Android in the Cloud

Chromebooks, BYOD and Wearables

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Android and Chromebooks

- Android is not likely to be eclipsed in the foreseeable future, with over 75% share of the worldwide mobile phone market.
- Google has succeeded in attracting a very large number of developers to Android.
- Chromebooks are becoming increasingly popular. Despite their common Google origin there is as yet no “convergence” between Chrome OS and Android.

Use Cases

- Ascender’s technology is enabling, and is thus applicable to different use cases.
- We examine select use cases.

1. Android in the Cloud, Chromebook convergence

2. BYOD, Mobile Enterprise Security

3. Wearable Devices

Use Case 1: Android in the Cloud

- In this use case, the Android application is run in the cloud on a virtualized host.
  - **Cloud:** An unmodified Android app is installed in the Android virtual image running in the cloud. The state of this system is persistent.
  - **Remote:** The remote client can be from a wide range of **systems**: Chrome OS, Windows, OS X, Android, IOS, Tizen, etc. The remote client can be from a wide range of **platforms**: desktops, chromebooks, laptops, tablets, phones or wearable devices. *No data is persistent, resulting in strong security.*

Use Case 1: Android in the Cloud

Use Case 2: BYOD Mobile Enterprise Security

- Ascender's technology levels the playing field for the adoption of BYOD devices.
  - **Cloud:** Applications can be written once, for Android only, and can be run in the cloud under the control of the enterprise. Hosting in the cloud intrinsically solves many security problems.
  - **Mobile Device:** Android applications can be viewed on a wide range of platforms: desktops, laptops, tablets, phones and even wearable devices. Windows Phone can be supported by enterprises as easily as more popular platforms.

Use Case 2: BYOD
Mobile Enterprise Security

- Security is simple to provide since the data resides in the enterprise cloud.
- Responsibility for mobile device management rests with the employee since the enterprise data security management is done in the cloud.
- Complex device dependent mobile device management (MDM) is not needed.

Use Case 3: Wearable Devices

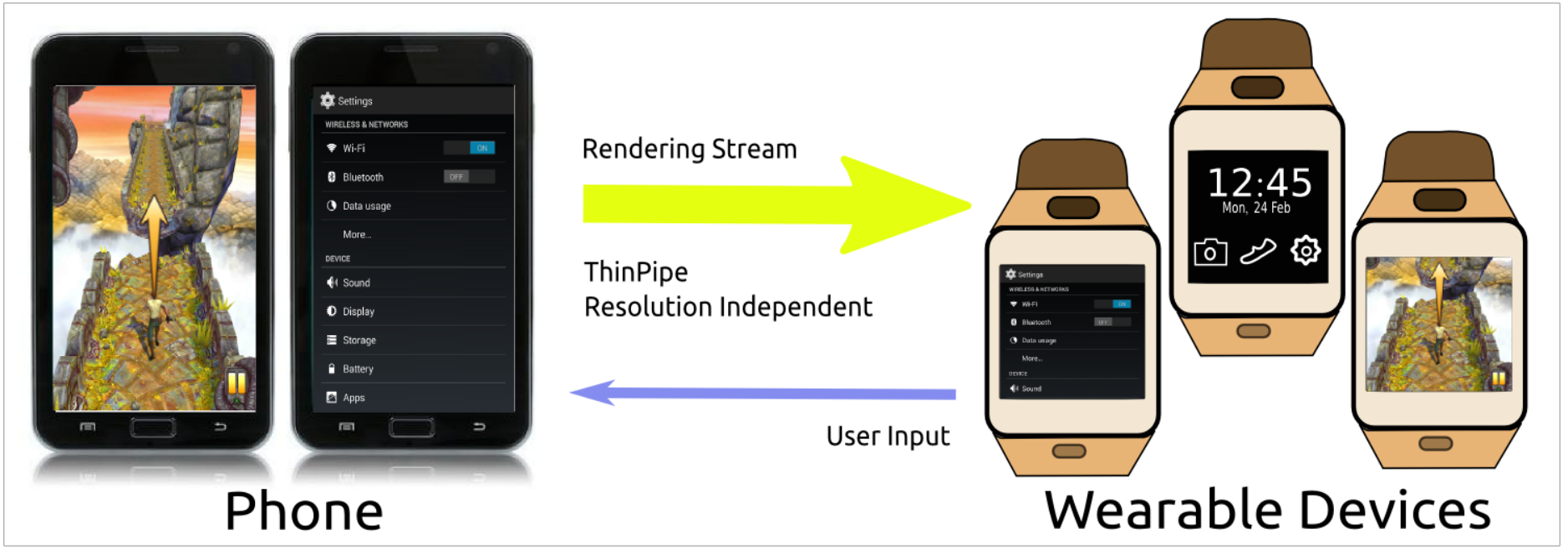
- In this configuration, devices that are carried on the person, or are in close proximity to the person, communicate.
- The wearable device might have constraints of computational power, network connectivity and/or OS compatibility that will make it difficult to run a desired application.

Use Case 3: Wearable Devices

- **Mobile Device:** This is a device running the Android OS, either tablet or phone. Android Wear apps can be run on the mobile devices.
- **Wearable Device:** This might be a device connected to the mobile device via a low bandwidth connection such as Bluetooth. With Ascender's technology, even devices that cannot natively run Android applications, can use remote Android apps.

Use Case 3: Wearable Devices

A Cloud In Your Pocket



Other Use Cases

- Cloud gaming
- App Library / Subscription Model
- Set-Top Boxes
- Automated Testing
- WebGL Browser Based Implementations

Android VDI

- While there is much experience in Virtual Desktop Infrastructure (VDI) for Windows, there is no comparable infrastructure for remote Android access.
- Most modern VDI technologies use host side rendering with a codec that compresses graphic frames at the pixel level.

Ascender Technologies’ Solution

- In contrast to the pixel based approach, Ascender's remote Android technology renders at the client side using remote rendering commands.
- Transmitting the remote graphics at the rendering level is intrinsically more efficient than transmitting pixels.
- The resulting data stream is very compressible while using low computational resources.

Benefits of Ascender's Solution

- Enables cost and computer resource efficient remote execution of unmodified Android apps on multiple platforms.
- Enables viewing on the remote client without performance compromise.
- Enables remote access to a large number of the 1,000,000+ available Android apps.

Benefits of Ascender's Solution

- Provides a high graphical frame rate using low network bandwidth.
- Expands the applicability of Android apps to many platforms, including Chromebooks.
- Solves the BYOD problem of managing multiple systems and platforms.
- Reduces cost of cloud hosting:
  - Rendering is done on the client side,
  - GPU's are not needed on the remote host.

Benefits of Ascender's Solution

- Typically uses less than 40 KBytes/sec of network bandwidth:
  - full resolution
  - low latency
  - lossless
  - 60 frames per second graphic stream.

Links

- Main repository on the technology and FAQ.
- Remote Android rendering
  - Short summary
  - Full length talk
- The challenge of mobile devices in the enterprise
- Remote WebGL demo