Viewpoint Q&A: Delivering networking and application development support for mobility solutions

In December 2013, InsightaaS.com had an opportunity to submit a set of questions exploring technical issues in delivery of networking and application development support for mobility to two HP experts – Steve Brar, Global Product Marketing Manager for HP Networking, and Paul Ashwood, Worldwide Portfolio Marketing Manager, Mobile Applications Services, HP Enterprise Services. Here is a transcript from our Q&A:

1. Why is it important to design a mobility solution from the network out?

Brar: The network is the lifeblood of mobility. Without the network, today's mobile devices become paralyzed. This fact highlights the importance of the network in designing a mobility solution.

Legacy mobile networks were designed as a coverage-focused overlay solution, acting as a separate network across the wired LAN and requiring separate management tools while providing inconsistent performance for users.

HP's unified wired and wireless network portfolio provides a single network, simplifying IT operations and enabling a consistent user experience regardless of how the user is connecting or from where.

With HP unified wired and wireless switches, access points, and Intelligent Management Center (IMC), a simplified, scalable, and lower cost network can be built.

HP is also investing heavily in enabling software-defined networking across its portfolio. SDN provides dynamic programmability of network devices enabling new innovations including the ability to create a more agile unified network for seamless connectivity and dynamic policy.

2. What are the key networking considerations in supporting mobility?

Brar: Bandwidth and performance. In order to ensure an optimized end-user experience for mobile users, ensuring there is sufficient bandwidth is key. Bandwidth becomes more critical as we move to denser client environments, more devices per user, and to new technologies such as 802.11ac. HP recognized that the bandwidth that will be required to deliver rich-media applications cannot be provided by traditional centralized data path controllers and a new architecture is needed. HP unified wired and wireless architecture delivers the scalability and performance for today's and tomorrow's bandwidth intensive mobile applications.

With respect to performance: ensuring a reliable and consistent level of performance is critical for mobility. Granular quality-of-service policies, advanced radio resource management, client load balancing, interference mitigation, and airtime fairness are all key capabilities that should be considered when deploying a network to support mobility. HP Wi-Fi Clear Connect provides these capabilities across the HP portfolio. HP is also innovating with new SDN applications such as HP UC&C SDN Application for Microsoft Lync which applies dynamic QoS policies across the network to support mobile communication and collaboration.

3. What are the system-level complexities involved in delivering a consistent user experience to users on a laptop, a tablet and a phone?

Brar: In a well-designed network, the user should have very similar experience with any of these devices. One key consideration is that each hardware device has different wireless radio capability and power. That is why it is important to build a wireless network that can handle dense client environments where some devices may have lower power output than others (e.g., smartphones vs laptops). A site survey can be helpful in designing a network that can support all types of devices as well as multiple devices that many users now carry.

4. What are the system-level complexities involved in supporting system access from multiple devices that are owned by employees, customers and suppliers, in addition to the business itself?

Brar: Mobility has two key aspects, the device and the user. From a device perspective, ensuring the integrity of the device, the operating system, and the hardware type are all key pieces of information used by an IT administrator for policy definition. The other aspect is who the user is and what their specific policy should be (e.g., employee, guest, etc.). All of these varying requirements can make it very complex to implement a network that can support a multitude of devices and users while maintaining consistent performance and security.

HP's IMC platform has integrated device fingerprinting, user access manager, and bring-your-own-device support all through a single pane-of-glass. IMC provides onboarding, provisioning and monitoring of devices and can apply the right policy as defined by the IT department for any user type, any device and from any location, ensuring the best possible user experience that is secure and reliable. In addition, IMC can check the health of end-user devices with a local client.

5. What are the keys to providing real-time updates/synchronization between central systems and remote mobile workers?

Brar: From a network perspective, a well-designed network with lower latency and WAN optimization will handle any type of real-time update/sync between a virtualized client or managed mobile device and central systems.

Ashwood: From a mobile apps development perspective, it's essential to consider timing of updates/sync and the network options (and data plans) the user is operating on. You don't want to push a 150Mb app update to a user over a 3G network with a weak signal in the middle of their work day – you will want to wait until they are at home on their Wi-Fi network and schedule the update to run at night while they are asleep.

6. What are the system-level complexities involved in supporting the integration of multiple data types (pictures, video, text, etc.) in outgoing communications?

Brar: From a network perspective, most content will traverse a well-design network without any issues. For video specifically, ensuring quality-of-service policy is set will ensure a consistent experience. Also for video, multicast to unicast conversion capability can be important as well as multicast optimization (HP patent).

Ashwood: From a mobile apps development perspective, the main complexity here is understanding that you have these different form factors (5" phone, 7" tablet, 10" tablet, portrait mode, landscape mode, laptops, desktops, etc), and that you need to create a *Responsive Design* that dynamically adjusts to the form factor being used. This will require you to design multiple layouts instead of the traditional one layout. Think about the example of a basic picture that is a banner image. The image I display on a 10" tablet in landscape mode, will look horrible on a 5" smartphone in portrait mode. It is a basic question of real estate; the solution is to have more than one image, to recognize the form factor being used, then to dynamically adjust the content to fit the form factor. This creates the nicest user experiences, but it does add (time and cost) to the design, development, and maintenance of the content. Hence you have this balance between the quality of the user experience, and the cost to deliver such quality with a responsive design.

Also, when it comes to video…the different device operating systems handle videos very differently with different media players on the device. Apple, Android, and Win8 video players are all different. YouTube does create a nice consistent way of playing videos especially in HTML-based apps or communications. You must consider the size (and therefore bandwidth) of videos and pictures, and also connectivity: do I need to be connected to the internet to play a video that is hosted on a server somewhere? While mobile web apps use HTML5 standards, the video players on each mobile OS are different. This is where products like PhoneGap come into play, to bridge the gap between HTML5 and device features like video players, cameras, GPS, and accelerometers which are somewhat unique to each device and not covered by standard HTML5 commands.

7. What do organizations need to consider, when creating an approach that enables remote endpoint devices to read from/write to corporate systems?

Ashwood: It's important to consider the following:

- Middleware services (and an API gateway) to connect (and manage) the front end mobile apps connecting to the back end enterprise systems
- Offline versus online mode: don't always assume users are connected – they may want to take orders in an offline mode, then sync the orders to the back end system later when they are connected
- Performance of the end to end solution (especially considering different locations / countries on a global deployment)…also, the ability to monitor that performance and diagnose performance problems.
- Security of the device and the app: can I exploit the app to access enterprise data I am not supposed to see? Organizations need to deploy secure containers on devices, app security scans of the apps, ensure that they have remote wipe capability, and provide encryption of the data both at rest (on the device) and in transit (over the network).