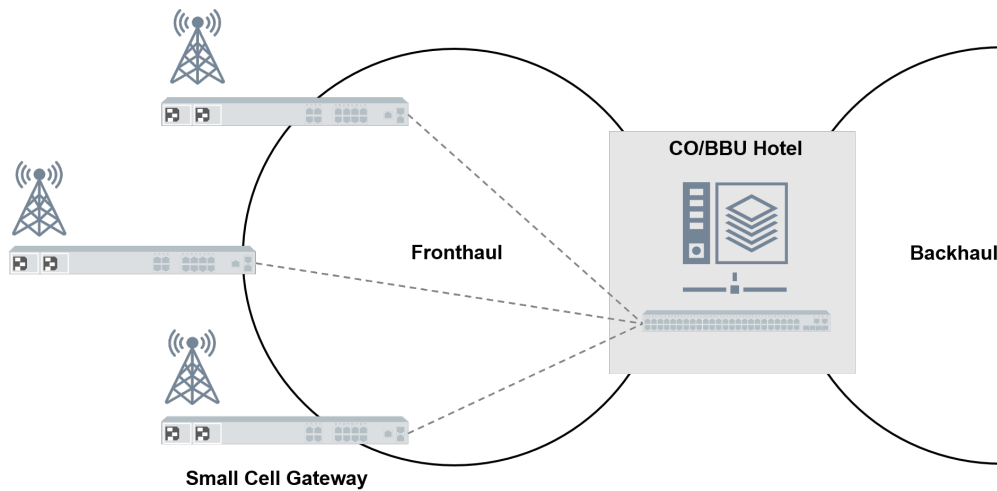


# Cell Site Gateway Router



Wireless providers need to make fundamental changes to their infrastructures to capitalize on the growth opportunities in changing 4G and new 5G environments. 5G will create new revenue opportunities but will require

significant CapEx.

Providers will need to radically alter their cell sites' capabilities in order to succeed. Cell sites in 5G networks will be far more numerous and much smaller. This new dynamic creates major technical and financial challenges for wireless network operators since legacy routers are unsuited to the capacity and economic requirements at this location in the network.

An open networking approach using a Cell Site Gateway (CSG) Router provides wireless carriers with an ideal solution to their 5G cell site challenges. [TIP's Disaggregated Cell Site Gateway](#) is an example of this approach. The Volta solution delivers not only carrier-grade routing capabilities but also the flexibility, reliability and cost efficiencies that wireless providers need.

## **Volta Networks' Cell Site Gateway (CSG) Router**

Volta Networks gives wireless network operators the ability to scale out their routing capacity right at their cell sites. Volta moves the bulk of the control plane processing to the cloud which allows us to scale the available processing far beyond what is possible in low-cost switches. As a result, Volta can support up to 255 virtual routers per CSG for applications like RAN sharing and network slicing. The Volta Agent provides the control on the switch so it acts much like an IO module in a conventional router.

Service providers are now specifying the requirements for CSGs including the hardware. They want low cost, hardened and open devices with the ability to run carrier grades software. However, the CPU used in these devices limits the processing that can be done on the box.

## **Carrier-Grade Routing at the New Service Edge**

Volta can support multiple virtual routers on a single white box switch. Operators can

spin up a virtual router from the cloud, and easily associate it with a particular switch at a specific site. And with the centralized management and automation offered in the CSG Router, they can just as easily dial down virtual routers to maintain maximum operational efficiency while controlling costs.

Scaling virtual routing will be critical to key applications:

- **RAN Sharing:** Going it alone in the build-out of next-gen wireless infrastructure is an expensive proposition for providers. Some operators are turning to a Radio Access Network (RAN) sharing. That's where two or more mobile operators collaborate in the sharing of the same infrastructure. For capacity buyers, it provides a lower-cost way to expand their services or enter new markets; for sellers, it creates a new profit center. The Volta CSG Router facilitates RAN sharing by enabling different providers to run multiple virtual routers at the same white box switch-powered cell sites. Each virtual router is a completely separate administrative domain running its own routing protocols.
- **Network Slicing:** Network slicing allows operators to deploy different "slices" of the network, where these virtual networks run on a common infrastructure. Each network slice is isolated and tailored to the specific requirements required by very different applications like machine-type communication, ultra-reliable low latency communication, and enhanced mobile broadband content delivery. The dynamic provisioning and management of network slices must go all the way to the cell site (and its router) where having separate virtual routers each with its own administrative domain is essential to make this service practical. The Volta CSG Router facilitates effective network slicing via multiple virtual routers provisioned and managed from the cloud but accessed at the same, white box switch-powered cell sites.
- **New Services:** Carriers recognize that the infrastructure to deploy 5G small cell sites can be reused in innovative ways. The fiber connecting a cell site could also be used to connect business locations that previously were not on-net. This makes services for these enterprise customers more profitable. Having separate virtual routers makes it easy to provision and manage these enterprise services.