Universal CPE: The Ultimate CPE Solution?

EXECUTIVE SUMMARY

Universal customer premises equipment (uCPE) systems are generic network appliances that can be provisioned with virtual network functions (VNFs) to support all the networking functions required in a typical enterprise office. uCPE systems are often provided as part of a communications and cloud services solution that can include virtual applications and functions running on servers in central data centers, edge locations and customer premises. The uCPE solution is usually managed by the service provider to deliver the agreed services, although some large enterprise customers continue to manage their own network services, including uCPE systems. uCPE systems consist of a uCPE hardware platform and uCPE software, which includes operating system (OS) and a complete network functions virtualization infrastructure (NFVI) for provisioning and managing the VNFs. The uCPE hardware platform is based on a server processor with memory and network interfaces matched to the performance and functionality required from the uCPE system.

uCPE systems support WAN connectivity, routing and firewall functionality. Many suppliers offer third-party VNFs for this core functionality, giving customers peace of mind as they move from separate boxes to integrated uCPE solutions. For small and branch offices the uCPE system may implement this core functionality as part of the uCPE software platform, leaving processing and memory resources for additional VNFs. Once the core WAN, routing and firewall functionality is provisioned, the value of a uCPE solution can be enhanced by adding hardware and software options for switching and IT services, including storage and print server. The use of open interfaces and support for third-party VNFs has enabled a vibrant ecosystem that gives service providers a wide range of options for hardware, software and integration services.

The uCPE market has continued to develop with further optimization of hardware and software implementations. There is significant opportunity for new processor solutions and advanced virtualization software approaches, including containerization. The target for all the suppliers in this market is delivering flexible uCPE solutions that support remote deployment and provisioning of virtual functions that enable cloud and communications services at costs that are attractive to service providers and their customers and will deliver significant return on investment.

uCPE systems are a key market opportunity that was created by the development of software-defined networks (SDNs) and cloud services. Universal CPE: The Ultimate CPE Solution?
discusses 18 vendors that have developed uCPE hardware platforms, uCPE software platforms or are providing specific uCPE integration services. The report also includes information on the leading processors for uCPE platforms and service provider approaches to uCPE systems, with specific information on AT&T uCPE platforms. The uCPE solutions discussed in this report cover a wide range of performance and flexibility requirements and show that uCPE solutions are continuing to develop with new processors, better system integration and more efficient virtualization solutions.

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Service providers and enterprises can manage vCPE platforms as part of their public, private or hybrid cloud infrastructure. VNFs – including firewall, IPS, router, VPN/NAT and SD-WAN controller – can be provisioned in the data center or on the vCPE platform (see the excerpt below). A thin vCPE platform will have limited processing capability and will support the SD-WAN and L2 switching. A thick vCPE platform will have significant processing capability and can be provisioned with all the relevant VNFs.

**Excerpt: vCPE Options**

![Excerpt: vCPE Options](source: Earlswood Marketing)

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