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Installation Guide for Conformance Software

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1 Introduction

This document provides necessary information on setting up the Conformance Software on a local machine. The document provides the steps to setup the software including the various dependent software packages and libraries. In addition, the version requirements of various software packages are provided.

2 Test realization architecture

Figure 1 shows the functional block diagram of how the DASH conformance software has been realized.

- The conformance software resides on the "Test Server".
- The "Tester" is a web-client, e.g. Google Chrome browser that accesses the conformance software on the Test Server.
- The Tester provides the MPD (either as an uploaded file, or points to the MPD location on the web) to the conformance software.
- Based on this information, the conformance software accesses the "DASH Content".
- Conformance testing is done on the Test Server.
- The report of the conformance testing is provided back to the Tester.
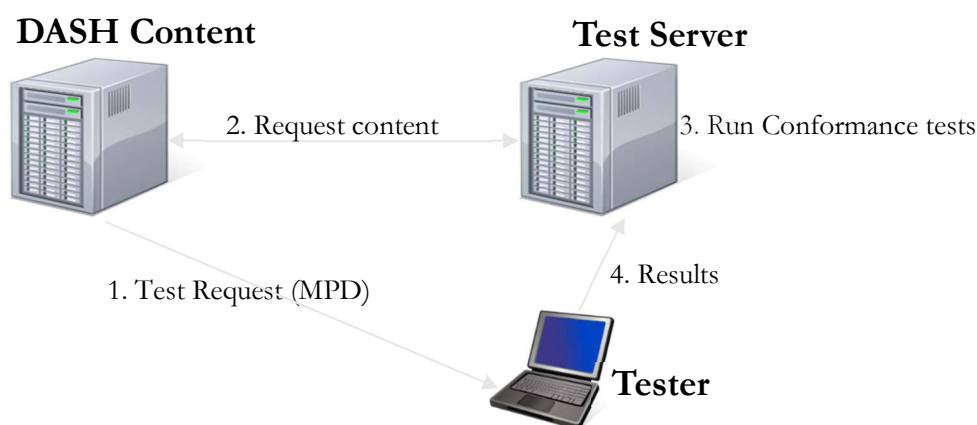
Figure 1 Functional block diagram of realization architecture

3 Requirements

This section provides the software requirements and the version numbers to be used to setup the Conformance Software.

3.1 Test Server

Table 1 below lists all the software requirements for the Test Server setup

Table 1 Software requirements

Package	Version
Operation System	Ubuntu 16.04.4 LTS, 64-bit **
PHP	5.6 or above
Java	1.8.0_171
Apache server	2.4
Python	2.7

** The conformance server is implemented on this OS and the support check for other OS versions or types is out of scope.

3.2 Tester

Tester is a web-client and Google Chrome ** has been used as the regular browser in the testing environment.

** Firefox can also be used, but additional support if required, is out of scope.

3.3 Test Server Program

The program code for the Conformance Software which should be downloaded to Test Server are uploaded on Github and the general syntax of the locations are provided below. Frontend code is sufficient to run the software, backend code is for reference.

Frontend code: https://github.com/*<username>*/*<Repository_Frontend>*
Backend code: https://github.com/*<username>*/*<Repository_Backend>*

4 Installation steps

This section provides the necessary commands and instructions for setting up the Test Server.

1. **Install PHP:**

   PHP 7.0 is the default package for Ubuntu 16.04. Please type the following command in the terminal console, press enter. Type "Y" and press enter when asked if you want to install.

   ```
   sudo apt-get install php php-dev php-curl php-xdebug libapache2-mod-php
   ```

2. **Install Java:**

   Go to the following link https://www.java.com/en/download/linux_manual.jsp, choose the appropriate archive, and manually download the newest Oracle (Sun) Java.

   Place the downloaded archive at a desired path and unpack it. An example for this procedure can be done with the below commands. An example for the desired path could be "/usr/java/".

   ```
   sudo mkdir <Desired_Path> (If the desired path does not exist)
   sudo mv <Download_Path>/<Archive_Name> <Desired_Path>
   cd <Desired _Path>
   sudo tar zxvf <Archive_Name>
   ```

   Afterwards setup the java path with the following commands. The paths are located in the bin folder of the unpacked package.

   ```
   sudo      update-alternatives      --install      "/usr/bin/java"      "java"
   "<Desired_Path>/<jre_folder>/bin/java" 1
   sudo      update-alternatives      --install      "/usr/bin/javaws"      "javaws"
   "<Desired_Path>/<jre_folder>/bin/javaws" 1
   ```

   Ensure that you also have a java compiler (JRE). This can be verified by using:

   ```
   javac -version
   ```

If there is, also ensure that javac and java use the same version. This can be verified by comparing the two commands:

> *java -version*
> *javac -version*

If there is no javac present, install the same version as java. For example, the javac 1.8 version could be installed by:

> *sudo apt-add-repository ppa:webupd8team/java*
> *sudo apt-get update*
> *sudo apt-get install oracle-java8-installer*

3. **Install Apache server:**

Install Apache by the following command. Apache 2.4 is recommended.

> *sudo apt-get install apache2 apache2-doc*

4. **Configure Apache:**

The default root folder is "/var/www/html/". Go to the root folder, copy or move the web contents (DASH/DVB frontend code specified in Section 3.3) to this directory or make a softlink of the projects.

Rename or move the index.html located in the root directory so that the user defined contents are shown in "http://localhost/".

NOTE: If you want to change the root location, then modify the file /etc/apache2/sites-available/000-default.conf

Make sure that your user is in the group "www-data". You can check this by the following command.

> *groups <username>*

If the user is not in the group "www-data", you can add it by typing the below command.

> *sudo usermod -a -G www-data <username>*

Please add write permission to the users in this group by:

> *sudo chmod -R 0777 /var/www/*

NOTE: In the conformance software, there are processes that requires permission to be run. If the group does not have the permission to run the processes without password, an addition to the "sudoers" list is needed. In that case, type "*sudo visudo*" and add these lines at the end: *www-data ALL=NOPASSWD: ALL*

After any configuration change, a restart of apache service is necessary.

> *sudo service apache2 restart*

5. Install Python:

For installing Python, please run the following commands.

> *sudo apt-get install python2.7*
> *sudo apt-get install python-pip*
> *sudo apt-get install python-matplotlib*

6. Possible additional installations

1. Install 'ant', required to run MPD validator in Conformance-Software.
   sudo apt-get install ant

2. XML extension of PHP
   sudo apt-get install php-xml

3. Stdc++ package, required if the system is 64-bit and does not have 32-bit support
   sudo apt-get install libstdc++6:i386

If everything works correctly, you should be able to open and start using the Frontend conformance software in your browser by navigating to:
http://localhost/<Repository_Frontend>/webfe/conformancetest.php