Service Providers Face Broadband Modernization Challenges

Telcos are beginning to realize that building networks with open, disaggregated routing software and solutions offer numerous benefits.

By Hannes Gredler / *RtBrick*

It's the same old story. The telecom industry, just like many others, has been slow to modernize and, therefore, keep up with expectations and demand. Most carriers understand the necessity to adapt, but there's still a persistent hesitation across the industry based on fear of losing what's familiar.

The industry has reached a breaking point. High-speed broadband access is a critical resource, and the need to protect users has never been more important. The USDA drives home this message: "Access to high-speed internet is vital for a diverse set of industries … and acts as a catalyst for rural prosperity."

Unfortunately, traditional broadband buildouts involving monolithic routing systems that integrate hardware and software from a single vendor aren't cutting it. They're inflexible, expensive and unreliable as new alternatives. If a router fails or loses connectivity, full service can't be restored until route convergence has been conducted, which can take longer on traditional systems.

By adding support for the Edgecore CSR440 open switch, RtBrick's software enables it to act as a broadband network gateway and support tens of thousands of broadband subscribers. In contrast, conventional routers can't scale down as well and come with high costs.

To take the best steps forward, it's essential to do more than try to make incremental improvements to old systems. The telecom industry must wean itself off legacy ways of working to make space for a new approach. Fortunately, the industry made a breakthrough toward a new era – the era of disaggregation – that can't come soon enough.

NETWORK DISAGGREGATION'S FINANCIAL BENEFITS

Similar to how cloud-native organizations built data centers, telcos can now select top-performing network hardware and software from different vendors and replace broadband network gateways (BNGs) and other functions via disaggregation. This is thanks to recent advancements in off-the-shelf merchant silicon, which is being used to create less expensive yet equally powerful "bare metal" switches that can be used to build IP/MLS routers for broadband networks.

As a result, disaggregation breaks the inflexible and expensive approach to broadband buildouts that's all too familiar today. With open-networking switches, the hardware costs associated with delivering broadband services are cut significantly. Total cost of ownership studies show that disaggregated broadband networks can cost less than half of what traditional broadband networks do.

Furthermore, the underlying silicon open switches use is typically a generation ahead of the proprietary silicon used in traditional routers and switches – making it more power-efficient. As the cost of power continues to rise, network disaggregation offers even more commercial advantages in addition to sustainability benefits.

DISAGGREGATED VENDOR LANDSCAPE

Disaggregated software routing vendors such as RtBrick and open networking solutions providers such as Edgecore revolutionized the industry and significantly advanced broadband access.

For example, by adding support for the Edgecore CSR440

open switch, RtBrick's software enables it to act as a BNG and support tens of thousands of broadband subscribers. Delivering 800 Gbps of throughput in a single rack unit, carriers can deploy the hardened Edgecore CSR440 near the network edge in non-temperature-controlled environments – permitting them to terminate subscriber services closer to distributed compute and storage infrastructure. This is a highly cost-effective way to deploy a BNG for smaller communities, demonstrating RtBrick and Edgecore's commitment to helping close today's broadband divide. By comparison, conventional routers can't scale down to these numbers and come with high costs.

In addition, although it seems that the remote work, video conferencing and streaming that were the norm during the pandemic may not be as prevalent today, internet users emerged with a hyper-reliance on uninterrupted service and less patience for outages. However, if a router fails or loses connectivity, route convergence must be conducted before full service can be restored. RtBrick is assisting with this problem by being able to relearn and load the entire internet feed of a million routes in less than 30 seconds at a rate of 40,000 updates per second. RtBrick also recently added high-availability capabilities to its routing software to help re-establish network services with only minimal disruption. In the event of a failure in the optical access network or a BNG hardware failure, which could affect tens of thousands of subscribers, services can now be re-established in a few seconds.

ENABLING BROADBAND ACCESS

The world has been waiting for broadband access that's reliable, cost-effective and power-efficient. Telcos are beginning to realize that building networks with open, disaggregated routing software and solutions does not require a leap of faith.

The benefits are clear and numerous – and growing year after year. Let's walk together into this inevitable new era.

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