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Automation/Scenarios

Cloud Environment for Mobile Applications Testing

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Université de Franche-Comté, France

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What is CEMAT

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CEMAT

- Cloud Environment for Mobile Applications Testing
- Facilitates testing of all kinds of application
- Specialized in Location-Based Applications
- Works with Emulators, Devices or both

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Automation/Scenarios

Why CEMAT

CEMAT Advantages

- Java application
- Platform independent

First Application Testing Framewrok

- Can work with any Android-OS device
- Distributed using Tree Hierarchy Model
- Offers Location-Based Testing
- Offers Heterogeneous Environment

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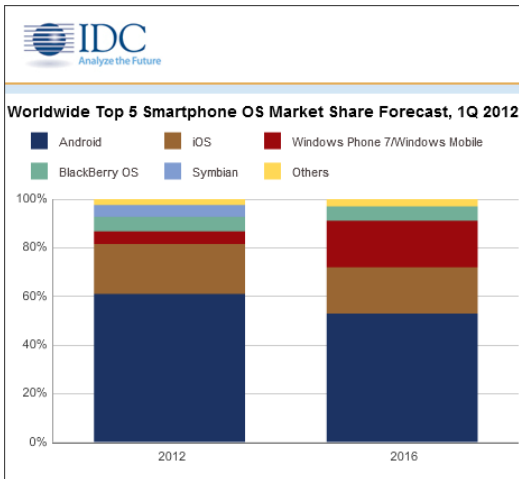| Introduction	Android Testing	CEMAT	Automation/Scenarios
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Why Android

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Smart Phone OS Comparison

MobApp Testing Market

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MobApp Testing Market

Top Testing Framewroks Comparison

Name	In-House Sever	Auto-Test	Devices Count	Distributed	Description
Perfecto Mobile	No	Yes	500	U.S., Canada, U.K., France, Germany, Switzerland Israel and India	Cloud-based,plugs into QTP, Selenium, web-based
Device Anywhere	No	Yes	258	275 locations	Cloud-based,Integrated with QTP
UTest	No	No	-	All Over the World	60,000+ professional testers, 190 countries,web, mobile and desktop applications
TestDroid	Yes	Yes	128	-	An Eclipse plugin for automation
Paca Mobile Center	No	No	300	France	

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Automation/Scenarios

Application Categories

Application Categories

- Stand-alone Applications

- Network Dependent Applications

- Location Applications

- Location-Network Dependent Applications

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Application Categories

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Application Categories

Android Testing Environment

- Android Emulators
- Android Computer (Virtual/Computer)
- Connected Real Devices
- Remote Real Devices

Android Emulators

Android Emulators

- Emulators
- Emulator Networking
- Local Networking Limitations
- Sending a Voice Call or SMS to Another Emulator
- Network, Power, Geo Location, Hardware Events, System

Android Emulators

Android Emulators

- Emulators
- **Emulator Networking**
- Local Networking Limitations
- Sending a Voice Call or SMS to Another Emulator
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Android Emulators

Emulator Networking

Network Address	Description
10.0.2.1	Router/Gateway address
10.0.2.2	Special alias to your host loopback interface (i.e., 127.0.0.1 on your development machine)
10.0.2.3	First DNS server
10.0.2.4 / 10.0.2.5 / 10.0.2.6	Optional second, third and fourth DNS server (if any)
10.0.2.1	The emulated device's own network/ethernet interface
127.0.0.1	The emulated device's own loopback interface

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Android Emulators

Android Emulators

- Emulators
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Android Emulators

Local Networking Limitations

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Android Emulators

Android Emulators

- Emulators
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Android Emulators

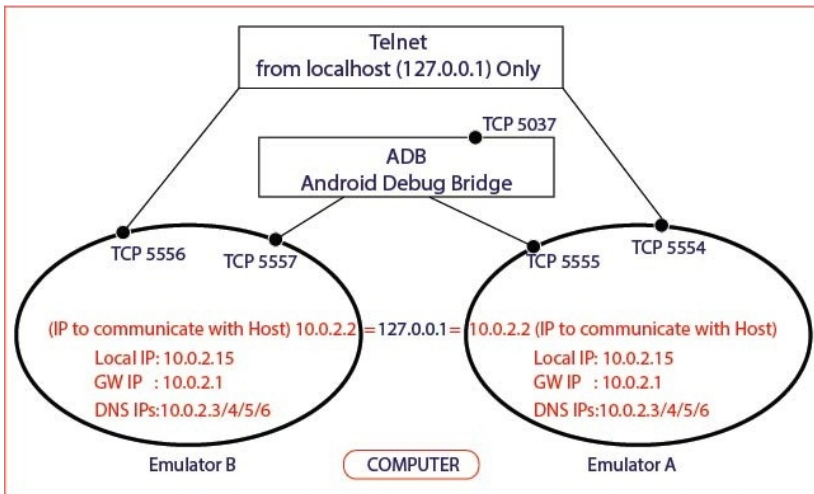# Android Emulators

- Emulators
- Emulator Networking
- Local Networking Limitations
- Sending a Voice Call or SMS to Another Emulator
- Network, Power, Geo Location, Hardware Events, System

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Android Emulators

Android Testing Environment

- Android Emulators
- **Android Computer (Virtual/Computer)**
- Connected Real Devices
- Remote Real Devices

Android Computer (Virtual/Computer)

Android Testing Environment

- Android Emulators
- Android Computer (Virtual/Computer)
- **Connected Real Devices**
- Remote Real Devices

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Connected Real Devices

Android Testing Environment

- Android Emulators
- Android Computer (Virtual/Computer)
- Connected Real Devices
- **Remote Real Devices**

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   - Why CEMAT
   - Why Android
   - MobApp Testing Market

2. Android Testing Environment

3. CEMAT
   - Architecture and Implementation
   - Link Emulators to CEMAT Server
   - Link Real Mobile Phones to CEMAT Server
   - Remote Real Phones (on road)
   - Heterogeneous Environment

4. Automation / Scenarios

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Architecture and Implementation

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Automation/Scenarios

Architecture and Implementation

Architecture and Implementation

- CEMAT Server
- CEMAT Data Collector
- CEMAT Client

CEMAT Server

Architecture and Implementation

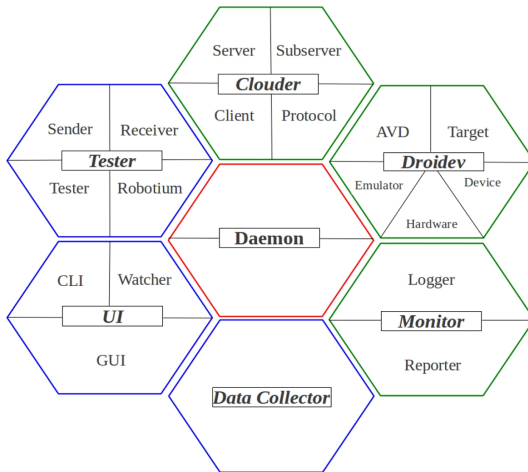## Architecture and Implementation

- CEMAT Server
- **CEMAT Data Collector**
- CEMAT Client

Architecture and Implementation

CEMAT Data Collector
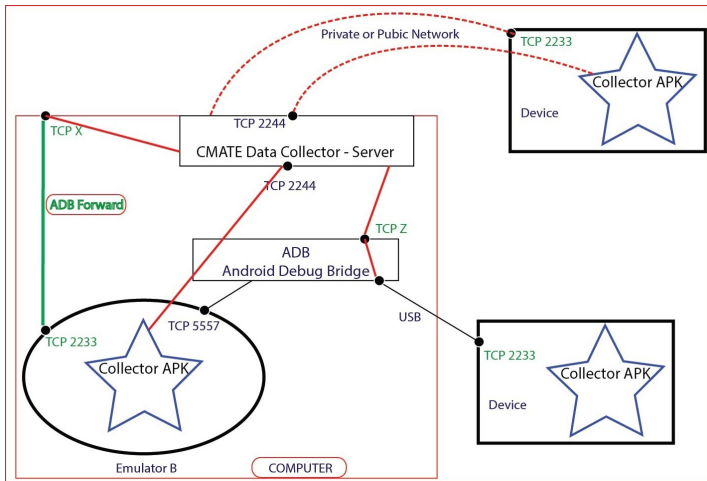
Architecture and Implementation

- CEMAT Server
- CEMAT Data Collector
- CEMAT Client

CEMAT Client

- Lightweight java application
- Connect to one of the servers in the cloud
- Limited to android application testing functions
- Can't manage the cloud

CEMAT Client

- Lightweight java application

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Automation/Scenarios

Architecture and Implementation

CEMAT Client

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Link Emulators to CEMAT Server

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Link Emulators to CEMAT Server

- List of Managed Emulators
- Unique name to be used in the session
- Shell session to the emulator
- Read the log and the output of the emulator
- Send the "CEMAT Data Collector" to the emulators
- Maintain a live connection to the Collector to read the data

- List of Managed Emulators

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Automation/Scenarios

Link Real Mobile Phones to CEMAT Server

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- List of Managed Devices
- Unique name to be used in the session
- Forward port on the server to a port on the device
- Send the "CEMAT Data Collector" to the device.

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Automation/Scenarios

Link Real Mobile Phones to CEMAT Server

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Remote Real Phones (on road)

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Automation/Scenarios

Remote Real Phones (on road)

Consideration

- No formal method to communicate with remote devices from Android
- private IP addressing
- Lack of Internet

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Automation/Scenarios

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Remote Real Phones (on road)

- Remote Real Phones (on road)
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  - Unique name to be used in the session
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    - Connection to the Data Collector on the device
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    - Receive the queries results with the updated values

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Heterogeneous Environment

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Automation/Scenarios

- **Automation**
  - Robotium
  - Direct Events Sender
- Scenarios
  - Environment Scenarios
  - Droidev (Emulators/Devices) Scenarios
- Results

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- Results

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- Automation
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Android Testing
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CEMAT
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Automation/Scenarios

Thank You

Questions ?