![Array Networks logo](Array NETWORKS)

Application Delivery Controllers

APV Series network functions platforms host multiple Array and 3rd-party virtual appliances, providing the agility of cloud and virtualization with the guaranteed performance of dedicated appliances.

Array's APV Series network functions platform hosts up to 32 fully independent virtual appliances (VAs), including Array load balancing and SSL VPN, as well as 3rd-party VAs from leading networking and security vendors. Designed with managed service provider and enterprises in mind, the APV Series enables data center consolidation without sacri icing the agility of cloud and virtualization or the performance of dedicated appliances. Uniquely capable of assigning dedicated CPU, SSL, memory and interface resources per VA, the APV Series network functions platform is the only solution to deliver guaranteed performance in shared environments.

Highlights & Benefits

APVx2800

- Eliminates the trade-offs of virtualization by providing the agility of virtual appliances with the performance of dedicated appliances

- Reduces data center 'appliance sprawl' and colo real estate footprint by consolidating up to 32 networking and security VAs into a single appliance

- Eliminates expensive per-vCPU commercial hypervisor costs

- Reduces space, power and cooling requirements by up to 16x versus dedicated ADC, SSL VPN or other networking and security appliances

- Eliminates truck rolls for provisioning high-performance network and security services

- Provides unmatched price-performance for virtual ADC and virtual SSL VPN functions, with the lowest $/SSL transaction per second (TPS) on the market

- Proven 4- to 6-month average time period to achieve ROI for enterprises, service providers and public sector organizations

- Enhances security by service-chaining multiple security VAs in sequence, multiplying the effectiveness of each VA

- Six platforms, ranging from 35Gbps with support for up to 8 VAs, to 160Gbps with support for up to 32 VAs

- Unique hybrid hardware and software architecture that utilizes advanced SR-IOV, DPDK, NUMA boundary and CPU pinning optimizations to guarantee performance and scale

- Hosts Array vAPV virtual application delivery controllers and vxAG virtual SSL VPNs

- Hosts 3rd-party VAs that run on KVM, Ubuntu or CentOS, such as virtual next-generation firewalls, WAFs and other devices

- Five VA instance sizes: shared-entry*, entry, small, medium and large, with the ability to mix-and-match sizes and fine-tune system resources if needed

- Dedicated CPU cores, SSL cores, memory and interfaces per VA ensures both high performance and guaranteed performance*

- Each VA is fully independent to ensure separation required for compliance and high-security environments

- Purchase and deploy VAs as needed on a pay-as-you-grow basis, and easily deploy new VAs through an online image repository

- High availability for APV platforms and VAs

- OpenStack plug-in and eCloud™ RESTful API for integration with cloud management and orchestration

ICSAlabs
CERTIFIED SSL VPN

*Shared-entry instance sizes are supported only on the APVx2800 System resources are not dedicated for shared-entry instances.

Eliminates Trade-Offs of Virtualization

In typical virtual environments, resources are shared across many virtual machines, resulting in contention and performance degradation for hosted applications and virtual appliances. In addition, general-purpose servers were never designed to support I/O and compute-intensive network functions. As a result, IT managers are left to choose between network and security devices that deliver guaranteed performance, or VAs that deliver enhanced agility.

The unique hybrid architecture of Array APV Series network functions platforms eliminate this trade-off, providing the agility of cloud and virtualization with the performance of dedicated appliances. Unlike most virtual computing environments, the APV Series is uniquely capable of assigning dedicated CPU, SSL, memory and interface resources for each hosted VA. Hypervisor management is similarly assigned dedicated resources, and separated from hosted functions, to fully eliminate resource conflicts.

Combined with additional cloud and virtualization capabilities including pay-as-you-grow capacity licensing, variable-size VAs, support for Array Networks and 3rd-party VAs, and the capacity for orchestration and service chaining, the APV Series is an ideal solution for service providers and enterprises seeking agility at scale for network and security functions.

Data Center Consolidation

For data center managers who choose to address the performance issues of virtualization by using dedicated/physical appliances for critical networking and security functions, this strategy can quickly lead to 'appliance sprawl' with multiple appliances taking up valuable rack space and consuming inordinate amounts of power, cabling and cooling costs.

With the APV Series network functions platform, multiple networking and security VAs can be consolidated into just a few RUs, saving on the cost of dedicated appliances as well as rack space, power, cabling and cooling, and offering a central management point for further OpEx reduction. The APV platform achieves this consolidation while maintaining hardware-like, guaranteed performance.

Enhancing Security

Traditional, single-function security solutions, such as NGFW, IDS/IPS, DDoS protection, WAF and others, often lack the ability to decrypt and scan SSL-encrypted traffic, or if they do have SSL resources, those resources can quickly become overwhelmed by large traffic volumes, impacting performance. Similarly, activating multiple security functions on a 'combination' appliance can also reduce the overall ability to protect against security threats.

The APV Series network functions platform provides guaranteed resources – including SSL processing resources – to help ensure the performance of these critical security functions. In addition, functions can be service chained, or cascaded, to maximize the effectiveness of each individual VA. (In effect, the whole is greater than the sum of its parts.) For example, a virtual ADC can decrypt SSL-encrypted traffic, pass it to a virtual NGFW, then to a virtual IDS/IPS, then to a virtual WAF, then to another virtual ADC for re-encryption and forwarding to its final destination.

High Performance for Virtual Appliances

The APV Series supports up to 32 fully independent VAs in a single appliance, each powered by reserved CPU, SSL, memory and interface resources. As a result, the APV Series offers the equivalent of up to 32 dedicated physical appliances in just two rack units, where customers and services can be assured of guaranteed and demonstrable performance.

Each VA is separately configurable and centrally manageable, enabling the utmost in flexibility, security and control. Through dedicated hardware resources and a partitioned software-centric architecture, service providers and enterprises gain a purpose-built platform for on-demand provisioning and consolidation of secure, high-performance VAs.

Flexible Sizing & Consumption

Four size options are supported for hosted VAs – entry, small, medium and large – to meet the performance requirements of any size customer or service. The APVx2800 also support up to 16 shared-entry instances with best-effort performance for smaller workloads where density is a primary consideration.

In addition to supporting different network functions, different size VAs can be mixed and matched within an APV Series platform, and system resources can be fine-tuned for individual VAs if needed. For example, a single platform can be configured to simultaneously support one large, two medium, four small and eight entry-level VAs.

The APV Series also features pay-as-you-grow licensing, allowing individual licenses or multi-license packs to be added at any time up to the maximum capacity of the APV appliance.

Cost-Effective To Deploy & Maintain

By consolidating multiple dedicated single-function boxes into a single, easy-to-manage virtualized appliance, the APV Series reduces space and power requirements by up to a factor of 16 versus traditional dedicated hardware network and security appliances. Expensive truck rolls for provisioning high-performance services are also eliminated. By bringing the APV Series platform and hosted VAs under the purview of a software-centric cloud management system such as OpenStack, services may be enabled, expanded and reallocated on-demand. Time to ROI, based on CapEx and OpEx savings, is typically under 6 months for both enterprise and service provider organizations.

Management Integration & Orchestration

APV Series platforms and hosted Array and 3rd party VAs are simple to install and offer intuitive configuration and management via a user-friendly WebUI with a service topology view, and a familiar command line interface. Via the APV dashboard, network managers

can view the status for a range of system and function parameters, enable services, automate configuration and gain granular control over virtual Ethernet and SSL resources. VA images can be quickly installed via the convenient online image repository or uploaded via USB drive or from the web.

To meet the deployment and management requirements of modern virtualized data centers and private cloud environments, Array's eCloud RESTful API provides an extensible interface for cloud management, orchestration and automation systems to manage and monitor Array APV Series platforms and hosted Array VAs.

For service providers and enterprises leveraging OpenStack for cloud management and automation, Array offers a plug-in for OpenStack Nova as a compute node, which allows managers to create, instantiate, manage, adjust and terminate VAs. In addition, Array's integration with OpenStack for load balancing-as-a-service (LBaaS) creates a standardized means to rapidly integrate with and control Array application delivery technology.

Platform & Function-Level High Availability

APV Series platforms support multi-level high availability, providing redundancy and failover for both APV Series systems and VAs. APV Series platforms can be configured to failover to backup APV Series platforms, while VAs can be configured to failover within a platform or to failover to a backup platform. A synchronization function can clone APV and VA-related configurations, as well as VA images and disks to the backup unit. APV and VA configurations and images can also be backed up and restored via USB device if desired.

Array's Full-Featured App Delivery & Security VAs

To support application delivery and security needs, users can purchase Array's vAPV virtual application delivery controllers (ADCs) and vxAG virtual secure

access gateways (SSL VPNs) to deploy on APV Series platforms. These VAs provide feature parity with Array's line of physical load balancing, remote access and web application firewall products. In addition, many eatures that require additional licenses on Array's physical appliances – such as global server load balancing on the APV Series and DesktopDirect remote desktop access on the AG Series – are included at no additional charge when deployed as virtual appliances on APV Series platforms.

3rd-Party Virtual Appliances

In addition to supporting Array Networks virtual appliances for application delivery and security, APV Series platforms also host VAs from 3rd-party vendors. Examples include security functions such as web application firewalls and next-generation firewalls as well as network functions such as WAN optimization and other proprietary or open source virtual functions appliances that run on KVM, Ubuntu or CentOS.

3rd-party VAs benefit from the same performance guarantees and benefits as Array Networks VAs. VAs benefit from a higher level of performance as compared to general-purpose servers and also benefit from guaranteed performance. By deploying 3rd-party VAs on APV Series platforms, enterprises and service providers can consolidate network infrastructure to achieve cost efficiencies, and at the same time move toward a software-centric architecture aligned with trends in cloud and virtualization.

APV Series Specifications

Guaranteed Performance

CPU, memory, I/O and SSL processing resources segregated per instance – Hypervisor and management overhead separated from instance processing – Four standard instance sizes ranging from the equivalent of low-end to high-end dedicated appliances – Instance resources can be fine-tuned to meet the specific needs of VAs, if needed

Agility of Virtual Appliances

Hosts Array and 3rd-party VAs running on KVM, Ubuntu or CentOS – Create, instantiate, modify and delete VAs on the fly

Data Center Consolidation

Consolidates functions of up to 32 dedicated appliances into just 2 RU – Reduces rack space, power and cooling costs – Centralized management of deployed VAs and system

Improved Security

Service-chain multiple security VAs in sequence to improve security – Create new security schemas and service offerings – Easily incorporate virtual ADCs in service chain to offload compute-intensive SSL processing from security VAs

Simplified Provisioning

Automates and abstracts complex configuration tasks such as port mapping, CPU pinning, NUMA boundary settings, SR-IOV and drivers – Takes the guesswork out of complex configurations – Online image repository for quick access to VAs for installation

Management & Orchestration

Easy-to-use graphical user interface for visualization and top-level management of installed VAs – Easily access VA console or CLI if needed – OpenStack plug-in allows complete lifecycle management – RESTful API for integration with cloud management, orchestration and automation

High Availability

Multi-level redundancy and failover – Active/Standby at platform level – Active/Active or Active/Standby at instance level – VA-level HA within same APV platform or across two platforms – Synchronization function clones APV configs to backup unit – Synchronizes VA configs, images and disks to backup unit – USB backup option for APV and VA configurations and images

APV Series Network Functions Platform Architecture
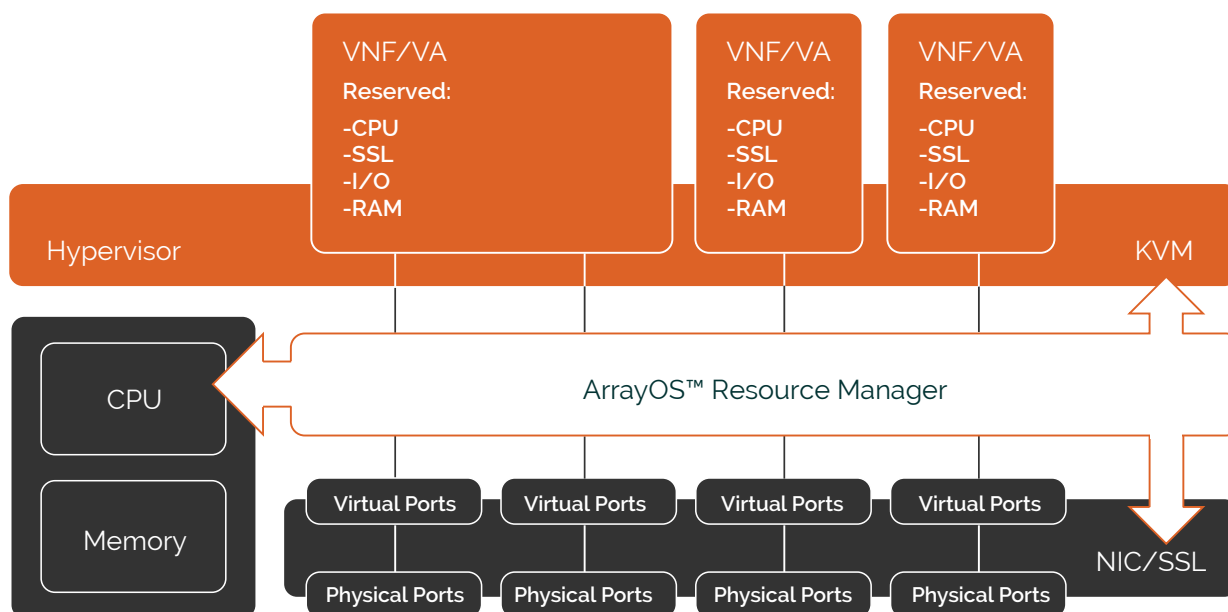
Product Specifications – APV Platform

	APVx2800
Hosted VNF/VAs	1, 2, 4 or 8 (16 without performance guarantee)
Max. L4 Throughput	31G
Max. SSL TPS	25K
Max. ECC TPS	3K (SW)
# of CPU Cores	4 (8 vCPUs)
# of Cryptographic Engines	56
RAM	64GB
HDD	2TB (4TB option)
1 GbE (copper)	4
10 GbE Fiber (SFP+)	4
40 GbE Fiber (QSFP+)	-
Power Supply	Dual Power: 100-240VAC, 5-3A, 50-60Hz
Typical Power Consumption (W)	164 - 174*
BTUs/Hour	564 - 598*
Dimensions	Dual Power: 1U – 17" W x 19.875" D x 1.75" H
Weight	Dual Power: 19.8 lbs.
Environmental	Operating Temperature: 0° to 45° C, Humidity: 0% to 90%, Non-condensing
Regulatory Compliance	ICES-003, EN 55024, CISPR 22, AS/NZS 3548, FCC, 47FR part 15 Class A, VCCI-A
Safety	CSA, C/US, CE, IEC 60950-1, CSA 60950-1, EN 60950-1
Support	Gold, Silver and Bronze Level Support Plans
Warranty	1 Year Hardware, 90 Days Software

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