Samsung Electronics

Chord Plug-in for the Android Virtual Device (AVD)

User Guide

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Introduction and Overview

Chord Plug-in for the Android Virtual Device (AVD) allows the android developers to develop their application on the Android Virtual Device environment. It allows all the functionalities that are possible using Chord in device such as share data, including text/binary messages and files, with selected members of the network.

Chord Plug-in is able to achieve the similar functionalities in Android virtual device. This guide covers the installation process of Chord Plug-in in eclipse, running of a test application and uninstallation of Chord Plug-in.

Note: An application developer can use same Chord for device and AVD. For AVD, application developer should also run Chord Relay Server that is provided by plug-in which is not required for device.

Prerequisites

Development machine should have the latest Android installed. The AVD Manager is installed as part of the Android SDK and can be used to create AVD configurations. In order to use Chord Plug-in, an AVD configuration should be created with the following features:

1. SD card with sufficient storage for testing file transfer functionality using Chord.
2. External keyboard support disabled if data transfer functionality is to be tested using keyboard trigger.

Framework

The following figure shows the Chord Plug-in for the Android Virtual Device framework:

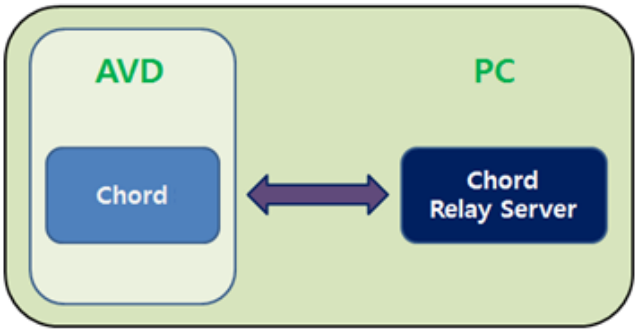

Figure 1 : Chord Plug-in for the Android Virtual Device Framework

Chord

It provides application developers with a simple, high-level set of APIs that can be used to build new exciting distributed applications. Chord intends to make the development environment easier by

providing simple API's. Application developer using Chord can develop network applications without the knowledge of networking.

Chord Relay Server

This module is responsible for communication between the Chord running on the device and other devices in the network. It listens for packets from Chord running on the AVD and from other devices in subnet and takes care of the necessary routing and packet conversion functions. This Module should run as a Plug-in on PC Environment.

Installation of Chord Plug-in

Chord Relay Server Eclipse plug-in needs to be run in PC machine, which will act as a Relay Server between the AVD network and outside network. It is done only once to setup the eclipse environment.

1. Open Eclipse. Go to **Help** -> Install New Software. Press **Add** Button.

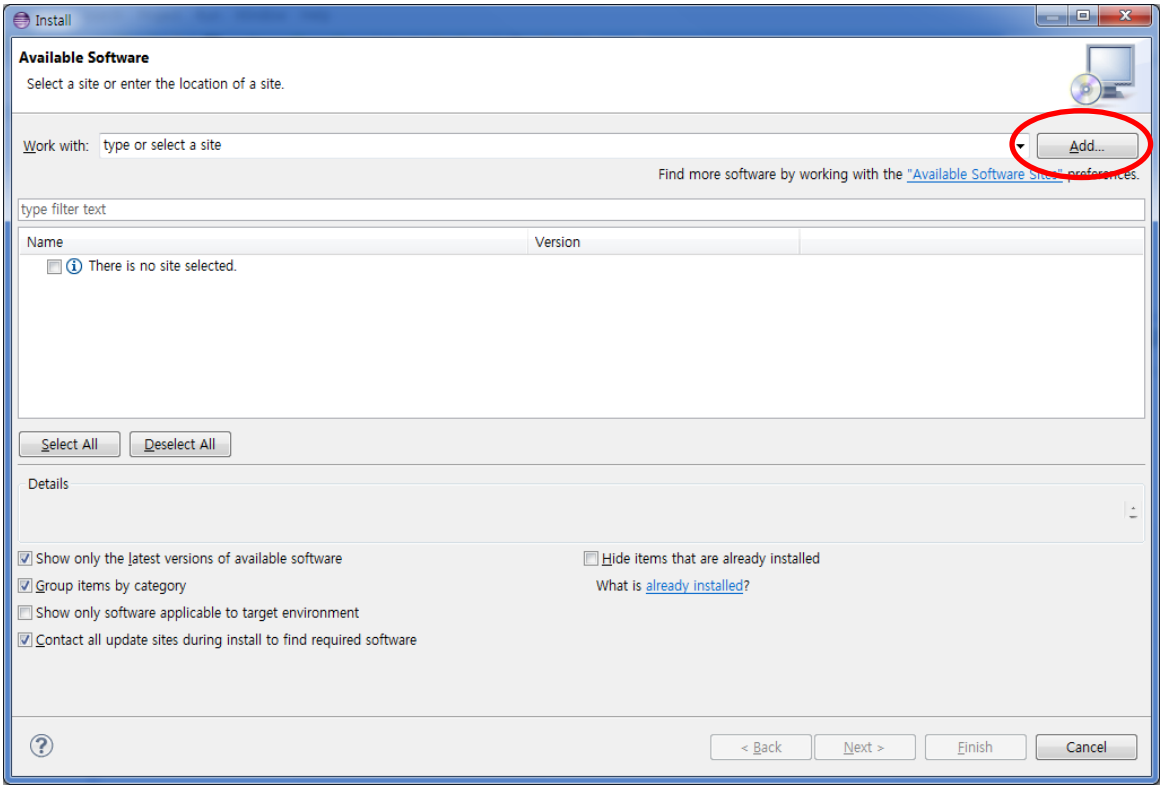

Figure 2 : Install New Software

2. Select **Local** and browse to the Chord Plug-in directory where it is saved.
   Give name as Chord Plug-in. Press **OK**.

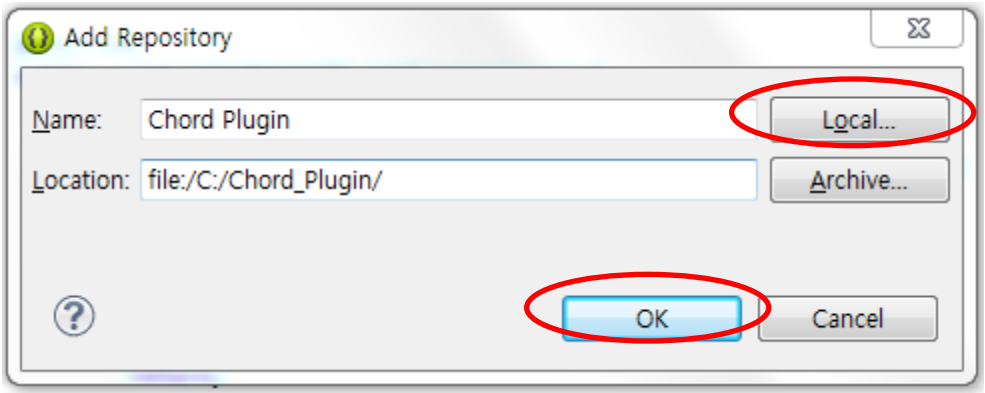

Figure 3 : Add Chord Plug-in Path

3. A checkbox displaying Chord will appear as show in the below figure. Select the checkbox and press **Next**.

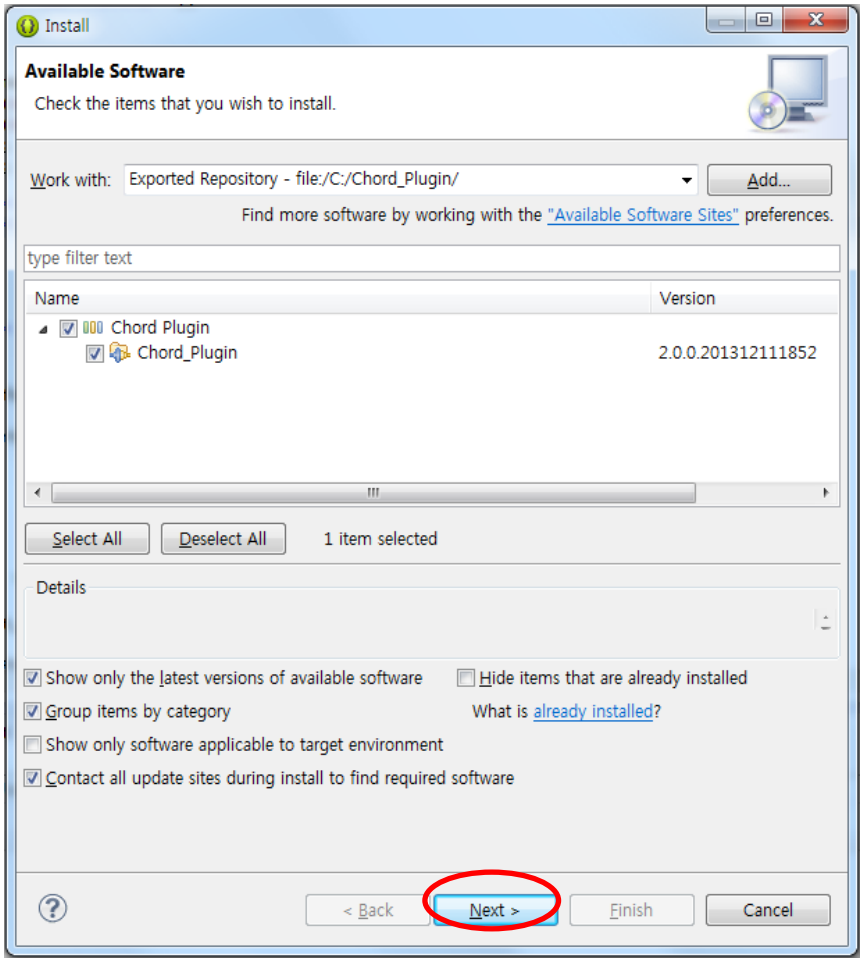

Figure 4 : Select Chord Plug-in

4. Accept the terms of agreement and click **Next**.
5. Click **Finish** to complete the installation.

6. If it asks for Security Warning, press **OK**. Then it will prompt you to restart the eclipse. Press **OK**.

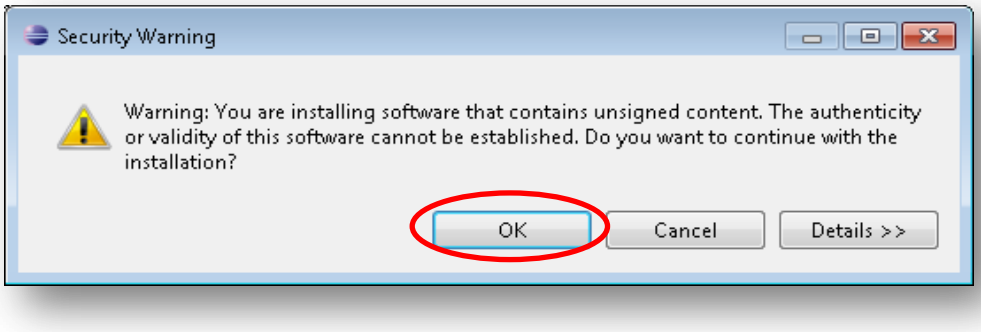

Figure 5 : Restart Eclipse Popup

Run Chord Relay Server in Eclipse

This Plug-in will be started in the Windows/Linux/MAC Systems, where AVD is started. Plug-in has to be run every time whenever the application is started in AVD.

Once the Chord Plug-in is installed for your eclipse environment, you can see "**Run Chord Relay**" in the menu bar. Click that menu and Press **"Chord Relay Server**".

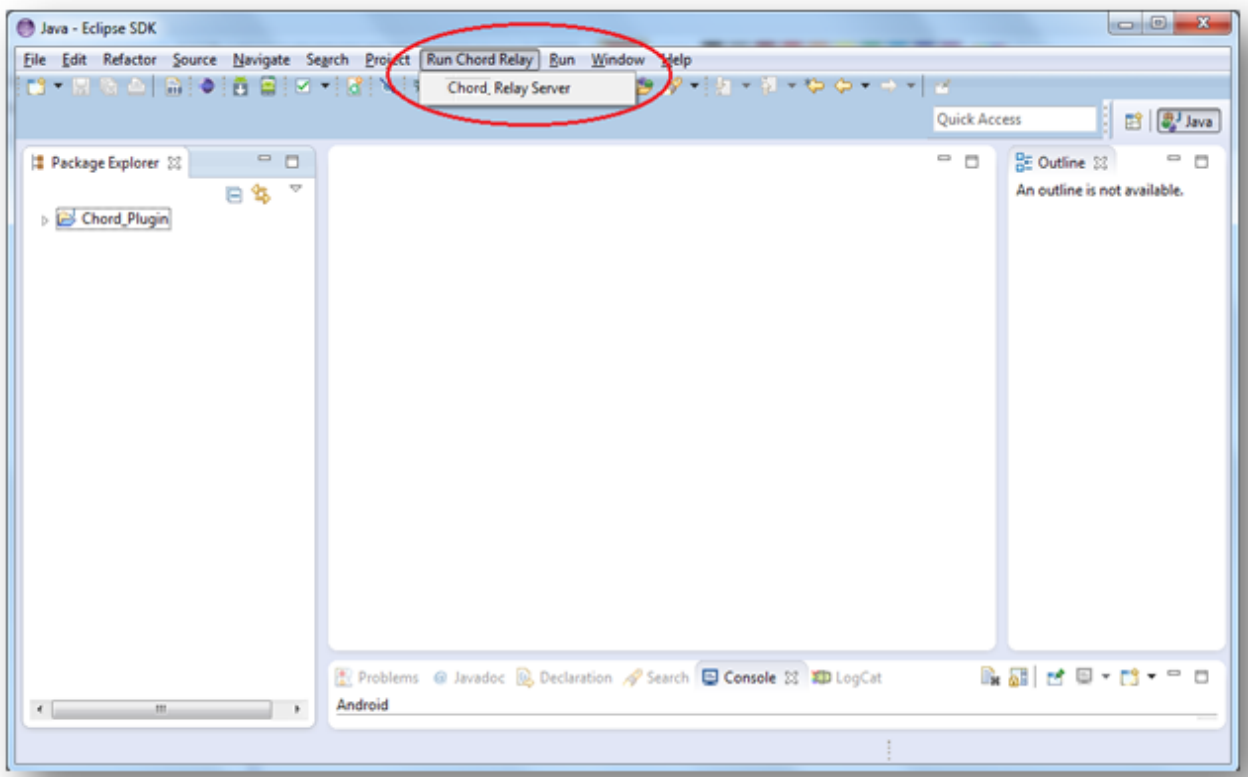

Figure 6 : Run Chord Relay Server

A log viewer displaying the Chord Relay Server actions will be opened.

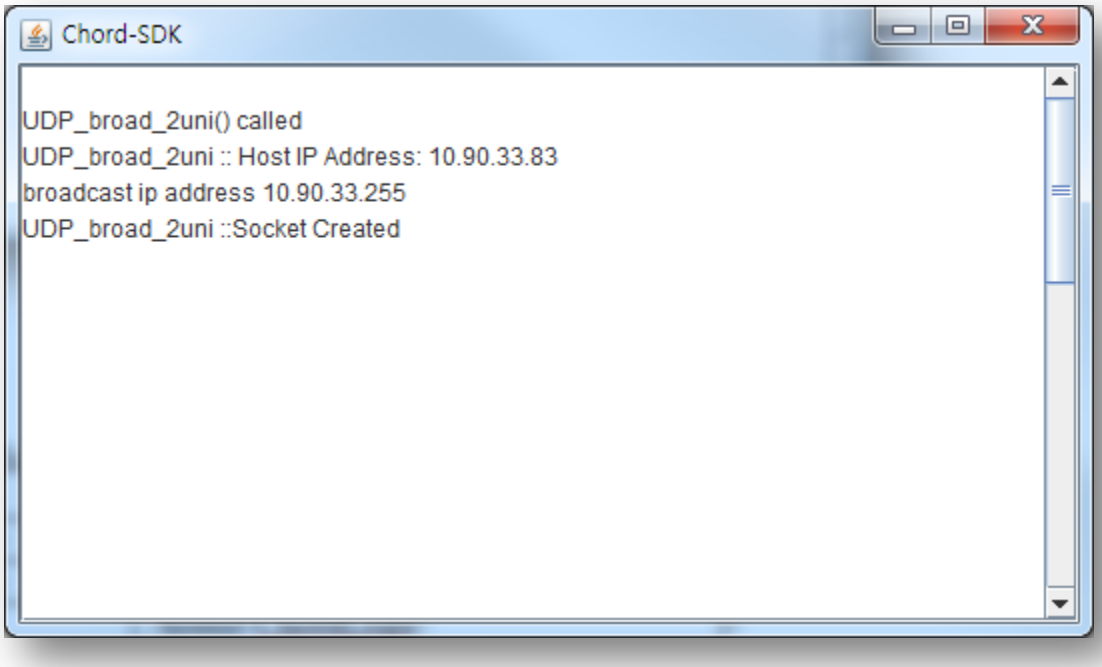

Figure 7 : Chord Relay Server Log viewer

The logs are also saved at the following location, depending on the platform :

Platform	Path
Windows	C:/ChordLogs
Linux	/home/ChordLogs
MAC	/home/ChordLogs

Run Sample Application on AVD

The AVD can be launched directly from Eclipse. The emulator is launched by default when there are no devices attached to the system and the application is launched by choosing “Run As” -> “Android Application”. This behavior can be changed using “Run Configurations”. Ensure that no other instance of the AVD is already running on the system.

Figure below shows the running of Chord test application on the AVD. Also Chord Relay Server is showed in running state, capturing logs of incoming packets from network and outgoing packets to network.

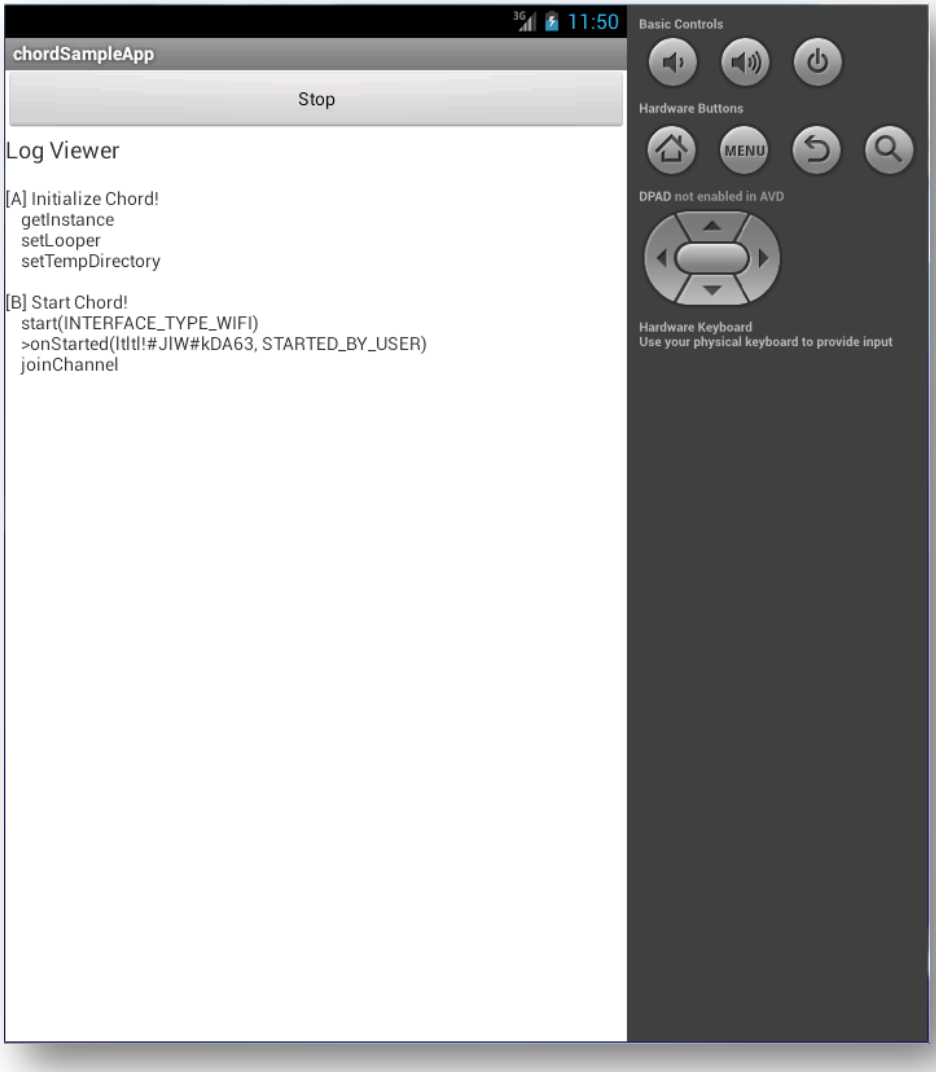

Figure 8 : Run Chord Test Application on the AVD.

Uninstallation of Plugin from Eclipse

1. Go to Help -> Install New Software -> Click **already installed**.

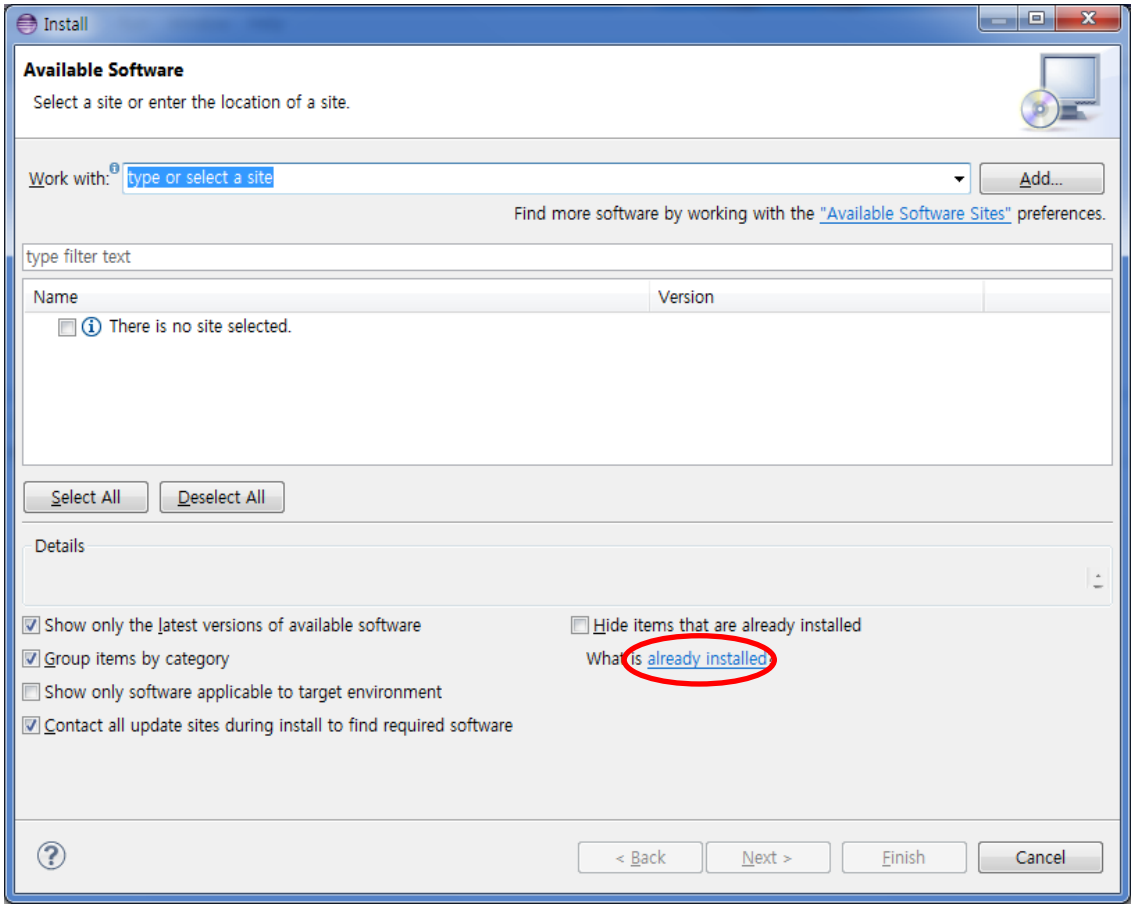

Figure 9 : Uninstall Chord Plug-in

2. Select the Chord Plug-in from the list. Click **Uninstall**. It will show the dialog box with details.

   Press **Finish** and you have successfully uninstalled the plug-in.

Assumptions and Limitations

- **Chord Application on AVD and Chord Relay Server both have to be running simultaneously:** Connections are established between the AVD and the Chord Relay Server for incoming and outgoing packets. If both are not running at the same time packets will not be received in the AVD.

- **Chord Application on AVD does not support network events such as 'Disconnect' and 'Reconnect' :**

  The AVD does not get notified of connectivity changes of the network interface of the host PC. This is because each instance of the AVD has its own private network isolated from the network of the host PC. The isolated network has a set of pre-allocated network addresses which do not depend upon changes to the PC network interface.

- **Only single instance of AVD should be running in 1 PC:**

  Since Chord Relay Server is used for relaying packets from outside network to the AVD, running 2 instances can make relay server to send packet to wrong instance of the AVD.

- **Use of a single network interface (either LAN or WLAN) is recommended for Chord Plug-in for the AVD:**

  Either the wired or wireless interface should be used when using the AVD. Only devices located in the same subnet as the host PC get discovered by Chord application in the AVD.

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