DEUXIEME ETAPE : BATIR LES SUPERS AUTOROUTES DE L'INFORMATION

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Le routeur Cisco 7000 : le premier routeur IP backbone pour Internet

Les innovations technologiques aident les fournisseurs de services à suivre la croissance exponentielle de l'Internet

Issy les Moulineaux, le 27 mai 2004 – Bien que cela date déjà d'une décennie, le titre d'un article paru dans une publication importante semble aujourd'hui plutôt original : « Pacific Bell et MCI se lancent dans le mouvement Internet ».

La clef du déploiement de services Internet de ces fournisseurs était le Cisco® 7000 Series Router, présenté pour la première fois en 1993. Tandis que le Cisco Advance Gateway Server (AGS) donnait naissance à Internet, le Cisco 7000 Series lui donnait ses jambes. Il pouvait transmettre 110 000 paquets par seconde, et offrait plusieurs fonctionnalités très demandées permettant d'augmenter les performances, la disponibilité et les services, incluant une double alimentation, une ligne de cartes échangeables à chaud et une sauvegarde basée sur la mémoire flash pour facilement mettre à jour les images des logiciels. Et, outre sa vitesse, il était capable de gérer une grande variété de taches en réseaux.

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Cisco 7000 Series Router: The Internet's First IP Backbone Router

Design innovations help service providers keep pace with exponential growth of Internet

May 4, 2004

By Nick Wreden, News@Cisco

Although it was only a decade ago, the headline on an article that appeared in a major publication now seems as quaint as steam-powered cars: "Pacific Bell and MCI jump on the Internet bandwagon."

The key to these carriers' Internet services rollout was the Cisco® 7000 Series Router, first introduced in 1993. While the Cisco Advance Gateway Server (AGS) gave birth to the Internet, it was the Cisco 7000 Series that gave it its legs. It could forward 110,000 packets-per-second, and boasted several much-requested features that boosted reliability, availability, and serviceability, including redundant power, hot-swappable line cards, and flash memory-based storage to easily update software images. More important than its speed was its ability to make a wide variety of networking work. A common early application, for example, was connecting corporate local-area networks with Asynchronous Transfer Mode (ATM) cell-switching backbones.

The Cisco 7000 Series stood out from the beginning; with performance that was 50 percent greater than competing products. Although the Cisco 7000 Series was a true multi-protocol router, able to handle multiple standards and technologies, including Systems Network Architecture (SNA), DECnet, Internetwork Packet Exchange (IPX), and even AppleTalk, its handling of the Internet Protocol (IP) took center stage. No wonder it immediately won a "Well-Connected Award" from Network Computing for being a product "that network administrators can't live without."

One innovation within the Cisco 7000 Series, the Silicon Switching Engine (SSE) provided high-performance IP forwarding via a flexible hardware-based engine. The SSE handled real-time operations, forwarding traffic between multiple interface processors at 250,000 packets-per-second. At the same time, a separate route processor handled non-real-time tasks such as sending and receiving routing protocol updates. It was this loosely coupled multiprocessing architecture, combined with an ability to be reprogrammed to adapt to new protocols that helped existing networks evolve and keep up with rapidly advancing traffic demands.

Pacific Bell began rolling out Internet access in 10 California cities, and immediately struggled, like carriers everywhere, to keep up with customer demand for the service. For example, between 1994 and 1995, AOL gained more than 3 million service members, an increase that repeated itself between 1995 and 1996. Enterprises also fueled demand, as the Internet and networking technologies influenced new ways of doing business. Companies were building closer customer and supply chain links, helping employees at remote sites collaborate on projects, and coordinating better across geographical regions so they could respond to global opportunities. One sign of the times: online ordering, which Cisco pioneered in 1994. Even the cable manufacturers were having trouble keeping up with the resultant demand for Fast Ethernet. Soon Cisco 7000 Series routers were almost as common as paperclips in corporate environments, symbolized by multiple marquee customers.

The increasing demand for Internet access caused customers to demand more speed and capabilities. In response, Cisco introduced the first multi-gigabit backplane router in 1995: the Cisco 7500 Series. The new routers expanded bandwidth capacity by four times, provided redundancy for route/switch processing, and increased maximum port density by 100 percent. The Cisco 7500 Series also provided a significant upgrade in network capacity, including high-speed switching, gigabit LAN, and Synchronous Optical Network (SONET) technologies. It eventually became a multifaceted workhorse for corporate environments, supporting Ethernet, Token Ring, Fast Ethernet, Fiber Distributed Data Interface (FDDI), high-speed serial interface, ATM, E1/T1, and even IBM channel attachments. Scalable system

bandwidth exceeded two gigabits per second (Gbps), resulting from a new, multiprocessor architecture with several innovative elements.

The first element was the Cisco 7500 Route/Switch Processor (RSP). Using a high-speed Reduced Instruction Set Computer (RISC) engine and custom application-specific integrated circuits (ASICs), the RSP speeded route and switch processing. Dual-RSP configurations maximized system and application availability.

Another innovation was a new Versatile Interface Processor (VIP) card. The VIP was the first router interface card to provide intelligent multilayer switching and run Cisco IOS® Software. By making local switching decisions, based on routing information received from the RSP, VIP cards enabled users to switch packets at aggregate rates greater than one million packets-per-second. Another important VIP card innovation was the concept of modular interfaces.

Finally, Cisco Systems® unveiled the high-speed CyBus, which enabled Cisco 7500 Series routers to provide up to 2.1 Gbps of bandwidth, offering four times the capacity of the Cisco 7000 Series' single CxBus.

Customers quickly adopted the Cisco 7500 Series. Sprint made volume purchases to keep up with customer demand for increased bandwidth density and new services. Soon, Cisco routers were carrying more than 80 percent of Internet backbone traffic, according to the Yankee Group.

A decade ago, Pacific Bell, MCI and many other major carriers turned to the Cisco 7000 Series to usher in a new era. That era still continues to redefine the way we do business, communicate and collaborate with colleagues and friends around the world, while also generating new entrepreneurial innovations. Now, we are on the threshold of another communications revolution where Cisco devices will empower and enable new capabilities and opportunities. Tune in during the next two weeks to see highlights of Cisco Systems' most monumental innovations following the Cisco 7500 Series Router, and to discover on May 25, 2004 how Cisco is once again about to change the world of communications.

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http://www.cisco.com/warp/public/779/largeent/landingPage/pdf/7000_Series_Feature.pdf