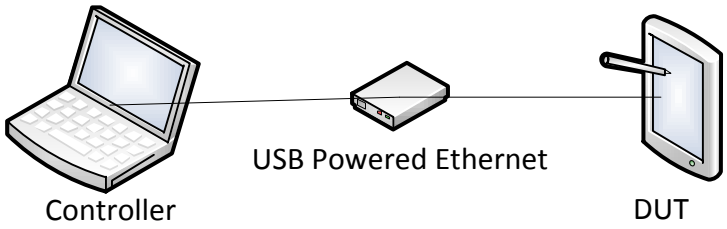
There are 3 ways to connect DUT to router.
1. WPS PIN
2. Passphrased usually 10 digits
3. Open

NFC

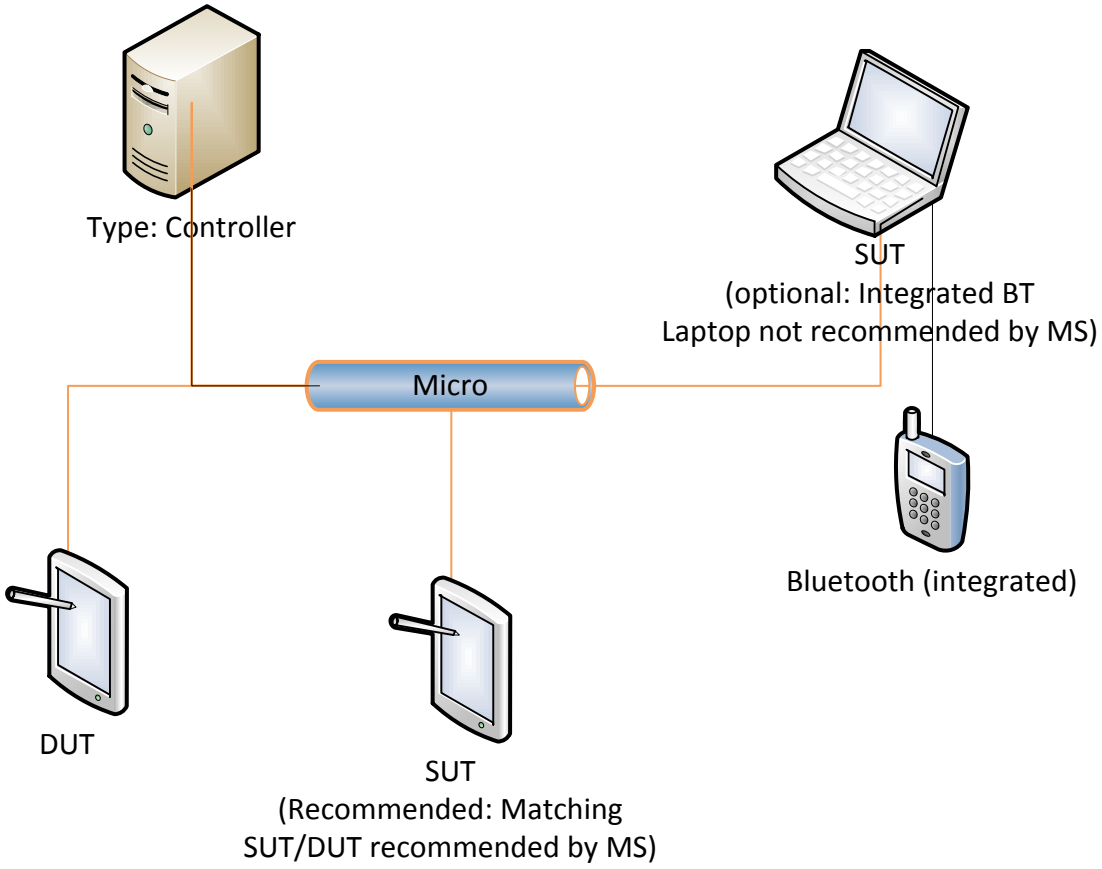


Fab-C devices require rework for NFC antenna to work. Fab D devices may work without a rework, but it is not guaranteed. BKC's later than WW28 enable NFC to work by default without the need to flash IFWI and complete registry hacks.

GPS



BT



Display
Andrew is responsible for display.

Hardware

IFWI

IFWI Version	DNX version
R8.BC(RVP1.4 C0)	FD_06
P9.BC (PC2 C0)	FD_0C/FD_B
R3.BC (RVP1.4 B0)	FD_04/FD_05
R2.BC (RVP1.0 B0)	FD_03
P4.BC (Pinole-C++)	FD_07/FD_08
P6.BC (PC2 Fab C B0)	FD_07/FD_08
P10.BC (PC2 Fab D B0)	FD_07/FD_08
R11.BC(RVP1.4 C-Step QS)	DnX_C1_PRQ_PSS
P12.BC(PC2 C-Step QS)	DnX_C1_PRQ_PSS

Miscellaneous

There is a mapping created between controller and client after installation. The setup.exe found inside the HCKClient directory must be chosen from the desired controller because there is a GUID association.

Three cases where you must re-install WHCK:

1. Renaming device
2. Going from workgroup to domain
3. Going from domain to workgroup

TSIE: Tablet Software Integration & Engineering

Shared Drives

Description	Location	Note
.hckx packages	\\tsiewin1\Share\Windows\WHCK\Packages	
BKC	\\tsiewin1\Share\Windows\BKC	OR
	\\oasis.sc.intel.com\winshare\BKC	CA
	\\gar\ec\proj\ba\NTG\PIV\INT\cvtwin8\cvt-rvp-pre-bkc-release\	PIV (India)
WHCK setup	\\tsiewin1\Share\Windows\WHCK\Setup	
Drivers	\\tsiewin1\Share\Windows\Drivers	
Tablet OS	\\tsiewin1\Share\Windows\OS\Tablet	
Windows 8 non-tablet OS	\\tsiewin1\Share\Windows\OS\non-SOC	
Windows Server 2008 R2	\\tsiewin1\Share\Windows\OS\Windows Server 2008 R2	

Links:

1. Getting started: http://wiki.ith.intel.com/display/TSIEWIN/WHCK+getting+started
2. WHCK download page: http://msdn.microsoft.com/en-us/windows/hardware/hh852366
3. Consolidated spreadsheet (TestingStatus.xlsx): https://sharepoint.amr.ith.intel.com/sites/SWE/CLVT545/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2FSWE%2FCLVT545%2FShared%20Documents%2FSubsystem%2FCWS%5FWHCK

Keeping WHCK up to date

QFE's:

If using Release Preview (8400), ensure installed QFE version matches latest update version here.

Filter Updates:

Download the latest filter updates from here.

Useful commands

Command	Description
dir	Show file size at the byte level
fciv <file>	Show checksum of a file

SharePoint

Sharing on Chandler drive:

- WHCK mastersheet results
- Defects.xls which contains all the HSD/CASEID/WinQual impacting WHCK

Sharing on PIV drive:

- Zip containing drivers

CWS

WiFi

Update NVRAM when downloading new BRCM drivers so that the proper NVRAM will be used for testing when needed. There are currently two types of NVRAM's within Intel: EVT4 and EVT5. The EVT4 NVRAM is currently being used for both EVT4 and EVT5 boards to yield the best results.

After WHCK installation, use HCK Manager to install "WLan setup" on DUT, SUT, and SoftAP. If running in single channel mode, set both AP's to channel 11. In multi-channel mode, set AP1to channel 2-5 and AP2 to channel 6-10. Broadcom will not support multi-channel until August or September of 2012, since a complete re-write is required.

The value for MAC should be the wireless MAC, which for the Linksys E1500 is the MAC address on the back after adding 1 HEX to the value. The setup should be completed on http://192.168.1.1, user/password: admin. Multi-channel mode can be obtained by setting AP1 channel to 2-5, and AP2 to channel 7-10. Single channel mode can be obtained by setting both AP's to channel 11. Ensure that the WPS radio button is selected after choosing channels in both modes.

BRCM Reference Platform is the board used at Broadcom to certify using WHCK. We have supplied Broadcom with an EVT5 Fab-D Pinole C2 board. All WiFi testing at Intel and Broadcom must be using an EVT5 board or better.

GPS

NFC

BT

WWAN

Test Cases

WiFi

1. “nettcp-setting command” before running WiFi Direct Performance Test GONegotiation PeerFinder APConnectAfterWFD APConnectAfterWFD.
2. WTFREMOTESYSTEM: IPv6 address of the DUT's ethernet including all the colons and such.
3. NetMon: Note that The updated tests (8400 + QFE’s before WW28) require availability of Netmon 3.4+ on SUT (Support Device Under Test) machine. Netmon on SUT is required even if the feature is not implemented in the miniport driver. Please reboot the machine once after installing the Netmon. Netmon on SUT is used to parse the traces collected on the DUT (Device under test). Netmon is available for free download at: http://www.microsoft.com/en-us/download/details.aspx?id=486
4. Peer to Peer ID was prefilled with 1234.

Peer finder

1. 8520 is supposed to relax the 3 second pair-time. When we were running 8515 WHCK this particular PeerFinder fails consistently.
2. In case you need the tweak anyway, here it is.
3. From an administrator powershell (not cmd.exe):
   - set-nettcpsetting -SettingName "Custom" -InitialRto 300
4. Then reboot and run a PeerFinder test.

Troubleshooting

General failures

1. "Restart are not same as Shutdown in windows"
2. Always do Shutdown when in doubt or problem
3. On 20120802, three tests were not passing until DUT/SUT shutdown, close WHCK controller, and shutdown everything.

Unable to make device ready

1. Use manager to try setting device to unsafe, debug, manual, and then reset.
2. Reboot client device.
3. Use HCK studio to delete device from machine pool(s).
4. Uninstall WHCK client application, reboot, and then install WHCK client.

Windows 8 fails to boot after BKC installation

1. IFWI may be out of date, so update IFWI to correspond with the BKC IFWI directory.

Appendix

Acronyms

Acronym	Expanded
ACT	Application Compatibility Toolkit
ADK	Assessment and Deployment Kit
AP	Access Point
AR	Action Required
BKC	Best Known Configuration
BT	BlueTooth
CSP	Customer Support Portal
CWS	Complementary Wireless Solutions
DPTF	Dynamic platform and thermal Framework
DUT	Device Under Test
DUT	Device Under Test
FFRD	Form Factor Reference Design
GPS	Global Positioning System
HSD	High Speed Database
IDP	Integrated Development Partner
IFWI	Integrated Firmware Interface
IHV	Independent Hardware Vendor
KMDF	Kernel-Mode Driver Framework
NFC	Near Field Communication
Non-PSS	??? * Indicates non-Secure boot
PSS	??? *Indicates Secure boot
QFE	Quick Fix Engineering
RVP	Reference Validation Platform
SoC	System on a Chip
SUT	Support Device Under Test
TSIE	Tablet Software Integration and Engineering
UMDF	User-Mode Driver Framework
USMT	User State Migration Tool
VAMT	Volume Activiation Management Tool
WDF	Windows Driver Frameworks
WDM	Windows Driver Model
WHCK	Windows Hardware Certification Kit
WiFi	Wireless Fidelity
Windows PE	Windows Pre-installation Environment
WLK	Windows Logo Kit
WPT	Windows Performance Toolkit

Contributors

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