

BROCADE VYATTA CONTROLLER DEVELOPER EDITION

SOFTWARE NETWORKING

Innovation and Business Value— On Your Schedule

HIGHLIGHTS

- Provides a quality-assured, developer-focused edition of the OpenDaylight controller, the industry's leading open-source SDN controller
- Enables customer and independent developers to quickly create new competitive services using new or existing network infrastructure
- Includes advanced application development support options—including design, testing, and certification—that leverage Brocade software development and networking expertise
- Offers education and professional services options to help organizations develop their own business logic, use cases, and custom SDN services
- Provides a robust development platform, free of proprietary extensions and with complete portability for OpenDaylight applications
- 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. User organizations typically cite two main reasons for exploring SDN¹:

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

The majority say open source is a key decision factor in SDN technology selection. At the same time, developers want a robust, stable, and widely adopted platform to work

on. Commercially supported versions of open-source projects are a common means of meeting both requirements.

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

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 and developers. 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 ON-RAMP TO SDN

SDN is a new frontier for developers and users alike. Brocade is attuned to the needs of both groups, and work done for one group directly benefits the other.

Low Risk

Because the Brocade Vyatta Controller is continuously built on OpenDaylight code, defect resolution is promptly shared with the community and continuously incorporated upstream. As a result, the Brocade Vyatta Controller provides a very stable platform for development that is always consistent with the community code.

The Brocade Vyatta Controller offering includes tools and services to develop and maintain SDN applications on the OpenDaylight platform, including training for both network engineers and application developers. Brocade also provides templates, libraries, and testing environments to help developers create applications that can be written and tested quickly and deployed easily. These offerings are backed by the expertise of Brocade leaders within the OpenDaylight developer community.

Investment Protection

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 or has an OpenDaylight plugin.

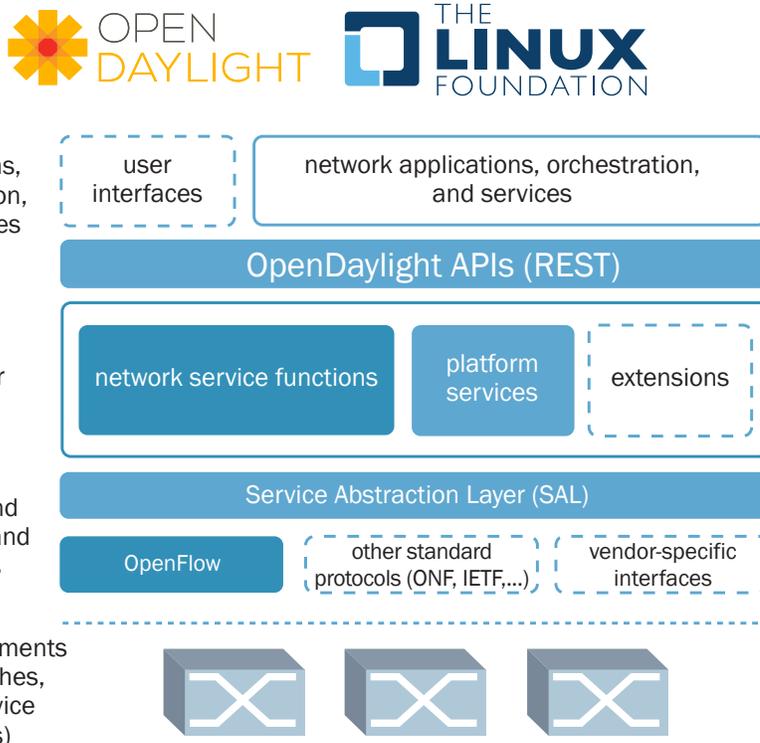


Figure 1. OpenDaylight controller architecture.

This interoperability gives in-house developers tremendous flexibility in designing applications that leverage their existing environments. It also gives commercial developers the largest potential market for their work.

FRAMEWORK FOR INNOVATION

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

Brocade is investing in developing an ecosystem of OpenDaylight-based 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.

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 controller can run on any other OpenDaylight-based controller. In addition, developers retain full intellectual property rights to applications developed on the Brocade Vyatta Controller.

Quality Assurance for Developers

The Brocade OpenDaylight team offers design review, testing, and certification of applications on the Brocade Vyatta Controller. As a result, SDN application developers can be confident that their projects will work.

Brocade Certified Education

Brocade University offers a two-day, instructor-led course for network software engineers who want to develop SDN applications that run on the Brocade Vyatta Controller. The course provides students with hands-on experience using the controller API and open-source developer tools.

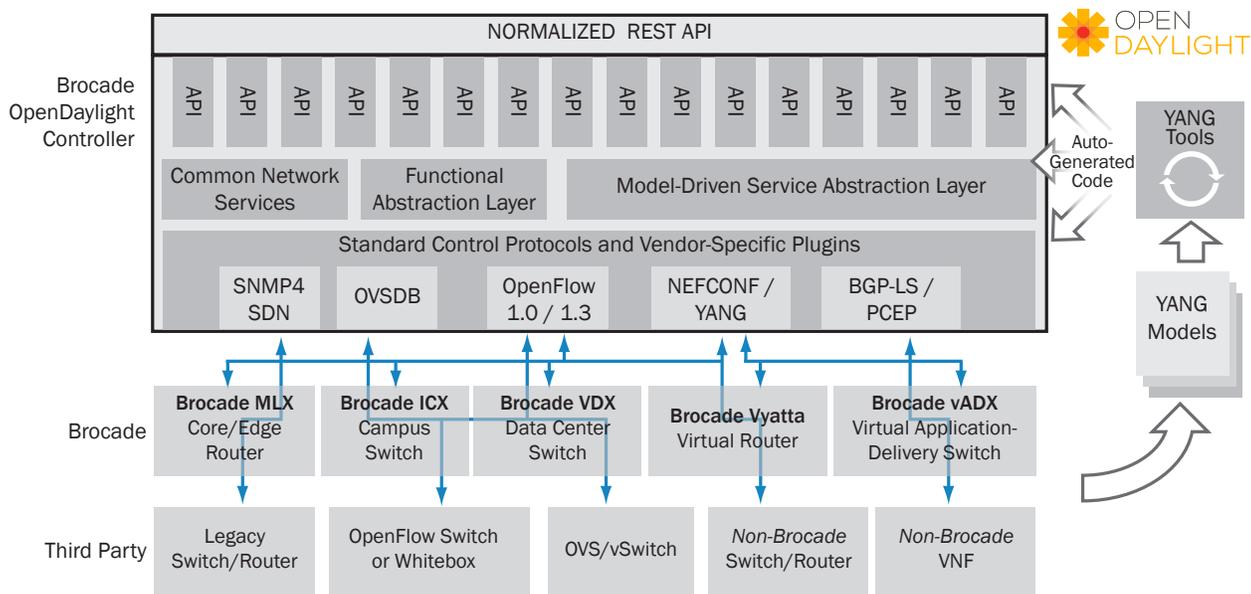


Figure 2. The Brocade Vyatta Controller operates on any type of OpenDaylight-compatible network infrastructure.

Brocade Provides the Bridge to Community

In an era when specialized network developer skills are a rare commodity, 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. By leveraging the history and technical depth of Brocade personnel within the OpenDaylight community, organizations can speed enhancement requests without having to hire new developers of their own.

In addition, Brocade can build custom applications, designed collaboratively with customers, to support unique use cases and environments. Brocade understands that many of these applications are specific to the operator's business and takes formal measures to protect the operator's environment and intellectual property.

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. Moreover, Brocade is introducing a portfolio of market-leading support and service products for customers of the Brocade Vyatta Controller.

Technical Support for Developers

Developer support includes a catalog of tools and services designed to serve a wide range of customers. From software developers writing simple automation scripts for the Brocade Vyatta Controller to developers creating complex services applications, Brocade support staff can expertly help customers resolve issues and ensure that their software performs as required.

BROCADE PROFESSIONAL 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 developers to create the build environment and to ensure that applications work in operations and at scale.

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

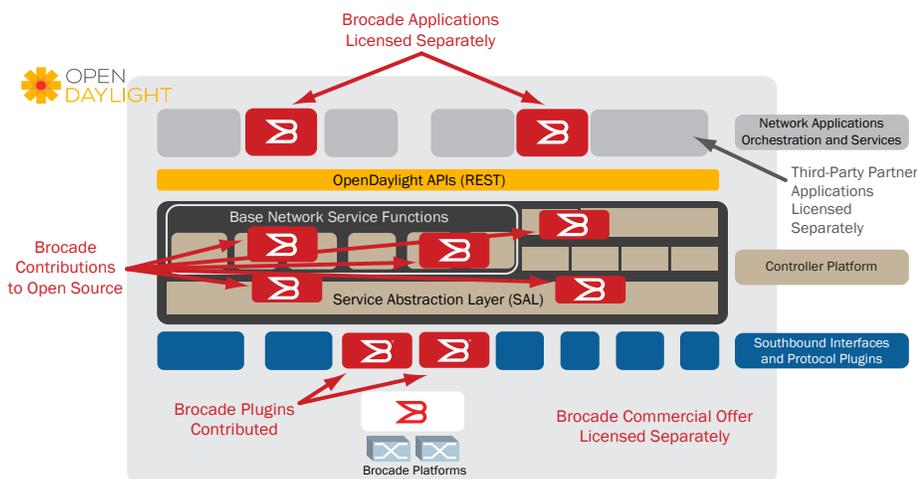


Figure 3.

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

BROCADE VYATTA DEVELOPER EDITION 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 DEVELOPER EDITION ORDERING INFORMATION

The Developer Edition is not intended for production use. Refer to the *Brocade Vyatta Controller (base edition)* data sheet (under license information) for operations SKUs.

Software and Support	
BR-9511-SVV-SW-1	Brocade Vyatta Controller Developer Edition—1 year
BR-9511-SVV-SW-3	Brocade Vyatta Controller Developer Edition—3 years
Professional Services	
SVC-CONTROLLER-INTG	End-user application developer support and application integration
SVC-CONTROLLER-APPDEV	Application development and integration
SVC-CONTROLLER-REPOSITORY	Continuous developer access to Brocade Vyatta Controller build environment for 1 year
SVC-CONTROLLER-SME	Consulting time with a subject matter expert for Brocade Vyatta Controller customers; per hour
SVC-CONTROLLER-INSTALL	Implementation of Brocade Vyatta Controller and integration with applicable Brocade devices
Education	
SDN-CNTRL-WBT	Web-based, self-paced training, Brocade Vyatta Controller, basics
SDN-CNTRL-9511-DEV1	Instructor-led training, two days, Brocade Vyatta Controller, developers, basic

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