



# The network functions platform company

Virtualized app delivery and security

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Safesoft Kft.



# Array At-a-Glance



## Headquarters

Milpitas, CA

## Employees

250+

## Technology

30+ Patents

## Focus

Virtualized Application Delivery and Security

## Products

Network Functions Platforms (NFV)

Application Delivery Controllers (ADC)

Secure Access Gateways (SSL VPN)

## Segments

Enterprise, Service Provider, Public Sector

## Markets

North America, China, Japan, India & EMEA

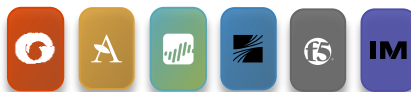
## Customers

5000+ Worldwide



# Array Networks Product Portfolio

Hyper-converged networking, security and application delivery



APV Series ADC  
AG Series SSL VPN



AVX Series  
Network Functions Platform



vAPV Virtual ADC  
vxAG Virtual SSL VPN

## Dedicated Appliances

Maximum performance  
and scalability in the  
enterprise data center

## Enterprise Private Cloud

Hyperconverged and  
virtualized networking  
and security solutions

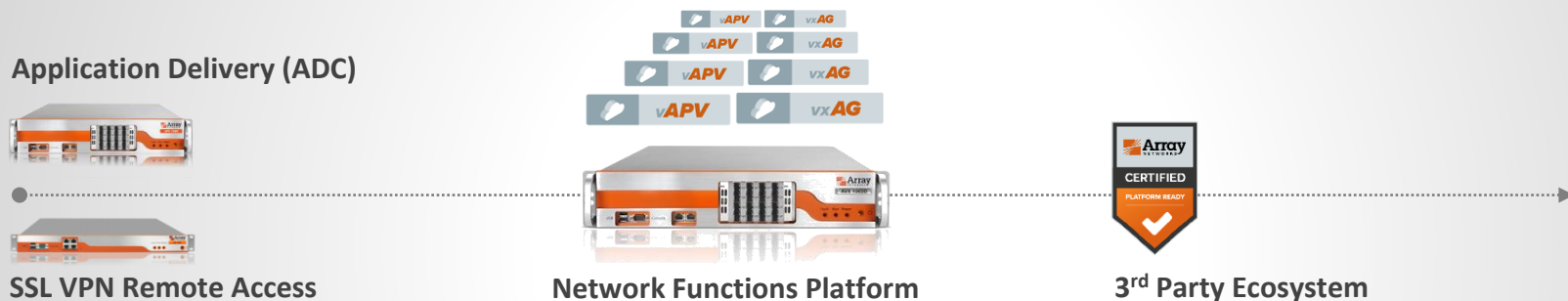
## Infrastructure Services

Offer networking and  
security as a service on  
premises or hosted

## Virtual & Public Cloud

On-demand utility  
consumption for AWS,  
Azure, VMware, etc

# Virtualized app delivery and security



## Secure App Delivery

## Evolving to Virtual Appliances

## Enterprise NFV

Providing a fast, always-on user experience

Solving performance and complexity challenges

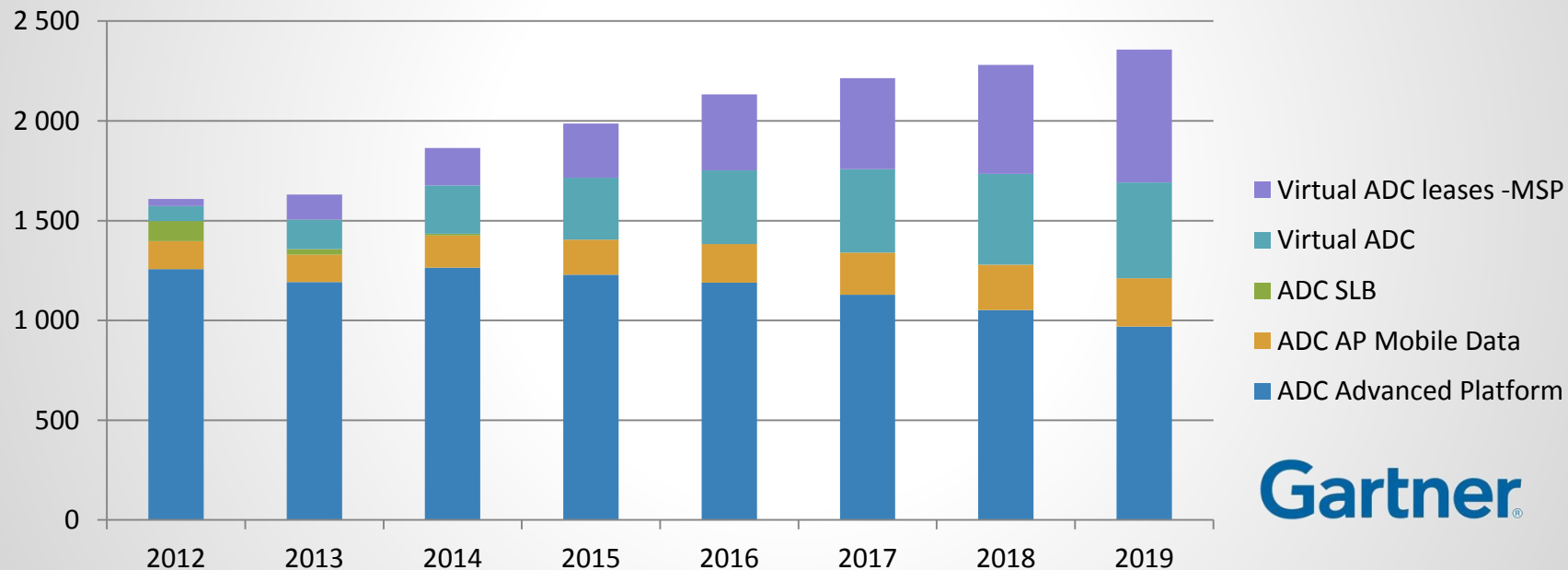
Creating a foundation for the future

- High availability
- Performance
- Traffic management
- Secure access

- Multi-tenancy and consolidation
- Agility with guaranteed performance

- Accelerated service provisioning
- Flexible service chaining

# Evolving towards virtualization



# Pros and cons of virtual appliances

## PROS

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- Flexibility and portability
- Orchestration friendly
- Pay-as-you-go/grow
- Avoids vendor lock-in
- Choice of hardware
- Space, power and cooling



## CONS

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- Performance penalty and scalability issues
- Organizational disruption
- Skills deficits
- Complex isolation and troubleshooting
- Hidden hardware and hypervisor costs

# Eliminate the trade-off with Array!



## Network Functions Platform

- Virtualized
- Multi-tenant environment
- Vendor neutral



- Simple
- Guaranteed performance
- Affordable

# The Network Functions Platform



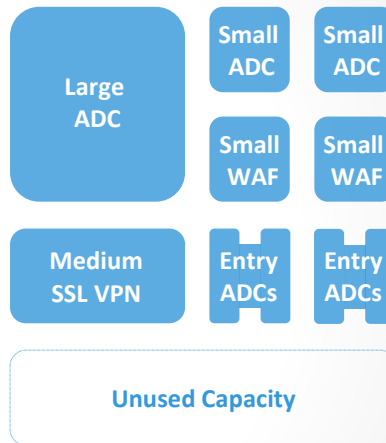
## SHARED ENVIRONMENTS

### Variable Size VMs

Mix and match 32 entry, 16 small, 8 medium or 4 large virtual appliances

### Pay-As-You-Grow

Purchase and deploy virtual appliances in proportion to business requirements



### Multiple Network Functions

Deploy ADC, WAF, SSL VPN, DDoS and other functions from Array or 3<sup>rd</sup> party vendors

### Management Automation

Integrate with existing MNS and cloud management platforms via RESTful APIs

## GUARANTEED PERFORMANCE

### Simplified Configuration

Eliminates complexity by automatically assigning virtual appliance hardware resources

### Hypervisor Management



### Guaranteed Performance

Dedicated CPU, SSL, RAM and I/O per virtual appliance for guaranteed performance



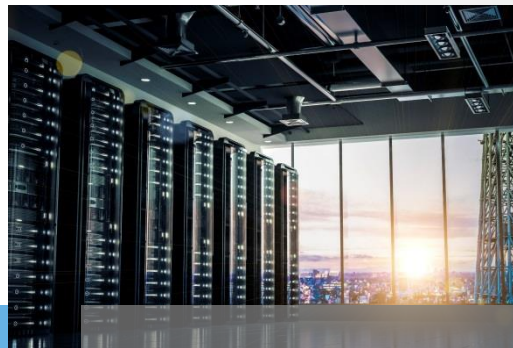
# Multi-tenancy and consolidation



## Internal Customers (Enterprise)

IT acts as a provider of private cloud app delivery and security services supporting internal projects and departments.

IT must become more agile in its ability to offer robust, on-demand services.



## External Customers (CSP & MSP)

CSP or MSP provides load balancing or SSL VPN as an infrastructure service supporting multiple customers.

Provider must accelerate service deployment while minimizing CapEx and OpEx.

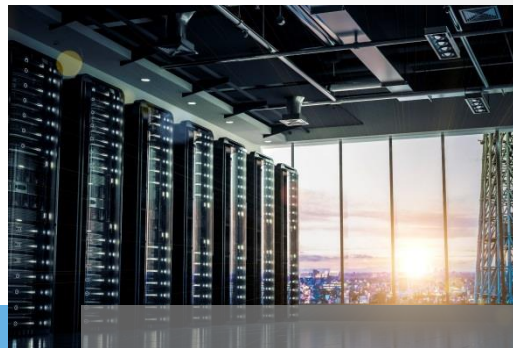
# Agility with guaranteed performance



## SSL Accelerated Virtual Appliances

IT wants a multi-tenant ADC or a virtualized environment capable of significantly higher SSL performance and guaranteed SSL performance per instance.

Support production apps or customer SLAs.



## Compute-Intensive vADC Functions

Use case requires multiple ADC functions such as SLB, SSL offload, SSL VPN, LLB, GSLB or WAF. One vADC cannot handle the combined load.

Distribute ADC functions across multiple virtual appliances, each with guaranteed performance.

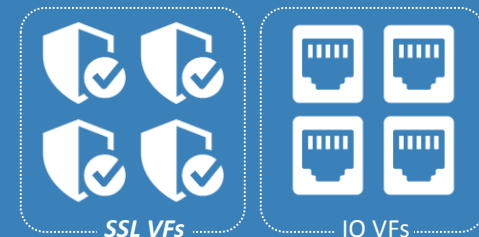
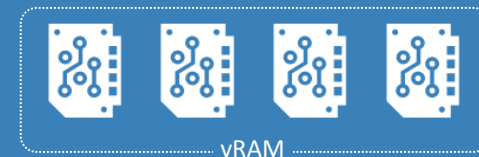
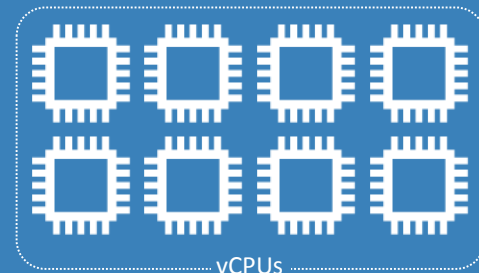
# SSL accelerated virtual appliances



- **Network Functions Platforms** are uniquely capable of running virtual ADCs with HW accelerated SSL

- **For instance, a large vADC is allocated:**

- 8 vCPU
- 16 GB vRAM
- 4 IO VFs
- **4 SSL VFs**



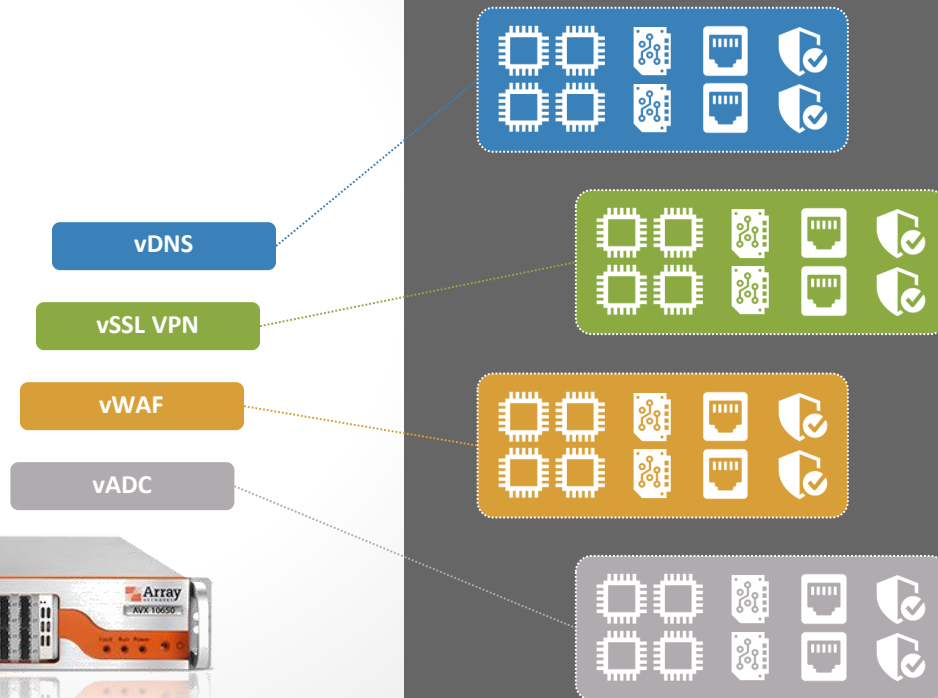
# Compute-intensive vADC functions



- Each compute-intensive vADC function deployed as an independent virtual appliance with dedicated HW resources

- Interconnect functions to gain:

- Needed functionality
- SW agility
- HW performance



# Why Array for virtualized appliances?



## Software-Centric Agility

Gain the flexibility of virtual infrastructure, with flexible sizing, functions, management and pay-as-you-grow consumption.



## Simplified Deployment

Eliminate complexity associated with virtual and physical port mapping, CPU pinning, NUMA boundary settings and SR-IOV.



## Cost Efficiency & Value

Reduce costs associated with space, power and cooling, minimize hardware costs and drive efficiency via agile management



## Guaranteed Performance

Reserved CPU, memory, SSL and interfaces per VA deliver hardware-like performance and guaranteed performance.



## Array or 3<sup>rd</sup>-Party VAs

Host Array application delivery and security virtual appliances, or virtual appliances from other networking and security vendors.

# “NFV in a box”



## Any Network Function

- Array or 3<sup>rd</sup>-party functions
- Certified Platform-Ready Program
- App delivery, security or networking
- Pay-as-you grow – purchase and deploy functions as needed

## Guaranteed Performance

- Reserved HW resources per virtual network function (VNF) or virtual appliance (VA)
- Dedicated vCPU, vRAM, SSL VF and IO VF per VNF or VA

## Plug & Play Simplicity

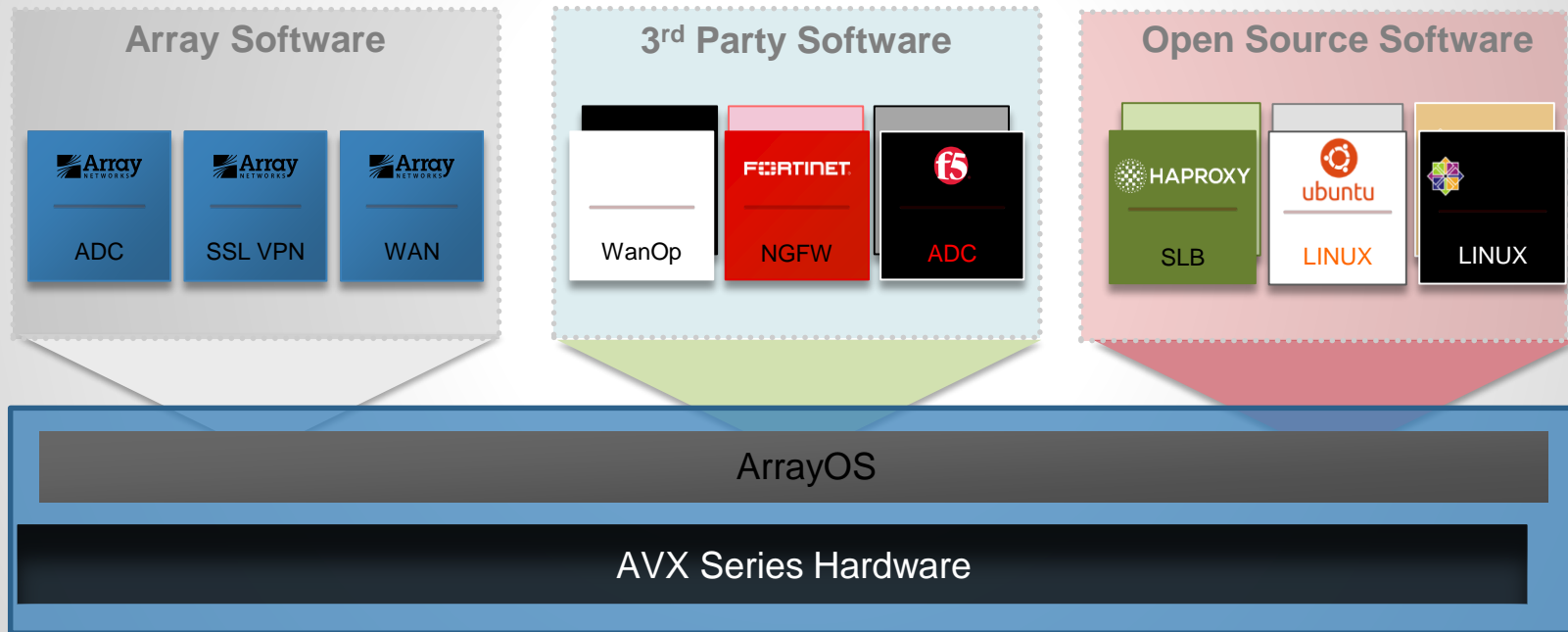
- Eliminates the need for specialized server or virtualization expertise
- Abstracts complex configuration tasks such as CPU pinning, NUMA boundary settings, SR-IOV and physical and virtual port mapping



## Intuitive Orchestration

- Visually interconnect VNFs and VAs via an administrator-friendly WebUI
- Integrate with existing MNS and cloud management via RESTful APIs
- Deploy as a node within OpenStack

# Deploy Array, 3<sup>rd</sup> party or Open Source Software



# Intuitive orchestration



Platform Overview

Service Chaining

Create VNF

Configure

## Network Functions



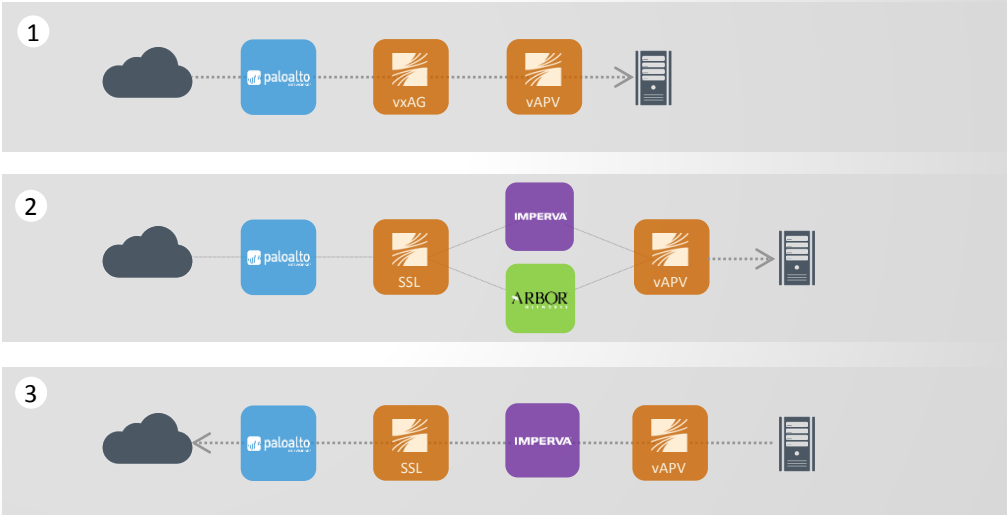
## Virtual Networking



## External Nodes



## Policy-Based Service Chain Flows



Create New Service Chain



# How can Array help you today?



## Application Delivery & Security

High-availability, performance and security for business-critical apps

Secure remote, mobile and cloud access



*Array provides an industry-leading combination of features, performance, ease-of-use, value and future-proof deployment models.*

## Multi-Tenancy & Consolidation

Gain the benefits of virtualization while avoiding the pitfalls of performance and complexity

Achieve agility at scale



*Array offers unique support for SSL accelerated virtual appliances and guaranteed performance in shared environments.*

## Enabling NFV Adoption

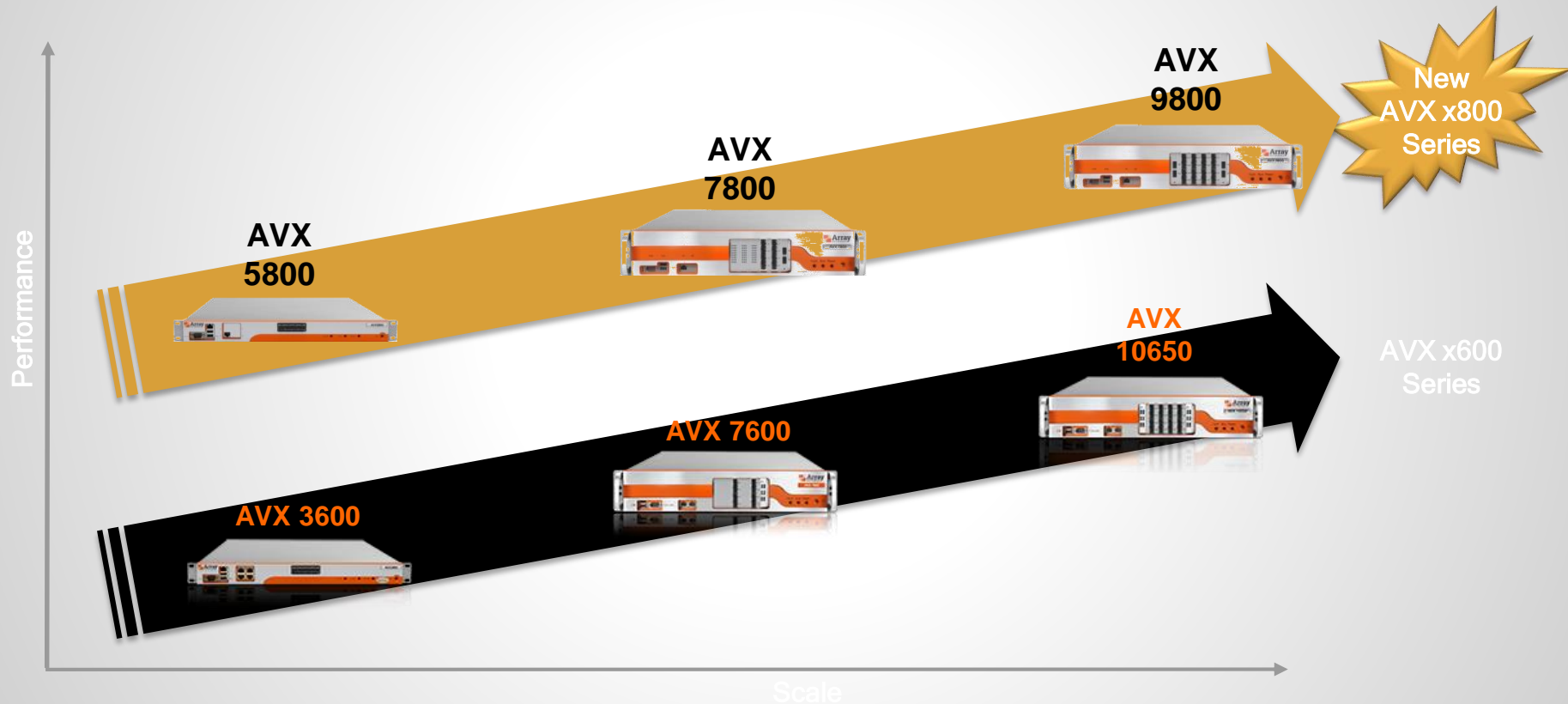
Solve app delivery and virtualization challenges while laying a foundation for NFV

"NFV in a Box"



*Array offers plug-and-play simplicity with support for any network function, intuitive orchestration and guaranteed performance.*

# AVX Platform Models



# AVX x800 Platforms: Performance & Scale

Network Functions Platforms				
		AVX 5800	AVX 7800	AVX 9800
Number of Pre-defined VAs	Number of Large Instances	1	2	4
	Number of Medium Instances	2	4	8
	Number of Small Instances	4	8	16
	Number of Entry Instances	8	16	32
Max System Performance & Scale	Max L4 CPS	750K	1.5M	3.0M
	Max L4 Throughput	40 Gbps	80 Gbps	160 Gbps
	Max SSL TPS (2K Key)	40K	80K	160K
	Max SSL Throughput	40 Gbps	80 Gbps	160 Gbps

Full Datasheet: <https://www.arraynetworks.com/ufiles/resources/DS-AVX-Series.pdf>

# Some Use Cases

The network functions platform company



# EverBright Bank



## 4xAVX7600



### Multi-tenancy and Consolidation

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Due to load fluctuation, most hardware procured will be idle in non-peak hours

AVX and vAPV enable flexible ADC capacity for multiple apps

vAPV only



### Guaranteed Performance

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SSL performance is a must; therefore making all other VNF solutions unacceptable

Single platform enables multiple apps for ease of management and easy capacity planning



### CAPEX and OPEX Savings

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Less than half the cost of standalone HW

# JUT



## 2xAVX7600



### Dynamic Security Policies

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Apply different security policies to different user groups

Hillstone vNGFW; Array vAPV, vxAG and vWAF

Internal users access via SSL VPN; external users filtered through WAF

Software-defined security



### Guaranteed Performance

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NGFW, SSL VPN, LLB, WAF functions all perform equal to a standalone hardware appliance

Single platform enables multiple security functions for ease of management



### CAPEX and OPEX Savings

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Less than half the cost of standalone HW

Quickly and easily react to new or changing requirements



## Network Functions Virtualization

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Use VNFs to replace  
hardware VoIP gateways

Deployed Cisco CSR1000v  
and Silverpeak VX-1000

VoIP and video  
conferences for employees



## Guaranteed Performance

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With vSwitch, Cisco  
vRouter can reach  
500Mbps throughput

SR-IOV will improve  
performance even better

Single platform enables  
multiple networking  
functions for ease of  
management



## CAPEX and OPEX Savings

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Significant CAPEX savings  
compared to hardware  
approach

Fits into company IT  
strategy



The background of the slide features a dark gray grid of various network-related icons, including gears, umbrellas, pie charts, and server racks, arranged in a repeating pattern that fades out towards the left.

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Thank you!

