

Open SD-Edge DANOS-Vyatta edition 2009

Data Sheet

1.0 Overview

Digital transformation and accelerated cloud adoption are driving changes to the WAN edge infrastructure. The Open SD-Edge platform gives Enterprises and Managed Service Providers (MSPs) the increased agility to add new services and lower operational costs. New services can be deployed quickly by onboarding third-party VNFs such as Firewall, SD-WAN, and WAN optimization.

In the ever-present quest to improve agility while reducing costs, enterprises large and small are capitalizing on the compelling benefits of virtualization and the cloud. In response, Cloud and Managed Service Providers are leveraging Network Functions Virtualization (NFV) to introduce new services to facilitate Cloud Migration.

IP Infusion's innovative Open SD-Edge Solution provides an intelligent option to the challenges posed by the Cloud and Virtualization network paradigms.

- Instead of the proliferation of purpose-built platforms, the Open SD-Edge replaces appliances with a common, flexible platform. In order to contain rising complexity in delivering multiple services, the solution streamlines operations, while reducing the CapEX and OpenEx by realizing NFV.

- The migration to multi-cloud architectures is addressed by offering flexible, cloud-ready solutions from Branch to Cloud, delivering the highest price-to-performance ratio without compromising on functionality.

The key differentiators of the Open SD-Edge platform include:

- **Truly open architecture** featuring DANOS-Vyatta edition open source-based software and best-of-breed Open Hardware (White box uCPE) delivers line rate throughput and lowers total cost of ownership.
- **A virtualization platform** with built-in routing, security functions and a common abstraction layer with support for hardware offloads and software data plane to enable operators to quickly ramp up new services and revenue.
- **Fully managed NFV infrastructure platform** offering choice of uCPE hardware and best-in-class VNFs. Complete VNF life cycle management solves operator pain points to deploy new on-demand services by integrating with MSP's MANO system.

The Open SD-Edge comprises of three different solutions:

- **Virtual SD-Edge** – Available in virtual form-factor to securely extend VPN to the public or private cloud and deliver scalable WAN, Security and CG-NAT functions.
- **Branch SD-Edge** – Available in a white-box or virtual form-factor for securely interconnecting branches or distributed offices and migrating workloads to the cloud.
- **Universal SD-Edge** – Offers next generation of uCPE solutions at the WAN Edge for connecting distributed branches and Enterprises to hybrid cloud environments. Universal SD-Edge provides Enterprises and Managed Service Providers (MSPs) the increased agility to add new services and lower operational costs. New services can be deployed quickly by onboarding third-party VNFs such as Firewall, SD-WAN, and WAN optimization.

VIRTUAL SD-EDGE	BRANCH SD-EDGE	UNIVERSAL SD-EDGE
<ul style="list-style-type: none"> • Secure, robust connectivity to the cloud • Available for hosting in the Public Cloud Marketplace or Private Cloud/Server • Includes: vRouter, VPN, vFirewall 	<ul style="list-style-type: none"> • Secure Branch Office connectivity and Cloud Migration • VNF or White Box form factor (multi-platform) • Includes: vRouter, VPN, vFirewall, • 1 or 10G interfaces 	<ul style="list-style-type: none"> • Enterprise/Branch Office connectivity • VNF or White Box form factor(multi-platform) • Includes: vRouter, vFirewall, VPN • Hosts third-party VNFs

2.0 Features on DVe 2009 Release

The table below lists the new software features in the latest DVe available release. Note, the following mentioned features are only indicative and the detailed feature list may vary. Please refer to Feature Matrix for complete feature list on supported ODM platforms.

2.1 Open SDE: Technical Specifications – Feature Support per SKU

FEATURE DOMAIN	FEATURE NAME	VIRTUAL SDE (DVE-vSDE)	BRANCH SDE (DVE-bsDE)	UNIVERSAL SDE (DVE-uSDE)
Interfaces	Layer 3 Interface support	Yes	Yes	Yes
	Support for Sub-interface (logical interface and encapsulations - single/double tag vlans.)	Yes	Yes	Yes
Layer 2	Virtual LANs with Port-based VLANs	Yes	Yes	Yes
	Routed VLAN interface	Yes	Yes	Yes
	Port based VLAN interface	Yes	Yes	Yes
	802.1q	Yes	Yes	Yes
	QinQ	Yes	Yes	Yes
	STP	Yes	Yes	Yes
	MSTP	Yes	Yes	Yes
	RSTP	Yes	Yes	Yes
	Link Aggregation	Yes	Yes	Yes
	Tunneling	Yes	Yes	Yes
Layer 3	Ethernet ARP	Yes	Yes	Yes
	Path MTU for IPv4 & IPv6	Yes	Yes	Yes
	Transmission of IP Datagrams over Ethernet	Yes	Yes	Yes
	Congestion Control in IP/TCP Networks	Yes	Yes	Yes
	IP Broadcast	Yes	Yes	Yes
	IP Broadcast in the Presence of Subnets	Yes	Yes	Yes
	IP Subnetting	Yes	Yes	Yes
	Classless Inter-Required-PO Routing (CIDR)	Yes	Yes	Yes
	Requirements for IP Version 4 Routers	Yes	Yes	Yes
	Route Redistribution across OSPF and BGP	Yes	Yes	Yes
	VLAN routing	Yes	Yes	Yes
	VRF lite	Yes	Yes	Yes
	Reverse-path forwarding (RPF)	Yes	Yes	Yes
	Unnumbered interfaces	Yes	Yes	Yes
	Border Gateway Protocol (BGP)	Yes	Yes	Yes
	Open Shortest Path First (OSPF)	Yes	Yes	Yes
	Bidirectional Forwarding Detection (BFD)	Yes	Yes	Yes
	Policy Based Routing (PBR)	Yes	Yes	Yes
	Static Routing	Yes	Yes	Yes
	Virtual Router Redundancy Protocol (VRRP)	Yes	Yes	Yes
Network Address Translation	Yes	Yes	Yes	
Multicast	Protocol Independent Multicast (PIM)	Yes	Yes	Yes
	Internet Group Management Protocol (IGMP)	Yes	Yes	Yes

FEATURE DOMAIN	FEATURE NAME	VIRTUAL SDE (DVE-vSDE)	BRANCH SDE (DVE-bsDE)	UNIVERSAL SDE (DVE-uSDE)
Quality of Service (QoS)	HQoS 3 Level	Yes	Yes	Yes
	QoS on L3 interface	Yes	Yes	Yes
	Classification based on DSCP	Yes	Yes	Yes
	Shaping, marking, policing	Yes	Yes	Yes
	Shaping per Virtual Port (Vlan ID)	Yes	Yes	Yes
	Shaping per Physical Port	Yes	Yes	Yes
	Support of 8 Queues. Default queues, 2 Priority , 4 Assured Forwarding, 1 Best Effort, 1 Expedited Forwarding	Yes	Yes	Yes
	At least 2 WRED levels within service egress assured classes	Yes	Yes	Yes
	QoS Marking for self-generated control plane traffic (BGP, OSPF)	Yes	Yes	Yes
	Maximum Bandwidth Per Queue, Configurable Weight and Queue depth, Tail-Drop.	Yes	Yes	Yes
VPN	Control plane policing (CoPP)	Yes	Yes	Yes
	IPsec (interface based/Virtual Tunnel Interfaces)	Yes	Yes	Yes
	IPsec (policy based)	Yes	Yes	Yes
	IPsec Virtual Feature Point (VFP) interfaces	Yes	Yes	Yes
	Dynamic Multipoint VPN (DMVPN)	Yes	Yes	Yes
	OpenLDAP auth	Yes	Yes	Yes
Management	Open VPN	Yes	Yes	Yes
	CLI access via console, telnet and SSH	Yes	Yes	Yes
	Telnet/SSH server	Yes	Yes	Yes
	Authentication using tacacs+/radius client	Yes	Yes	Yes
	ACM/RBAC	Yes	Yes	Yes
	Extended ping and traceroute	Yes	Yes	Yes
	SNMP v1, v2, v3, server	Yes	Yes	Yes
	DHCP v4/v6 client	Yes	Yes	Yes
	DHCP v4/v6 relay	Yes	Yes	Yes
	DHCP v4/v6 server	Yes	Yes	Yes
	NTP server	Yes	Yes	Yes
	Syslog	Yes	Yes	Yes
	File Upload/Download using FTP/TFTP/SFTP/SCP	Yes	Yes	Yes
	Management VRF	Yes	Yes	Yes
DNS: Host config, Dynamic DNS, DNS forwarding	Yes	Yes	Yes	

FEATURE DOMAIN	FEATURE NAME	VIRTUAL SDE (DVE-vSDE)	BRANCH SDE (DVE-bsDE)	UNIVERSAL SDE (DVE-uSDE)
Management	Patch Upgrade Mechanism with & without ONIE	Yes	Yes	Yes
	Persistent configuration across Image Upgrades	Yes	Yes	Yes
	NETCONF	Yes	Yes	Yes
	Netconf support for Rollback	Yes	Yes	Yes
	Link Layer Discovery Protocol (LLDP)	Yes	Yes	Yes
	REST	Yes	Yes	Yes
	Path Monitor	Yes	Yes	Yes
	SPAN/RSPAN/ERSPAN	Yes	Yes	Yes
Security	TWAMP	Yes	Yes	Yes
	Secure interface login and password	Yes	Yes	Yes
	SSH v1, v2	Yes	Yes	Yes
	Dynamic load balancing (ECMP)	Yes	Yes	Yes
	Access Control Lists (ACLs) based support for Security	Yes	Yes	Yes
Hardware Monitoring	Firewall	Yes	Yes	Yes
	Temperature monitor	No	Yes	Yes
	Power Monitoring	No	Yes	Yes
	CPU load monitoring	No	Yes	Yes
	Board information (EEPROM)	No	Yes	Yes
Deep Packet Inspection	Fan and PSU FRU information	No	Yes	Yes
	Firewall	Yes	Yes	Yes
Flow Export	NAT	Yes	Yes	Yes
	Netflow	Yes	Yes	Yes
	IPFIX	Yes	Yes	Yes
Virtualization	SFLOW	Yes	Yes	Yes
	Support for 3rd party VNFs	No	No	Yes

3.0 Solution Ordering Guide

3.1 Platforms Supported per SKU

S. NO.	VENDOR PLATFORM	CHIPSET	SPEED/ INTERFACE	CPU	DVE-vSDE	DVE-bSDE	DVE-uSDE
1	Silicom uCPE Extra Small	Marvell 88E6190X	4x1GbE, 2x1GbE (POE+), 2xSFP	C3558, 4 cores, Base Freq. 2.2GHz, 8MB, TDP 16W	N	Y	Y
2	Silicom uCPE Small	Broadcom® Hurricane2 BCM56160	10x 1GbE RJ45, 4x SFP+, 4 of 1GbE supports POE+	Intel® Xeon™ D-1517 8Cores, 16 threads Base Freq. 2.1GHz, 14MB Cache, TDP 45W	N	Y	Y
3	Silicom uCPE Medium	Broadcom® Hurricane2 BCM56160	10x 1GbE RJ45, 4x SFP+, 4 of 1GbE supports POE+	Intel® Xeon™ D-1541 8Cores, 16 threads Base Freq. 2.1GHz, 14MB Cache, TDP 45W	N	Y	Y
4	Silicom uCPE Large	Broadcom® Hurricane3 BCM56172	32x 1GE RJ45, 8x SFP+, 32 of 32 supports (POE+)	Intel® Xeon™ D-1577 16 Cores, 32 threads Base Freq. 1.3GHz, 24MB Cache, TDP 45W	N	Y	Y

Verifications of the VNF enabled images have been done on -

- VMWare ESXi - Intel® Xeon® Gold 6242R CPU @ 3.10GHz
- KVM - Intel® Xeon® CPU E5-2620 v4 @ 2.10GHz

IP Infusion's Virtual SD-Edge solution is now available for deployment in the Azure Marketplace as well as on Amazon Web Services (AWS) Marketplace.

The DVE-vSDE image is available on the Cloud at:

- AWS Marketplace - IP Infusion Virtual SD-Edge (Open Secure Routing) https://aws.amazon.com/marketplace/pp/B08F9CC1D4?ref_=srh_res_product_title#pdp-pricing
- Azure Marketplace at- IP Infusion Virtual SD-Edge (Open Secure Routing) <https://azuremarketplace.microsoft.com/en-us/marketplace/apps/ipinfusion1590066770520.virtual-sd-edge-1-0?tab=PlansAndPrice>

3.2 SKU Ordering Details

3.2.1 Open SDE SKUs

SKU	DESCRIPTION	COMMENT
DVE-vSDE-BASE-#vCPU-#Y	DANOS-Vyatta edition Base VM image with enterprise class networking features such as Routing (v4/v6), VPN, Firewall, QoS, NAT, WAN optimization, CLI/Netconf/REST API to build hybrid cloud infrastructure and migrate applications to the cloud. Restricted to #of virtual core and #Y subscription license includes support.	#of virtual cores (1, 2, 4, 8, 16, 32) #Y: Subscription term is 1, 3 or 5 years includes support
DVE-bSDE-BASE-#vCPU-#Y	DANOS-Vyatta edition Branch SD-Edge image with enterprise class networking features such as Routing (v4/v6), VPN, Firewall, QoS, NAT, WAN optimization, CLI/Netconf/REST API for secure branch connectivity and to migrate applications to the cloud. Restricted to #of virtual core and #Y subscription license includes support.	#of virtual cores (1, 2, 4, 8, 16, 32) #Y: Subscription term is 1, 3 or 5 years includes support
DVE-uSDE-BASE-#vCPU-#Y	DANOS-Vyatta edition Universal SD-Edge image with host OS supporting enterprise class networking features such as Routing (v4/v6), VPN, Firewall, QoS, NAT, CLI/Netconf/REST API and virtualization infrastructure for managing VNF life cycle. New services can be deployed on-demand by onboarding third-party Virtual Network Functions (VNF), such as Firewall, SD-WAN, and WAN optimization. Restricted to #of virtual core and #Y subscription license includes support.	#of virtual cores (1, 2, 4, 8, 16, 32) #Y: Subscription term is 1, 3 or 5 years includes support

3.2.2 Open SDE Bundle SKUs

SKU	DESCRIPTION	COMMENT
DVE-bSDE-BASE-SM#X#Y	DANOS-Vyatta edition Branch SD-Edge software (#Y subscription term with support) on Silicom uCPE model #X	#X: Specifying the Silicom uCPE Platform type (1:XS, 2:S, 3:M, 4:L) #Y: Subscription term is 1, 3 or 5 years Includes maintenance and support
DVE-uSDE-BASE SM#X#Y	DANOS-Vyatta edition Universal SD-Edge software (#Y subscription term with support) on Silicom uCPE model #X	#X: Specifying the Silicom uCPE Platform type (1:XS, 2:S, 3:M, 4:L) #Y: Subscription term is 1, 3 or 5 years Includes maintenance and support

3.3 Maintenance & Support

SKU	MAINTENANCE & SUPPORT
DANOS-Vyatta-MS-1Y	1 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
DANOS-Vyatta-MS-3Y	3 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
DANOS-Vyatta-MS-5Y	5 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
DANOS-Vyatta-MS-1Y-Premium	1 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
DANOS-Vyatta-MS-3Y-Premium	3 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
DANOS-Vyatta-MS-5Y-Premium	5 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.

4.0 Relevant Links

Additional information about the following documents is available on the IP Infusion website (<https://www.ipinfusion.com/products/danos-vyatta-edition/>)

- Feature Matrix
- Platform Datasheets

For more information

For more information about the DANOS-Vyatta edition Solution, contact your IP Infusion sales representative.

ABOUT IP INFUSION

IP Infusion, a leader in disaggregated networking solutions, delivers enterprise and carrier-grade software solutions allowing network operators to reduce network costs, increase flexibility, and to deploy new features and services quickly. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at <http://www.ipinfusion.com>

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