MOTIVE HELPS A NORTH AMERICAN TIER 1 SERVICE PROVIDER DRIVE THE RAPID ADOPTION OF LTE

ALCATEL-LUCENT PROVIDES STREAMLINED MOBILE DEVICE MANAGEMENT & OPTIMIZED CUSTOMER EXPERIENCE

THE CHALLENGE

Mobile broadband is exploding as consumers embrace data-centric applications on their devices. LTE is at the forefront of this trend because, compared to 3G, LTE delivers 10 times the speed with three to fives times lower latency. Operators transitioning to LTE are making forklift upgrades on radio access network (RAN) and core network components — highlighting the importance of an immediate return on investment.

According to ABI Research, at the end of 2013, there will be 1.4 Billion smartphones in use around the world (Source: ABI Research's Mobile Application Technologies, 31 January 2013). This trend will be accelerated as more mobile network operators deploy LTE, because the overwhelming majority of LTE devices are smartphones.

Delivering a seamless LTE customer experience depends on provisioning and managing numerous LTE devices (USB dongles, wireless routers/hotspots, smartphones, handsets, tablets) from a variety of different manufacturers. Managing these devices is complicated because many of them are dual mode (LTE for data and CDMA for voice) and come from a variety of OEMs, with varying degrees of standards compliance.

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Google introduces updates to its Android operating system several times per year; in 2011 alone, nine updates were released. OEM device manufacturers deliver firmware upgrades to introduce new functionality, patches and integrate OS updates. Operators must send firmware updates to their subscribers before they receive costly calls to the help desk. Automating this process was a key consideration for a successful launch of LTE.

Typically, feature phones require one firmware upgrade per year. LTE devices are expected to require 3-4 firmware upgrades in their first year alone, with the size of the upgrades taking Megabytes rather than Kilobytes.

Adding to the challenge was a short implementation timeframe. Given the massive wireless infrastructure investment for LTE, it was imperative to add subscribers as fast as the network was launched. The aggressive nature of the LTE rollout meant that the mobile device management provided would have to be scalable. The goal was to have one million subscribers/devices up and running by end of the first year.

THE MOTIVE SOLUTION

The Motive Mobile Device Manager (MDM) is a comprehensive device management tool that enables operators to automate and remotely manage key customer touchpoints from activation through ongoing customer support.

One of the most powerful features of MDM is the concept of 'primitives'. The primitive approach separates the actual device commands from the business logic. An example of a primitive could be to lock the device; the actual device commands would be abstracted from the MDM user so they would not have to know the OS, and/or protocols required. The primitive approach helps operators keep abreast of changes in OEM device functionality by allowing the device commands to be updated independently of the business logic. Although there are many competitive MDM products, primitives are unique to Alcatel-Lucent.

MDM goes beyond out-of-the-box device detection, configuration and provisioning of mobile devices. Features include:
- Support for both Apple Pull model and new Apple Proprietary remote management model
- Post Load Remote Management Client that enables over-the-air (OTA) management of Android devices

- Automatic Device Detection based on triplet (IMSI, MSISDN, and IMEI) or doublet (MEID/ESN)
- Support for OMA-CP and OMA-DM device management protocols
- Single MDM server supporting CDMA, GSM, UMTS and LTE – RAN agnostic
- Remote diagnostic capabilities that enable service providers to retrieve useful information from the device (ex. Get OS version)
- One-to-many management capabilities for performing large-scale and targeted actions, such as firmware upgrades and configuration updates

With new devices continuously coming on the market, it's easy for operators to quickly get inundated with testing device management against the OEM documentation. In response to this, Alcatel-Lucent created a formal interoperability program that independently tests mobile devices from a variety of manufacturers. This program validates OEM device commands and identifies (or exposes) what functions Motive's MDM can enable on those devices within the operator's marketing portfolio. The program produces a monthly interoperability update of devices and corresponding primitives that are aligned to the operator's current or planned device portfolio.

As part of the initial provisioning, the Access Point Names (APN) were configured. APNs are used by wireless operators to configure quality of service (QoS), set billing and manage data traffic. Even after activation, APNs can be modified when a subscriber moves to another geographic region, create revenue by offering filtered access to the Internet or distribute data traffic load thereby delivering the best broadband experience. MDM is designed for 40 transactions (APN/ADD) per second.

Alcatel-Lucent also provided the Motive Service Management Platform (SMP) to integrate MDM functionality into the operator's B/OSS (business/operations support systems) framework. SMP can be used in the mobile or fixed realms to model workflows, integrate with other systems, and provide northbound Interfaces.

- Workflow builder offers business analysts an intuitive, drag and drop, graphical interface for the creation of customer care and service troubleshooting workflows. Workflow Builder automatically discovers the device and service operations created in SMP. The model builder enables the analyst — who does not require a technical background — to create workflows that capture various components and dependencies thereby helping to define a service or create a troubleshooting process for the customer service representative (CSR).
- SMP enables the creation of customized northbound APIs to normalize device operations across a variety of disparate endpoints. As a result, northbound systems can interact with different endpoints (e.g., residential gateways, mobile phones and set-top boxes) without using specialized or proprietary functions for each different type or model.
- The integration capability allows service providers to easily develop and deploy data source adapters for underlying systems. SMP leverages an integrated data aggregation layer which works in concert with the integration framework to handle communication with the different systems to gather the information required by workflows.

THE MOTIVE DIFFERENCE: PRIMITIVES, HOSTING AND FIRMWARE OTA

Within the first year, it was clear that this operator was well on its way to delivering a superior customer experience, with over 7 million LTE devices activated on the network. Currently, the operator is rapidly approaching 25 million LTE devices.

A key differentiator for the Motive MDM is its unique architectural design for managing Firmware Over The Air (FOTA). MDM separates the device configuration process and actual firmware image downloaded into separate sessions. As a result, MDM performance is uninhibited by firmware image size or the number of devices being upgraded.

In response to the short launch window, Alcatel-Lucent is hosting both the Motive MDM and Motive SMP in our Austin, Texas hosting facility rather than installing the software on the operator's servers. This method accelerates the time to market and delivers 99.999% reliability. A second geo redundant site in Dallas, Texas acts as a mirror to maintain maximum system availability.

Given the rapid introduction of LTE device and corresponding OS changes, there was no shortage of device manufacturer updates. By the end of the first year, 2 million firmware upgrades were pushed out over-the-air (OTA), as they were certified. Traditional feature phone updates can be up to 300 to 500 KB, but LTE devices are more sophisticated and firmware upgrades can exceed 1 GB.

Two types of firmware upgrades are supported; user initiated (UI) and network initiated (NI). Proactively pushing our firmware upgrades can avoid calls from subscribers requesting help desk assistance with providing the latest OS updates or help with a defect or bug.

In addition, SMP provides a key role by modeling the service and management operation associated with the endpoints (devices) on which the services depend. SMP allows easy integration between MDM and any internal provisioning and backend systems, like billing.

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