



Intel[®] IoT Gateway Diagnostics Tool

User Guide

March 2016

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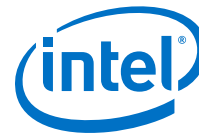
Revision History

Date	Revision	Description
February 2016	1.3	Updated instructions for software version 2.2.1
January 2016	1.2	Updated instructions for software version 2.2.0
November 2015	1.1	<ul style="list-style-type: none">• Corrected test folder path in Install the Diagnostics Tool on the Gateway• Added Viewing Detailed Results• Moved section previously titled Sending Test Results to Intel to Obtaining Intel® IoT Gateway Certification• Added Resizing a USB Drive Partition
October 2015	1.0	Initial public release



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1.0 Introduction

Applicable to These Intel® IoT Gateway Products

- Intel® IoT Gateways based on Intel® Atom™ processors
- Intel® IoT Gateways based on Intel® Core™ processors

How These Instructions Help You

This document helps you set up a test environment to run diagnostic tests using a Graphical User interface (GUI). This lets you to check the presence, configuration, and basic functionality of various gateway components, using both automated and manual tests. For test descriptions, see [Diagnostics Tool Test Descriptions](#).

Document Terminology and Conventions

- **Terminology**
 - Gateway: Hardware included in your gateway kit.
 - Intelligent Device Platform: Bundled software from Wind River Systems, Inc.
- **Conventions**
 - This font is used for commands, API names, parameters, filenames, directory paths, and executables.
 - **Bold text** is used for graphical user interface entries, buttons, and keyboard keys.

This font in a gray box is used for commands you must type or include in a script.

Items You Need to Provide

- An installed Intel® IoT Gateway.
 - For hardware installation steps, see <https://software.intel.com/en-us/SetupGateway-hardware>.
 - To install the Wind River tools and set up your Development Computer, see <https://software.intel.com/en-us/Setup-IDP-DevelopmentTools>.
- A computer running a Windows operating system to use as the UI Development Computer. This computer must have Internet access and a current Internet browser installed on it.
- One 4 GB or larger USB flash drive formatted with the FAT32 file system.

Reporting Technical Issues

For any technical issues with the Diagnostics Tool, open an Intel® Premier Support (IPS) ticket under product code **Intel IoT Gateway Products**.



Update Notification

If you would like be notified of Diagnostic Tool updates, send an email containing the email address for notification to gw_diagnostics_notification@intel.com



2.0 Install the Diagnostics Tool on the UI Computer

You received a file called `Diag-<version>-<architecture>.zip`, where

- `<version>` is the software version.
- `<architecture>` is the gateway's processor type and can be either Quark, Baytrail, or Haswell.

An example filename is `Diag-2.2.1-Baytrail.zip`.

`Diag-<version>-<architecture>.zip` includes the following files:

Description	Filename
User's Manual	561994_Intel_IoT_Gateway_Diagnostic_Tool.pdf
Gateway Installer	Diag-<version>-Gateway-<architecture>.zip where <code><version></code> is the software version and <code><architecture></code> is the processor, such as <code>Diag-2.2.1-Gateway-Baytrail.zip</code>
Windows User Interface Installer (file 1 of 2)	Intel.Gateway.HealthCheck.UI.Setup.msi
Windows User Interface Installer (file 2 of 2)	setup.exe
Software License	MoonIslandQualificationPreProductionEULA.pdf

Use a Windows* 7 and 8.1 or higher computer to complete these steps.

1. Review the license agreement in [INTEL SOFTWARE LICENSE AGREEMENT](#). Proceed only if you agree with the terms of the license agreement.
2. Run `setup.exe` to install the Windows UI application on the Windows computer.
3. If a **User Account Control** window displays, select **Yes**.
4. When the installation completes, click **Finish**.



3.0 Install the Diagnostics Tool on the Gateway

1. Copy `Diag-<version>-Gateway-<architecture>.zip` to a USB flash drive that you can use on the gateway.
2. Insert the USB flash drive into the gateway.
3. Power on your gateway and login using `root` as both the user ID and the password.
4. List the flash drive contents:

```
ls /media/sdb1
```

Note: When the USB flash drive is inserted into the gateway, the FAT32 partition will be auto-mounted at mount point `/media/sdx1`, where **x** represents the USB flash drive letter and may be different depending on how the flash drive is formatted. If you do not see `Diag-<version>-Gateway-<architecture>.zip` when you execute the `ls` command, change **x** to a different letter, such as **a** and try it again.

5. Create the necessary directory structure on your gateway:

```
mkdir rpm  
cd rpm
```

6. Confirm `Diag-<version>-Gateway-<architecture>.zip` is available on the flash drive and unzip it into the `rpm` directory:

```
ls /media/sdb1  
unzip /media/sdb1/Diag-<version>-Gateway-<architecture>.zip
```

If you do not see `Diag-<version>-Gateway-<architecture>.zip` when you execute the `ls` command, see the note under step 4.

7. Install the Diagnostics software:

```
./InstallDiag.sh
```

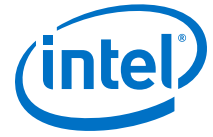
The Diagnostics software is installed on your gateway's hard drive in `/opt/Intel/Diagnostics`. It integrates with the UI that is installed on a separate computer.

The test folders under `/opt/Intel/Diagnostics/gateway/HostScripts/UNIX` each contains two files:

- `Attributes.xml`: Test attributes required for UI integration.
- `README.TXT`: Basic test information, test procedures, and test categories.

The automated test folders contain the following files at a minimum:

- `setup.sh`: Script that includes common code and ties the test to the Web GUI (json objects). This is a test setup and initialization script that calls `qualify.sh`



- `qualify.sh`: Script that executes a test procedure and reports the results to `setup.sh`.



4.0 Running Diagnostics Tests

Starting Diagnostics Console Program on Gateways

Perform these steps on each gateway to be tested.

1. Login to the gateway using `root` as both the username and password.
2. Start the Diagnostic Agent:

```
diag
```

This response indicates the gateway is ready:

```
TCP listening address = 0.0.0.0 on port 5150.  
UDP listening address = 0.0.0.0 on port 5150.  
Starting HostService service in console mode.  
Press 'q' to quit...
```

Running Automated Tests

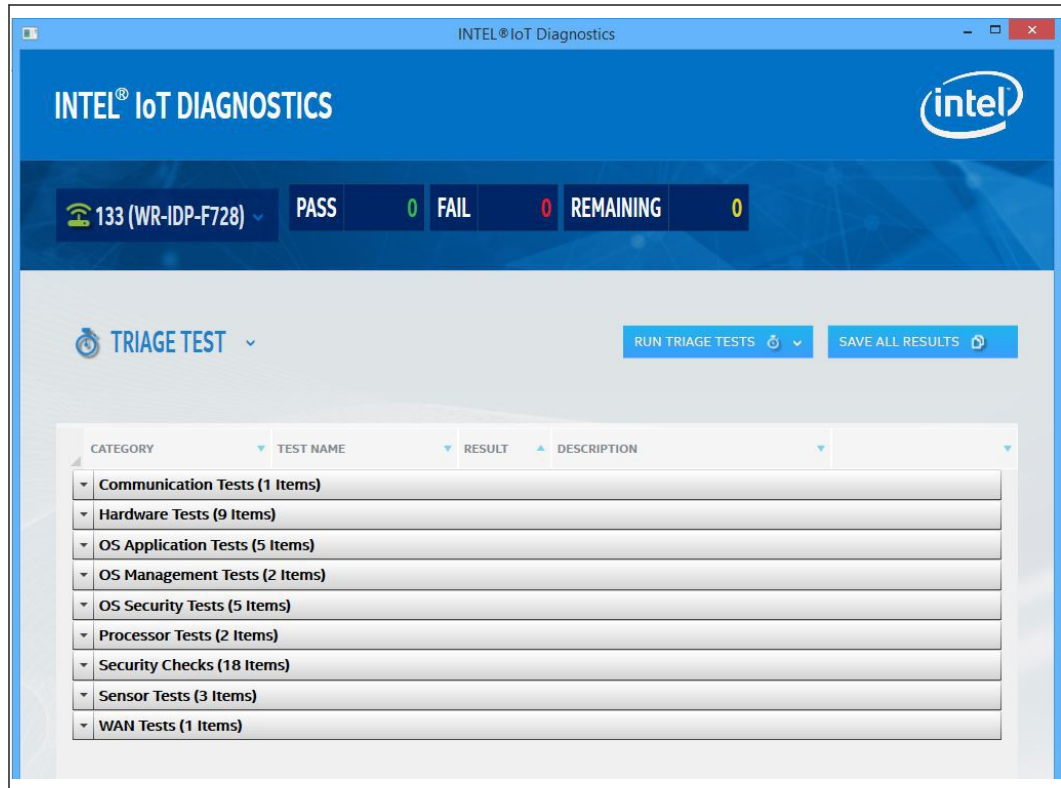
Execute these steps from the Windows computer that you set up in [Install the Diagnostics Tool on the UI Computer](#).

Important: Start all gateways to be tested before beginning. Otherwise, the gateways will not be auto-discovered.

1. Double-click the **Intel Gateway HealthCheck** icon on your desktop.

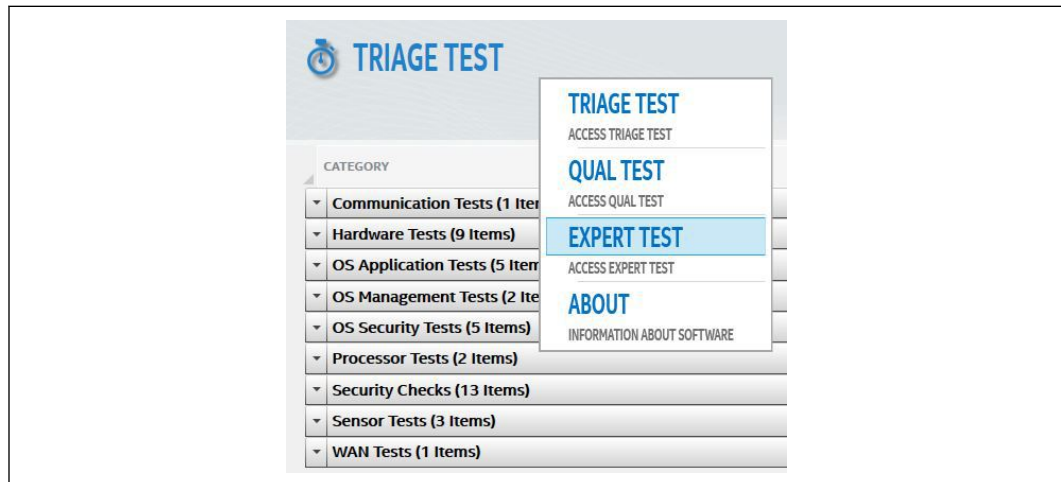
The Intel IoT Diagnostics software opens and attempts to find gateways that are running the Diagnostic Agent and are on the same network subnet as the UI computer. The Diagnostics UI connects to one gateway at a time, and the connected gateway's host name is displayed in the drop down box located near the top left of the applications window. You can use this drop down box to select other detected gateways.

Note: If you do not see a gateway listed, either that gateway is on a different subnet, or you did not complete [Starting Diagnostics Console Program on Gateways](#). If you completed the steps above and do not see a connected gateway in the list, see [Manually Discovering Gateways](#).



2. Select the test type. A separate drop down box allows you to select from three test groups. The group descriptions are shown below.

Note: An individual test may appear in more than one group.

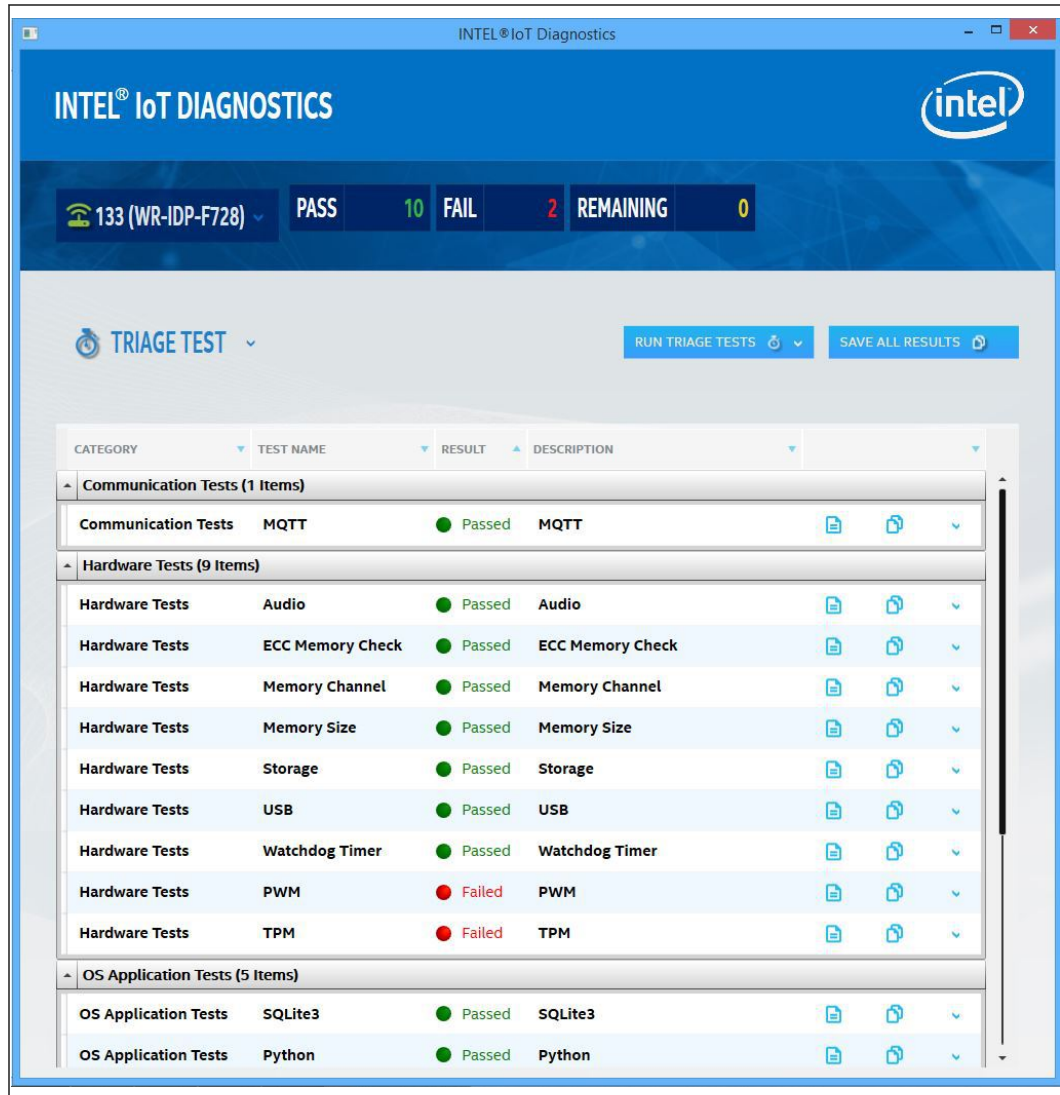




Test Type	Description
Triage Test	An automated test that runs in less than 30 minutes to test the gateway's health and to collect information about the gateway. This test is useful for detecting gateway failures. For faster support, include the Triage test results in all support tickets.
Qual Test	Required to qualify the gateway as compliant to the Intel IoT gateway specification version 2. Many tests are manual in which you are prompted with the procedure. You must select pass or fail, and optionally type any desired comments.
Expert Test	Contains every test that is available, regardless of whether it is required for gateway qualification or meets the criteria for triage (runs automatically in a short amount of time). These tests may provide additional hardware and software capabilities not found in other tests.

3. Expand and collapse the categories by clicking the triangles on the left side.
4. Select the tests to run.
 - To select multiple tests, hold down the Ctrl and click the left mouse button on each the item to test.
 - To select a continuous range of tests, click the top test in the range, and then hold down the shift key while clicking the bottom test in the range.
5. With the test(s) selected, click the right mouse key to run the tests.

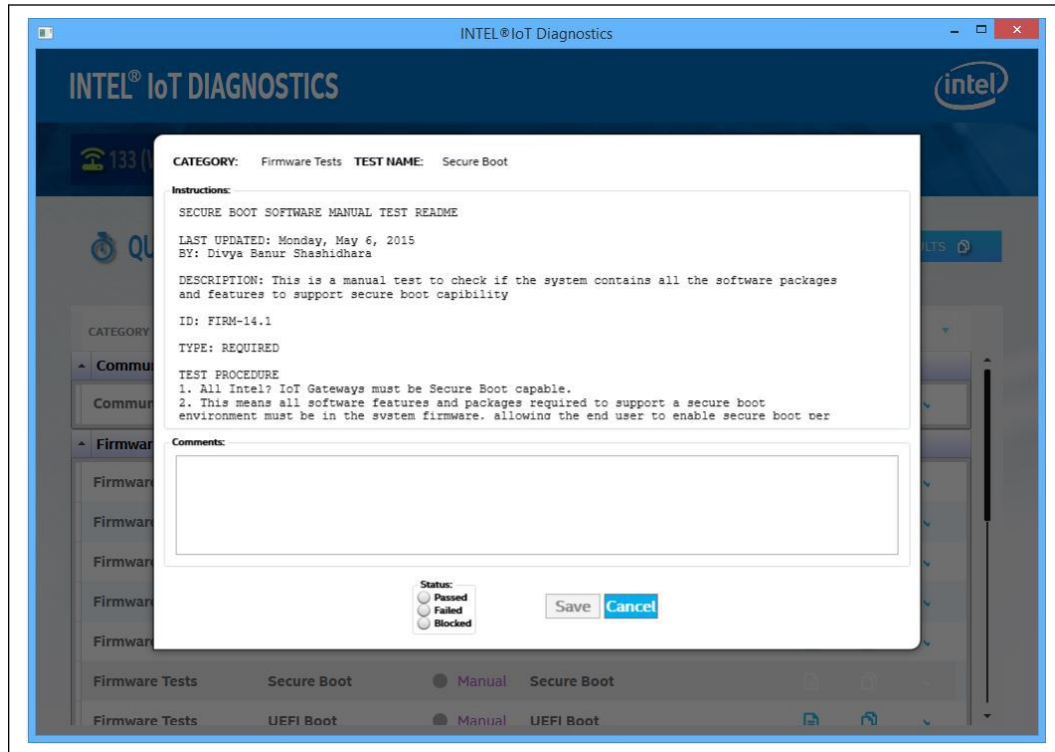
Your results will appear as follows, with passed tests displayed in green and failed tests displayed in red.



Running Manual Tests

Manual tests require human intervention and interpretation.

1. To view a list of all manual tests, click **Triage Test** in the upper left, and then select **Expert Test**.
2. Click the triangles on the left to expand and collapse the categories. To identify manual tests, look at the test result information.
3. Right-click the test you want to run and select **Run Manual Test...** from the menu that opens. You are provided with an instruction screen.



4. Each manual test has an associated test procedure. To complete the test, follow the directions in the test procedure, enter **Comments**, and select **Pass**, **Fail**, or **Blocked**. Click **Save**.

Note: **Blocked** is enabled only after you describe the blocked condition in the **Comments** box.



5.0 Viewing Detailed Results

Detailed test results can be viewed on the gateway using the following steps.

1. Click **Save all results**.
2. Save the file to your Windows computer. By default, the file extension is `html`
3. To view the file, double-click on it. It opens in your default Web browser.

To reorganize the tests in the Intel® IoT Diagnostics window, right-click the **Category** or **Result** column heading. Use the right column to choose to show or hide details.

The screenshot shows the INTEL IoT Diagnostics tool interface. At the top, there's a header with the Intel logo and the text 'INTEL IoT DIAGNOSTICS'. Below the header, there's a status bar showing '133 (WR-IDP-F728)' with a dropdown arrow, and summary statistics: 'PASS 12', 'FAIL 2', 'REMAINING 0'. Below the status bar, there's a 'TRIAGE TEST' section with a dropdown arrow and two buttons: 'RUN TRIAGE TESTS' and 'SAVE ALL RESULTS'. The main content is a table of test results.

CATEGORY	TEST NAME	RESULT	DESCRIPTION
Communication Tests	MQTT	Passed	MQTT
Hardware Tests	Audio	Passed	Audio
Hardware Tests	ECC Memory Check	Passed	ECC Memory Check
Hardware Tests	Memory Channel	Passed	Memory Channel
Hardware Tests	Memory Size	Passed	Memory Size
Hardware Tests	PWM	Failed	PWM
Hardware Tests	Storage	Passed	Storage
Hardware Tests	TPM	Failed	TPM
Hardware Tests	USB	Passed	USB
Hardware Tests	Watchdog Timer	Passed	Watchdog Timer
OS Application Tests	SQLite3	Passed	SQLite3
OS Application Tests	Python	Passed	Python
OS Application Tests	OpenJDK	Passed	OpenJDK
OS Application Tests	LUA	Passed	LUA



6.0 Obtaining Intel® IoT Gateway Certification

1. Run all Qual tests.
2. Attach and send the test results file from [Viewing Detailed Results](#) to the Intel email address gw_diagnostics_notification@intel.com



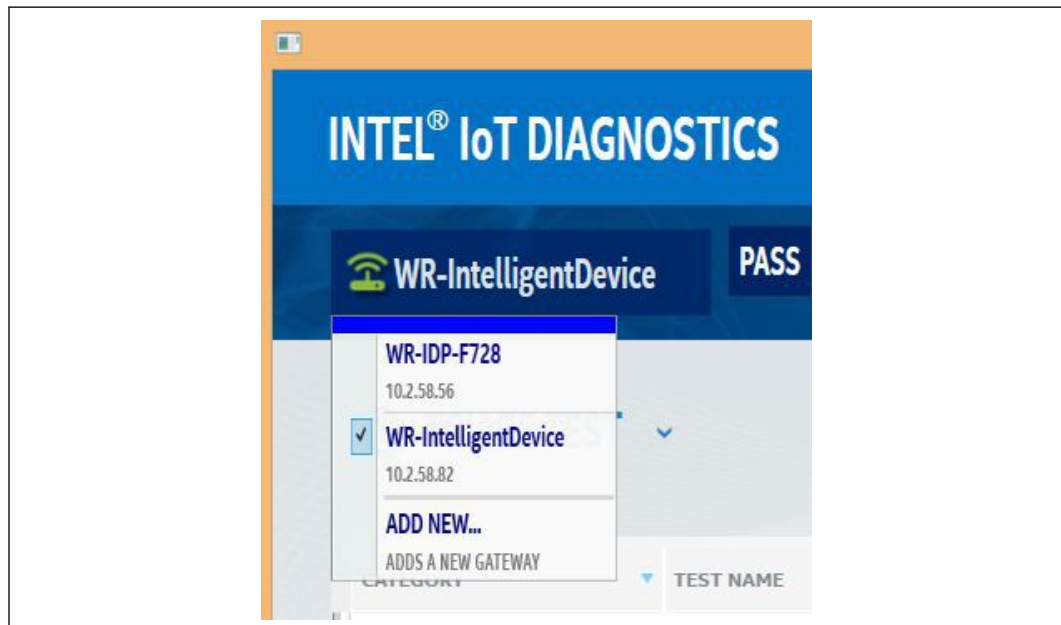
Appendix A Manually Discovering Gateways

Gateways on the same subnet that are not auto-discovered and gateways that are on different subnets can be manually included by explicitly specifying the gateway IP address.

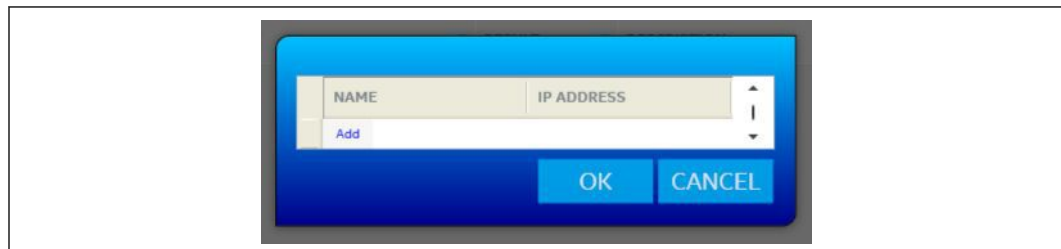
1. On the gateway, determine the IP address for that gateway:

```
ifconfig
```

2. Write down the IP address that applies to `inet addr` for `eth0`.
3. Return to the UI Computer.
4. Right-click on the WR-xxx item.
5. Select **Add New**.
6. Select **Configure IP Addresses...**



7. Enter the **IP Address** of the gateway and an identifier in the **Name** field:





Appendix B Diagnostics Tool Test Descriptions

The tests below are listed in the `Diagnostics` directory under `/opt/Intel/Diagnostics/<test_name>` and the test procedures are in the `README.TXT` file in each directory. You must test each component in the table that is labeled as **Required** in the **Test Type** column.

Test Name	Test ID	Test Type	Description
Accelerometer	SENSOR-11	Optional Manual	Check for the presence of the driver for the accelerometer. 1. Confirm the presence of a customer-supplied driver. 2. If present, the driver should contain a sensor from which the values can be read. 3. Pass if the driver is present and the values can be read. Otherwise FAIL.
Analog_To_Digital_Converters	SENSOR-04	Required Automated	If this test confirms are any ADC devices are present, then the IIO bus will become available. Compare the measurement data to the acceptable range.
Antenna Mounting	HW-11	Required Manual	Look for a provision on the board for antenna mounting.
Audio	HW-25	Required Automated	Confirm the presence of audio devices on the gateway. This test requires an audio clip. The test performs the following steps: 1. Detect audio devices. FAIL if none found. 2. Display detailed information about found audio hardware. 3. Provide device driver information. 4. Play audio sample. 5. Display codec information.
BIOS Password	FIRM-01	Recommended Manual	Check that the system firmware supports the ability to password-protect entry into the firmware setup menu.
BIOS UEFI Architecture	FIRM-06	Required Manual	Check the BIOS/UEFI architecture. 1. Check with the BIOS vendor to confirm the architecture is 64-bit. 2. PASS if the architecture is 64-bit. Otherwise FAIL.
BIOS Vendor	FIRM17	Required Manual	Informational: Provides the BIOS vendor name.
Bluetooth	SENSOR-06	Required Automated	Scans for and detects nearby Bluetooth*-enabled devices. The test expects to find a device "ubuntu0" and attempts to ping it.
Cellular_3G	WAN-04	Required Automated	Search for the 3G interface and attempt to implement a cellular connection.
Cellular_SMS	WAN-03 WAN-04 WAN-05	Required Automated	Search for a test phone number to send an SMS to verify and establish a cellular connection with the gateway.
Compact Flash	HW-33	Required Manual	The gateway is not required to boot from a Compact Flash card. 1. Check for the presence of a Compact Flash connector on the board. 2. Plug in a Compact Flash card. 3. If the device displays, perform a read/write operation.

continued...



Test Name	Test ID	Test Type	Description
			4. PASS if read/write is successful. Otherwise FAIL
CPU	PROC-01	Required Automated	Find the presence of the correct gateway SKU: Intel® Quark™ or Atom™ processor.
DisplayPort	HW-08	Required Manual	Look for a gateway display port. Required only on a gateway with an Intel® Atom™ processor as a commercial product.
ECC_Memory_Check	HW-02	Required Manual	Manually check the presence of ECC memory on the board and in the BIOS configuration.
EFI_Shell	FIRM-16	Required Manual	Check for the presence of EFI shell.
Edp	HW-08	Required Manual	Check that the Electronic Data Processing display is connected to the display port.
Encrypted_Storage	OS-SEC-07	Required Automated	Ensure encrypted storage can be set up. There is no error checking because a fail condition is not expected unless the gateway is missing the required executables.
ESATA	HW-34	Optional Manual	Check for the presence of the ESATA device on the board. This is not applicable for an Intel® Quark™-based gateway.
ETH_Switch	WAN-01	Required Automated	Test the Wi-Fi* connectivity of the Ethernet switches by connecting at least eight clients to AP, according to the <i>Intel® IoT Gateway Specification</i> .
Ethernet	WAN-01	Required Automated	Confirm the Ethernet connection by pinging the gateway.
GPIO	SENSOR-03	Required Automated	The test iterates through every GPIO port starting with first available port and attempts to enable one to user-space (sysfs). FAIL if a GPIO node can't be created.
GPS	SENSOR-10	Required Manual	Test the presence of the GPS module. If present and configured, it can be used to test the exact location of the system for dimensionality.
Grsecurity	OS-SEC-02	Required Automated	Verifies GRSecurity existence and functionality.
HDMI	HW-08	Required Manual	Confirm the HDMI display is working by connecting the supported display interfaces into the display panel.
Headless Operation	FIRM-02	Required Manual	<ol style="list-style-type: none"> 1. Check the ODM sheet to check to confirm we have all the connectors that go onto the board. 2. Connect all the cables to the respective ports onto the board. 3. Leaving out the display connector that is particular to the ODM board, ensure all the connectors are in place to be able to power on the system. 4. Power-on the board and confirm system boots by: <ol style="list-style-type: none"> a. Manually checking if all the LEDs that indicate the board is powered on are blinking. b. Using the IP address for the board, try to SSH into it from a Development Computer connected to the board to confirm that the system has successfully booted. 5. PASS if SSH connection is successful. Otherwise FAIL.
IPSec_VPN	OS-SEC-08	Required Automated	Check for the presence of IPsec implementation in Wind River® Intelligent Device Platform XT 3.
Legacy Free Operation	FIRM-03	Required Manual	<ol style="list-style-type: none"> 1. Check the ODM sheet to confirm the presence of all board connectors. 2. Connect all cables to the respective ports, including the applicable display cable and power cord.

continued...



Test Name	Test ID	Test Type	Description
			<ol style="list-style-type: none"> 3. Leave out the I/O connections such as the keyboard, mouse or any other input device required to operate the system. 4. Make sure a display monitor is connected to visually verify if the system has booted up. 5. Power on the board and let it boot. 6. View the LED lights that indicate that the board is powered on. 7. View the display monitor to see that system is booting without help on any input devices. 8. PASS if board can reach the terminal point without requiring the help of any input device. Otherwise FAIL.
LTP	OS-05	Required Automated	Execute the Linux Test Project (LTP) test suite.
LUA	OS-APP-02	Required Automated	Test if the LUA code can be compiled and run on the gateway. LUA is a multi-paradigm programming language that resides as a scripting package.
LVDS	HW-08	Required Manual	Check if the LVDS cable is working by connecting the supported display interfaces to the display panel.
McAfee_Embedded_Control	OS-03	Required Automated	Check the presence of the McAfee Embedded Control security feature and confirm it can be configured.
Memory Channel	HW-28	Required Manual	Information: Provides the type of memory channel implemented.
Memory_Size	HW-01	Required Automated	Verify the DRAM memory is at least 512 MB.
Memory Topology	HW-29	Required Manual	Information: Provides the implemented memory topology.
Memory_Type	HW-02	Required Manual	Check the memory type (SODIMM or memory down) and the number of memory channels on the board.
MQTT	OS-COMM-02	Required Automated	Confirm the mosquitto message broker is present, and messaging using publish/subscribe model (MQTT protocol) is functional.
MSATA	FIRM-08	Optional Manual	<p>The boot service from MSATA is not applicable to Intel® Quark™-based gateways.</p> <p>Check for the UEFI Boot services to boot from the MSATA and boot the system.</p> <p>Only Boot Services is required. The OS provides drivers.</p> <p>PASS if the board boots. Otherwise FAIL.</p>
OMA-DM	OS-MANAGE-02	Required Automated	Check the presence of OMA-DM manageability agent feature and confirm it can be configured.
OpenJDK	OS-APP-01	Required Automated	Check the presence of OpenJDK & its version.
OpenSSL	OS-SEC-01	Required Automated	Create public and private keys using openssl, sign a test file with the private key, and then recover the signed file data to confirm access.
Open POSIX Test Suite (OPTS)	OS-06	Required Automated	Execute the Open POSIX Test Suite (OPTS).
OSGi	OS-APP-04	Required Automated	Check the presence of OSGi feature. The ProSyst mBS Smart Home SDK development kit are included with OSGi bundle and provide a base for tailoring images for specific home device management platforms. Confirm it can be configured.
PWM	HW-26	Required Automated	Smoke test. Confirms if PWM is accessible through user-space (sysfs). The test will fail if a PWM node can't be created.
			<i>continued...</i>



Test Name	Test ID	Test Type	Description
Python	APP-01	Required Automated	Check if Python is installed on the gateway and can be compiled and run on it.
RS232	SENSOR-01	Required Manual	Check the correct working and data transfer over RS232 serial interface.
RS485	SENSOR-01	Required Manual	Check the correct working and data transfer of RS-485 interface.
SATA	FIRM-08	Optional Manual	Check for the presence of a SATA device. This is not applicable to Intel® Quark™-based Gateways. Check for the UEFI Boot services to boot from the SATA and boot the system. Only Boot Services is required. The OS provides drivers. PASS if the board boots. Otherwise FAIL.
SD Card	HW-32	Optional Manual	The gateway is not required to boot from an SD card. 1. Check for the presence of a SD card slot on the board. 2. Plug in a SD card. 3. If the device displays, perform a read/write operation. 4. PASS if read/write is successful. Otherwise FAIL.
Secure Boot	FIRM-14.1	Required Manual	Confirm the system contains all software packages and features necessary to support secure boot capability. All gateways must be capable of Secure Boot.
Signed_Bootloader_Atom	OS-SEC-04	Required Manual	Test the Bootloader application for the Intel® Atom™ processor-based Gateway.
Signed_Bootloader_Quark	OS-SEC-04	Required Manual	Test the Intelligent Device Platform to check module presence, version to boot up the BIOS of the system by checking if there is certified data present.
Signed_Kernel_Atom	OS-SEC-05	Required Manual	Check if the certificate data from the Bootloader has successfully passed to the kernel for an Intel® Atom™ processor-based Gateway.
Signed_Kernel_Quark	OS-SEC-05	Required Manual	Check if the certificate data from the Bootloader has successfully passed to the kernel for an Intel® Quark™ processor-based Gateway.
SOC_Config	HW-03 HW-04 WAN-01 OS-SEC-07 PROC-01 HW-08	Required Automated	Test the presence of system I/O interfaces, USB devices, Network IO interfaces, storage devices, CPU, and memory configuration.
SQLite3	OS-APP-03	Required Automated	Look at the log file to determine which version is installed.
Storage	HW-27	Required Automated	Test storage testing by creating a random file, copying it to the gateway and moving it back. Use CMP and checksums to ensure both files are identical.
Touch Controller	HW-35	Optional Manual	Test procedures are pending.
TPM	HW-07	Required Automated	Check if the main board must host a Trusted Computing Group-compliant TPM v1.2 or ISO standard ISO/IEC 11889-1L2009 TPM.
TR-069	OS-MANAGE-03	Required Automated	Check the presence of TR-069 manageability agent feature and confirm it can be configured.
UEFI Boot	FIRM-14	Required Manual	Confirm UEFI boot is supported in the BIOS.

continued...



Test Name	Test ID	Test Type	Description
			<ol style="list-style-type: none"> 1. Connect a device that contains a bootable image to the USB, MMC, or SATA connector. 2. Enter the BIOS utility by following the on-screen instructions at power-on. 3. In the BIOS utility, locate the 'Boot Option Priorities' option. The location will vary by BIOS vendor. 4. PASS if you see a boot option to boot the system using your boot-device as "UEFI: <Name of Boot-device>". Otherwise FAIL.
UEFI_Boot_Services	FIRM-08	Required Manual	Check that the UEFI boot is supported in the BIOS for an USB, MMC/eMMC, and SATA/mSATA devices.
UEFI_Capsule_Update	FIRM-10	Required Manual	Check if UEFI Capsule Update is enabled.
UEFI_Compliance	FIRM-05	Required Manual	Check the if the BIOS in the system is Intel® IoT Gateway-compliant. UEFI version 2.3.1 errata C or later is required for compliance.
UEFI_Secure_Boot	FIRM-14	Required Manual	Check the features of Secure Boot in BIOS.
USB	HW-08	Required Automated	Check for the presence and to print USB information.
USB Hub	HW-31	Optional Manual	<p>Check the functionality of a USB hub. A USB hub is formed when a single USB port expands into several USB ports to make additional ports available for connecting devices.</p> <ol style="list-style-type: none"> 1. Connect a USB hub into one of the available USB ports. 2. On the terminal, enter the command <code>lsusb</code>. 3. Look for the hub device name. 4. PASS if the device displays. Otherwise FAIL.
USB3_Flashdrive	HW-04	Required Automated	This test is built from the USB test, but in this test, <code>parse- lsusb.py</code> looks specifically for a USB3 flash drive.
VGA	HW-08	Required Manual	Check if the video graphics array connector is working by connecting it to the display panel.
Virtualization_Extensions	FIRM-04	Required Automated	
Watchdog_Timer	HW-24	Required Automated	Test if the Watchdog_Timer device file is present.
WiFi_AP_mode	SENSOR-05	Required Automated	Determine if the Wind River Linux/Intelligent Device Platform XT 3 configures a system by default in AP mode / if its supported by the Wi-Fi module.
WiFi_Client	WAN-02	Required Automated	Test the Wi-Fi connectivity for the gateway to behave as a client to enable connectivity.



Appendix C Resizing a USB Drive Partition

Identify the number of the partition that you wish to resize. If you used the Wind River instructions for imaging the USB, it is number 2. These instructions assume that the device you wish to resize is `/dev/sdb` and that the partition is number 2.

1. Run `fdisk` on the device you wish to resize:

```
root@WR-IntelligentDevice:~# fdisk /dev/sdb
```

2. At the `fdisk` prompt, delete the second partition.

Note: This will delete the partition boundaries. It will not erase the data in the partition.

```
Command (m for help): d
Partition number (1,2, default 2): 2
```

3. Create a new primary partition:

```
Command (m for help): n
Partition type:
  p primary (2 primary, 0 extended, 2 free)
  e extended
Select (default p): p
Partition number (2-4, default 2): 2
First sector (xxx-yyy, default xxx): <Enter>
Last sector, +sectors or +size{K,M,G,T,P} (xxx-yyy, default yyy): <Enter>
Created a new partition 2 of type 'Linux' and of size n GiB.
```

4. Write the changes to the drive:

```
Command (m for help): w
```

5. Reboot the gateway:

```
root@WR-IntelligentDevice:~# reboot
```

6. The second partition is not yet resized. Resize it with the command:

```
root@WR-IntelligentDevice:~# resize2fs /dev/sdb2
resize2fs #.#.# (dd-mm-yyyy)
Filesystem at /dev/sdb2 is mounted on /; on-line resizing required
old_desc_blocks = 1, new_desc_blocks = 1
Performing an on-line resize of /dev/sdb2 to bbb (4k) blocks.
The filesystem on /dev/sdb2 is now bbb blocks long.
```

Your USB drive resizing is complete!



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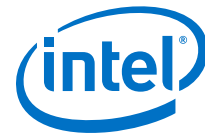
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