

# BROCADE VYATTA CONTROLLER

## SOFTWARE NETWORKING

## Innovation and Business Value— On Your Schedule

### HIGHLIGHTS

- Provides a quality-assured edition of the OpenDaylight controller, the industry's leading open-source SDN controller
- Enables physical and virtual networking platforms from multiple vendors to be managed within the Brocade Vyatta Controller environment
- Includes single-source, 24×7 technical support for the entire Brocade Vyatta Controller environment
- Enables a smooth transition to Software-Defined Networking (SDN) with an easy-to-use GUI, installation tools, and full support for network operators and developers
- Provides professional services to help organizations develop their own business logic, use cases, and custom SDN services to meet the needs of service providers and enterprises
- Provides a robust development platform with complete portability for OpenDaylight applications, free of proprietary extensions
- Delivers a solution backed by an established technology provider and its leaders within the OpenDaylight developer community

Software-Defined Networking (SDN) is a new and rapidly evolving approach to networking. Organizations typically cite two main reasons for exploring SDN<sup>1</sup>:

- The ability to choose networking platforms independently of architectural needs
- The need for programmability to support rapid service design, development, and teardown

The majority say open source is a key decision factor in SDN technology selection. At the same time, adopting a new approach to network operations is not a

minor undertaking, and users expect their technology partners to be able to assist in making the transition as seamless as possible.

The OpenDaylight Project, founded in April 2013, is operated by the Linux Foundation with the charter to establish a reference framework for network programmability and control through an open-source solution for SDN. Brocade is fully committed to the OpenDaylight Project; Brocade has no distracting investments in secondary controllers, and the success of the Project and its community members are central to Brocade's vision of SDN.

1. GigaOm Research, "SDN, NFV, and Open Source: The Operator's View," March 2014.

The Brocade® Vyatta® Controller is the first commercial distribution built directly from OpenDaylight Helium code, without any proprietary extensions or platform dependencies. Organizations can freely optimize their network infrastructures to match the needs of their workloads, and develop network applications that can be run on any OpenDaylight-based controller (Figure 1).

The Brocade Vyatta Controller package includes tools and services to quickly and confidently implement software-defined networks within existing environments. Brocade provides multivendor compatibility testing and complete, single-source support for Brocade Vyatta Controller environments, backed by the expertise of leaders within the OpenDaylight developer community.

Brocade combines deep networking expertise with a highly collaborative approach to open-source networking.

Brocade views the OpenDaylight community as a force multiplier for innovation with and on behalf of controller users. Brocade’s multifaceted support helps organizations achieve maximum architectural flexibility and develop skillsets for self-service innovation. Adopting SDN can help organizations accelerate the delivery of new services while optimizing their business operations.

### SMOOTH TRANSITION TO SDN

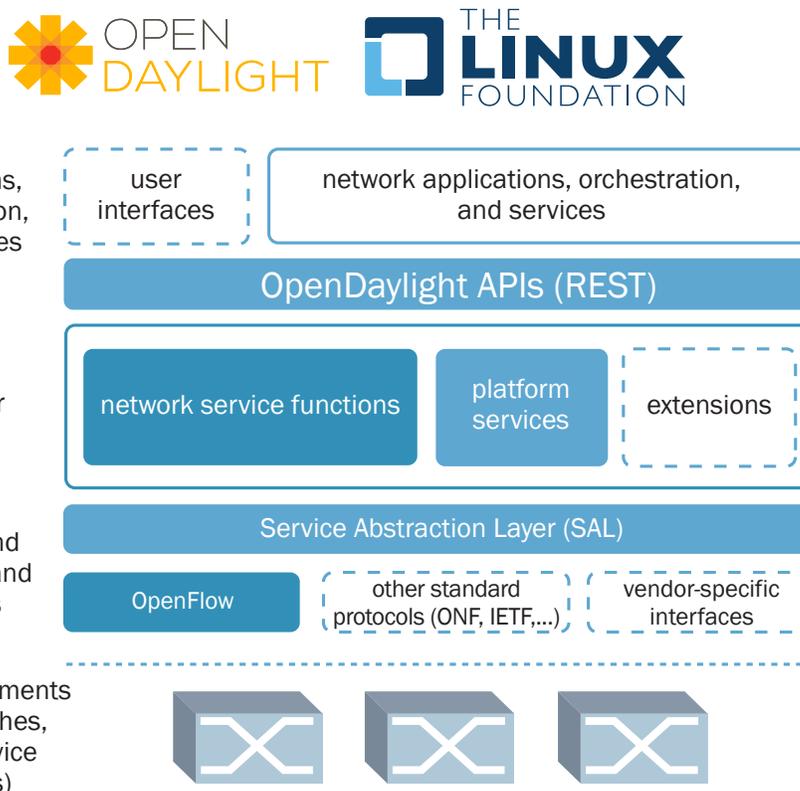
#### Low Risk

Three-quarters of users interested in open-source SDN want to get the technology from a commercial provider in order to lower adoption risks and have reliable support<sup>1</sup>. The Brocade Vyatta Controller is fully tested, documented, and quality assured by an established networking provider with global resources.

Because the Brocade Vyatta Controller is continuously built on OpenDaylight code, defect resolution is promptly shared with the community and continuously incorporated upstream. This practice improves the quality of the source code on a daily basis while ensuring full transparency and rapid time to resolution for users of the Brocade Vyatta Controller.

Brocade has committed to contributing any enhancements made to the Brocade Vyatta Controller (such as improvements for scalability, reliability, and usability) to the community to ensure interoperability with other OpenDaylight-based controllers on an ongoing basis. As a result, new features, functions, and enhancements can be incorporated into the controller within weeks instead of months.

For user organizations that want to deploy open-source SDN with confidence, Brocade also provides a range of support, education, and professional services options.



**Figure 1.** OpenDaylight controller architecture.

1. GigaOm Research, “SDN, NFV, and Open Source: The Operator’s View,” March 2014.

### Investment Protection

A common reason for delaying SDN implementation is the fear that it would require replacing existing equipment before it has depreciated. Some SDN controllers do have platform dependencies that constrain a controller domain to a single vendor's gear. This limits an IT organization's ability to fully align the infrastructure's operating cost and performance with common workload behavior and requirements. Creating several vendor-specific controller domains also can lead to controller proliferation and interoperability challenges—further complicating operations.

The Brocade Vyatta Controller is platform-independent as well as host OS- and hypervisor-agnostic. Any networking equipment—physical or virtual—from any provider can be operated within the controller domain as long as it is compatible with any of the standard OpenDaylight

southbound interfaces (SBIs) or has an OpenDaylight plugin (Figure 2). With the Brocade Vyatta Controller, IT organizations can gradually introduce ever-larger portions of their existing network into the controller domain without disruption. Furthermore, Brocade provides single-source technical support for the entire Brocade Vyatta Controller environment.

### Smooth Installation and Maintenance

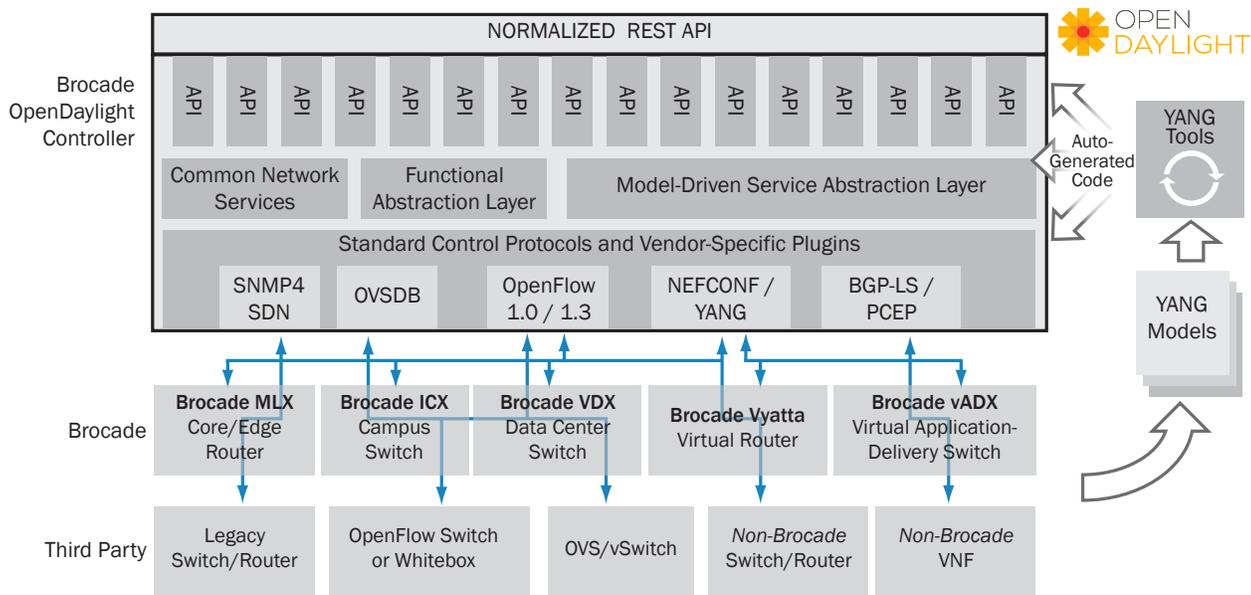
The Brocade Vyatta Controller offer includes many value-enhancing tools and tested solutions to reduce time-to-competence and ongoing administrative overhead, including:

- Easy-to-use installation tools
- Distribution packages optimized for the specific needs of service providers and data center operators
- An intuitive GUI to reduce training time and scale repeatable operations

- Tested solution packages to support a broad range of use cases
- Release and revision compatibility management

### FRAMEWORK FOR INNOVATION

Network operators expect most of SDN's near-term benefits to be operational in nature: greater management efficiency, fewer interoperability challenges, and possible OpEx reductions. However, the original promise of SDN—faster, custom innovation through programmability—provides an even stronger business case for SDN adoption.



**Figure 2.**

The Brocade Vyatta Controller operates on any type of OpenDaylight-compatible network infrastructure.

### Complete Application Portability

The Brocade Vyatta Controller is a completely non-proprietary platform for network application development. Developers can be assured that any application developed on the Brocade Vyatta Controller Developer Edition can run on any other OpenDaylight-based controller. Moreover, developers retain full intellectual property rights to applications developed on the Brocade Vyatta Controller.

Brocade also plans to invest in a series of network applications, on its own and with partners. These applications will be developed and licensed completely independently of the controller to ensure continuous integrity of the controller and full application portability.

### Brocade Provides the Bridge to Community

In an era when specialized network developer skills are rare, an OpenDaylight-based controller provides access to the industry's largest pool of SDN

developer talent and code libraries. Some organizations may choose to be consumers of the Project via the Brocade Vyatta Controller, benefiting from the history and technical depth of Brocade personnel within the OpenDaylight community to speed enhancement requests without having to hire new developers of their own. Others may explicitly adopt open SDN to achieve self-service innovation in collaboration with Brocade and the OpenDaylight community.

### BROCADE TECHNICAL SUPPORT

Brocade Technical Support has more than two decades of networking expertise in mission-critical environments and leverages a single-source support team to provide ongoing maintenance for all Brocade Vyatta software solutions. Brocade is introducing a portfolio of support and service products specifically designed for the Brocade Vyatta Controller. These new support offerings will enable organizations to realize the benefits of SDN through operability with any network node and give software developers the ability to create custom network services.

### BROCADE PROFESSIONAL SERVICES AND EDUCATION SERVICES

Brocade Professional Services helps Brocade Vyatta Controller customers realize the full power of SDN by providing consulting expertise to assist with SDN implementation and development efforts. These subject matter experts work directly with user organizations to create the build environment and to ensure that applications perform as expected.

Additionally, Brocade education courses, available in multiple formats, provide the conceptual foundation and skills that IT organizations need to adopt SDN successfully. For more information, contact a Brocade Sales representative or partner, or visit [www.brocade.com](http://www.brocade.com).

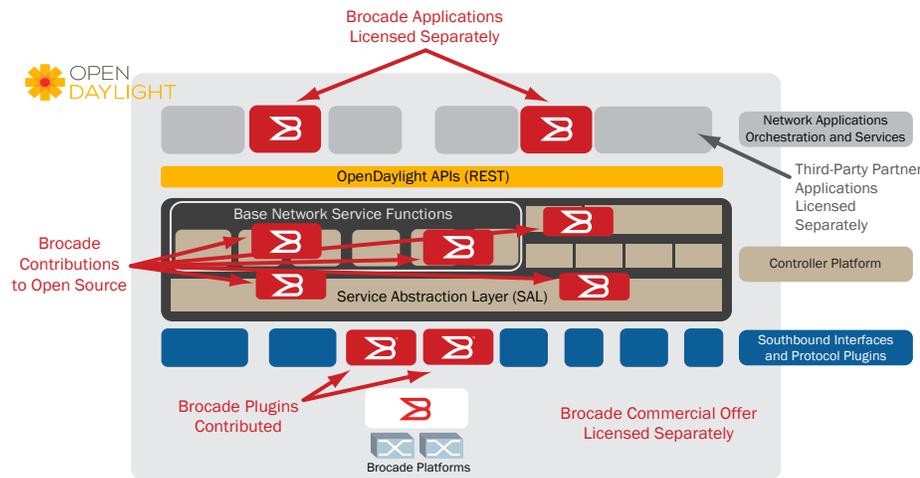


Figure 3.

The Brocade Vyatta Controller is a completely open platform for application development.

## BROCADE VYATTA CONTROLLER SPECIFICATIONS

### Southbound Plugins Supported

OpenFlow 1.0 and 1.3  
NETCONF/YANG (RFC 6241/6020)  
OVSDB  
BGP-LS/PCE-P  
SNMP V1 and V2C

### Specific OpenFlow Features Supported

TLS 1.2 security  
Basic L2/L3 flows  
ARP Header support: match on src/dst IP, src/dst MAC  
IPv6 Header support, including source IP, destination IP, Flow Label, and Extension Header  
ICMPv6 ND support, including target IP, source Link-Layer, and destination Link-Layer  
PBB support: match on I-SID, push/pop PBP tag  
LLDP topology  
MPLS  
Normal Action  
QinQ  
Group Table—All, Fast Failover, IP Hop  
Logical Interface  
Decrease TTL support  
Set queue support  
Group table definition  
Group table apply  
Metering table definition  
Metering table apply

### NETCONF Protocol Version 1.1, RFC 6241

Read-config (get/get-config)  
Edit-config  
Copy Config  
Delete config  
Notifications  
Lock/unlock  
Rollback

### YANG Protocol, RFC 6020

#### Controller YANG Models Supported:

opendaylight-topology.yang  
opendaylight-topology-view.yang  
opendaylight-topology-inventory.yang  
opendaylight-table-types.yang  
opendaylight-statistics-types.yang  
opendaylight-rest-connector.yang  
opendaylight-queue-types.yang  
opendaylight-queue-statistics.yang  
opendaylight-port-types.yang  
opendaylight-port-statistics.yang  
opendaylight-meter-types.yang  
opendaylight-meter-statistics.yang  
opendaylight-match-types.yang  
opendaylight-l2-types.yang  
opendaylight-inventory.yang  
opendaylight-group-types.yang  
opendaylight-group-statistics.yang  
opendaylight-flow-types.yang  
opendaylight-flow-table-statistics.yang  
opendaylight-flow-statistics.yang  
opendaylight-action-types.yang  
odl-sal-netconf-connector-cfg.yang  
network-topology.yang  
netconf-node-inventory.yang  
netconf-cli.yang  
netconf-cli-ext.yang  
ietf-yang-types.yang  
ietf-yang-types  
ietf-restconf.yang  
ietf-netconf.yang  
ietf-netconf-monitoring.yang  
ietf-netconf-monitoring-extension.yang  
ietf-inet-types.yang  
iana-if-type.yang  
toaster.yang

### OpenDaylight, Helium Release Base Services

MD-SAL/AD-SAL  
Base Network Services  
Topology Manager  
Stats Manager  
Switch Manager  
Forwarding Rules Manager  
Host Tracker  
Address Resolution Protocol Manager

### Supported Platforms/OS

RedHat RHEL—6.5  
Ubuntu—14.04  
CentOS—7  
Fedora—20

### DLUX and Web UI Support

Firefox 5

### Services Interfaces

Karaf: <http://karaf.apache.org/> (3.0.1)  
OSGi: <http://www.osgi.org/>  
Akka: <http://akka.io> (2.3.4)

### Recommended Minimum Server Configuration

3.0 GHz Intel Xeon or Intel Core—4 Cores or Equivalent  
RAM: 8 GB  
Storage: 64 GB  
Network: At least 1 Gbps Ethernet

## BROCADE VYATTA CONTROLLER ORDERING INFORMATION

### Software and Support

BR-9500-5NODE-LIC	Promotion for five nodes or fewer, including 60-day support offer
BR-9500-APP-PE	Path Explorer application
BR-9500	Brocade Vyatta Controller (always included with BR-9500-BIN)
BR-9500-1NODE-SVV-SW-1	1 node license (paper)—1 year
BR-9500-1NODE-SVV-SW-3	1 node license (paper)—3 years

### Professional Services

SVC-CONTROLLER-SME	Consulting time with a subject matter expert for Brocade Vyatta Controller customers; per hour
SVC-CONTROLLER-INSTALL	Contract Brocade Vyatta Controller implementation; SOW

### Education

SDN-CNTRL-WBT	Web-based, self-paced training, Brocade Vyatta Controller, basics
SDN-CNTRL-9500-INTRO	Instructor-led training, one day, introduction to Brocade Vyatta Controller
SDN-CNTRL-9500-OPS1	Instructor-led training, two days, Brocade Vyatta Controller, operations, basic

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