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1. Environment setup

1.1. Symbols and abbreviations

- TC - Test Case
- TCT - Tizen Compliance Test
- SDB - Smart Development Bridge
- <name> - Mandatory argument
- [name] - Optional argument
- $(in shell command) - Indicates the beginning of a command
- \ (in shell command) - In long commands, the backslash character ensures that newline character is ignored (if you join consecutive lines, please remove unnecessary backslashes)

1.2. Hardware Requirements

1. PC or Laptop that will work as host on which TCT-Manager will be installed
2. Tizen device that will work as target on which TCs will be executed
3. USB Cable for connecting device to host

1.3. Software Requirements

1. Install 32 or 64 bit Ubuntu OS with Linux 12.04 kernel on PC
2. Install JDK 1.6 or newer version on Linux PC.
2. Installing the TCT-Manager

To install the TCT-Manager on your PC:

1. These packages should be installed before running TCT-Manager
   
   $ sudo apt-get install rpm2cpio
   $ sudo apt-get install tree
   $ sudo apt-get install timeout
   $ sudo apt-get install python-pip
   $ sudo apt-get install python-support
   $ sudo apt-get install python-requests
   $ sudo apt-get install python-setuptools

2. libudev1 or libudev-dev package should be installed for SDB.

   First find the library ‘libudev’ installation location using command:
   
   ➢ $ cd /lib/
   ➢ $ find . -type f -name ‘libudev*’

   ![Figure 1: Getting location of libudev](image)

   If the package is not properly linked, use the following command:

   ➢ $ sudo ln -s /lib/[installation-folder]/libudev.so.[version] /lib/[installation-folder]/libudev.so.0

   e.g. $ sudo ln -s /lib/i386-linux-gnu/libudev.so.0.13.0 /lib/i386-linux-gnu/libudev.so.0
3. Download the archive file of TCT-Manager (e.g. native-tct-v2.3.tar) from the TCT server

4. Extract the archive file to a local directory /home/[User_name]/native-tct-v2.3/

    ~$ tar -xvf native-tct-v2.3.tar
3. TCT-Manager Installation Process

3.1. Folder structure:

You will find the folder structure like below:

```
Name          Size     Type
---           ------    -----
doc           0 items  folder
             (Empty)         
package       2 items  folder
mobile        0 items  folder
pkg_infos     1 item   folder
resource      7 items  folder
             
testkit-stub  2 items  folder
tinyweb       2 items  folder
             getCap.wgt  20.6 KB  Zip archive
             getCapArm   137.7 KB shared library
             getCapX86   138.3 KB shared library
TC_Config.txt 272 bytes plain text document
             tct-testconfig-2.3-1.zip 96.4 KB Zip archive
             
        tools     13 items  folder
             manager   4 items  folder
             sdb        2 items  folder
             shell      15 items folder
             
             testkit-lite 12 items folder
             conf-device 44 bytes  shell script
             conf-host   109 bytes shell script
             full_pkg_generator 418 bytes shell script
             healthcheck.ini 151 bytes plain text document
             tct-config-device.py 20.5 KB Python script
             tct-config-host.py  9.7 KB Python script
             tct-mgr        476 bytes shell script
             tct-shell      67 bytes  shell script
             testkit-lite   58 bytes  shell script
```
Figure 2: TCT-Manager folder structure

The following table describes the folders contents.

<table>
<thead>
<tr>
<th>Folder</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>package</td>
<td>All the packages to be tested in device</td>
</tr>
<tr>
<td>resource</td>
<td>Required resources for TCT manager</td>
</tr>
<tr>
<td>tools</td>
<td>Contains installation scripts for host and device</td>
</tr>
</tbody>
</table>

3.2. Tools Permission:

Execute the following command and give access permission to all contents inside tools.

- Extract a `native-tct-v2.3.zip` file

  ```sh
  ~$ sudo unzip native-tct-v2.3.zip
  ```

- Change mode of the native-tct-v2.3 directory

  ```sh
  ~$ sudo chmod 777 –R native-tct-v2.3
  ```

- Move to the native-tct-v2.3/tools directory

  ```sh
  ~$ cd native-tct-v2.3/tools
  ```

3.3. For Host Configuration:

1. Clean the environment if an older version of TCT-Manager exists in host

   ```sh
   ~ native-tct-v2.3/tools/$ sudo python tct-config-host.py --purge
   ```

2. Set environment on your host

   ```sh
   ~ native-tc-vt2.3/tools/$ sudo python tct-config-host.py
   ```
3.4. For Device Configuration:

1. Connect the target device to host (PC) through USB.

2. Clean the environment if an older version of TCT-Manager configuration file exists in target device

   \~native-tct-v2.3/tools/$ \texttt{sudo python tct-config-device.py --purge}

3. Set environment on your target

   \~native-tct-v2.3/tools /$ \texttt{python tct-config-device.py}

4. Run below commands to change permission of TCT-Manager

   \~native-tct-v2.3/tools/$ \texttt{sudo chmod –R 777 /opt/tct/tizen_core_2.3}

   \~native-tct-v2.3/tools/$ \texttt{sudo chmod 777 /usr/bin/tct-mgr}

Note:-

1. We recommend to use --purge option (like clean) for getting fresh execution environment

2. If you face any problems, you should do as root.
4. Source Build and Install

4.1. Download TCT Source

Download TCT source from git.

1. Make a directory to download the source.
   
   \$ \texttt{mkdir <folder\_name>}

2. Clones a repository into a newly created directory.
   
   \$ \texttt{cd <folder\_name>}
   \$ \texttt{git\ clone\ git://git.tizen.org/test/testsuite/tct/native/tct}
   \$ \texttt{cd tct}
   \$ \texttt{git\ checkout\ tizen\_2.3}

4.2. Build and Install packages

1. Update ‘tct.conf’ file with repository which you refer to.

   \begin{figure}
   \centering
   \includegraphics[width=\textwidth]{tct.conf.png}
   \caption{tct.conf file}
   \end{figure}

2. Run init script
$ cd tct/scripts
$.init.sh

3. Build packages.

If you want to build all packages for **device – tcbuild**, for **emulator - tcbuildsdk**

```
$ cd tct
$ sudo ./tcbuild build
```

Or if you want to build for specific package,

```
$ cd tct
$ sudo ./tcbuild build <tc_type> <package-name>
```

ex) $ sudo ./tcbuild build itc application

![Figure 3. Build a package](image)

4. After build success, install packages.

If you want to install all packages for **device – tcbuild**, for **emulator - tcbuildsdk**

```
$ cd tct
$ sudo ./tcbuild install
```

Or if you want to install for specific package,

```
$ cd tct
$ sudo ./tcbuild install <tc_type> <package-name>
```

ex) $ sudo ./tcbuildsdk install itc application
Figure 4. Install a package
5. Execute Test Suites

5.1. Run TCT-Manager:

Execute the following command:

- $ tct-mgr

![TCT Manager UI](image)

**Figure 7: TCT-Manager UI**

5.2. Choose Target:

Choose your target from **Settings > Choose Device:**
Figure 8: Choose device in TCT-Manager UI
5.3. Execution by Creating a New Plan:

1. Select suites by checking boxes from trees.
2. Choose profile ‘mobile’.
3. Execution type to ‘All’
4. Click button ‘Run’.

Figure 9: Device selection in TCT-Manager
5. If you need to set configurable parameters (e.g. Wi-Fi AP Name, Bluetooth MAC address etc.), then select a test suite which you want to execute, check ‘Pre-configure’ checkbox
6. press ‘Run’ button
7. Create a new test plan.

Figure 10: Creating a new plan in TCT-Manager
Figure 11: Input plan name in TCT-Manager
5.4. Performs a Health check:

As shown in Figure 12, health check routines will be invoked to check the status of the target before executing the selected test suites. After all health check routines pass, TCT-Manager runs selected test suites.

![Figure 12: Health check monitoring after execution Run in TCT-Manager](image)
5.5. Edit Pre-Configuration File:

If you had checked the ‘Pre-Configure’ checkbox then a dialog is displayed to show the configurable parameters as shown in Figure 13. Change the values of parameters as per the test environment and press ‘Continue’. For e.g. value of EMAIL_RECIPIENT should be set as the email address of recipient to which email should be sent.
Figure 13: Edit Pre-Configuration file before execution.

Below is the pre-requisites list of individual modules suggesting the necessary changes in configuration values:

<table>
<thead>
<tr>
<th>UTC Packages</th>
<th>Pre-requisites</th>
<th>DEVICE [How to find Information]</th>
</tr>
</thead>
<tbody>
<tr>
<td>bluetooth</td>
<td>If Supported, Bluetooth should be enabled.</td>
<td>*Down Notification bar &gt; Enable Bluetooth</td>
</tr>
<tr>
<td>camera</td>
<td>If Supported, Camera should be working.</td>
<td>*Insert SIM card. *SDN information should be written in SIM Card. (Only allow to write this information to tele-company)</td>
</tr>
<tr>
<td>contacts-service2</td>
<td>If Supported, SIM Card should be inserted.</td>
<td>*Settings &gt; Accounts &gt; Email &gt; Set created accounts [Set the Pre-Configure dialog of TCT-Manager UI] *EMAIL_RECIPIENT: Created email account</td>
</tr>
<tr>
<td>email</td>
<td>Must be set an email account.</td>
<td>*Settings &gt; Accounts &gt; Email &gt; Set created accounts [Set the Pre-Configure dialog of TCT-Manager UI] *EMAIL_RECIPIENT: Created email account</td>
</tr>
<tr>
<td>location-manager</td>
<td>If Supported, GPS should be enabled.</td>
<td>*Down Notification bar &gt; Enable GPS</td>
</tr>
<tr>
<td>messages</td>
<td>If Supported, SIM Card (call, message, data network) should be inserted.</td>
<td>*Insert SIM Card [Set the Pre-Configure dialog of TCT-Manager UI] *MESSAGES_MOBILE_NUMBER ex) +821012345678</td>
</tr>
<tr>
<td>nfc</td>
<td>If Supported, NFC should be ON.</td>
<td>*Down Notification bar &gt; Enable NFC</td>
</tr>
<tr>
<td>player</td>
<td>1. Ear-Jack should be connected. 2. Must be connected to internet using Wi-Fi or data network.</td>
<td>*Connect Ear-Jack *Down Notification bar &gt; Enable Wi-Fi OR Down Notification bar &gt; Enable Mobile Data [Set the Pre-Configure dialog of TCT-Manager UI] *PLAYER_DOWNLOAD_URL ex) <a href="http://www.archive.org/download/WaltzingMathilda-avi/WaltzingMathilda320X240_512kb.mp4">http://www.archive.org/download/WaltzingMathilda-avi/WaltzingMathilda320X240_512kb.mp4</a> *PLAYER_DOWNLOAD_PROGRESS_URL ex) <a href="http://content.bitsontherun.com/videos/ntPYsD4L-1ahmry41.mp4">http://content.bitsontherun.com/videos/ntPYsD4L-1ahmry41.mp4</a></td>
</tr>
<tr>
<td>radio</td>
<td>If Supported, Ear-jack should be connected.</td>
<td>*Connect Ear-jack</td>
</tr>
<tr>
<td>telephony</td>
<td>If Supported, SIM Card (call, message, data network) should be inserted.</td>
<td>*Insert SIM card.</td>
</tr>
<tr>
<td>wifi</td>
<td>If Supported, Wi-Fi should be enabled.</td>
<td>*Down Notification bar &gt; Enable Wi-Fi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ITC Packages</th>
<th>Pre-requisites</th>
<th>DEVICE [How to find Information]</th>
</tr>
</thead>
<tbody>
<tr>
<td>bluetooth</td>
<td>If Supported, Bluetooth should be enabled.</td>
<td>*Down Notification bar &gt; Enable Bluetooth</td>
</tr>
<tr>
<td>camera</td>
<td>If Supported, Camera should be available.</td>
<td>*Insert SIM card.</td>
</tr>
<tr>
<td>connection</td>
<td>If Supported, Enable Wi-Fi</td>
<td>*Down Notification bar &gt; Enable Wi-Fi. *Down Notification bar &gt; Enable Mobile</td>
</tr>
<tr>
<td></td>
<td>If Supported, Enable Mobile Data Network</td>
<td>*Down Notification bar &gt; Enable Mobile. *Down Notification bar &gt; Enable Mobile</td>
</tr>
<tr>
<td>Module</td>
<td>Description</td>
<td>Set the Pre-Configure dialog of TCT-Manager UI</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
</tbody>
</table>
| contacts-service2      | 1. If Supported, SIM Card should be inserted.  
2. Create a contact in SIM                | *Insert SIM card.  
*SDN information should be written in SIM Card.  
(Only allow to write this information to tele-company)  
* Contacts > Select Sim > Save Contact Information |
| email                  | Must be set an email account.                                                                     | *Settings > Accounts > Email > Set created accounts  
**EMAIL_RECIPIENT** : Created email account |
| key-manager            | Must be set the time as correct                                                                   | *Once connect mobile data or wi-fi, it comes correct when ‘auto udpate’ set.  
Or **Settings > Data and Time : Set by manual.** |
| location-manager       | If Supported, GPS should be enabled.                                                               | *Down Notification bar > Enable GPS          |
| messages               | If Supported, SIM Card (call, message, data network) should be inserted.                          | *Insert SIM Card  
**MESSAGES_MOBILE_NUMBER** ex) +821012345678 |
| player                 | Must be connected to internet using Wi-Fi or data network.                                         | *Down Notification bar > Enable Wi-Fi OR  
Down Notification bar > Enable Mobile Data  
*PLAYER_DOWNLOAD_URL** ex) http://www.archive.org/download/WaltzingMathilda-avi/WaltzingMathilda320X240_512kb.mp4  
*PLAYER_DOWNLOAD_PROGRESS_URL** ex) http://content.bitsontherun.com/videos/ntPYsD4L-1ahmry41.mp4 |
| radio                  | If Supported, Ear-jack should be connected.                                                       | *Connect Ear-jack                             |
| runtime-info           | 1. Connect Ear-Jack  
2. Enable silent mode  
3. Enable auto-rotate                                                                              | *Connect Ear-jack  
*Down Notification bar > Enable Mute Mode  
*Down Notification bar > Enable Auto rotate |
| sound-manager          | Connect Ear Jack                                                                                   | *Connect Ear-jack                             |
| system-settings        | 1. Enable USB Debugging  
2. Enable Key Motion  
3. Enable silent mode  
4. SET 24 hours time format  
5. Mobile Data Network should be enabled.                                                           | *Settings > Developer Options > Enable USB Debugging  
*Down Notification bar > Enable Mute Mode  
*Settings > Date and Time > Enable 24-hour clock  
*Down Notification bar > Enable Mobile Data |
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>Instructions</th>
</tr>
</thead>
</table>
| telephony        | If Supported, SIM Card (call, message, data network) should be inserted.                               | *Insert SIM card.  
   ※ SPN information should be written in SIM Card. (Only allow to write this information to tele-company) |
| url-download     | Must be connected to Internet using Wi-Fi or data network.                                            | *Down Notification bar > Enable Wi-Fi OR Down Notification bar > Enable Mobile Data                  |
| wifi             | If Supported, Wi-Fi should be enabled.                                                                 | *Down Notification bar > Enable Wi-Fi OR Down Notification bar > Enable Mobile Data                  |
| CTC              |                                                                                                        | *Set the Pre-Configure dialog of TCT-Manager UI*                                                 |
| Packages         | Pre-requisites                                                                                         | DEVICE [How to find Information]                                                                     |
| bluetooth        | If Supported, Bluetooth should be enabled.                                                              | *Down Notification bar > Enable Bluetooth                                                           |
| filesystem       | If Supported, SD card should be inserted.                                                              | *Insert SD card.                                                                                   |
| permission       |                                                                                                        | *Insert SD card.                                                                                   |
| libstorage       | If Supported, SD card should be inserted.                                                              | *Insert SD card.                                                                                   |
| messages         | If Supported, SIM Card (call, message, data network) should be inserted.                               | *Insert SIM Card  
   *SDN & SPN information should be written in SIM Card. (Only allow to write this information to tele-company) |
| platform         | If Supported, Bluetooth should be enabled.                                                              | *Down Notification bar > Enable Bluetooth                                                           |
5.6. Execution Progress:

When executing the test, this screen will be shown as in Figure 14.

![Figure 14: Execution progress while Running Test Suite in TCT-Manager](image_url)
5.7. Execution Report:

After executing all the test suites, Reports tab will show a results list as in Figure 15.

Figure 15: Execution report after completing execution in TCT-Manager
5.8. Download Result:

You can download the result file by clicking red marked button showed in Figure 16.

![Figure 16: Download the Execution report in TCT-Manager](image)

5.9. View Result Summary:

Click the red marked link to view result summary in browser as shown in Figure 17.

![Figure 17: View the Execution report in TCT-Manager](image)

TCT-manager provides detailed information about test results. TCT Report (Figure-18)
shows how many test suites were executed, how many test cases were checked, how many test cases passed or failed, etc.

![TCT Report](image)

**Device Capability**

**Test Summary by Suite**

![Test Summary](image)

**Figure 18: View the Execution report summary in TCT-Manager**

### 5.10. View Result Details:

By clicking the name of each test suite, you can check the name, purpose, result and error log of each test case (Figure 19).
5.11. Execution Log Export:

Export execution log by clicking export button marked red in Figure-20.

![Figure 20: Exporting Log of Execution Report from TCT-Manager](image)

5.12. Stop Execution:

While executing test suites if executions need to be stopped, click the window close button which will prompt like below (Figure 21).
5.13. Rerun Failed Test Cases:

If you want to re-run for failed test cases, click rerun button (Figure 22).

Figure 21: Stop the test-suite execution while execution is running in TCT-Manager

Figure 22: Rerun Failed TCs
6. Appendix

- Certain ports should be opened if company firewall is applied to Wi-Fi being used. These ports are needed to create email account, download file and sppc module for sending and receiving push notifications.

5223, 110, 143, 465, 587, 993, 995, 8000, 8081, 8088, 8080, 80, 443