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Solutions Brief

Supermicro uCPE Solutions

Supermicro has expanded its lineup of Intel° Select Solutions for uCPE. The SuperServer 5019D-FN8TP, E300-9D-8CN8TP, and E300-9D are all verified Intel° Select Solutions for uCPE in the base configuration. The SuperServer 1019D-16C-FHN13TP is verified in the plus configuration.

Executive Summary

Universal customer premises equipment (uCPE) is an emerging category of network functions virtualization (NVF)-based edge computing and service provisioning systems. This new generation of systems provides network platform suppliers, systems integrators, and software vendors the ability to quickly deliver managed services using software-driven and virtual network functions (VNFs). This, in turn, enables service agility for customers in the fields of software-defined-startup, telecom operators, service providers, or enterprise infrastructure.

Now, with Supermicro's verified Intel° Select Solutions for uCPE in both base and plus configurations, service providers are able to quickly and efficiently deploy various NFV applications with improved security and ease of operation. This solution eliminates the need for proprietary purpose-built servers that are hard to manage and maintain.

Featuring tested and optimized configurations, Supermicro's solutions enable end users to save time, effort, and expense evaluating hardware and software options. Supermicro's verified Intel° Select Solutions for uCPE will help end users simplify design choices by bundling hardware and software components for optimal performance. Whether using an Ubuntu OS or a neutral Orchestrator such as ADVA, Supermicro's uCPE products benefit all certified models.

SUPERMICRO uCPE SOLUTIONS		
	Ubuntu	**ADVA**
Base Configuration (5019D-FN8TP, E300-9D-8CN8TP, and E300-9D)	✓*	✓*
Plus Configuration (1019D-16C-FHN13TP plus Intel® QuickAssist Adapter 8970 Card)	✓*	✓*

* certified/compatible with Ubuntu or ADVA (Ensemble Connector)

Easing Adoption of SD-WAN

Current generation network equipment is based on purpose-built proprietary hardware. These appliances are single function boxes that are complex to maintain as well as slow and expensive to upgrade. They inhibit network platform suppliers from dynamically offering new network services and functions.

Adapting Supermicro's uCPE can help network service providers take advantage of technology innovation in software-defined networking (SDN) and NFV, which are complementary but increasingly co-dependent if the benefits of software-defined networking are to be fully realized. A network service provider with Supermicro's uCPE could run multiple VNFs—such as a router, VPN, and a firewall—on a general-purpose server based on end-user demand. They have the flexibility to deploy new network functions and services without deploying new hardware servers, allowing significant CAPEX & OPEX reduction as well as increased speed and ease in the deployment of new services.

Supermicro's verified Intel Select Solutions for uCPE are designed and tested to enable easy integration with a variety of VNFs, including SD-WAN (software defined-WAN). SD-WAN has its roots in SDN, which is built on the underlying principle of abstracting the network hardware and transport characteristics from the applications

Intel® Select Solutions uCPE Plus Configuration
SYS-1019D-16C-FHN13TP
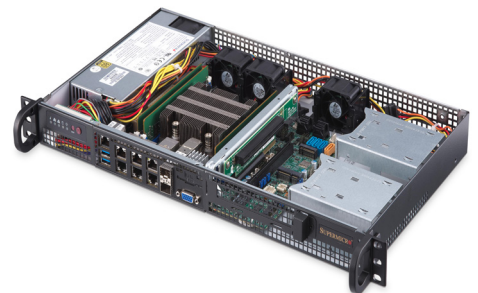
Intel® Select Solutions uCPE Base Configuration
SYS-5019D-FN8TP

Intel® Select Solutions uCPE Base Configuration
SYS-E300-9D-8CN8TP

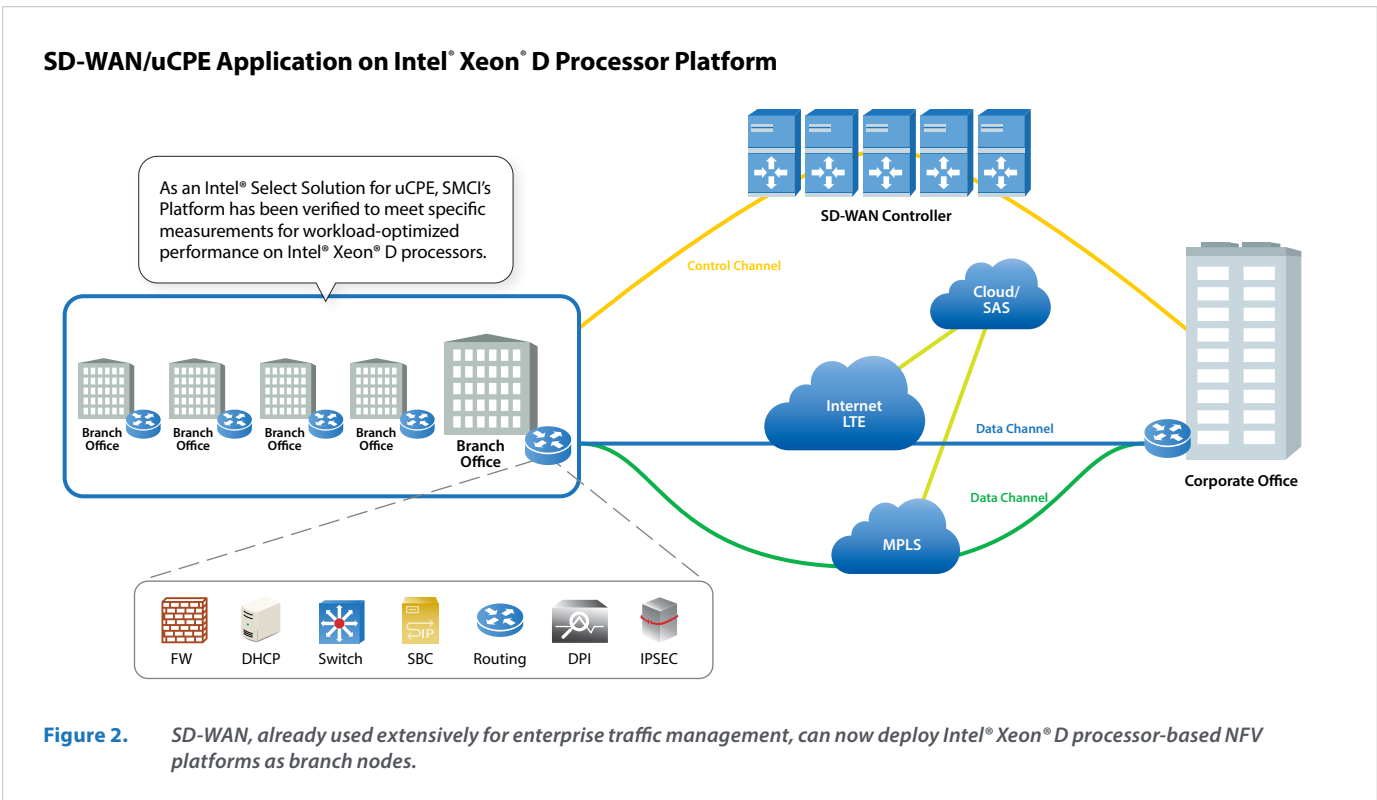Intel® Select Solutions uCPE Base Configuration
SYS-E300-9D

Figure 1.   *Intel® Select Solutions are verified hardware and software stacks that are optimized for specific software workloads and are designed to be easy to deploy.*

that use the network. With this innovation, SD-WAN is able to deliver increased network agility and cost reduction compared to traditional WANs. Instead of manually configuring and managing all WAN devices, including those at remote locations, SD-WAN overlay architecture enables you to centrally manage WAN infrastructure through a single interface.

A hybrid approach to WAN infrastructure in both MPLS (Multi-Protocol Label Switching) & SD-WAN will increase the variety and complexity of performance issues. The market still has serious challenges to address such as:

1. Is it better to adopt a fully managed SD-WAN or should control be preserved in-house?

2. Is there a middle-ground that alleviates much of the day-to-day burdens without risking availability or data integrity?

3. Will adopting a hybrid approach cause a bottleneck retrieving data from remote network locations back to headquarters?

Supermicro's verified Intel Select Solutions for uCPE address these challenges to adopting SD-WAN by providing an integrated hardware and software platform, with verified performance, to ease decision making and speed deployments.

SD-WAN/uCPE Application on Intel® Xeon® D Processor Platform

Figure 2. *SD-WAN, already used extensively for enterprise traffic management, can now deploy Intel® Xeon® D processor-based NFV platforms as branch nodes.*

INTEL® SELECT SOLUTION FOR uCPE HW CONFIGURATION

Base	Specifications	Required	Recommended
Platform	Intel® Xeon® D Processor Family	✓	
CPU	Intel® Xeon® D-2123IT processor, 4C 2.2 GHz 60W, or higher SKU	✓	
Memory	16 GB DDR4 2133 MHz, 4 * 4 GB Total of 16 GB Minimum all four memory channels populated (1 DPC) to achieve 16 GB (i.e., 4 * 4 GB RDIMM)	✓	
NIC	2 x 10 GbE Integrated Ethernet ports	✓	
Intel® QAT	Integrated Intel® QuickAssist Technology or Intel® QuickAssist Adapter 8970 PCIe* add-in card or equivalent third party Intel® C62x Series Chipset Intel QAT-Enabled PCIe* add-in card		✓
Storage	Intel® Solid State Drive Data Center S3110 256 GB 2.5" (SATA or M.2)	✓	

Plus	Specifications	Required	Recommended
Platform	Intel® Xeon® D Processor Family	✓	
CPU	Intel® Xeon® D-2177NT processor, 14C @ 1.9 GHz, 105W or higher SKU	✓	
Memory	64 GB DDR4 @ 2667 MHz, 4x 16 GB (Total of 64 GB) Minimum all four memory channels populated (1 DPC) to achieve 64 GB (i. e., 4x 16 GB RDIMM)	✓	
NIC	4x 10GbE Integrated Ethernet ports	✓	
Intel® QAT	Integrated Intel® QAT or Intel® QuickAssist Adapter 8970 PCI Express* (PCIe*) add-in card or equivalent Intel® C627 Series Chipset Intel QAT-Enabled PCIe* add-in card	✓	
Storage	Intel® Solid State Drive Data Center S4500 512 GB 2.5" Internal SSD (SATA or M.2)	✓	

SUPERMICRO uCPE SOLUTIONS

Base Configuration	SuperServer 5019D-FN8TP	SuperServer E300-9D	SuperServer E300-9D-8CN8TP
URL	https://www.supermicro.com/products/system/1u/5019/SYS-5019D-FN8TP.cfm	https://www.supermicro.com/products/system/Mini-ITX/SYS-E300-9D.cfm	https://www.supermicro.com/products/system/Mini-ITX/SYS-E300-9D-8CN8TP.cfm
CPU	Intel® Xeon® D-2146NT processor, 8-Core, 16 Threads with built-in Intel® QuickAssist Technology for Crypto/ Compression acceleration	Intel® Xeon® D-2123IT processor, 4-Core, 8 Threads	Intel® Xeon® D-2146NT processor, 8-Core, 16 Threads with built-in Intel® QuickAssist Technology for Crypto/Compression acceleration
Memory	Up to 512GB ECC LRDIMM or up to 256GB ECC/non-ECC RDIMM DDR4 2666MHz in 4 slots	Up to 512GB ECC LRDIMM or up to 256GB ECC/non-ECC RDIMM DDR4 2666MHz in 4 slots	Up to 512GB ECC LRDIMM or up to 256GB ECC/non-ECC RDIMM DDR4 2666MHz in 4 slots
Storage	Intel® SSD DC S3500 Series in M.2 & S3520 series in 2.5" for 256 GB or higher	Intel® SSD DC S3500 Series in M.2 & S3520 series in 2.5" for 256 GB or higher	Intel® SSD DC S3500 Series in M.2 & S3520 series in 2.5" for 256 GB or higher
PCIe Expansion	1x M.2 M key for SSD in 2280 1x M.2 B Key for wireless communication card in 2242 1x Mini-PCI-E with mSATA Support 1 PCIe 3.0 x8 slot	1 onboard OCuLink port (or 1 PCI-E 3.0 x4 NVMe), 1 PCI-E 3.0 x8 (LP) open slot	1x M.2 M key for SSD in 2280 1x M.2 B Key for wireless communication card in 2242 1x Mini-PCI-E with mSATA Support 1 PCIe 3.0 x8 slot
Network Interface	Copper: 4x 1GbE and 2x 10G Based-T ports Fiber: 2x 10G SFP+ ports	Copper: 2x 10G Based-T ports	Copper: 4x 1GbE and 2x 10G Based-T ports Fiber: 2x 10G SFP+ ports
Other I/O Interface	1x dedicated LAN for IPMI 2.0 1x VGA & 2x USB 3.0	1x dedicated LAN IPMI 2.0 1x VGA & 2x USB 3.0	1x dedicated LAN for IPMI 2.0 1x VGA & 2x USB 3.0
Cooling Fan	3x 40x28mm Delta 4-PIN PWM fans	3x 40x28mm 4-PIN PWM Fan	3x 40x28mm 4-PIN PWM Fan
PSU	200 W Low-noise AC-DC power supply	120 W Lockable DC Power Adapter	150 W Lockable DC Power Adapter

SUPERMICRO uCPE SOLUTIONS

Plus Configuration	SuperServer 1019D-16C-FHN13TP + Intel® QuickAssist Adapter 8970 Card
URL	https://www.supermicro.com/products/system/1U/1019/SYS-1019D-16C-FHN13TP.cfm
CPU	Intel® Xeon® D-2183IT processor, 16-Core, 32 Threads with Intel® QuickAssist Adapter 8970 card for Crypto/Compression application
Memory	Up to 512GB ECC LRDIMM or up to 256GB ECC/non-ECC RDIMM DDR4 2666MHz in 4 slots
Storage	Intel® SSD DC S3500 Series in M.2 & S4500 series in 2.5" for 512 GB or higher
PCIe Expansion	1x M.2 M key for SSD in 2280, 1x M.2 B Key for wireless communication card in 2242, 2 PCIe 3.0 x16 slot
Network Interface	Copper: 9x 1GbE and 2x 10G Based-T ports, Fiber: 2x 10G SFP+ ports
Other I/O Interface	1x dedicated LAN for IPMI 2.0, 1x VGA & 2x USB 3.0
Cooling Fan	6x 40x28mm Delta 4-PIN PWM fans

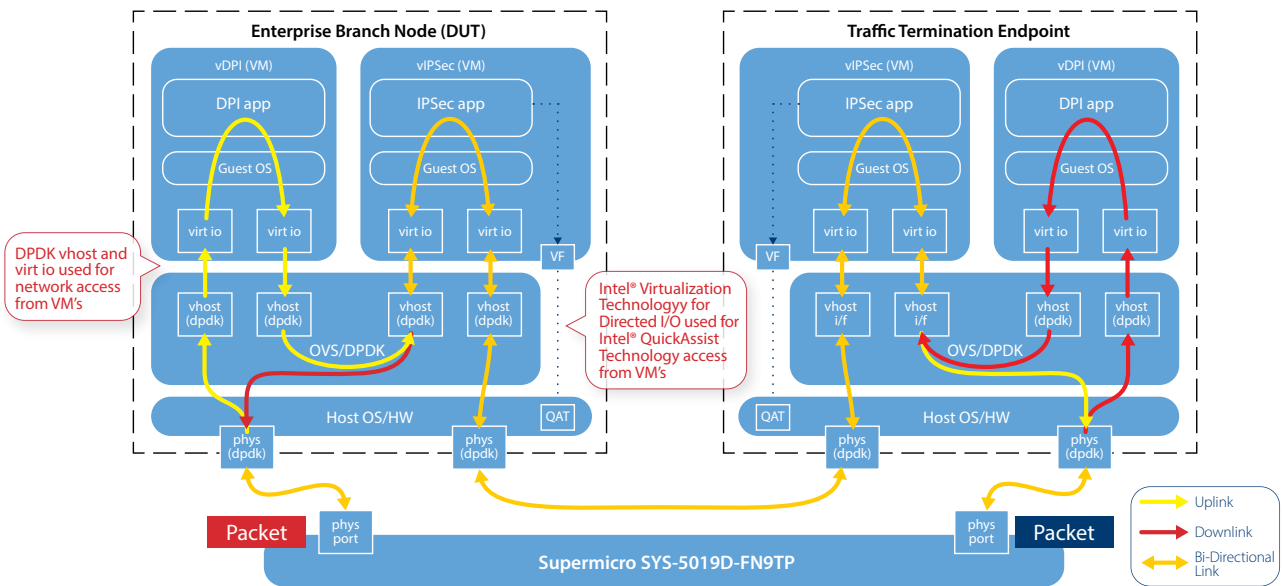### SD-WAN/uCPE Application on Intel® Xeon® D Processor Platform DPDK & Intel® QAT

Figure 3. *Testing configuration for certification of the Supermicro uCPE platform with Intel® QuickAssist Technology (Intel® QAT)*

For More Information

- Intel® Xeon® D Processors
  www.intel.com/xeond

- Intel® Select Solutions
  www.intel.com/selectsolutions

- Find a Solution for Your Workload
  **builders.intel.com/
  intelselectsolutions**

- Supermicro Authorized System
  Integrators
  **https://www.supermicro.
  com/wheretobuy/namerica.
  cfm?rgn=100**

- ADVA Ensemble Connector
  **https://www.advaoptical.com/en/
  products/network-virtualization/
  ensemble-connector**

ADVA Ensemble Connector

ADVA™ Optical Networking

Supermicro and ADVA have partnered to integrate ADVA's Ensemble Connector with our uCPE systems. These combined platforms have been verified as Intel® Select Solutions for uCPE in both base and plus configurations, bringing more pre-integrated NFV options to our customers.

Summary

Supermicro offers a variety of market-ready uCPE solutions with full validation in each BIOS, firmware, operating system, and VM level certification. For example, Supermicro servers, using Intel Xeon D-2100 processors and Intel Atom® C3000 processors, are on the list of VMware HCL compatibility with latest ESXi 6.7, which means customers can easily apply virtual machines on the top of Supermicro uCPE. With the SuperServer 5019D-FN8TP, E300-9D-8CN8TP, E300-9D, and 1019D-16C-FHN13TP verified as Intel® Select Solutions for uCPE, Supermicro now offers its customers a new, additional degree of confidence. Those looking to easily adopt SD-WAN can be assured that these systems offer, not just easy deployment, but also, verified, workload-optimized performance.

About Super Micro Computer, Inc.

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology is a premier provider of advanced server Building Block Solutions® for Data Center, Cloud Computing, Enterprise IT, Hadoop/Big Data, HPC and Embedded Systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative and provides customers with the most energy-efficient, environmentally-friendly solutions available on the market.

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About Intel® Select Solutions

Intel is driving the next wave of data center innovation with Intel Select Solutions, based on Intel technologies. Intel Select Solutions are verified solutions configurations that are aimed to speed selection and deployment of data center and communications network infrastructure. The solutions are developed from deep Intel experience with industry solution providers, as well as extensive collaboration with the world's leading data center and service providers. Intel, the Intel logo, Intel Atom, and Xeon are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

About Ensemble Connector (ADVA)

We have become one of the industry's most trusted partners and are responsible for architecting some of the world's most advanced networks. The reason: we listen to our customers. Our technology and innovation is driven by our customers' needs. We develop the right technology at the right time, ensuring our customers have the solutions they need to stay ahead of the competition. Each member of our team is committed to our customers' success. Only by working so closely with our customers can we effectively build the foundation for tomorrow's networks.