

Network Optimization And Data Center Bridging

Bridging private and public clouds



Delivering public/private cloud integration

To successfully deploy public, private, or hybrid cloud service networks, administrators face a number of critical challenges:

- **Network policy control.** The entire path through the cloud, from end-user data to application, needs to be protected. Extensive, granular, entitlement and security management policies must be implemented throughout the infrastructure.
- **Traffic integrity and confidentiality.** Traffic flowing through the cloud needs to be secured to prevent unwarranted data disclosure and guarantee the confidentiality of user information
- **Quality of Service (QoS).** Assuring the quality of the end-user experience for certain application types (video, financial transactions, and so on) requires services to apply QoS metrics, such as a preferred service for VoIP traffic.
- **Network Load Balancing.** Software-based load balancing capabilities are vital to allow data to be routed between applications running in different data centers.

IEEE 802.1 is a collection of Ethernet technologies that aim to eliminate packet loss due to network congestion

The Institute of Electrical and Electronics Engineers (IEEE) is developing *IEEE 802.1 Data Center Bridging (DCB)*, a collection of independent standards-based technologies that provide enhanced Ethernet features.

Per-priority PAUSE adds fields to the standard PAUSE frame to allow a device to inhibit transmission of frames based on priorities instead of inhibiting all frames' transmission.

Enhanced Transmission Selection allows network administrators to allocate a percentage of total link bandwidth to particular classes of traffic.

Congestion Notification provides end-to-end congestion management for protocols with no built-in congestion control mechanism.

DCB Exchange enables peer devices to discover each others' capabilities, exchange configuration profiles, and diagnose configuration issues.

Collectively, the objective of these DCB technologies is to eliminate packet loss due to network congestion.

HP and Intel's activities in the domain

HP and Intel are collaborating with the IEEE and the Internet Engineering Task Force (IETF) to implement the DCB standards and deliver on their promise:

- **Enhanced performance** for Ethernet LANs
- **Lossless fabric** for storage traffic on converged networks
- **Deterministic latency** for High-Performance Computing and Communications (HPCC) traffic
- **Virtual links by traffic class** applied to pause-per-class and end-to-end congestion management and notification
- **Seamless integration** with classic Ethernet networks

DCB-enabled networks provide the foundation for next-generation initiatives such as Fibre Channel over Ethernet (FCoE), and allow public/private cloud solutions to support features such as *cloud on-boarding* and *cloud bursting*.

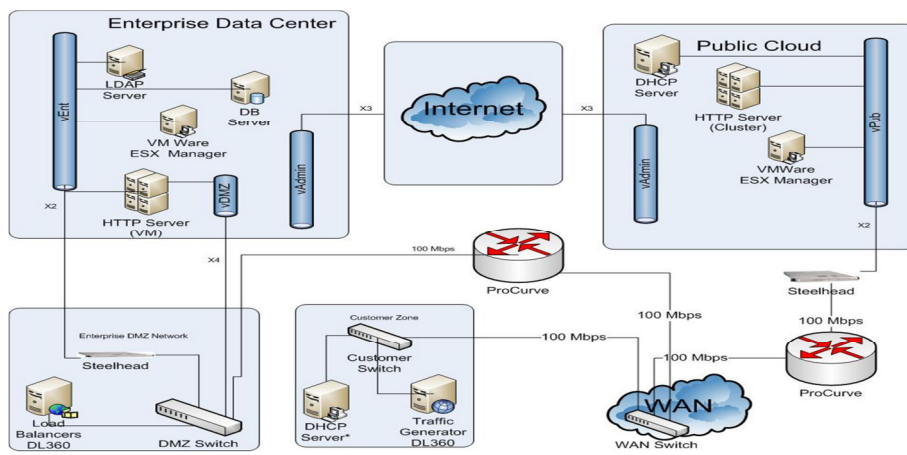
Description of the solution

HP and Intel have developed a solution that implements the DCB standards. The solution runs on HP Industry Standard Servers (ISSs) equipped with the latest Intel processors.

The solution's software stack allows the DCB functions to be configured using an application programming interface (API). They are accessed using either Web services or Representational State Transfer (REST) architectures. It is therefore ideal for customers looking to deploy systems for public/private cloud delivery models.

The solution also utilizes Steelhead® WAN acceleration technology from Riverbed Technologies, HP's key ISV partner in this field.





Description of the solution (continued)

The solution's core DCB functions, provided by HP and Intel partner Vyatta, allow private data hosted by enterprise data centers to be seamlessly accessed from a public cloud environment. They allow enterprises, for example, to offload peak activity to a public cloud environment, or to run parts of an application stack in a public cloud.

HP Intel CME Solution Center's team and facilities

The HP Intel Communications, Media, and Entertainment (CME) Solution Centers in France, China, and the United States are part of a worldwide initiative to innovate and provide expertise at a vital point of convergence for the industry. The combined forces of the two companies bring unique skill sets and infrastructure to the converged network environment. The solutions centers engage in a wide variety of activities:

- Live demonstrations of key technologies to drive sales and demonstrate HP and Intel's leadership and know-how in hardware- and software-based solutions
- Proofs-of-concept related to the fields of communications, media, and entertainment, as well as the healthcare industry and cloud computing.

- Platform certification and benchmarking: the solution centers regularly perform benchmarking of independent software vendor (ISV) products and certify HP hardware for use in specific software solutions.

When migrating to the next generation of data centers, the HP Intel CME Solution Centers can help reduce time-to-market and lower the risks of adopting innovative solutions.

HP and Intel key hardware components

- HP Blade System c7000 enclosure**
Provides all the power, cooling, and I/O infrastructure needed to support modular server, interconnect, and storage components today and throughout the next several years.
- Intel® Xeon® Processor 7500 Series**
Exceptional scalable performance with advanced reliability for your most data demanding applications and intelligent performance that automatically adapts to the diverse needs of a virtualized environment.

For more information

To read more about the HP Intel CME Solution Center, visit www.hpintelco.net



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The HP Intel Solution Centers provide complete telecom infrastructures for demonstrating the Communications, Media, and Entertainment Solution Portfolio to HP customers and partners. The centers are located in the three regions: Grenoble, France for EMEA; Plano, Texas, USA for Americas; and Shanghai, China for APJ. These unrivalled technical facilities offer our customers and partners the unique opportunity to evaluate new services in real-world environments, test new technologies, and select the solutions most likely to succeed.

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