Introduction - WiFi Regression
Agenda

- Definition
- Purpose
- Overview
- Products
- Environments
- Tools
- Bug Issue
- Report
Definition

xVT –
Stands for
Cross-Validation Testing

Regression -
• Tests to ensure that previously developed and tested software still performs after a change.
Changes that may require regression testing include bug fixes … tend to grow with each found defect, test automation is frequently involved. (Wiki)

Automation -
• Test automation can automate some repetitive but necessary tasks in a formalized testing process already in place or perform additional testing that would be difficult to do manually. (Wiki)
Purpose

xVT – Cross-Validation Testing

• Validating Drivers & tools
• Validation of source code and releases by automated execution of HVT and DRTU.
• Analysis and comparison of multiple test results.
• Release new validated drivers as soon as possible.

Summary of Reports

• Display detailed analysis and comparison results
• History reports on shared drive
Testing Overview

- Develop Team summit code on TFS
- Trigger Nightly Regression
- Run HIT Manager on each station
- Verify products if pass regulatory
- Collects CSV result
- Generate report and send Email to xVT Members
- Final Report
- xVT member Check tests results
- Reproduce suspicious issue

- Create bug
- Report to FW Fireman Team

- DevOps start Testing Procedure

- DevOps

- Jira Software

- git

- Azure DevOps

- Jenkins
<table>
<thead>
<tr>
<th>Name</th>
<th>Station</th>
<th>IP</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCP2x2_EXM</td>
<td>HWS776</td>
<td>10.185.231.6</td>
<td>399_Control/HWS399/10.185.231.91</td>
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<td>HRP2x2_IQexlm</td>
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<td>OEM_DRTU_11342_21_21030_0</td>
</tr>
<tr>
<td>GFP2</td>
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</table>
Environment Setup

Automated HVT Infrastructure Setup

• HVT – selected version
• TFS Branch – download & build
• IM – suitable / latest version
• HIT Manager – latest version

Automated Tests Execution

• Execute HIT Manager flow
• Backup results on shared drive
Software Tools of xVT

- **Titan** – Tests triggering and Cloud Monitoring
  Cloud centralized service server. Trigger every station with specific drivers run on HIT Manager and monitor its status.

- **HIT Manager** – Hardware testing execution application
  Titan controls stations to run flows on HIT Manager and test on HW equipments.

- **R2M** – Collect data and create reports
  Installed on each station, collects CSV files that run on HIT manager, generate comparison reports with limits and send email to xVT members.

- **Jira** – Bug tracing App communicating with Develop team
  Bug tracking software. When xVT found real issue, they collect data and log to dev team on Jira.
Start testing a Driver version on various stations

Visualize testing progress on status bar

Select stations and flows intend to test
Final Trigger summary

General
- Request Name: PF_XVT_MAIN_SNJ_M_99.0.63.1_DRV_c9e971_FW_07a083_45607
- Mailing List: sys_winrdvbuild@intel.com, cs.crnl.xvt1@intel.com
- Comments

Details
- Technology: WiFi
- Program: XVT_Regresssion
- Cycle Types: xVT_HRP2_SnJ_1679

Targets
- xVT_HRP2_SnJ_1679
  - WiFiDriverOplInst:
    \win\089b.\il.intel.com\Zip\Listener\buildSystem\WIFI_DRV\master\M_99.0.63.1_DRV_c9e971_FW_07a083_45607
Features

Automated Results Analysis

• Analyze test results using limits, filters and graphs (defined by user)
• Compare results of multiple products

Comparisons Editor

• Convenient UI for displaying and editing analysis and comparison configurations.
• Save configurations to xml file.
Select all the CSV Files that generated from HIT Manager without the log file.

Open the path of the Limit File. Limit file’s values are defined based on WiFi/BT Standard.

Email the result to recipients.

Open the path of the Data/CSV files.

Results Editor – Compare data with defined limits and generate report

Limit file Editor
Select each testcase

Set the defined values regarding to regulations

Select the columns would like to present

Limits Editor

- Load existing test log
- Add Parameter to analyze
- Set Limits & Filters
- Define multiple Charts
- Save as ‘.config’ file
Command-Line Execution

- Analysis of directory
- Comparison between two directories.
- Execute in automation

R2M Help:
R2M has 2 or 3 arguments on command line:
1. Input paths - for analysis report fill with only path only. For comparison report fill in two paths separated by ' & '.
2. Limits file - .txt or .config file which contains limits and charts for the report.
3. (Optional) Email addresses - list of recipients separated by ';'.
linianx@linianx-mobl /m/c/U/1/O/Desktop [255]>
/mnt/c/RFST-Tools/R2M/R2M.exe "C:\Users\linianx\OneDrive - Intel Corporation\Desktop\LINIANX-MOB\data" "C:\Users\linianx\OneDrive - Intel Corporation\Desktop\LINIANX-MOB\Limits.config" ian1x.lin@intel.com

Running Analysis  

Done!
Email sent to: ian1x.lin@intel.com
Report path: C:\Users\linianx\OneDrive - Intel Corporation\Desktop\LINIANX-MOB\20.04.21.15-42-43\data.htm
Analysis Report

Core: Main - WiFi xVT Regression JFP1x1_ANT_DIV_EXM QNJ WIN10x64

WiFi Driver path: `\\Inf089b.intr.intel.com\Zip_listener\buildSystem\WIFI_DRV\master\LM_99.0.63.1\DRV_c9e971-fw_07a0b83_46607`

RFST HVT Drop: `\You.corp.intel.com\sec\proj\ha\YIT\RFST_BUILD\HVT WiFi\6.1.4.2_NightlyBuild`

Total Tests: 1182
Passed Tests: 1174
Filtered Tests: 2
Total Exceptions: 5
Failed Tests: 6

Card: JEFFERSON 1x1AGN
Step and Flavor: 811 FLO
Branch: e5\source\apagent\work\131\src\tests\lowlevel\xvt\widgets\wifi\xvtn\managed\testapi.h
Hvt Version: HVT Release 8.4.1.42_NightlyBuild
Driver Version: 99.0.63.1
Usr Version: 7.180.8.145
Sndusio Version: 1.9.1.1
Ucode Version: 65.127955962
Esyprom Version: 1340
Mac Address: 36-D9-18-38-93
NVME Version: A384
Station: HWS479
Duration: 00:00:00.16

RxMask (Driver IT High Band 40MHz) X failed

Full CSV File: `\You.corp.intel.com\sec\proj\ha\YIT\WiFi\YIT\RFST\Report\JFP1x1_ANT_DIV_EXM_QNJ\Results\JFP1x1_ANT_DIV_EXM_QNJ_FullReport.csv`

Pass

Full Reset (DC Power Cycle)
Passed (Limits not defined)

Full Reset (NewApi)
Passed (Limits not defined)

ResetDriver
Passed (Limits not defined)

Full Reset (OldEnum)
Passed (Limits not defined)

Tx EVM (Smart OFDM and HT)
Passed

Tx EVM (Driver CCK)
Passed

Tx EVM (Driver Low Band 20MHz)
Passed

Tx EVM (Driver Low Band 40MHz)
Passed

Tx EVM (Driver High Band 20MHz of 80MHz)
Passed

Tx EVM (Driver High Band 20MHz)
Passed

Tx EVM (Driver High Band 40MHz)
Passed

Tx EVM (Driver High Band 80MHz)
Passed

Tx Mask (Driver IT Low Band)
Passed

Tx Mask (Driver IT High Band 20MHz)
Passed

Tx Mask (Driver IT High Band 40MHz)
Passed

Tx Mask (Driver IT High Band 80MHz)
Passed

The number of iterations which passed all limits is 4 out of 6.
The number of failed iterations is 2.
Station Report

• Summarized table with each test status
• Trace detailed information for Exceptions
• Link to test flow CSV Files created by HIT Manager
• View locally or by email
**Final Summary Report**

Nightly Driver Link installed on every station

Nightly Driver Link installed on every station

XVT Regression over Core 62 build results attached.

Bug reports to Firmware team to Fix: [https://jira.idoc.intel.com/issues/?filter=20598](https://jira.idoc.intel.com/issues/?filter=20598)

Save every result from each HW station

Each HW Station connecting with testing extenders

Create bugs on JIRA software

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Build / Driver Version</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Main</td>
<td>M:99.0.63.1.DRV bee652_FW:7d8216:44944</td>
<td>FAILED</td>
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<table>
<thead>
<tr>
<th>OS</th>
<th>Tests Blocked</th>
<th>Tests Errord</th>
<th>Test Failed</th>
<th>Total Tests</th>
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</thead>
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<tr>
<td>Win10x64</td>
<td>0</td>
<td>9</td>
<td>30</td>
<td>17191</td>
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**Test summary:**

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<tr>
<th>HW</th>
<th>Passed</th>
<th>Failed</th>
<th>Errored</th>
<th>Blocked</th>
<th>Notes</th>
<th>Details</th>
<th>Bug ID</th>
<th>Owner</th>
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<tbody>
<tr>
<td>GFP4x4 PHY IQexlm (Israel)</td>
<td>6750</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>RxPerSensitivity (UHE HLL) Ch:223 Chain:A: Sensitivity point: -61.037 &gt; -61.6</td>
<td>WIFI-108722</td>
<td>Stanislav G.</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td>Sporadic NaN result on Tx EVM test</td>
<td></td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Ch:102(T) Chain:B: Sensitivity point: -72.44 &gt; -73</td>
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<tr>
<td>HBP2X2 TSMC EXM</td>
<td>1615</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>Negative margin on Tx Mask (Driver T High Band 160 MHz) Ch50 Chain:A: Mask margin: -6.53 ≤ -5</td>
<td>WIFI-108723</td>
<td>Stanislav G.</td>
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<td>NaN Results in RxPerDynamic and RxPerSensitivity On Ch:165</td>
<td>WIFI-99270</td>
<td>Ian L.</td>
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<tr>
<td>CCP2X2 EXM (Israël)</td>
<td>1629</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>Sporadic NaN result on Tx EVM test</td>
<td>WIFI-114046</td>
<td>Eddie Y.</td>
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<td>Exception on XVT_CMD_RUNTIME_CALIB_HANDLE</td>
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</table>
Common Issue / Exceptions in xVT Regression

- HVT Drop
- Driver installation Error
- Titan automation connection Error
- NaN results
- Degradation Results
- BSOD/Station down
- IM tool
- IQexl
- EXM
- Limit Violations
Bug List that provides current bugs that xVT monitoring

<table>
<thead>
<tr>
<th>Key</th>
<th>Summary</th>
<th>Status</th>
<th>Development Testing Environments</th>
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<tbody>
<tr>
<td>WIFI-114046</td>
<td>[xVT Regression][CoreMain/CoreCycle][CCP][EXM] Sporadic NaN Results on Tx EVM</td>
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<tr>
<td>WIFI-111104</td>
<td>[xVT Regression][CoreMain/CoreCycle][TYP2X2][IQexlm] Tx Power Limitation on TxPwrInfo Regulatory Limit A</td>
<td>PENDING</td>
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<td>WIFI-109152</td>
<td>[xVT Regression] Frequency Accuracy degradation in several projects</td>
<td>OPEN</td>
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<td>WIFI-109150</td>
<td>[xVT Regression][EXM Issue's] Misalignment to PXA in TxBandEdge HB channels</td>
<td>OPEN</td>
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<td>WIFI-109149</td>
<td>[xVT Regression][EXM Issue's] Misalignment to PXA in TxBandEdge 160Mhz</td>
<td>OPEN</td>
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<td>WIFI-108723</td>
<td>[xVT Regression][CoreMain][HRP2_TSMC][EXM] Limitation on RxPerDynamic Ch165</td>
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<td>WIFI-108722</td>
<td>[xVT Regression][CoreMain][HRP2_TSMC][EXM] Negative Limitation on Tx EVM (Driver US HE9 RU High Band 20Mhz)</td>
<td>OPEN</td>
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<td>WIFI-103125</td>
<td>[xVT Regression][CoreMain/CoreCycle][ISR GPP4k4][IQexlm] Tx EVM Limitation on Tx pwr VSA</td>
<td>OPEN</td>
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<td>WIFI-102795</td>
<td>[xVT Regression][Core 51][JFP1x1_ANT_DIV][IQexlm] ADC Samples Exception failed with status 31</td>
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<td>WIFI-99698</td>
<td>[xVT Regression][CoreMain][SNJ+JFP1x1][EXM] : Negative Margin at [Tx Band Edge]-Driver HT US Low Band 20Mhz - Ch13 - 2472</td>
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<td>WIFI-99270</td>
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<td>BT-36961</td>
<td>[xVTRegression][BT][HRP1//FP2/TYP2][IQexlm][Nightly]</td>
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<td></td>
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</tbody>
</table>
Provide detailed issues on product.

Actual Results: Command XVT_CMD_GET_ADC_SAMPLES_V2 failed with status 31.
Discussion with Firmware team members to specify issues about the driver in various versions.

Hi
please define next steps and owner
Yaki

As already said before. This looks like a FW issue. FW does not generate interrupt or interrupt was not generated on RFD

Next steps: Eddie should collect the debug data as Yair N. requested. After collecting this data, the bug should be assigned to Yair N. for analysis.

Returning the bug to Eddie.

Hi. Moving to FW, since looks like missing interrupt from FW side.
we see the TX RSP in the RFD Q.

Newly collected logs and report are provided in path below:
\ger.corp.intel.com\ecj\proj\East\WIFI\JT\WVTU\cp\WIFI\102795_ADCSample_Exception_status31\new collect
Please let me know if any issues with the collected logs, thanks.

Following debug session with Guriashkin, Stanislav same test passed with exm TE Gnj JFP AD but not with IQexlm Pnj + JFP AD
Next step - isolate affecting factor either TE EXM\IQexlm or QNJ\PNJ.
The end