



Calix Experience Innovation Platform

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INTRODUCTION

For broadband service providers (BSPs) that offer high-speed Internet services, focusing exclusively on hardware-specific benefits is challenging because, once installed, the traditional residential gateway that has been used for decades is a monolithic system. It cannot evolve. The only way to stay ahead of the competition with this approach is to constantly deploy new hardware, increase connection speeds, and reduce prices. This is a race to the bottom.

By adopting an innovative platform that runs on top of cutting-edge Wi-Fi systems, appealing new services and applications can be offered to subscribers on an ongoing basis. This approach results in increased subscriber satisfaction, while generating additional, recurring revenue.

CALIX EXPERIENCE INNOVATION PLATFORM OVERVIEW

The Calix Experience Innovation Platform transforms existing business models, taking advantage of the power of software with:

- **Hardware independence:** the software layer is abstracted from the hardware, allowing for an accelerated time to market because the containerized architecture allows for development and testing of features to be performed independently.
- **Services abstraction:** provide consistent and instantaneous availability across all products, simplifying software validation, and allowing feature mobility from one device to another.
- **Modular architecture:** ensure that changes to one function do not impact other system functions.

DE-COUPLING THE SOFTWARE FROM THE HARDWARE

The Calix Experience Innovation Platform abstracts the software and service applications away from the underlying system on a chip (SoC) found within the residential gateway. This delivers a solution where the software is integrated once and future hardware change cycles are largely hidden; improving time to market significantly, while greatly simplifying operational processes and delivering a common experience for subscribers.

Core to the Calix Experience Innovation Platform is a System on a Chip Abstraction Layer (SoCAL) that creates a common application platform across all systems, regardless of the SoC, Wi-Fi, or IoT chipsets. This enables rapid development of new functionality, re-use across implementations, and a DevOps approach to development, integration, and test methodologies. In addition, the Calix Experience Innovation Platform supports advanced capabilities across WAN, Wi-Fi, and IoT interfaces with rich Layer 2 and 3 services, and a portfolio of expanding features. Because the Calix Experience Innovation Platform is a comprehensive platform, it provides the basis for true “intelligence at the edge” as required for a wide variety of scenarios and use cases.

On top of the SoCAL are the application packages. These packages can be inserted via a container architecture, leveraging a stateful OpenWRT framework, allowing fast time to market without regressing the entire portfolio. The management plane is decoupled and centralized, so it can manage all the applications simultaneously even though the applications can be installed independently.

The Calix Experience Innovation Platform paves the road for a future that is hardware agnostic, separating the software layer from the hardware layer, giving BSPs the flexibility to develop and integrate applications and services that are free from the limitations of traditional hardware dependencies.

Hardware abstraction to allow for silicon independence is, in itself, not the goal. The goal is flexibility. By having a true abstracted platform, we are able to achieve four benefits: speed to market, capability flexibility, always on networks, and open APIs.

Speed to Market

Today, every new premises system requires feature development within a constrained software development kit (SDK) and TR-069 ACS integration that can take up to 18 months to complete. The Calix Experience Innovation Platform is abstracted from the silicon, allowing BSPs to reuse software applications running on the residential gateway across different hardware implementations. This results in radically reduced lab validation and integration times, with existing systems like OSS and BSS leveraging a hardware agnostic northbound interface to the ACS, as well as integration with other cloud platforms via JSON interfaces. The Calix Experience Innovation Platform will allow BSPs to integrate and launch new systems dramatically faster

Capability Flexibility

By embedding capabilities (i.e., band and node steering) into a componentized, abstracted platform, the Calix Experience Innovation Platform provides BSPs with the flexibility and speed of software innovation. BSPs will be able to develop their own applications or pick from a rich ecosystem provided by Calix. No more waiting.

Always on Networks

The Calix R&D mindset is based in the concept that rapid software innovation can't come at the expense of the subscriber experience and reliability. The subscriber wants to rapidly consume new features as quickly as they are available, but a software update can't impact their service. It must be 'always on'—whether it is a consumer not wanting their 4K movie interrupted, a gamer's demand for zero interruptions, or a small business never wanting their Wi-Fi enabled point of sale system to go down. The Calix Experience Innovation Platform allows BSPs to service systems remotely, without a reboot through a fully stateful platform design.

Open APIs

Whether exporting data to a BSP's data warehouse, using the native REST-based APIs to serve the BSPs mobile app, sharing data with partners, or enabling Calix Marketing Cloud behavioral insights, the Calix Experience Innovation Platform is an open architecture committed to enabling broad systems access.

MANAGEMENT FRAMEWORK

The Calix Experience Innovation Platform is built on a persistent database and object model that allows BSPs to access several management protocols and interfaces. Whether the device is managed through an internal graphical user interface (GUI), TR-069, or using NETCONF and YANG data modeling, the Calix Experience Innovation Platform provides adapters to access, manage, and provision for current and future interfaces.

Based on Linux, the Calix Experience Innovation Platform leverages stateful OpenWRT to provide a framework for full customization and integration of contained features. The Calix Experience Innovation Platform gives BSPs a platform that is hardened for carrier-grade deployments to manage consumer-grade devices.

With the Calix Experience Innovation Platform, BSPs are provided a framework that gives visibility into the connectivity behaviors and management capabilities for the many devices that make up the connected home. You can continue to support, manage, and control the subscriber experience through a standard framework.

ANALYTICS AND INSIGHTS ARE EVERYWHERE

An enormous benefit of the designs upon which the Calix Experience Innovation Platform is based, as previously detailed, is that it provides the perfect platform upon which to identify, mature, and execute advanced analytical models capable of furnishing intelligence. These models leverage the real-time and historical telemetry that they are inherently privy to, set the stage for intelligent behavior in response to real-time events, and leverage proactive behavior based on predictive modelling.

The results of applying analytic analysis within the network is twofold: You can find new opportunities to sell services that matter to your subscribers and fix areas of misalignment. With the former, BSPs can leverage the historical real-time behaviors of subscribers to market new services that best fit their usage, while the latter allows performance or security issues to be dynamically fixed before they impact the subscriber experience. In a rapidly evolving world, where superior subscriber experience is the deciding factor of who dominates, better insights are key. Finally, and perhaps most importantly, we believe every interaction with a subscriber represents a revenue opportunity, but fully embracing this will require a shift in the BSP mindset from premises as a 'cost'.