Rebuilding on the Fly: NFV meets OSS/BSS

By: Tim Young

The city I call home—a mid-sized city in the southeastern US—is bisected by a stretch of freeway that dates back to the Eisenhower presidency.

For decades, it was a stretch of I-40, the third-longest interstate highway in the country, which stretches more than 2,500 miles from Barstow, California to Wilmington, NC. A bypass opened a quarter-century ago and claimed most of the I-40 through-traffic from this particular stretch of roadway, but it remains heavily traveled, skirting the downtown core and connecting the city's most populous neighborhoods and shopping districts.

And it's a mess.

The exit ramps are far too short and the roadbed is potholed and worn. The overpasses are crumbling, with at least one closed to vehicle traffic and in need of a complete rebuild. Acceleration lanes, where they exist, are narrow and awkward. Like many mid-century highways, it was built without much regard for pedestrian connectivity and inelegantly cordons off neighborhoods from one another. It contains bottlenecks and snags, and it simply isn't an optimal conveyance for modern commuters. It's one of the many examples of critical infrastructure projects around the country that are long overdue.

And so, sometime in the next few years, the several-mile-long chunk of highway is getting completely shut down and rebuilt. No chipping away at the problem, closing an overpass at a time or routing cars into a single lane of traffic for a half-decade. A couple miles of roadway get shut down completely for a year or so and rebuilt from the ground up. The 80,000 or so cars the highway currently carries every day will be rerouted onto bypasses and surface streets, causing unpleasant-but-temporary congestion, but the end-result could be worth a year or two or inconvenience, right?

Where am I going with this? You might have already guessed. Your network probably looks in places like the technological equivalent of that past-its-prime stretch of roadway. It's not optimized for modern traffic and it's crumbling in spots. But there are a few key differences between your network and this highway.

Though traffic has increased on both over the past decade or two, there probably aren't enough cars in the nation to clog my stretch of outdated highway with the equivalent increase to what your networks have seen. And while the highway revamp includes allowances for traffic that the highway wasn't built for—pedestrian overpasses and an adjacent bike highway are a part of the grand design—you'd have to throw in some bullet trains and rocketships and speed boats to create an equivalent diversity of traffic to what your network is now expected to support.

But the biggest difference is that your antique, pieced-together legacy network can't shut down and rebuild. Like the highway, your legacy network has been supplemented and supplanted by a wide variety of newer pieces of infrastructure through the years, but unlike the highway, it is too crucial to take a day off, much less a year off. And the systems that support it have to remain in place as long as the network remains necessary.

This is the painful heart of OSS/BSS transformation.

Virtualization is doing remarkable things, and NFV orchestration has come so far. But it can't do everything, and OSS/BSS transformation has to happen without interrupting anything that your subscribers will notice.

And obviously, all future plans should prominently feature virtualization and automation. As Hutchison CTO Stephen Hampton pointed out in a guest post on Cisco's blog, CSPs have been understanding about the slow-going of networks to address complex issues surrounding automation, distributed configuration, heterogeneous environments, and service insertion. "However, now in 2017, both SDN and NFV have matured and there is no longer an excuse," Hampton writes. "If your network is not software defined, then it is legacy."

But here's where the underlying aspects of NFV management and orchestration (MANO) can be leveraged to transform legacy OSS/BSS architecture, according to HPE's handy special edition of "Network Functions Virtualization for Dummies." [PDF]

(And yeah, I'm immediately on board with anything that lets me admit I am a dummy.):

In order to take advantage of the flexibility of NFV, OSS needs to be automated, catalog-driven, intent-based, and data-focused. There needs to be a real-time awareness of resources, a tight watch on assurance, and an automated and speedy path to fulfillment as a result of this overall awareness.

That catalog-driven approach has long been promoted by vendors such as Sigma Systems (and the now-absorbed Tribold before), and the firm's solutions were recently featured in a Stratecast report on the way forward for hybrid services. Catalogs, in short, are crucial.

"Nowhere else can configuration data, product and services descriptors, order management processes, configure-price-quote attributes, and data on both physical and virtual network assets be combined and correlated," said author Tim McElligott, Senior Consulting Analyst within the Stratecast Operations, Orchestration, Data Analytics & Monetization practice, in a statement. "Catalogs can support both ETSI and TM Forum specifications and information models."

We all know NFV is on the rise. [Forecasts a few months back](#) had it growing at a CAGR of nearly 33% through 2020. But there's no closing down this highway. We have to build it all on the fly, transforming as we go. That's what makes the ongoing modernization and transformation of OSS/BSS absolute table stakes in the years to come. It may not seem like the world's best plan to invest in technology that is anything less than cutting edge, but there's still an awful lot we can't or won't virtualize.

It's a hybrid life for us, then, and that means taking the crucial lessons offered by NFV and using them to make our legacy support systems more agile and more intuitive.