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Carrier Ethernet - the way forward?

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Demand for bandwidth is growing so fast that some vendors are predicting that the Internet will be at full capacity within two years. So what can carriers do to avoid hitting the bandwidth brick wall?

For many of those attending the NetEvents European Press Summit in Portugal the answer appeared to be the deployment of Carrier Ethernet technology. Proponents of Carrier Ethernet claim it offers unrivalled bandwidth capability combined with significant cost efficiency gains. Carrier Ethernet also enables the deployment of new optimised network architectures. At present the major Carrier Ethernet market is 10Gbits/s connections but 40Gbits/s solutions have been standardised and are beginning to appear in the market. The next step up, a necessary one many believe if the demand for bandwidth is to be satisfied, will be to move up to 100Gbits/s. Work on standardising 100Gbits/s has already begun within the IEEE and the standard is planned for completion in 2009.

Driving the global deployment of Carrier Ethernet is the role of the Metro Ethernet Forum (MEF). Made up of more than 150 service providers, testing organisations and manufacturers, the MEF develops technical and test specifications as well as implementation agreements and tools to promote standardization. Speaking in Portugal Nan Chen, president of the MEF, said that Carrier Ethernet is now entering the third phase of its evolution. In Phase 1 issues regarding specifications and architecture had been addressed. Phase 2 focused on certification and implementation; rather successfully too as the market for Carrier Ethernet WANs passed US\$12bn in 2007. The third phase is focused on achieving interconnect between carriers on a global basis and the MEF has already completed specifications for the automatic management of this process. The aim, commented Nan Chen, 'is to make intercontinental Carrier Ethernet as straightforward as an intercontinental TDM phone connection. Phase 3 will bring both operational scalability and efficiency over legacy networks to take Carrier Ethernet to that next level.'

Although 100Gbits/s standardisation is still in process with a target end date of 2009, test systems vendor Ixia jumped the gun by revealing in Portugal that it will begin shipping the industry's first 100Gigabit Ethernet (GE) Development Accelerator System in mid-November. This, the world's first-to-market 100GE test system, provides vendors with the capabilities that they need for layer-2 traffic generation and analysis. Ixia said that it had worked closely with the IEEE standards committee and if there were any variations on the specifications in the next twelve months its Development Accelerator System was field upgradeable to ensure compliance with the final standard. The company also plans to demonstrate 40Gigabit

Ethernet (GE) line-rate traffic generation and analysis at the forthcoming Broadband World Forum Europe in Brussels .

Ixia is working with Extreme Networks, a developer of Ethernet networking solutions, to integrate their products to enhance post-deployment service verification. They will integrate Extreme Networks' Ethernet switch platforms and the ExtremeXOS modular operating system with Ixia's IxRave Converged Service Verification Solution.

Finally Ixia unveiled IxRave Voice, an enhancement of its IxRave service verification system that enables service providers to assure voice over IP (VoIP) quality of service and alerts service providers of problems before subscribers become aware of them.

Spirent Communications announced the setting up of Spirent Proof of Concept (SPoC) Labs and Collaboration Centres in London and Beijing . These labs will have a number of Spirent test systems including Spirent TestCenter Fibre Channel over Ethernet (FCoE), the industry's first test product to validate the performance characteristics of FCoE systems, as well as the Test Automation Alliance's (TAA) best-in-class advanced automation framework, Automation Continuum. As well as network emulation capabilities the SPoC Labs allow engineers to identify the performance of a system and ultimately assure the service quality of experience (QoE) of next generation multi-play networks and multi-device technologies.

GENBAND, a developer of next-generation IP infrastructure solutions, revealed that it had acquired carrier grade security solutions vendor NextPoint Networks. With this acquisition, GENBAND had added a new and powerful layer of security capabilities to its gateway solutions. It also enhances GENBAND's leadership position in gateways and puts the company on an aggressive product development path aimed at the integration of emerging technologies like security, control and packet inspection. The NextPoint transaction is the latest in a series of moves by GENBAND including the acquisition of Tekelec's Switching Solutions Group and Nokia Siemens Networks' Surpass IP trunking gateway product lines.

Extreme Networks unveiled its new BlackDiamond 20808 switch which gives service providers the tools they need to compete effectively while satisfying their customers' needs and expectations. BlackDiamond 20808 switches allow a single Carrier Ethernet network to deliver residential services, business services and wireless backhaul services. With 64 line-rate 10 GbE ports available in a single chassis, Extreme Networks claims that the new switches offer the highest system capacity in the market both in terms of performance and port count. With the BlackDiamond 20808, service providers can easily scale to support additional subscribers and service instances while reducing the number of network elements to install and maintain as they expand their networks. BlackDiamond 20808 switches provide a future-proof design, with 120Gbit/s per slot capacity that enables future upgrades to 40GbE and 100GbE I/O modules, to support today's bandwidth and service demands as well as future needs.

The A-series 2200 is the new Carrier Ethernet switch from Nokia Siemens Networks.

Providing an effective bridge between an existing TDM network and the next generation Ethernet transport network for enterprises, the A-series 2200 offers many benefits combining the best of SDH carrier-class security and robust data transport capabilities. Additionally, it enables greater cost efficiencies, as a single hardware device can carry both voice and data traffic, and the architecture enables greater traffic at lower costs. With a maximum switching capacity of 24Gbit/s, the A-series 2200 provides the power to handle even most demanding applications such as voice, video and Storage Area Networks. The switch offers carrier-grade Service Level Agreement (SLA) with 50 milliseconds protection with Committed Information Rate (CIR) and it is a scalable solution to more than 5000 network elements. Pan-European carrier COLT has recently decided to base its Ethernet services on the A-series solution from Nokia Siemens Networks.

Distributed Tap from VSS Monitoring claims to be the industry's highest-capacity network traffic capture tool, providing carriers with complete visibility of their networks. By separating data capture and analysis it is possible to achieve more complete monitoring and better correlation of the monitored data which reduces network vulnerability. VSS Monitoring's CEO Terence M. Breslin says the company's approach reduces response time to network incidents as well as reducing the overall number of incidents. 'Pro-active control is the number one goal of network managers and network visibility is the only way to achieve it.'

The latest ploy of malicious Internet hackers is 'cache poisoning'. Uncovered by security researcher Dan Kaminsky, cache poisoning enables an attacker to redirect traffic, particularly online banking and other financial transactions, from the real target websites to illegitimate websites, enabling hackers and criminals to gain key financial information. Reporting on this development Infoblox said this new threat showed the importance of Domain Name Resolution (DNS) security. Infoblox and other security vendors have joined forces to create a short term patch for cache poisoning, but experts agree that there are going to be other critical vulnerabilities found in DNS which would lead to other attacks. Infoblox announced enhancements to its full line of core network appliances to provide unique DNS security capabilities such as alerting, reporting and attack mitigation which will help to thwart future attacks.

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