

基于Openstack的VNF应用

BROCADE 张泽鹏

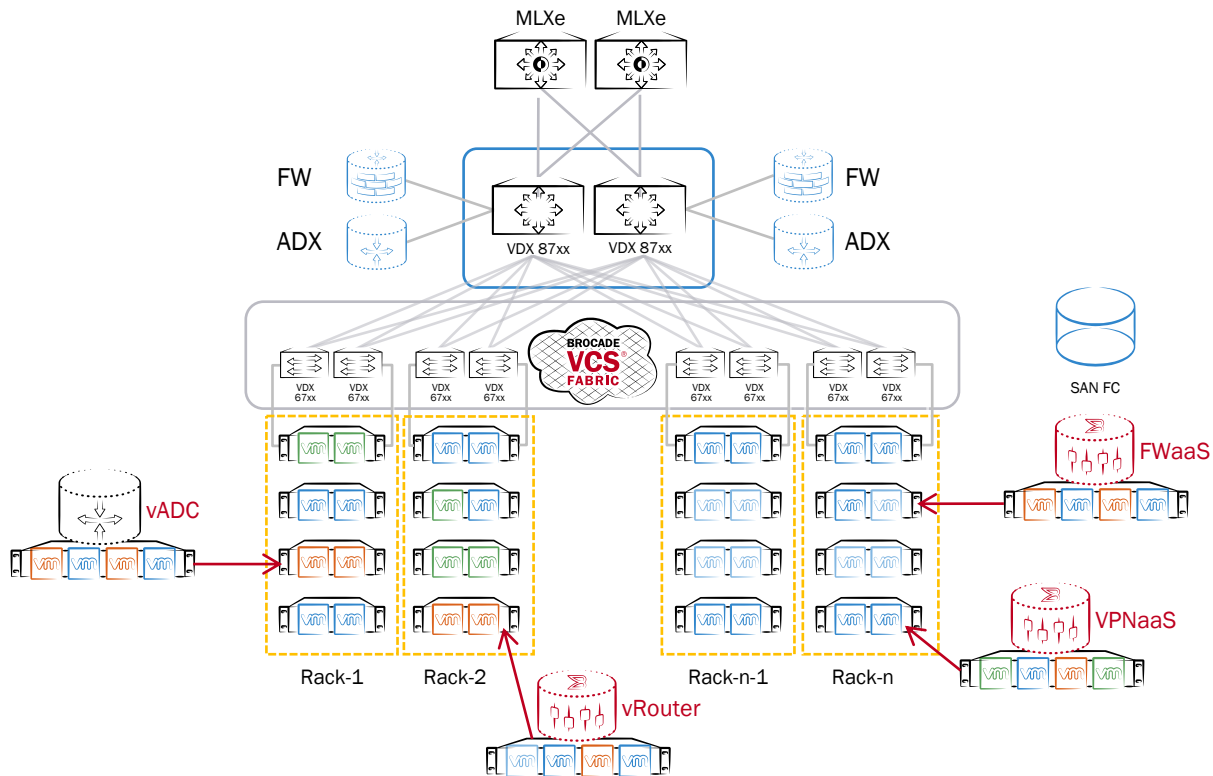
2015年10月



博科 SDN 和 NFV 产品线支持一览



博科 SDN 控制器



博科涉足的软件网络产品

博科产品名称	功能	简称
博科 Vyatta 虚拟路由器	软件路由、防火墙、VPN	vRouter
博科 vADC	应用交付	SteelApp
	Web 防火墙	
	服务控制器	
博科 SDN 控制器	SDN 控制器	BSC
博科移动网络分析平台	网络可视化和分析平台	NVA
博科 vEPC	软件 EPC 解决方案平台	Connectem

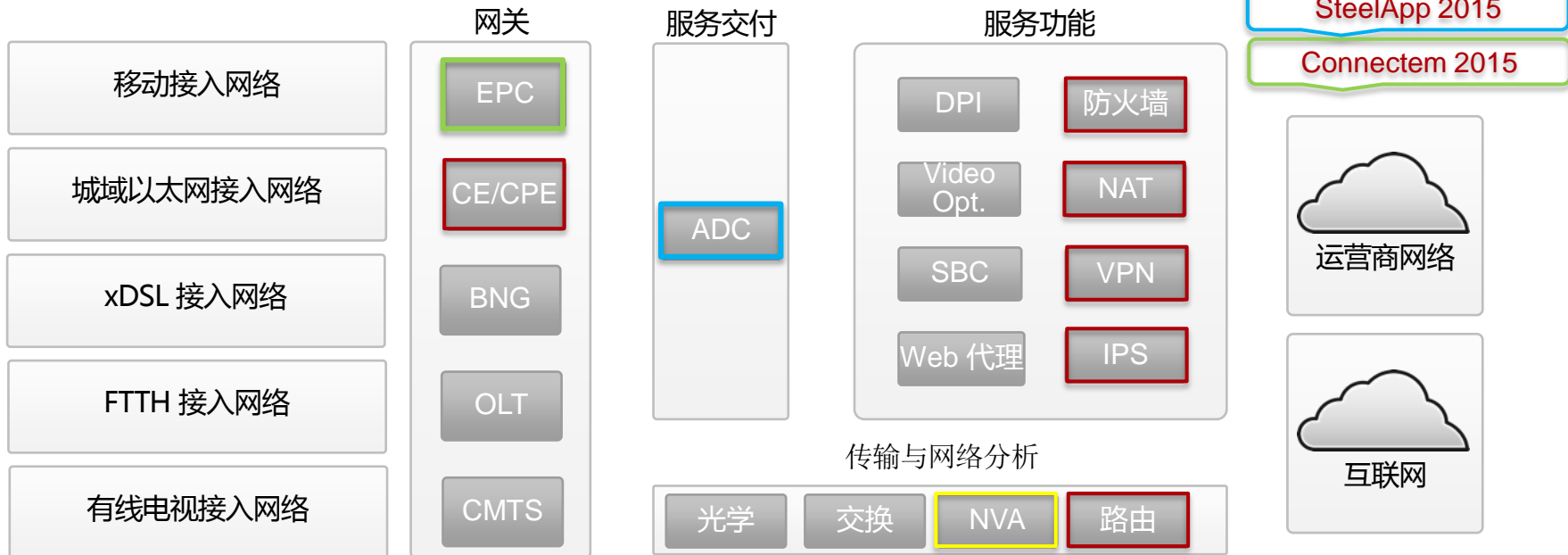
VNF应用场景

构建完整的端到端虚拟网络解决方案

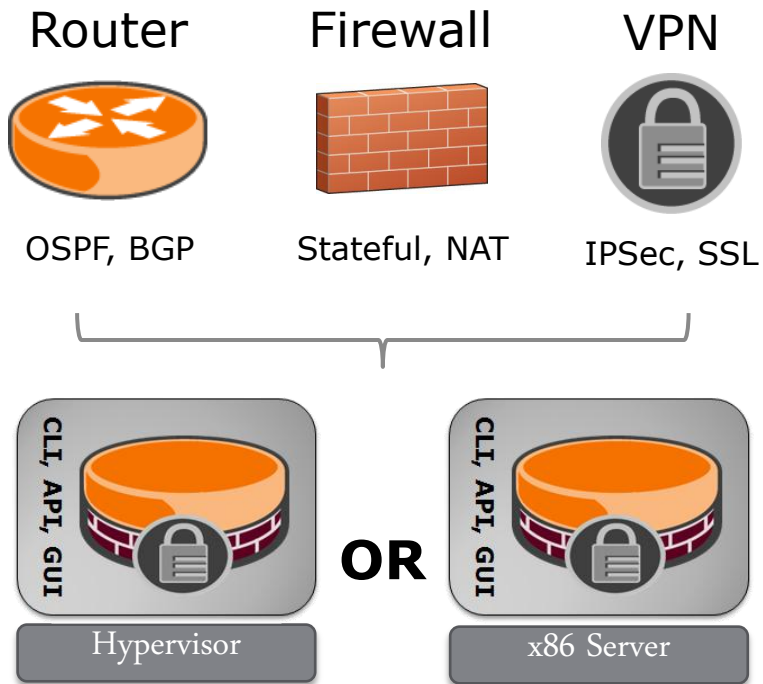
企业和用户



应用和内容



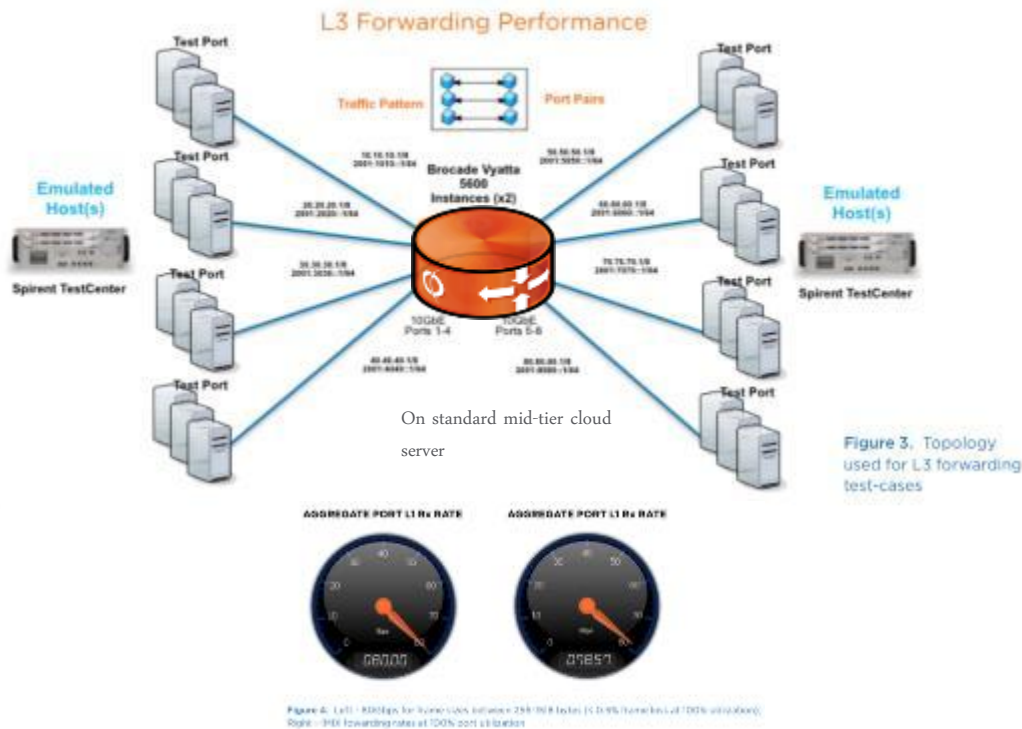
博科虚拟路由器Vyatta



Feature Highlights	
Routing	IPv4, IPv6, Static, PBR, OSPF, RIP, BGP, Multicast
Security	IPv4, IPv6, Stateful Firewall, NAT
VPN	IPSec, SSL, Route-based, L2-bridging, DMVPN
System Management	CLI, RESTful API, GUI
IP Services	SSH, DHCP, DNS, SNMP
High Availability	VRRP, Stateful Failover, Config Sync
Platforms	VMware, Xen, KVM, Hyper-V, x86

第三方测试显示超强的性能

L3 data plane forwarding	<ul style="list-style-type: none"> 70 million packets per second with 64B 80Gbps bi-directional traffic with 256B to 1518B > 75Gps of throughput under IMIX frame sizes and IPv4/ IPv6 dual-stack 2 million flows
L3 control plane scaling	<ul style="list-style-type: none"> BGP scalability up to 8 million routes from a single peer or up to 8 peers
L4-7 performance	Stateless Firewall <ul style="list-style-type: none"> 200K sessions/sec 2.5 million concurrent sessions
	Stateful Firewall <ul style="list-style-type: none"> 50K sessions/sec 1 million concurrent connections



SteelApp 虚拟应用交付 - 提供 ADC 即服务

Traffic Manager



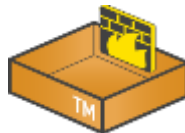
- 负载均衡 / 流量管理 / ADC
- 提供可靠性, 可用性, offload, 安全, 脚本等更多功能...

Web Content Optimization Module (WCO)



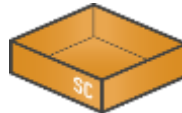
- 网站加速
- 减少页面加载时间, 减少带宽使用

Web App Firewall Module (WAF)



- 应用感知的防火墙
- 保护应用, 防范威胁

SteelCentral Services Director

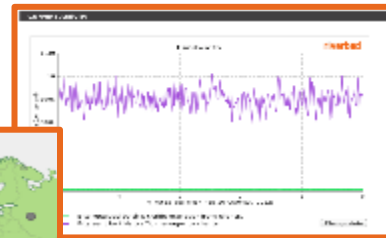
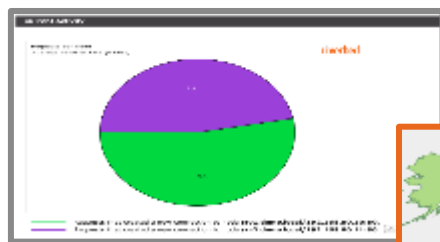


- 极具弹性和适应性的服务控制器
- 自动实现ADC服务的部署, 授权, 提供服务, 计费

全面实现应用交付完整解决方案 –
软件/虚拟设备/云/微型实例

Activity 监控 - 完整的 ADC 的可视化

- Activity 监控
 - Real-time
 - 历史资料
 - 地图
 - 可从 WebUI 或 SNMP 获得
- Request 日志
 - 可从 WebUI 或 Sysog 获得
- Audit 日志
 - WebUI (可下载)
- Event 日志
 - 可从 WebUI , 或Syslog , SNMP , Email等获得



```
192.168.1.42:1 -> [20/06/2012 01:06:05 -> 01:05] GET /images/logo.jpg HTTP/1.1 200 2563 "http://www.dreamwork.it/" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7; rv:5.0.1) Gecko/20100101 Firefox/5.0.1" Intel
192.168.1.42:1 -> [20/06/2012 01:06:05 -> 01:05] GET /scripts/HTTP/1.1 200 655 "http://www.dreamwork.it/" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7; rv:5.0.1) Gecko/20100101 Firefox/5.0.1" Intel
192.168.1.42:1 -> [20/06/2012 01:06:05 -> 01:05] GET / HTTP/1.1 200 854 "http://www.dreamwork.it/" "Mozilla/5.0 (Macintosh; Intel Mac OS X 10.7; rv:5.0.1) Gecko/20100101 Firefox/5.0.1" Intel
```

Timestamp	User	Group	Rank	ID	Description	Traffic Manager
20/06/2012 01:02:12 +0100	admin	admin	1000	192.168.1.42	Config:readLocalAndActivityGeneration/Response: per Node; Key: parse	1000
20/06/2012 01:02:12 +0100	admin	admin	1000	192.168.1.42	Config:readLocalAndActivityGeneration/Response: per Node; Key: parse	1000

Brocade OpenStack 的生态合作伙伴



Market Reach Expansion

生态系统
合作伙伴



99Cloud

- Training
- Vrouter, FWaaS validation



Red Hat

- RHEL/KVM Enterprise
- Support reputation

installed base



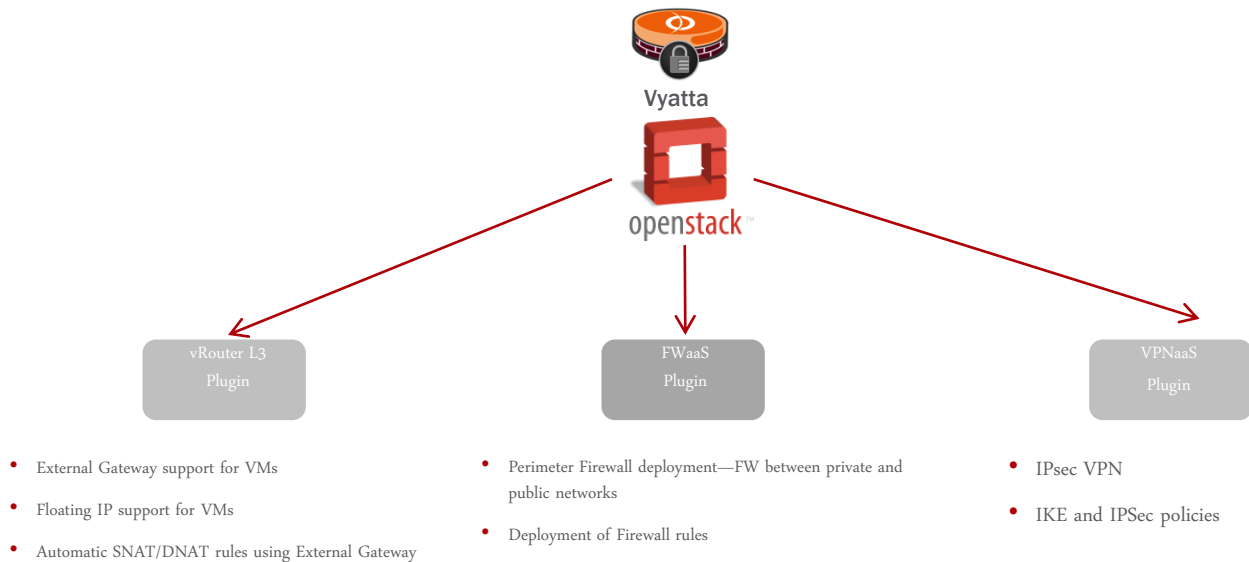
Mirantis

- Training
- Professional Services
- Open distribution



OEMs for SAN FC

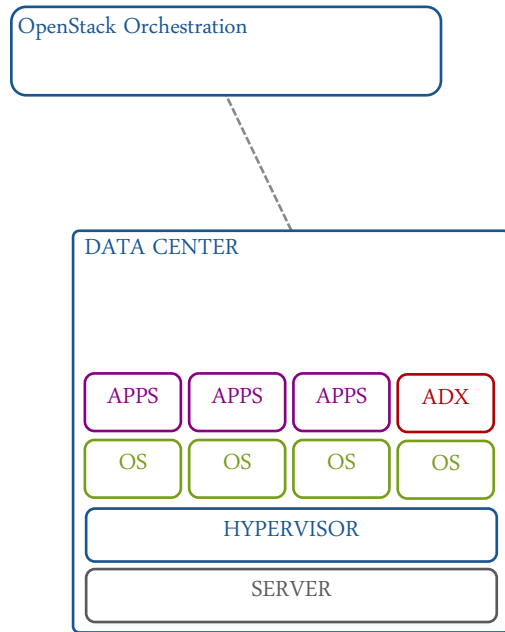
Brocade 实现L3 Router, FWaaS, VPNaaS增强服务

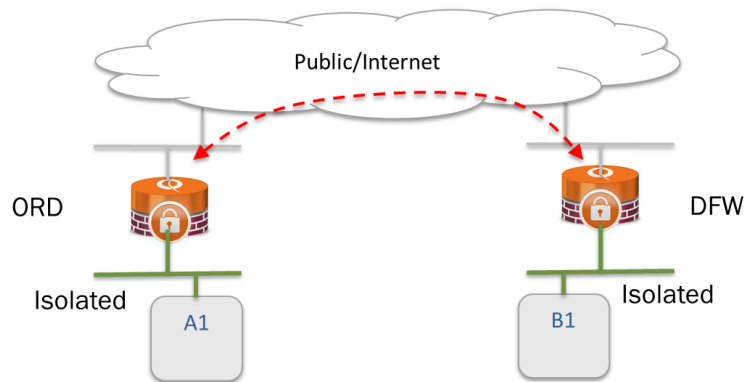
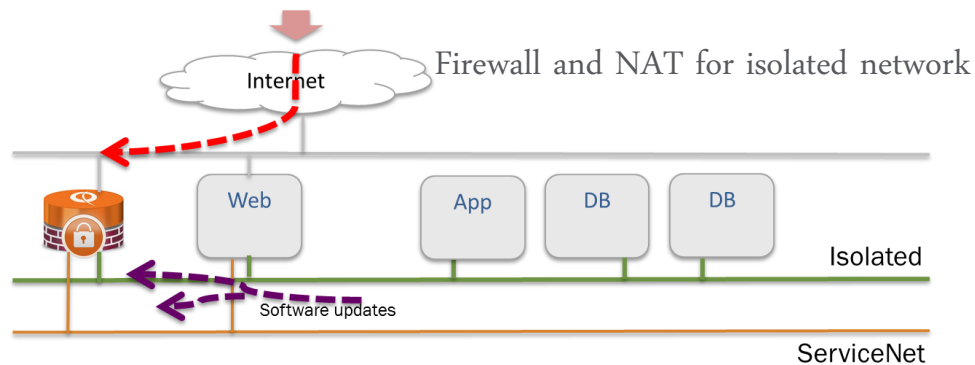


OpenStack 的 LBaaS

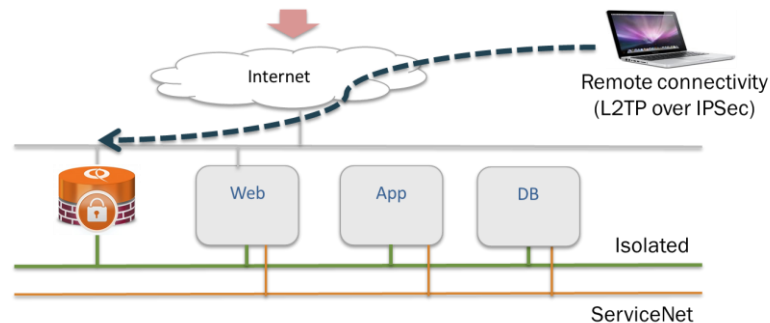
- 应用交付的特性:

- Virtual Server
- Virtual Server Port
- Real Server
- Real Server Port
- Port Policy
- Bind of virtual Server Port to Real Server Port
- Monitor of connection related parameters.





Site-to-site VPN



Remote access IPsec VPN

Enhanced security and networking

Cloud Servers, Cloud Networks, and the Brocade Vyatta® vRouter together enable a comprehensive all-in-one networking and security solution—giving you an easy-to-configure firewall, advanced networking, and VPN capabilities, plus increased security in the cloud.

Key features



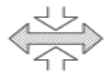
Virtual private network (VPN) gateway—Build a VPN tunnel from your data center into the Rackspace public cloud. You can use a standards-compliant VPN device from almost any vendor at the other end of the VPN connection; or provide secure remote access for users in your company to connect to your resources in the cloud. The Brocade Vyatta vRouter supports both IPsec and OpenVPN.



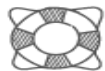
Firewall—Secure your cloud infrastructure with a network-based firewall that can perform stateful, IPv4/v6 packet inspections to intercept and inspect network activity and help protect your critical data. The Brocade Vyatta vRouter supports zone and time-based firewalling.



Network address translation (NAT)—You can provision application and database servers without public network interfaces, while still allowing your servers to access the Internet for OS updates and patches using Source NAT. Or you can hide your web servers behind the Vyatta with Destination NAT. This gives you added security in your cloud infrastructure with even less exposure to the Internet.



Router—If you want to create application tiers on different isolated networks by leveraging the capabilities of Cloud Networks, the Brocade Vyatta vRouter enables you to easily build connectivity between these isolated networks giving you greater flexibility in building secure applications.



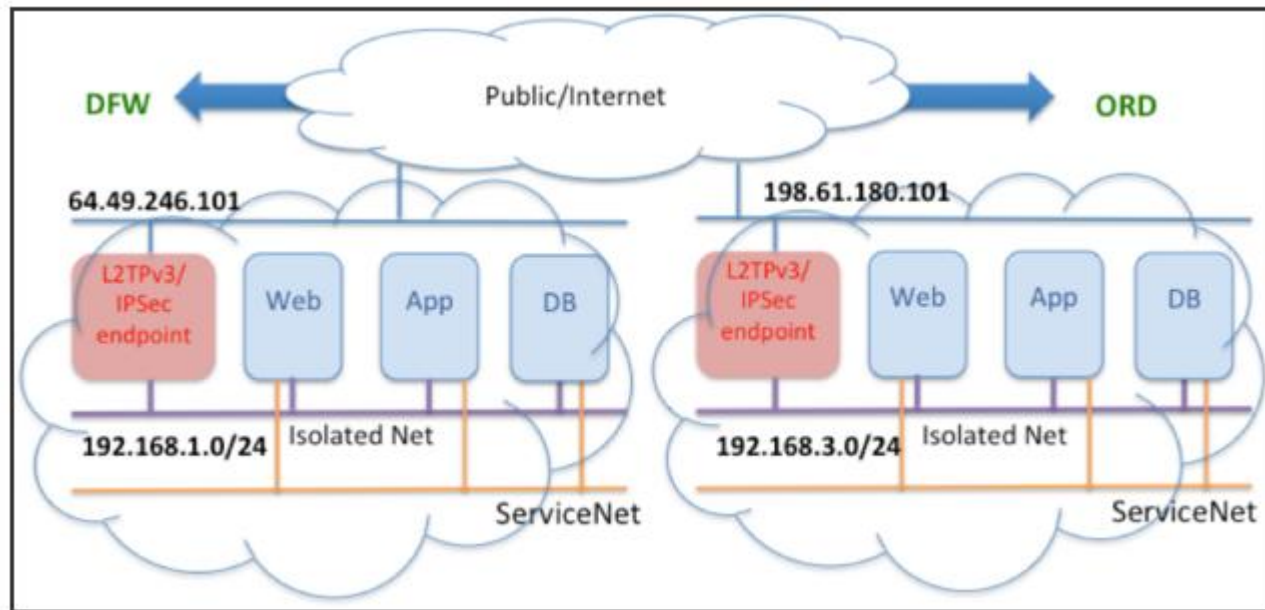
Support—With the Managed Operations service level, leave the heavy lifting to us. We configure and manage your Brocade Vyatta vRouter to meet a range of security and networking requirements.

Rackspace IPSec VPN 应用实例



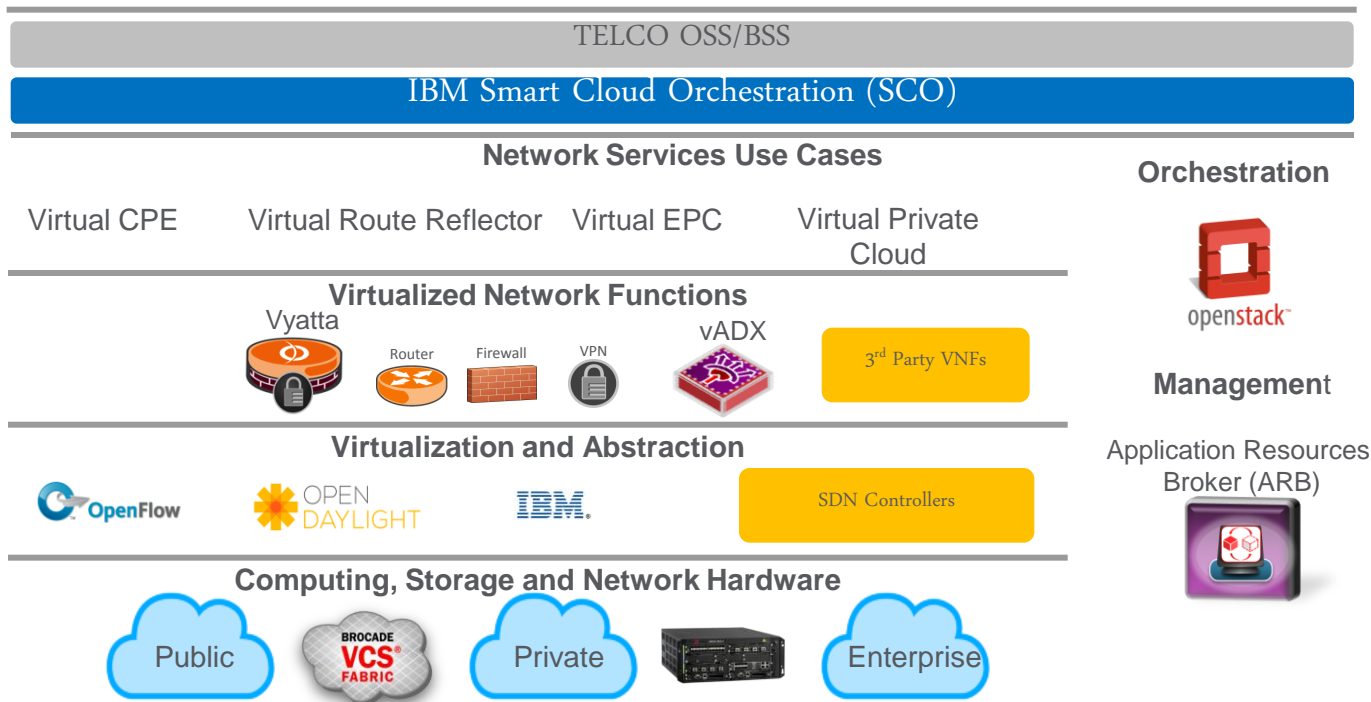
here are three main components of the Internet Protocol security (IPsec) architecture:

- The Authentication Header (AH) protocol
- The Encapsulating Security Payload (ESP) protocol
- The Internet Key Exchange (IKE) protocol, formerly referred to as ISAKMP/Oakley



IBM & Brocade VNFaaS – Eco-system Showcase

Highlighting IBM and Brocade Integration/Joint Value

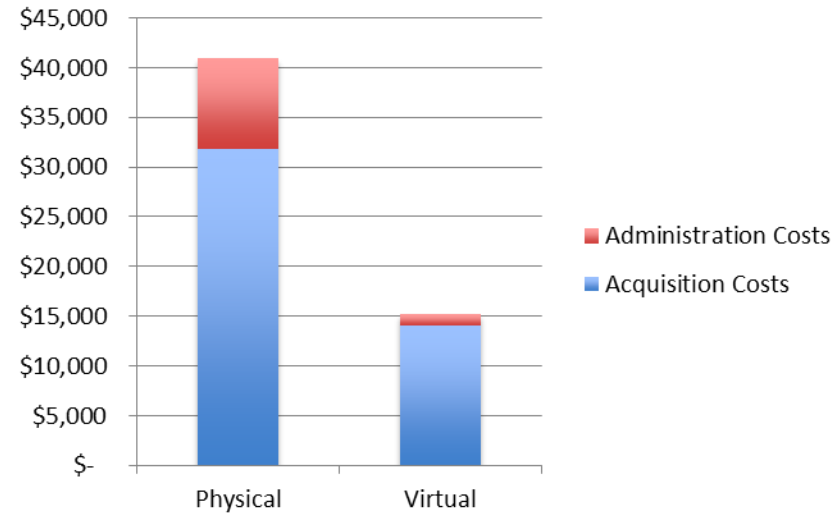


Financial Value of Virtual Router Deployment

- **ROI & Financial modeling:**
 - Physical routers vs. virtual instances
 - Firewall Use Case Comparison
- **Key Vyatta Advantages:**
 - 56% CapEx Savings
 - 86% OpEx Savings
 - 8x Lower Administrative Time
 - 27% Space Savings

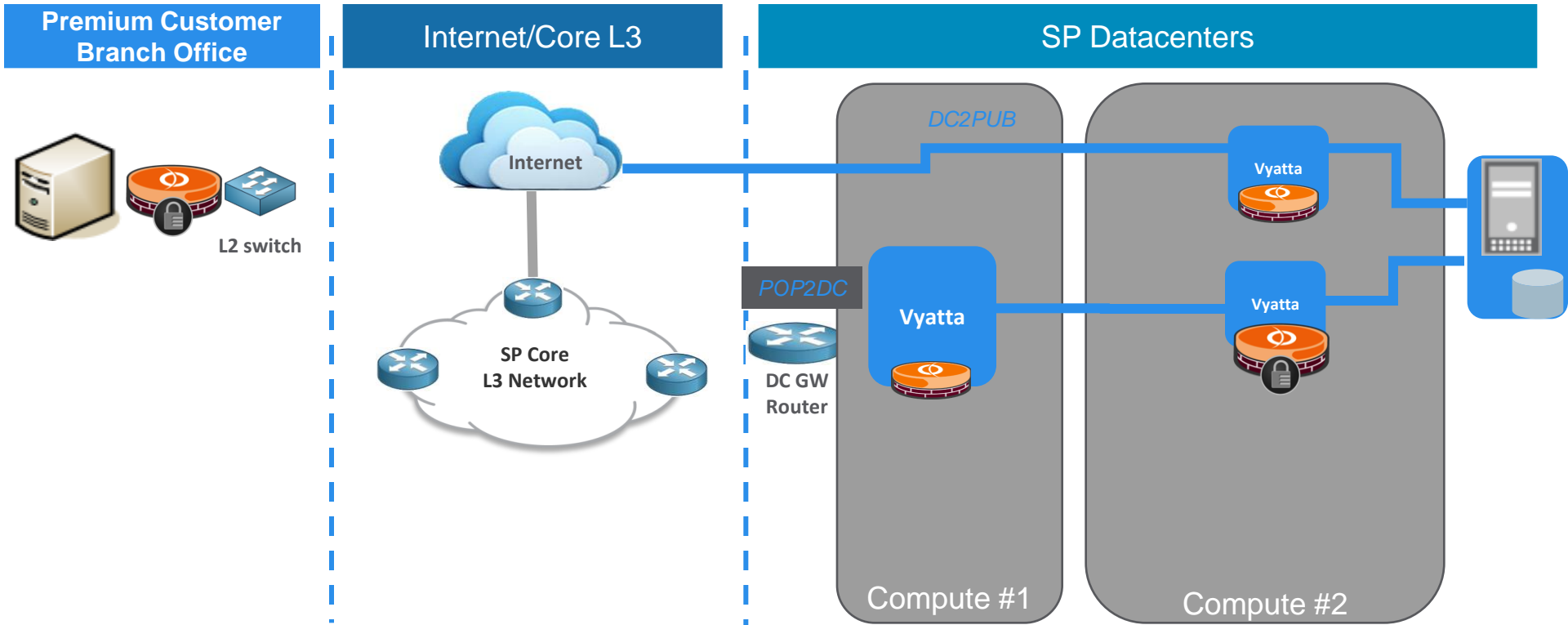
HA Pair Comparison	Physical	Virtual
Acquisition Costs	\$ 31,824	\$14,000
Administration Costs	\$ 9,094	\$ 1,272
Administration Hours	29.1	4.1
Rack Units Consumed	15	0

Vyatta - Per HA Pair: 5-Yr TCO



Step 1: Launch Virtual System Pattern for Premium customer.

No service yet.



Smart Cloud Orchestrator Interface

Launch Virtual System Pattern for *Premium* Customer

Home Self-Service My Requests Instances Images & Patterns Components Reports Configuration Administration My Inbox

Pattern Editor

Editing La-gaude-complete-demo

Search...

Showing parts for OpenStack, region RegionOne

Parts (3/3)

- Core OS**
IBM OS Image for Fedora - AE
2.0.1.1 (64), OpenStack, RedHat Enterprise Linux 64-Bit 16 (Fedora 16 ec2 20111101 i386)
- Core OS**
IBM OS Image for Red Hat Linux Systems
2.0.0.2 (92), OpenStack, RedHat Enterprise Linux 64-Bit 6.3 (RHEL 6.3 X64)
- Vyatta_vRouter**
Region: RegionOne
Vyatta_vRouter
1.0.0.0 (bce201123.0), OpenStack, Debian 64-Bit (debian 6.0)

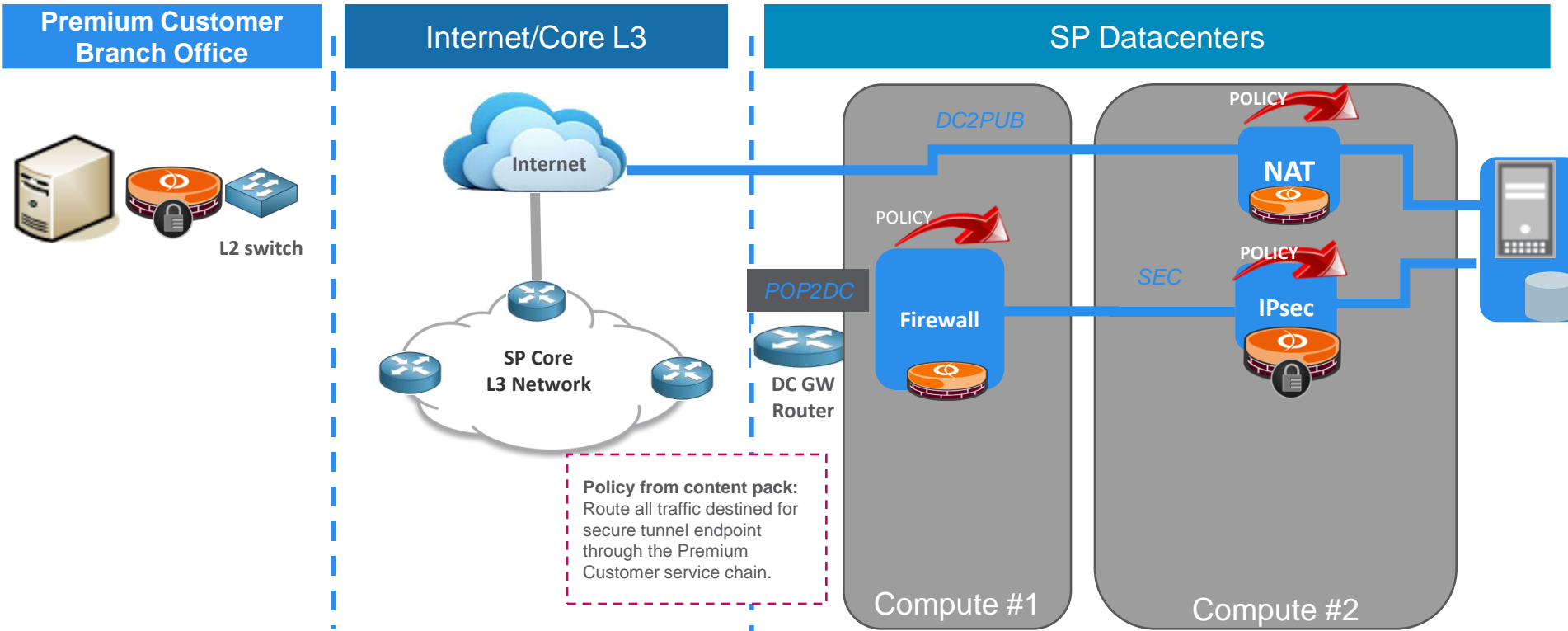
Scripts (5/5)

Add-Ons (8/8)

The diagram illustrates the virtual system pattern for the 'La-gaude-complete-demo'. It consists of three main components, each represented by a box with a configuration panel and a list of associated scripts (indicated by green server icons with red 'X' marks).


- Core OS (4 instances):** The configuration panel shows a version dropdown set to '2.0.0.2'. It has one script associated with it.
- Vyatta_vRouter (1 instance):** The configuration panel shows a version dropdown set to '1.0.0.0'. It has two scripts associated with it.
- Vyatta_vRouter (1 instance):** The configuration panel shows a version dropdown set to '1.0.0.0'. It has three scripts associated with it.

Step 2: Use Content Pack to configure Policy and create Premium customer service chain. (FW + IPsec VPN + NAT)



Smart Cloud Orchestrator Interface

Brocade VNFaaS Content Pack configuration

**Manage Brocade Vyatta VNFs**
Deploy/Undeploy Brocade Vyatta VNFs


VNFaaS Self Service Portal
Enter Business Name

Select Service Type

Select Action

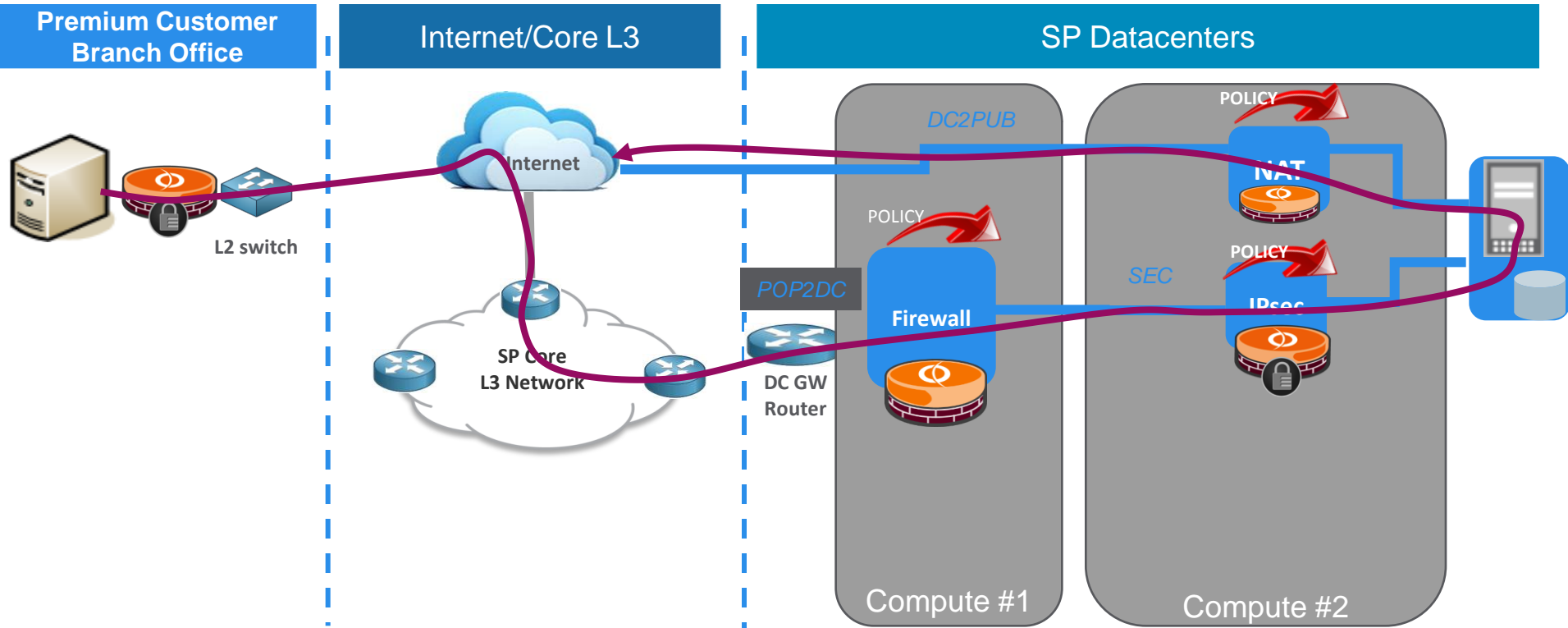


[Self-Service](#) > [Brocade Vyatta](#) > [Manage Brocade Vyatta VNFs](#)

**Manage Brocade Vyatta VNFs**
Deploy/Undeploy Brocade Vyatta VNFs

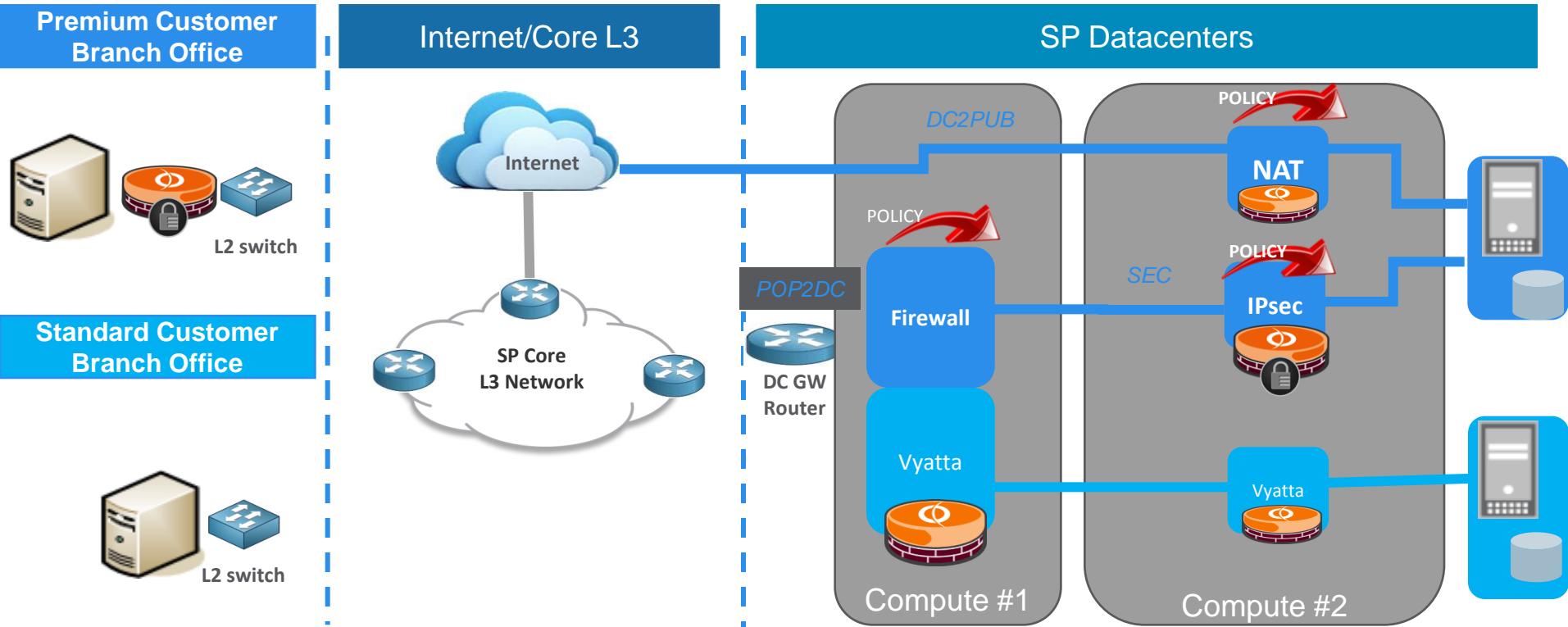
Deploying Premium Service For Shell
Secure Tunnel IP

Step 3: Watch the premium customer in action using remote desktop to access the web.



Step 4: Launch Virtual System Pattern for Standard Customer.

No service yet.



Smart Cloud Orchestrator Interface

Launch Virtual System Pattern for *Standard* Customer

Home Self-Service My Requests Instances Images & Patterns Components Reports Configuration Administration My Inbox

Pattern Editor

Editing La-gaude-complete-demo

Search...

Showing parts for OpenStack, region RegionOne

Parts (3/3)

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IBM OS Image for Fedora - AE
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- Vyatta_vRouter
Region: RegionOne
Vyatta_vRouter
1.0.0.0 (bce201123.0), OpenStack, Debian 64-Bit (debian 6.0)

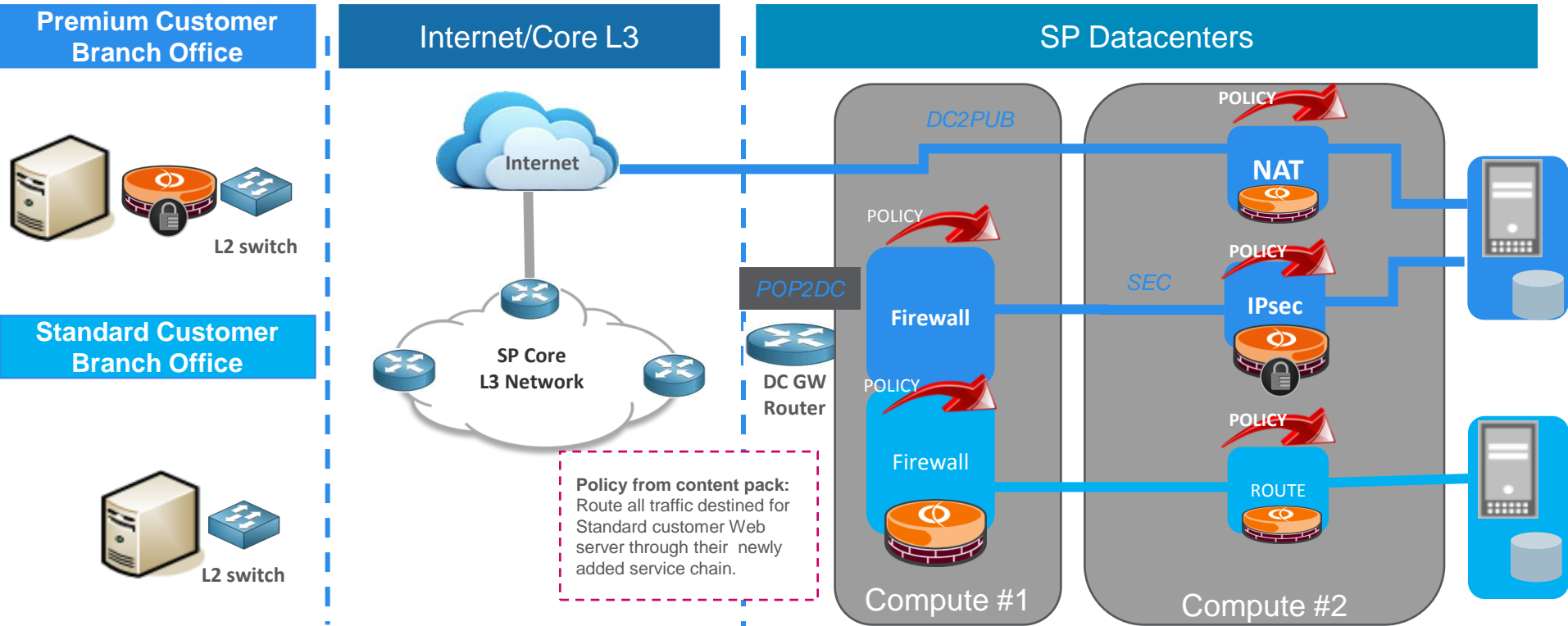
Scripts (5/5)

Add-Ons (8/8)

Diagram illustrating the Virtual System Pattern components and their configuration:

- Core OS (4 instances):** Configured with version 2.0.0.2.
- Vyatta_vRouter (1 instance):** Configured with version 1.0.0.0.
- Vyatta_vRouter (1 instance):** Configured with version 1.0.0.0.

Step 5: Use Content Pack to configure Policy and Standard customer service chain.(FW + ROUTE)



Smart Cloud Orchestrator Interface

Brocade VNFaaS content pack configuration

Self-Service > Brocade Vyatta > Manage Brocade Vyatta VNFs



Manage Brocade Vyatta VNFs

Deploy/Undeploy Brocade Vyatta VNFs

VNFaaS Self Service Portal

Enter Business Name

Select Service Type

Standard

Select Action

Deploy

Submit



Self-Service > Brocade Vyatta > Manage Brocade Vyatta VNFs



Manage Brocade Vyatta VNFs

Deploy/Undeploy Brocade Vyatta VNFs

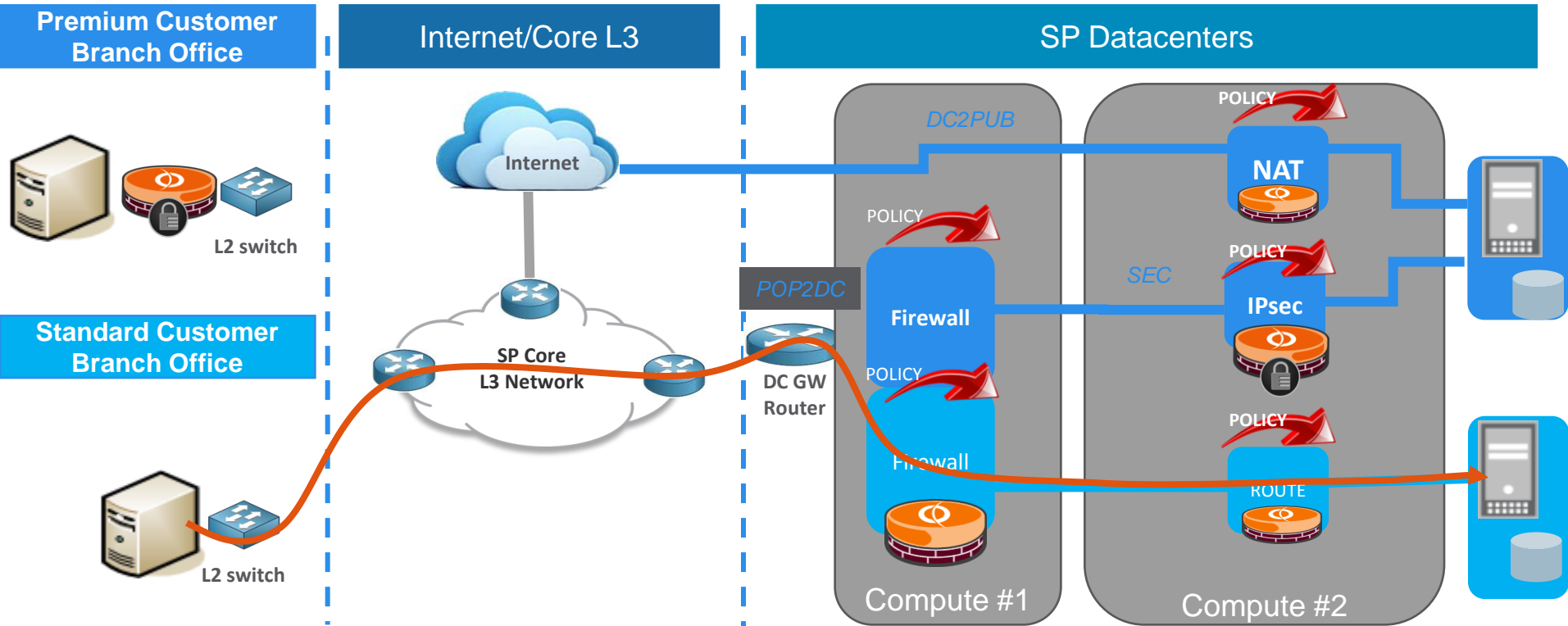
Deploying Standard Service For Valero

Web Server Destination IP

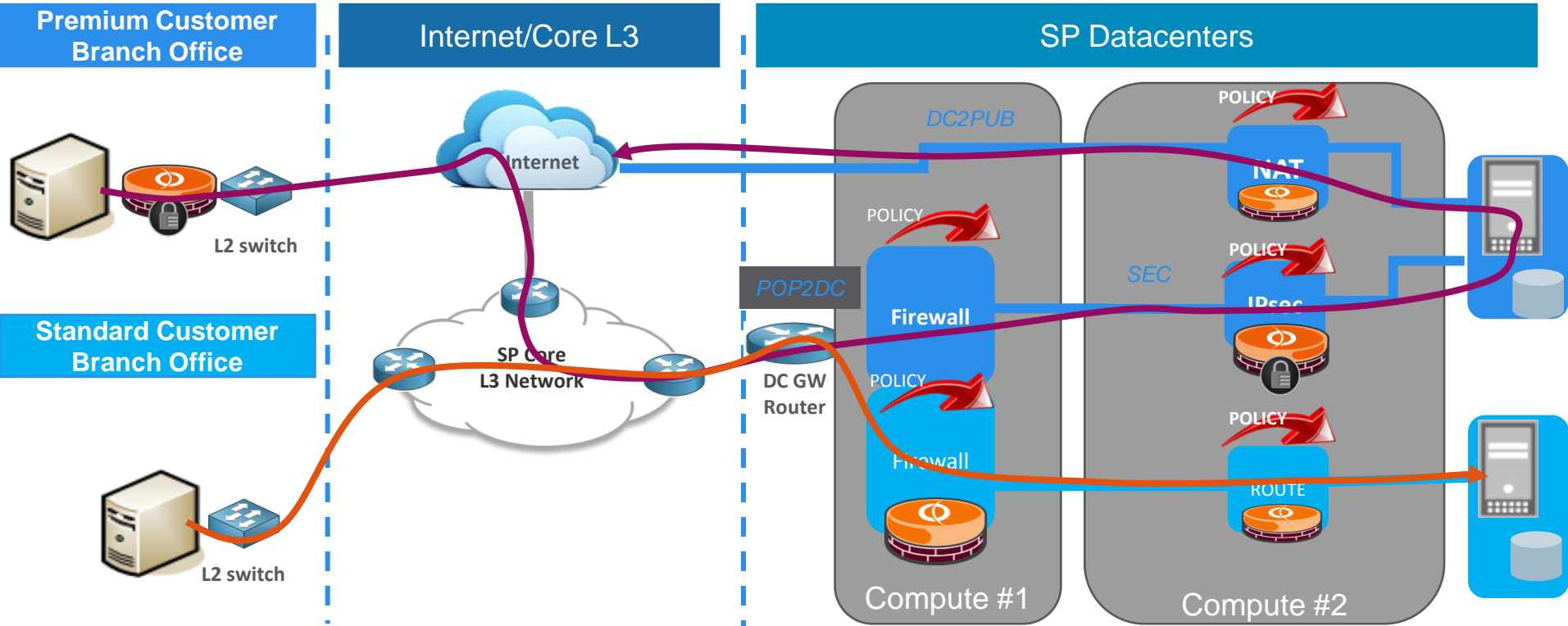
Customer Source IP

Submit

Step 6: Watch standard customer in action accessing their web server.

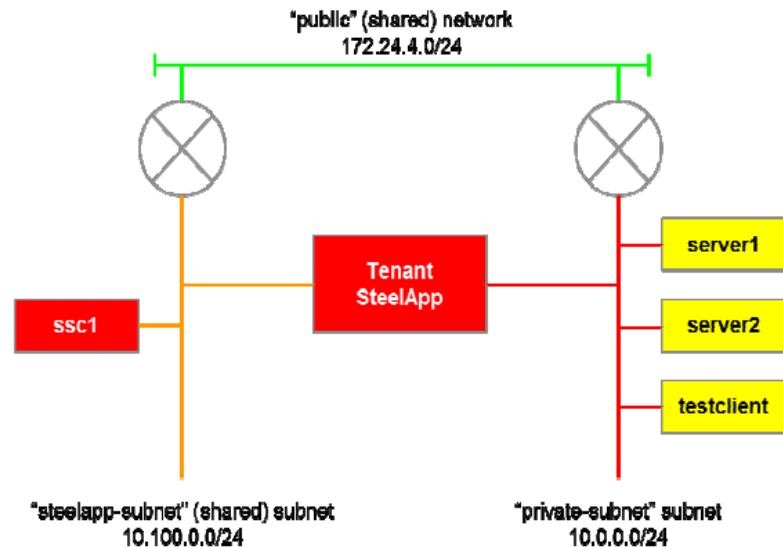


Step 7: Different forwarding graphs for different customers.

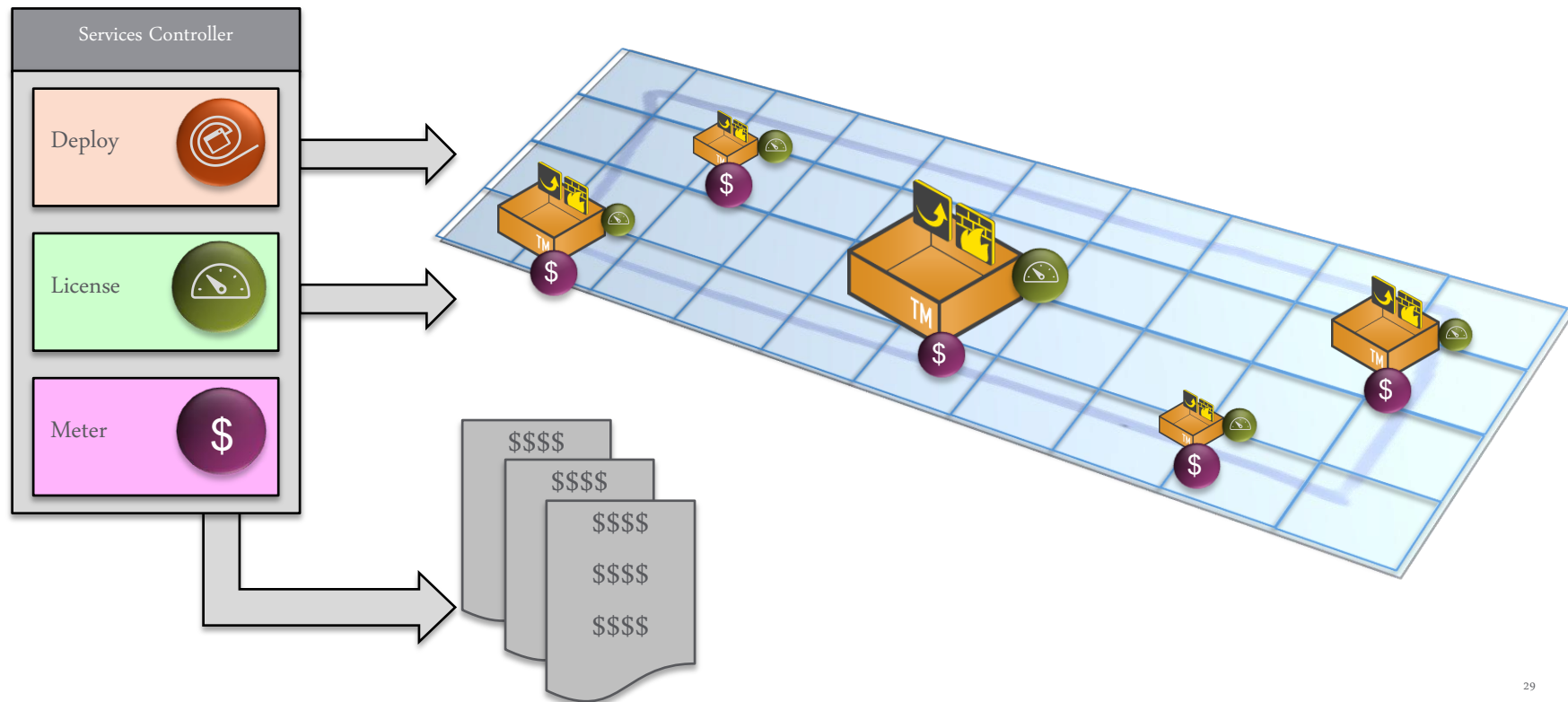


某云客户LBaaS案例

- Upload vTM image(s) to OpenStack Glance repository
- Bring up Services Director instance
- Set up / configure licenses:
 - Upload the Services Director license, SSL certificates into Services Director
 - Generate the FLA license to be used for vTM instances and upload to Services Director instance
 - Generate the bandwidth license (optional) and upload to Services Director instance
- vTM Device Driver retrieves the FLA license from the Services Director
- vTM Device Driver brings up a new vTM instance as a Nova VM
- vTM Device Driver adds the vTM instance to Services Director as unmanaged instance
- vTM Device Driver configures the request on the vTM via services directory proxy API



如何实现： Services Director for LBaaS



博科提供开放的开发者用户论坛

<http://community.brocade.com/t5/DevNet/ct-p/APISupport>

The screenshot shows the Brocade DevNet Community forum homepage. At the top, there's a navigation bar with links for Home, Discuss, Attend Events, Blogs, Documents, Social, MyBrocade, and SDN + NFV. Below this is a large banner for DevNet. The main content area is divided into several sections: a 'CONTRIBUTORS / MODERATORS' list on the left, a 'WELCOME TO THE BROCADE DEVNET COMMUNITY' message in the center, and a 'JOIN THE COMMUNITY' section on the right. The center section includes links to download Brocade Vyatta Controller and API Toolkit, and a list of latest posts. The right section features a Twitter feed with tweets from the OpenDaylight Project.

Brocade.com | MyBrocade | Info & Feedback | Register/ Sign-In

BROCADE

Home Discuss Attend Events Blogs Documents Social MyBrocade SDN + NFV

DevNet

BROCADE COMMUNITY FORUMS : DISCUSS : TECHNOLOGY : DEVNET

CONTRIBUTORS / MODERATORS

- Lisa Caywood
- Jim Burns
- Santosh Rajvaidya
- Nagendra Jaladanki
- Prakash Kaligotla
- Saravanan Rasappan
- Imran Saeedi

ASK A QUESTION

WELCOME TO THE BROCADE DEVNET COMMUNITY

Here you will find links to download the Brocade Vyatta Controller and Brocade platform APIs, as well as sample scripts, documentation and support resources. As you start working these resources, share what you learn and build with the community here or on Brocade GitHub Wiki. If you have a question, comment or recommendation, please create a new post or comment.

Quick Links:

- Brocade Wiki on GitHub
- Discussions - Start or Join a Discussion, and contribute code examples to the community
- Documents - Review, Comment and Share official documentation, podcasts, webinars and videos.

DOWNLOAD Brocade Vyatta Controller

- Download Free Trial-->>> **DOWNLOAD NOW**
- Download on GitHub-->>> **DOWNLOAD NOW**

DOWNLOAD API Toolkit

- Download on GitHub-->>> **DOWNLOAD NOW**

LATEST POSTS

SUBJECT	AUTHOR	POSTED

Join the Community

Get quick and easy access to valuable resource designed to help you manage your Brocade Network.

REGISTER **SIGN-IN**

#opensdn

OpenDaylight Project
@OpenDaylightSDN
Get #OpenSDN on the brain? Don't worry, you aren't alone.
pic.twitter.com/RZ9wBPgU6u
Retweeted by Spencer

OpenDaylight Project
@OpenDaylightSDN
England's Bristol is Building the First

用户论坛包含：

- 博科 SDN 控制器下载
- APIs 下载
- 文档资料
- 演示视频
- 样本脚本
- 专家回答

.....

谢谢！