



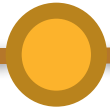
SDN & the pursuit of building more secure datacenters

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Nuage Networks

- HQ in Silicon Valley with a global team
- A Nokia venture focused on datacenter network evolution for the cloud era
- Offers an open, high-performance, scalable SDN solution that supports any workload, anywhere and over any physical infrastructure
- Member of the OpenStack community

Icehouse



Juno



Kilo



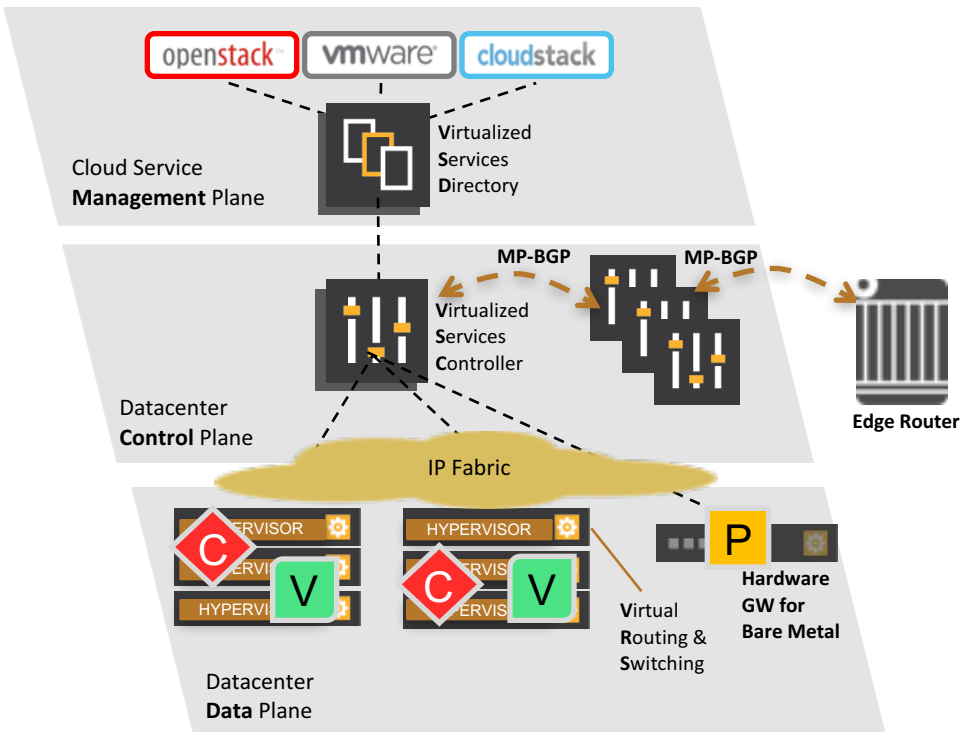
Liberty



Mitaka



Nuage Networks VSP Architecture



Nuage Networks Virtualized Services Platform (VSP)



Virtualized Services Directory (VSD)

- Network Policy Engine – abstracts complexity
- Service templates and analytics



Virtualized Services Controller (VSC)

- SDN Controller, programs the network
- Rich routing feature set based on ALU 7x50



Virtual Routing & Switching (VRS)

- Distributed switch / router – L2-4 rules
- Integration of bare metal assets

Market Trends Driving New Security Requirements

Move to Cloud



- Security Automation
- Multi-tenancy
- Support Mobility

Threat Landscape



- Mitigate lateral spread
- Visibility to East/West Traffic
- Fast Response

Challenges with Existing Data Center Security Model

Protection



Detection



Operations



SDN can help address these challenges!

Current Approaches Aren't Sufficient



Protection

- Perimeter centric – requires trust between all apps and tenants
- Cannot enforce internal segmentation



Detection

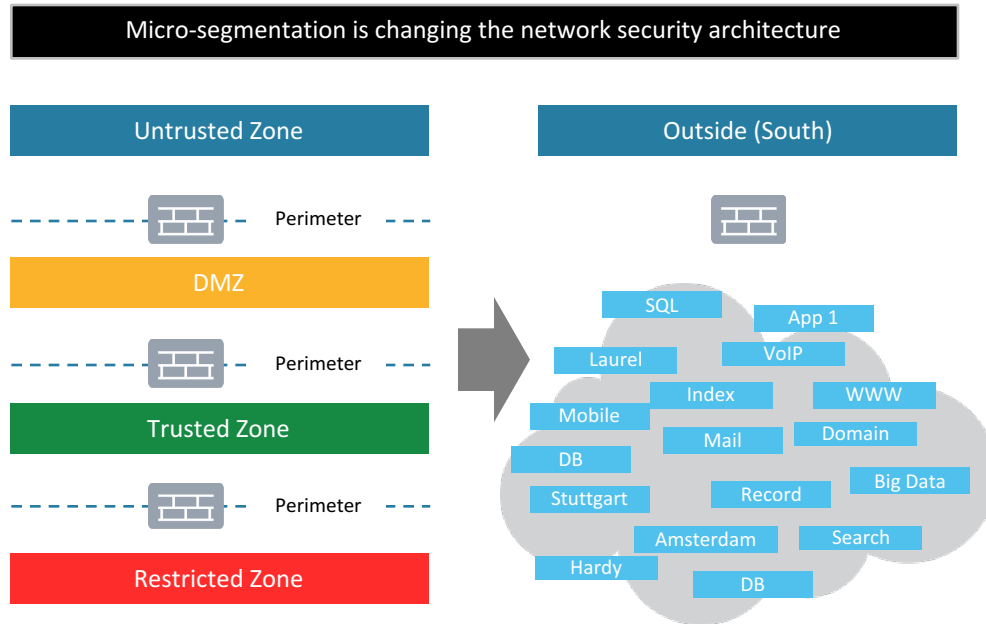
- Lack of visibility/control for East-West datacenter traffic
- Traditional approaches cannot scale for cloud



Operations

- Manual processes delay policy changes and app delivery
- Costly to remediate, manage and update

Micro-Segmentation reduces risks with a “Zero-Trust”[□] Model



■ Benefits

- Enforce security between end-points anywhere
- Restricts lateral movement of malware

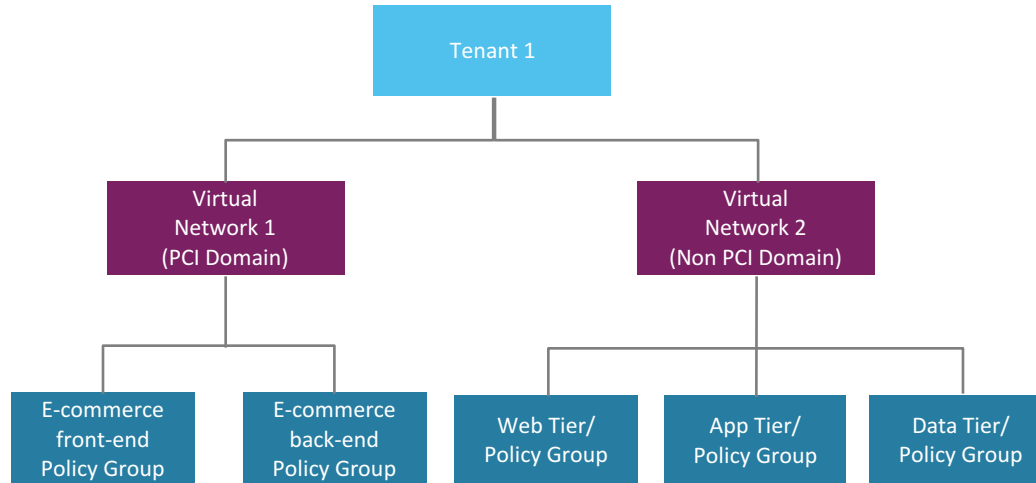
■ Use Cases

- High value asset protection
- PCI compliance
- Restrict shared services access
- Securing east/west application traffic

Gartner, *Network Security Architectures for Virtualized Data Centers*, Joerg Fritsch, 10 August 2015 ; Figure2

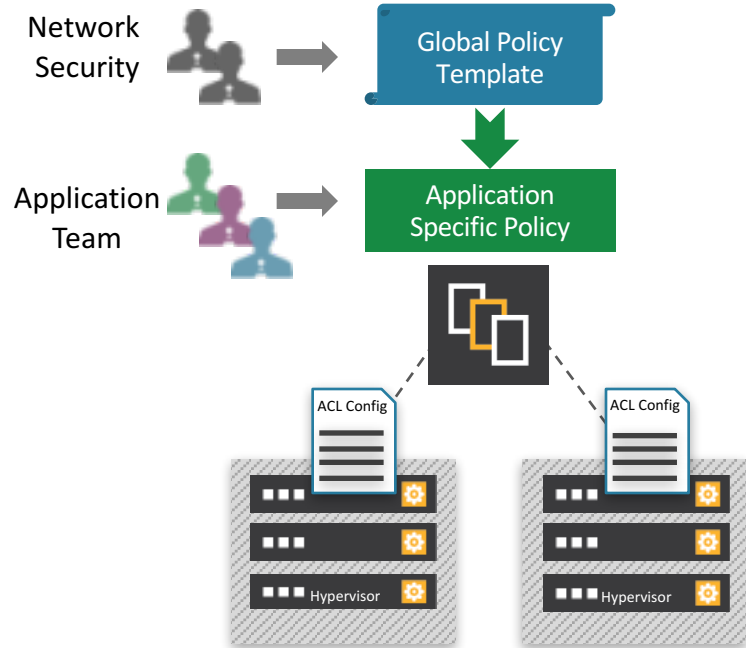
□ Forrester, *Five Steps To A Zero Trust (ZT) Network*, John Kindervag, July 27, 2016

Nuage VSP enables Flexible Segmentation for ANY End-point



- Secure multi-tenancy
- Isolation based on virtual networks
- Logical segmentation using policy groups
- Distributed L4 stateful firewall
- Supports bare-metal, VMs, containers

Security Automation with Nuage Networks VSP



Automate enterprise wide security enforcement to ensure compliance

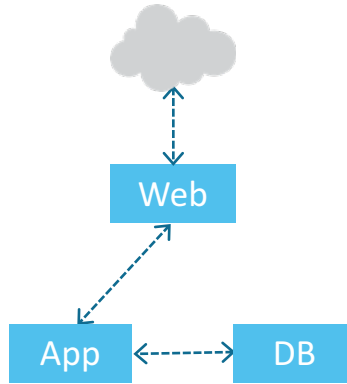
Automate security provisioning at the time of workload instantiation, removal

Automate security service insertion based on forwarding policy

Visibility and Security Monitoring in Virtual Networks



- ACL Flow Logging
- Policy based Mirroring



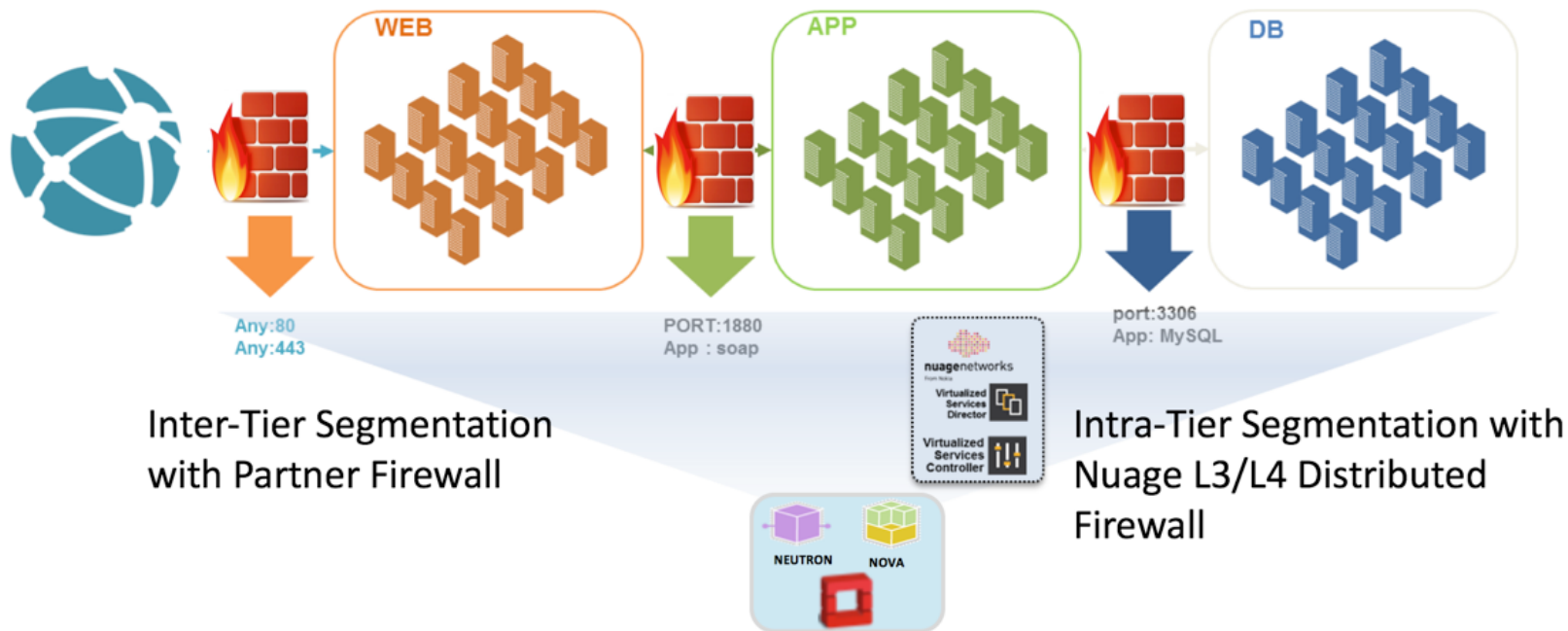
- Contextual Flow Visibility
- Application Flow Detection



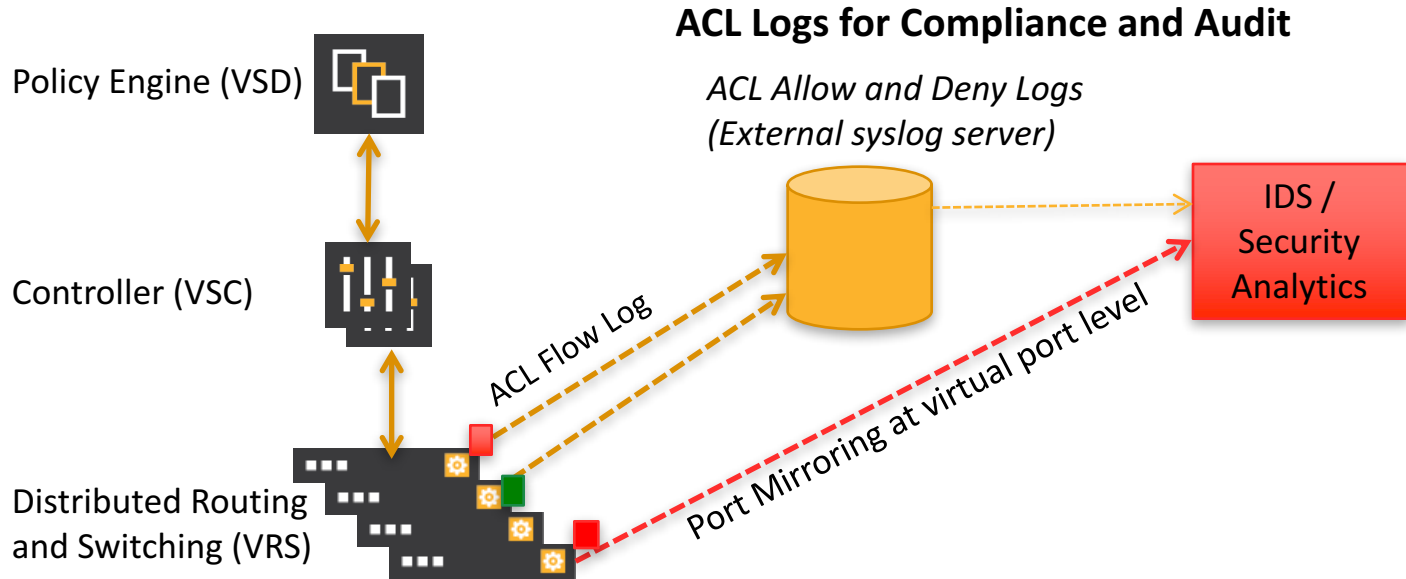
- Security Alerts
- Monitoring Reports

Sample Use-Case

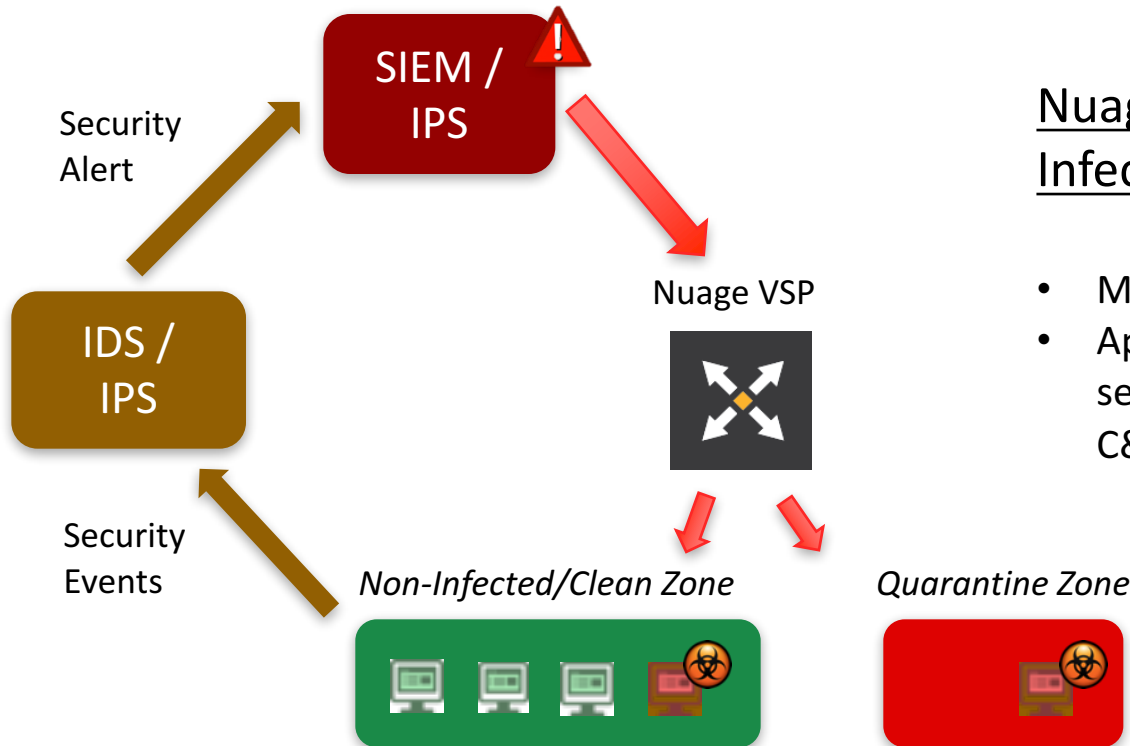
Network and application-level micro segmentation with advanced threat protection



Better Visibility, Compliance & Accelerated Threat Detection



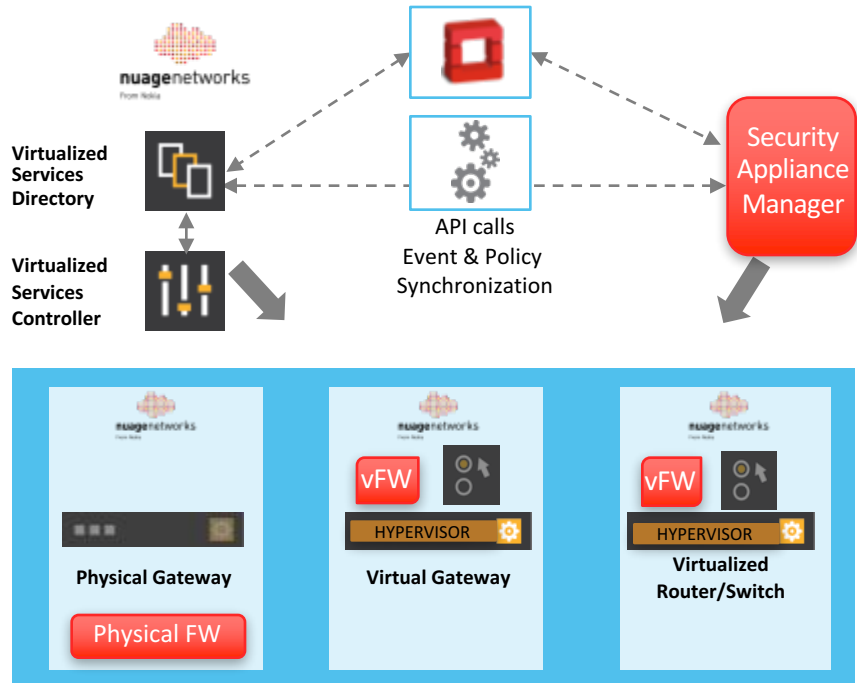
Faster Incident Response [Automated Quarantine]



Nuage VSP API to Quarantine Infected Servers/VMs

- Move VM to Quarantine Zone
- Apply security policy to block select communications (e.g., C&C, FTP)

Nuage Networks VSP integration with industry leading products



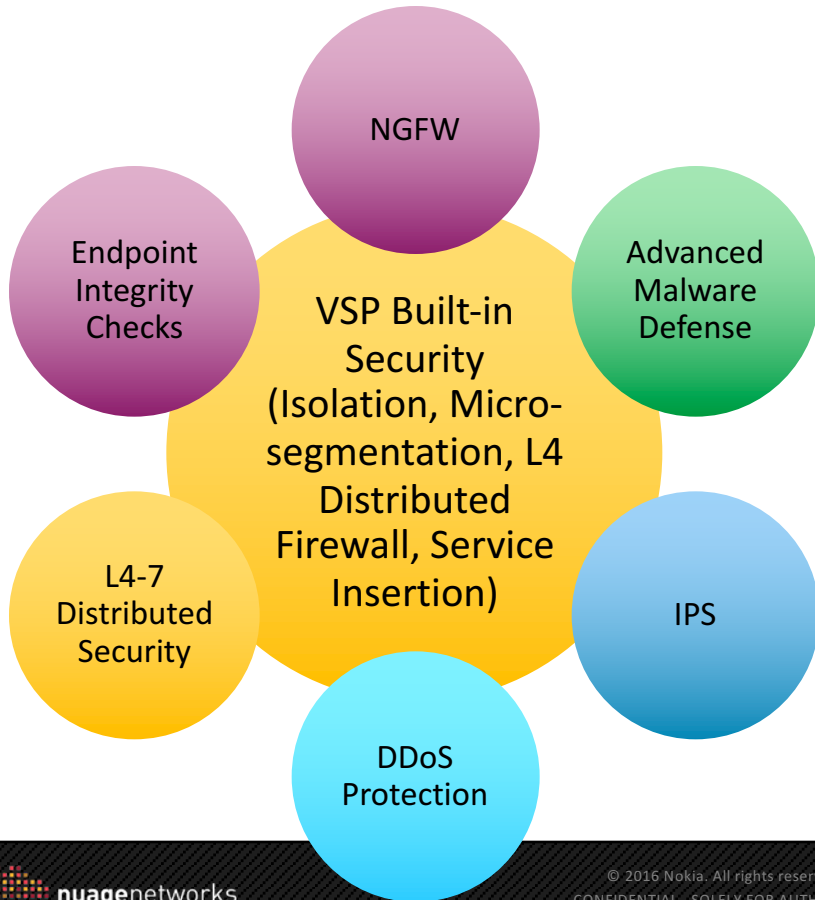
■ Security Automation

- Policy based insertion of physical or virtual security services
- Policy based security automation for any workload

■ Advanced Security Controls

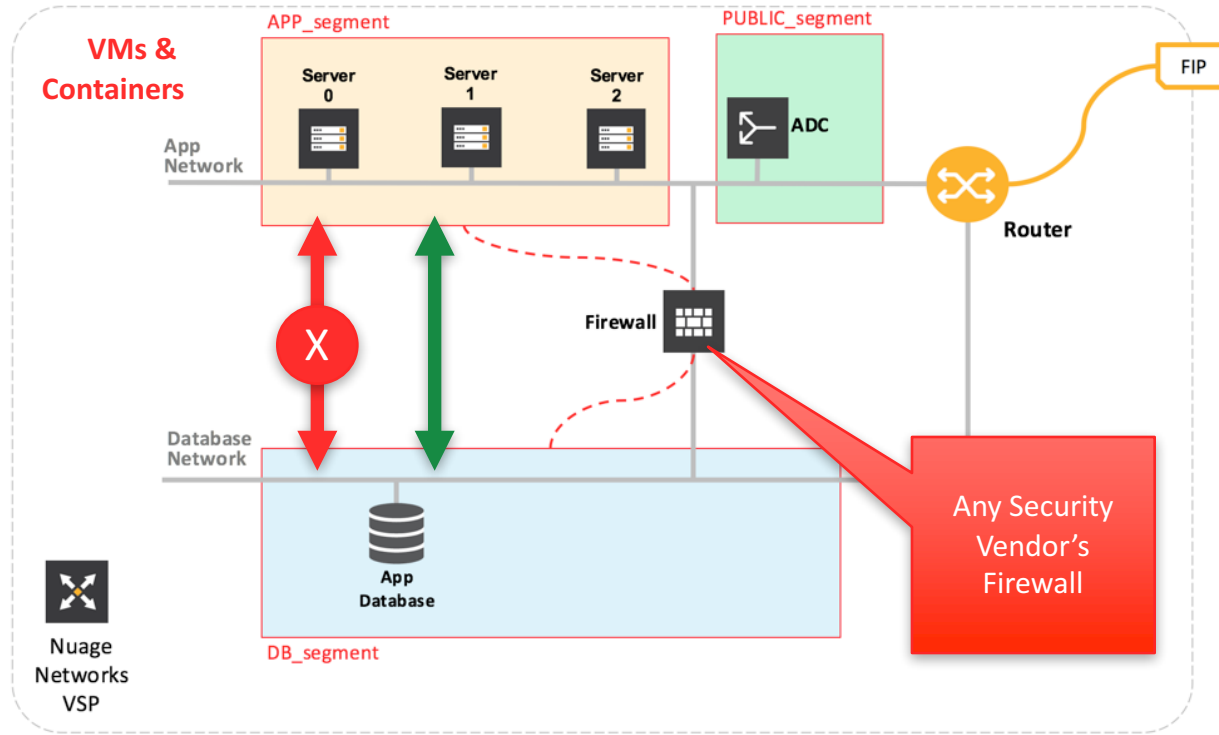
- Application based micro-segmentation
- Advanced threat protection

Advanced Security Solutions through Partner Integration



- Protection with broad security eco-system integration
- Solutions enable advanced micro-segmentation, threat detection inside data center and automated quarantine
- Flexible Security Service Insertion (Physical or Virtual Security Appliances)
- Investment Protection (works with existing security appliances and operational models)

Demo



Nuage Networks VSP Addresses Cloud and Enterprise Data Center Security Challenges

Secure Multi-tenancy for Private and Public Cloud

- ✓ Reduces risk, lowers infrastructure costs
- ✓ Enables cloud service providers to offer network security as a service

Micro-Segmentation Prevents Lateral Malware Spread

- ✓ Embedded L4 distributed firewall with Adv. L4-7 Security service insertion
- ✓ Protects any workload (P,V,C) , multi-hypervisor, any network

Policy based Security Automation and Compliance

- ✓ Policy based on logical context and grouping
- ✓ Automated provisioning of L4 security and compliance enforcement

Faster Incident Response with Automated Quarantine

- ✓ APIs for integration with threat detection/SIEM systems to automate quarantine



THANK YOU!

Want to learn more, visit our OpenStack summit booth to see live demos or our website @ www.nuagenetworks.net/partners

Got questions, e-mail us at partners@nuagenetworks.net



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