



Getting Started Guide

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1. RBFS Overview

FullStack carrier routing software is a new way to build and run your network, applying a cloud-IT approach to deliver routing software that is more robust, more controllable and costs far less than a conventional network. Disaggregating your routing software from hardware allows you to build a distributed Software Defined Network, using software that delivers at carrier-scale.

The software is available in a number of discrete products, such as a BNG (Broadband Network Gateway) and a PE Router (Provider Edge).

- BNG (Broadband Network Gateway)
- PE Router

1.1. RtBrick BNG

The RtBrick Border Network Gateway (BNG) is delivered using RtBrick Full Stack software, which takes advantage of the latest merchant silicon running on powerful bare-metal switches to give you high-performance at a fraction of the cost of conventional monolithic router systems.

The RtBrick BNG is delivered as a Linux container and packaged for bare-metal switches within an Open Network Linux (ONL) installation for a seamless experience out-of-the-box. ONL handles peripherals such as LEDs, temperature sensors, and other platform management tasks. The entire networking stack, including the forwarding elements, is implemented in userspace as containerized processes.

The platform provides an in-memory database custom-built to meet networking scale and performance requirements and also provides primitives needed to build network applications. Application instances can themselves be scaled out to meet performance requirements

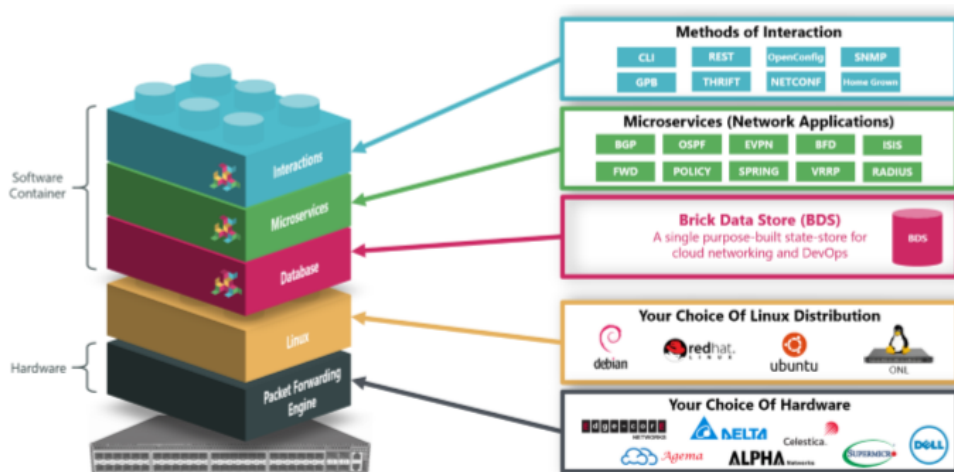


Figure 1. RtBrick BNG Software

For more information, see [BNG](#).

1.2. PE Router

The RtBrick PE Router is delivered as a software container, packaged out-of-the-box with the Open Network Linux (ONL) provided by the hardware SKU manufacturers, which handles peripherals such as LEDs, temperature sensors, and so on. There are no dependencies on either the kernel or the hardware platform components, so RtBrick's containers can be run on the Linux version of your choice. The RtBrick PE Router software can run on either an x86 server, or for most carrier-scale deployments, on low-cost but powerful bare-metal switches.

The BNG's subscriber management capacity is provided in a scale-out architecture called the Point-Of-Deployment (PoD). A large-scale PoD consists of Access Leaf Routers and Border Leaf Routers aggregated by a layer of Spine Leaf Routers in an auto-provisioned CLOS topology (see Figure 2). The Access Leaves deliver subscriber management functionality and the Border Leaves provide connectivity to the core of the provider network.

The leaves can be scaled out horizontally to increase the number of subscribers supported on the PoD, providing a pay-as-you-grow architecture. For smaller PoDs, Spine and Border Leaf functionality can be collapsed onto a single hardware platform, depending upon the hardware platform used.

PPPoE Subscribers can be terminated on the Access Leaf Routers or tunneled to an LNS over L2TPv2. L2 Cross Connect (L2X) allows subscriber traffic to be tunneled out of the PoD at Layer 2, providing wholesale connectivity.

The RtBrick BNG software can also run on an x86 processor or in a cloud compute environment.

For more information, see [PE Router](#).

2. RBMS Overview

The RtBrick Management Suite (RBMS) software is designed for out-of-the-box automation. All you will need to operate your network are a few simple tools:

- A web browser
- A standard DHCP server (For your zero-touch provisioning server)
- A management LAN

For more information, see [RBMS](#).

3. Compatible Hardware

RtBrick's Full Stack routing software can operate on many bare metal switches, depending on your performance and port count requirements.

For more information, see [Hardware Compatibility](#).

4. RtBrick BNG PoD architecture

You can re-use your existing infrastructure to continue to provide lower volume legacy services, and optimize the rest of the network for the bulk of your traffic - providing large volumes of high bandwidth services at a lower cost-point with a web-scale operating environment.

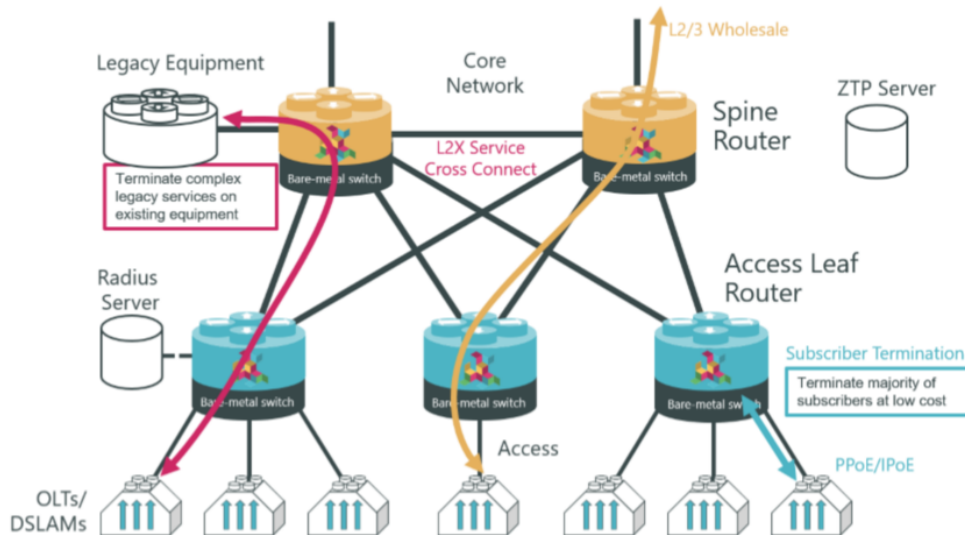


Figure 2. RtBrick BNG PoD architecture

So your RtBrick BNG can also act as a service cross-connect, routing each subscriber to the appropriate network infrastructure and extending the life of your high-cost legacy BRAS or BNG systems, for example.

5. Management and Operations

Along with the traditional CLI and SNMP, more 'cloud-native' means of interactions are also supported, such as gNMI and Netconf.

RtBrick's Management System, RBMS, takes this a step further, by providing network level workflows such as Image Lifecycle Management, Network Upgrades and Event and Log Management. RBMS actions are available through REST APIs making them easy to integrate into existing OSS systems. RBMS provides a single point of interaction for operations staff – from provisioning and management to monitoring and debugging.

The result is a BNG that can be managed using the latest Web2.0 tools through a 'single pane of glass', with Zero-Touch-Provisioning.

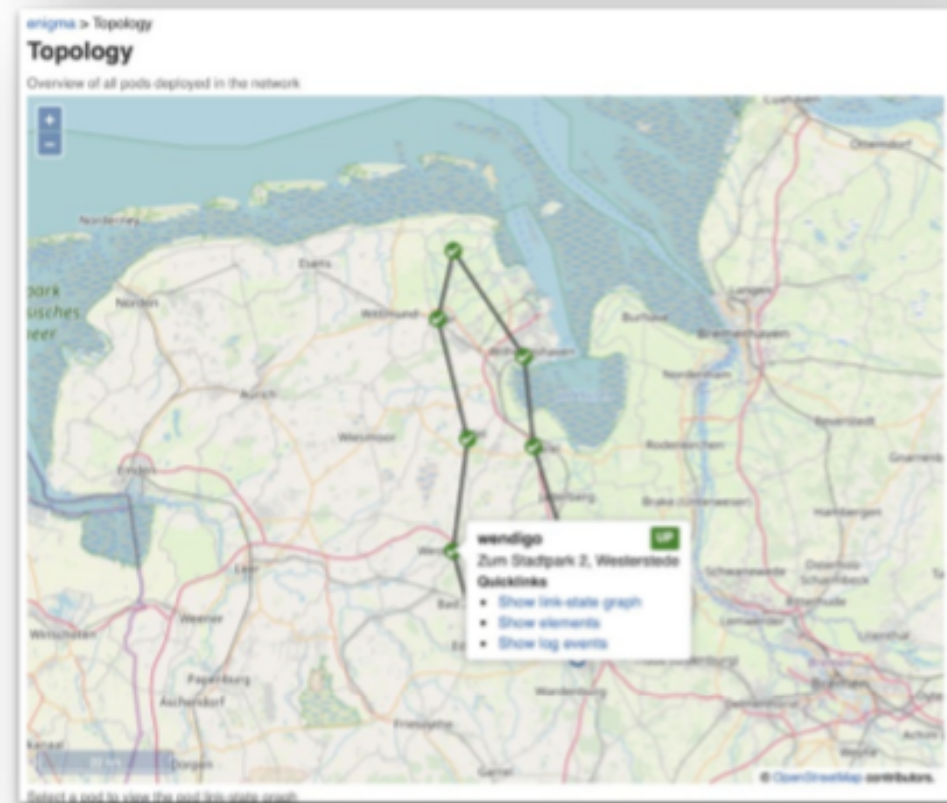
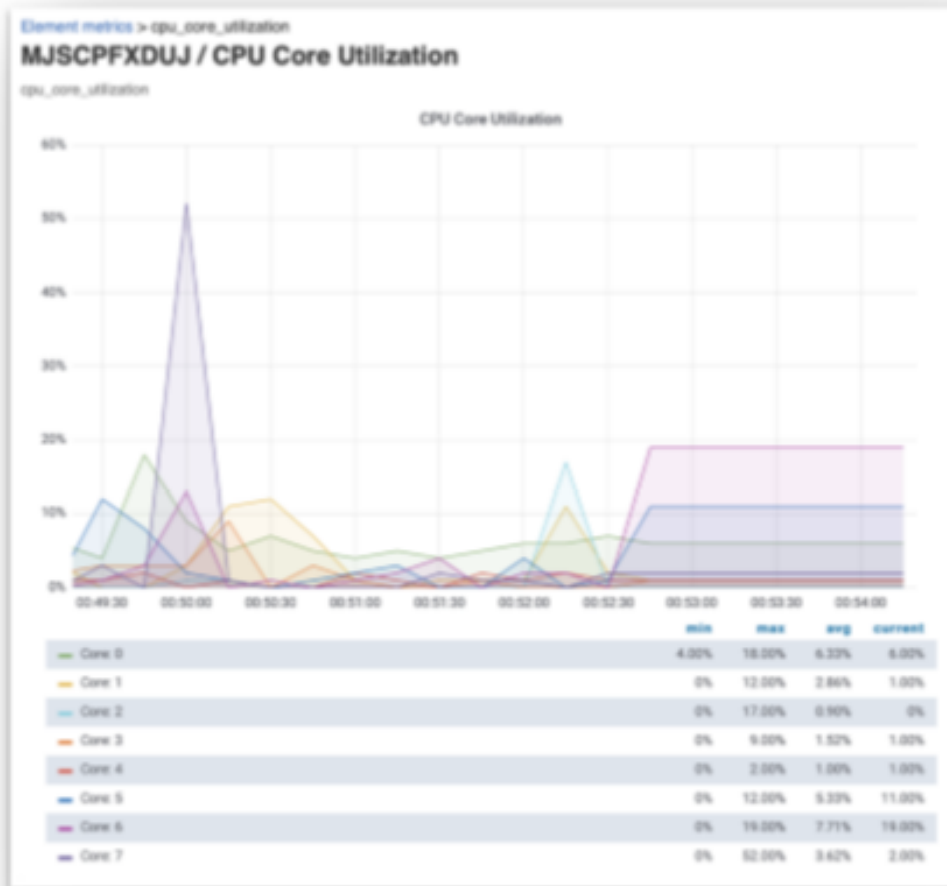


Figure 3. RtBrick Management System example