

Media Gateways

Customer: Network Equipment Provider

Location: Europe

Introduction

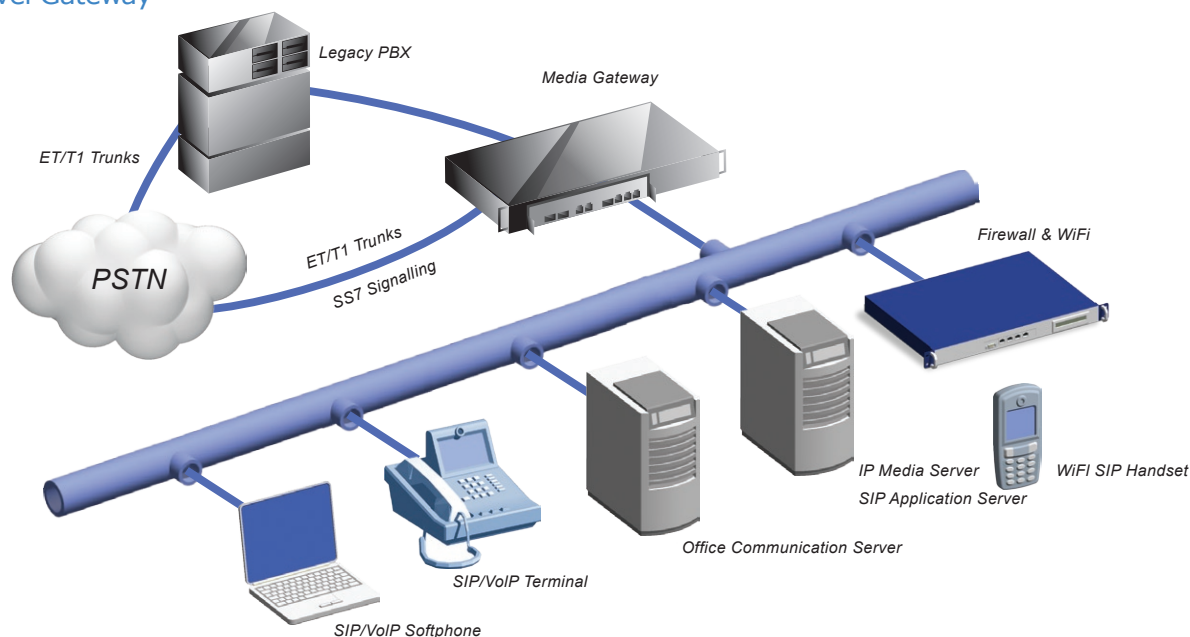
With the growth in data network traffic driving major changes in public networks, the convergence of existing voice traffic onto the data network infrastructure promises significant benefits (such as reduced costs and simplified network management) for carriers and enterprises alike. Media gateways that support the integration of Voice over Internet Protocol (VoIP), legacy public switched telephone network (PSTN), and ATM networks make this convergence possible. A Media Gateway acts as a translation unit between disparate telecommunications networks and enables multimedia communications via multiple transport protocols. Because a Media Gateway connects different types of networks, one of its main functions is to convert between the different transmission and coding techniques. Communication is achieved by means of protocols such as MGCP, Megaco, H.248 and SIP. VoIP Media Gateways perform the conversion between Time Division Multiplex (TDM) voice to Voice over Internet Protocol (VoIP). Some examples of Media Gateway applications are:

- (1) Multimedia services where callers who wish to select media (such as a radio station, conference broadcast, or song clips) connect through the Media Gateway to a VoiceXML server for content selection. The Media Gateway then connects the caller to the desired SIP endpoint, which streams the selected content to the caller.
- (2) Contact Centers where calls that arrive over the PSTN are first routed (via SIP signaling) to a speech-enabled self-service application based on a VoiceXML server. Once it is established that the caller needs to connect to a call agent, the call is redirected by the Media Gateway to the appropriate agent.
- (3) Unified Communications, where voice, voice messaging, email, fax, instant messaging and mobile communications are integrated to deliver significant productivity gains to employees through a convenient desktop user interface and a separate voice interface that may also be embedded in business applications.

Solution

One of our European customers, a developer of turn key network equipment solutions needed a hardware partner able to provide a wide range of scalable platforms for their Media Gateway & Signalling Server product offering. Their platforms needed to scale to 960 ports with multiple T-1/E-1 interfaces for medium and large enterprises deploying a variety of applications such as IP media servers, remote office connectivity, long-distance consolidation, call centers, messaging, conferencing, self-service, voice portals and more. The Media Gateway needed to provide PSTN network and signalling with fully integrated gateway and call routing functions. The Media Gateway also needed to provide SIP and other Internet protocols to provide standards-based interfaces for application servers and other network resources, including VoiceXML servers and content storage systems.

Entry Level Gateway



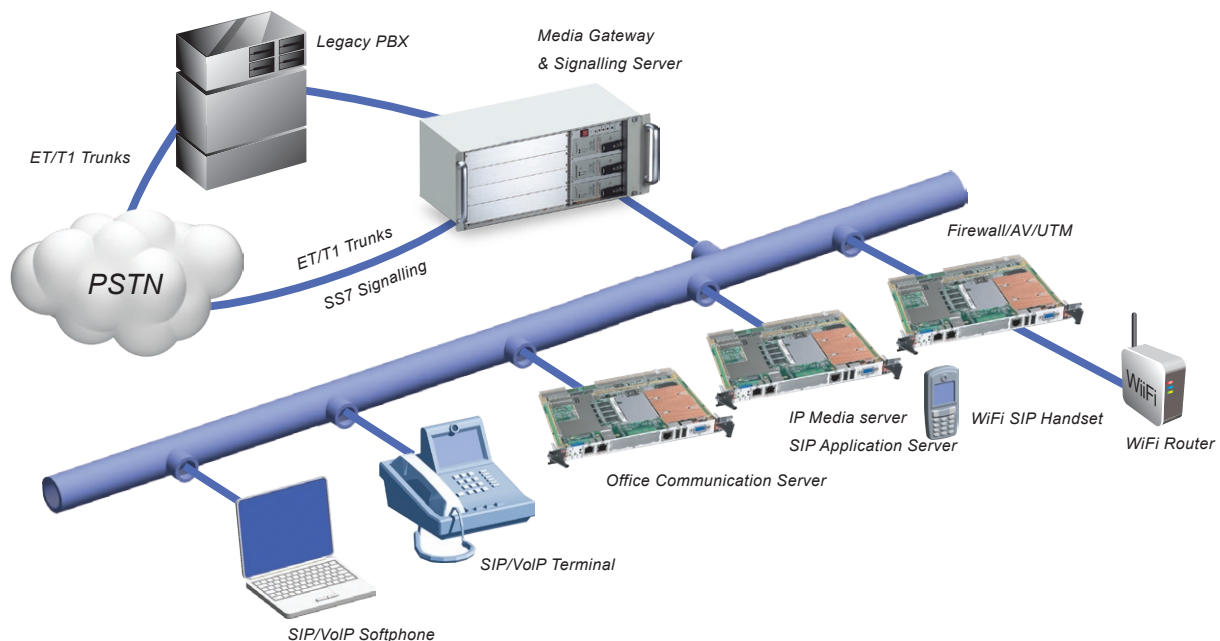
System

The customer selected the MIC-3392 Intel-based Core 2 Duo CompactPCI blade for the control and application functions along with two CompactPCI platforms to obtain important scalability. The MIC-3392 blade was selected for its processing power and the ability to execute Host Media Processing software in certain lower-density, DSP-less configurations. The MIC-3039 2-slot CompactPCI chassis was chosen as a compact entry-level solution with one available PMC on the MIC-3392 and one free CompactPCI-slot for gateway and signalling functionality. The MIC-3043D mid-to-high-end platform was chosen for its denser port count and five slots for gateway, signalling and possible application or media server functionality at a later date. The MIC-3043D is also available in AC or DC versions and provides two hot-swappable SATA bays for database mirroring requirements. As this system is also expected to be deployed to Service Providers globally as well as medium and large enterprises, the 1+1 and 2+1 power supply options and redundant disks provide a higher level of availability.

Benefits

- Scalable off-the-shelf platforms ranging from low-cost turn-key gateways to service provider approved, large scale gateways
- High-performance Dual Core CompactPCI computing blade with pervasive I/O connectivity
- Highly available design with disk striping or mirroring and redundant AC or DC power supplies

Higher Density Gateway with Bladed Application Server



Network Monitoring & Deep Packet Inspection

Customer: Network Equipment Provider

Location: Europe

Introduction

One of our longstanding Industrial PC and CompactPCI customers was looking for a smaller-footprint, modular architecture for their next generation of deep packet inspection (DPI) equipment. Typically, DPI identifies individual streams of traffic on a per-user and per-application basis, allowing policy enforcement of quality of service (QOS) and security as well as service quality logging. DPI essentially provides visibility and control to service providers so they can see what is traversing their networks and take appropriate action.

DPI applications include traffic management of peer-to-peer (P2P) flows to prevent bandwidth hogging, network security, service enhancements such as content filtering as well as resource and admission control systems for video stream availability based on network load.

Solution

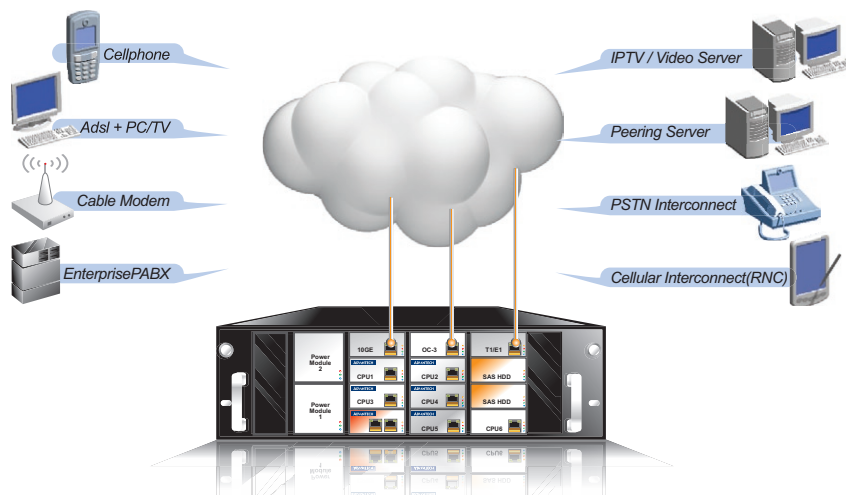
The system examines the data and header part of a packet as it passes an inspection point and provides the ability to look at all data from Layer 2 through Layer 7 of the OSI model. This includes headers and data protocol structures as well as the actual payload of the message. The DPI identifies and classifies the traffic based on a signature database that includes information extracted from the data part of a packet, allowing much finer control than classification based only on header information. The chosen system needed to fit in a reduced 3U height and be able to scale its packet processing power according to network bandwidth. Multiple network connection types and a scalable number of physical connections needed to be accommodated. A custom MicroTCA system was designed to provide the density and necessary infrastructure to support expandable high speed WAN and LAN connectivity, and between two and six processor AMC blades for wire-speed packet analysis.

System

The customer selected a 3U MicroTCA system based on a custom-developed 12-slot chassis and six MIC-5601 Processor AMCs. The 10 GbE Controllers and OC-3/STM1 boards were developed specifically by the customer and associated 3rd parties. Advantech's UTCA-5503 provides the MicroTCA Carrier Hub management and GbE switching between all elements with a 10GbE version under definition. Only one MCH is required as redundancy and high availability is not needed. For logging purposes, two SATA/SAS drives provide for up to 1/2 a terabyte of packet recording. The system provides one further slot for connection to four T1/E1's should this become a service provider requirement at a later date. Future versions of the Processor AMC with Intel Core 2 Duo based Processor AMCs are currently in design at Advantech for the next generation system. The availability of both AC and DC versions of the chassis were key to customer deployment in central offices as well as data centers.

Benefits

- Globalized R&D with Local Project Management for engineer-to-engineer support in the same time zone
- Access to innovative new technology allows early market entry for hi-density next generation system
- Scalable design allows processing performance and I/O matching



Voice and Data Communications via Satellite

Customer: Telecommunication Service Provider

Location: South Africa

Introduction

Today, there are hundreds of commercial satellites in operation around the world. These satellites are used for diverse applications such as wide-area network communications, weather forecasting, television broadcasting, amateur radio communications, Internet access and the Global Positioning Systems (GPS). The introduction of the Very Small Aperture Terminal (VSAT), has successfully opened access to communication networks in rural and remote areas. VSAT is a fixed satellite terminal that provides interactive or one-way communications. VSATs operate with ground stations that use small dish antennas less than 3 meters in diameter for point to point and/or multiple point communications. VSAT is most commonly used for applications that require a wide area of network coverage, especially in locations where local terrestrial communications infrastructures are unavailable. Satellite communications has had great success complementing the existing terrestrial infrastructure because it is readily available and offers a reliable terrestrial-free network for secured multi-cast content distribution.

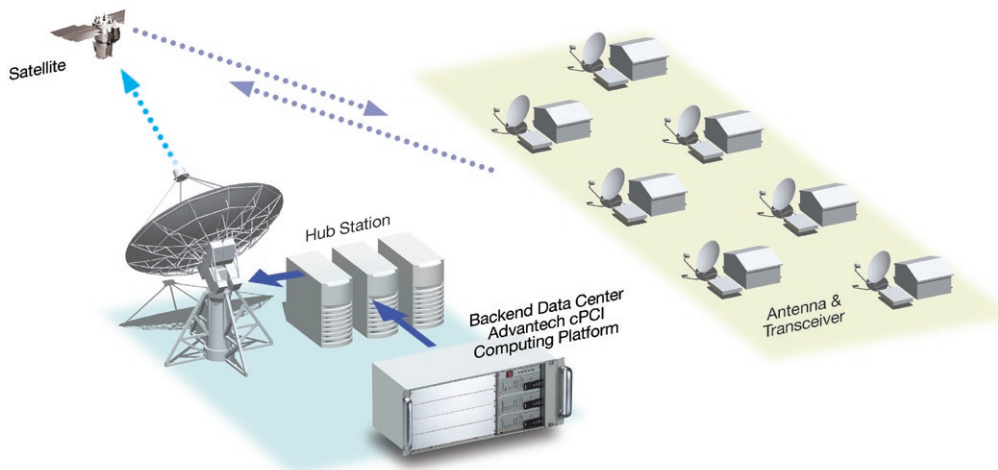
Solution

Our customer is a leading Telecommunications service provider that is looking for a solution to bring new services, like Internet access, email and fax, to citizens in rural areas of Africa within a short span of time. Due to the remote geographic setting and lack of existing infrastructure, the obvious choice for establishing rapid access was the use of a Satellite Internet Network. To setup such a comprehensive network, apart from traditional satellite antennas and receivers, requires a high-performance platform to serve as a reliable backend data support center.

CompactPCI blade servers were selected for this task since they are reliable, stable and readily-available for real-time data communications. Multiple blade servers can fit into a single chassis and each can act as an independent system, with their own processors, memory, storage, network controllers, operating systems and applications. The slim, hot-swappable nature of blade servers is convenient for creating complex cabled platform racks, which are easily accessed for adding or removing server boards. With switches and power units shared, precious space is freed up to offer higher densities with far greater ease.

System

Advantech offers a complete platform solution based on Advantech's MIC-3369C 6U CompactPCI Intel Pentium M-based processor board. This unit provides an ideal application blade for integrating systems that require high performance yet low power consumption. Paired with the RIO-3309 rear transition board, the platform provides additional Gigabit Ethernet connectivity to manage the high data throughput that the networks demand. To finish the system, and offer a reliable platform-level solution, the server blades are enclosed in the MIC-3042 4U CompactPCI enclosure.



Benefits

- A comprehensive product line for board-level and system-level solutions
- Fast design and integration service for quick deployment
- Cost-effective solutions and service for customers worldwide through global logistics and localized customer support

WiMAX Gateway Appliance

Customer: Network Equipment Provider

Location: United States

Introduction

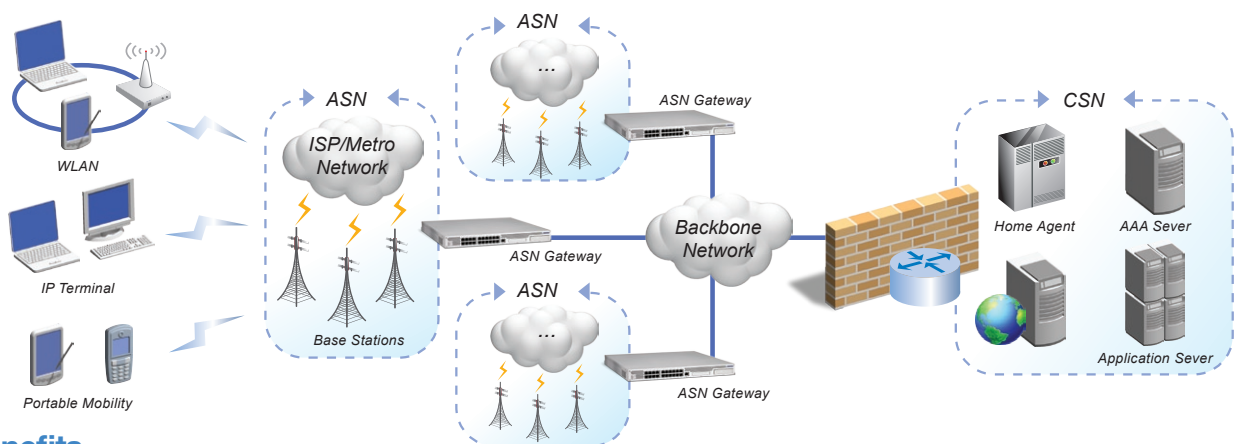
As more users demand broadband access on the move, WiMAX technology (Worldwide Interoperability for Microwave Access) shows great potential for service providers to deliver cost-effective broadband access over a wide geographic area. It often serves as a substitute for DSL (Digital Subscriber Line) to extend Internet services to rural areas, or as a WiFi hotspot backhaul which is less expensive than wired public networks.

Solution

A WiMAX network is built from many Access Service Networks (ASNs) that encompass a number of base stations. Each ASN has an ASN gateway that is used to control the transition of users from one base station to another. The ASN gateway must be built on an industrial-grade IP networking platform that is highly reliable and available. Based on the diverse requirements for WiMAX deployments in different towns or campuses, the platform must be scalable from small deployments of only a few base stations, to nationwide deployments involving a large number of base stations.

System

The Advantech NCP-3120 is designed for ASN gateways that require high network throughput and computing power. The NCP-3120 is a 1U platform based on the industry leading Cavium OCTEON Network Services Processor. This multi-core MIPS64 processor provides excellent hardware-based network acceleration functions, including TCP offload, security encryption, pattern matching and more. The system has two CN3800 NSP processors offering stable computing power to manage network traffic from all twenty Gigabit Ethernet ports on the system. A PMC expansion slot supports LAN or HDD expansions. Also, redundant power supply and hot-swappable fans in the system bring greater reliability and availability to the system. Apart from the hardware design and system integration, Advantech's own software team also developed the boot loader and device drivers to make it easier for the customer to port software. In addition, the platform is NEBS level 3 compliant, making it the ideal solution for WiMAX deployment.



Benefits

- Network processor based platform offers performance at wire-speed for small packet traffic
- Validated boot loader and device driver helps customer software development
- Modular power supplies, fans and HDDs reduces maintenance costs once deployed

Customized Firewall Systems with Modular Design

Application Field: Network Security Solution

Location: China

Introduction

Solution providers in the Network Security field are always looking for new and innovative hardware solutions that can fulfill diverse firewall solutions. Customers need different hardware platforms to fulfill their needs depending on the market segment, business size, network environment and physical environment. Advantech can provide copper or fiber LAN interfaces, a range of computing power in a selection of form factors from rackmountable 1U or 2U platforms to compact tabletop designs. Solution providers are searching for a modular and scalable platform that is able to fulfill complex demands while simplifying product and stock management.

Solution

Our customer is a major network appliance solution provider who is looking for a platform that can complete their line up of firewalls. The customer was looking for an industrial-grade platform with long life support that was designed for mainstream use. This platform must have computing power that is scalable from entry-level mid-level to high-level processing performance. Additionally, the platform must offer a range of port densities and expansion capabilities to suit various applications. Our customer chose Advantech, because they were familiar with Advantech design excellence and modularity in Network Application Platforms.

System

The customer has chosen Advantech's 1U Rackmount Platform, the FWA-3710, to implement a complete line of Firewall products for different business segments. The FWA-3710 is modular and uses PCI Express interface technology as a base for communication. With the use of a specially customized LAN expansion board, Advantech offers a selection of platforms with different LAN interface options, from 4 fiber or copper ports or a mixture of the two.

In addition, Advantech designed a new 2U rackmount chassis, which accommodates the main board, the expansion board and redundant power supply to create a complete enterprise-level solution based on the same platform configuration. The new system has been fully qualified through strict reliability testing, and is already EMC and safety certified.

Since most of the solution comes from an existing platform, our customer was able to receive the first sample within 8 weeks. After a minor modification for final confirmation, the system was ready for production within 5 months of project kick-off.

Benefits:

- Fast design and integration service for quick deployment, because the product was based on design of the existing FWA-3710
- PCI Express based module provides additional high-speed GbE ports for added flexibility
- Modular design offers unlimited opportunities for customers to design their desired platforms



Session Initiation Protocol (SIP) Enabled Firewall Appliance

Application Field: Network Security Solution

Location: United States

Introduction

Real-time communications have become an essential requirement for most enterprises. Whether it is through VOIP, multimedia conferences or instant-messaging, individuals and businesses can enjoy instant communications to save time and money. Generally, almost all instant communication connections are controlled by the Session Initiation Protocol (SIP), that initiates, modifies and terminates sessions between the participants. However, conventional network firewalls do not recognize SIP media, and whenever the firewall must relay SIP media packets for inspection, delays are caused during real-time communications. To speed up the inspection process, some firewalls create an automatic bypass for media packets, which creates a potential loophole for security threats.

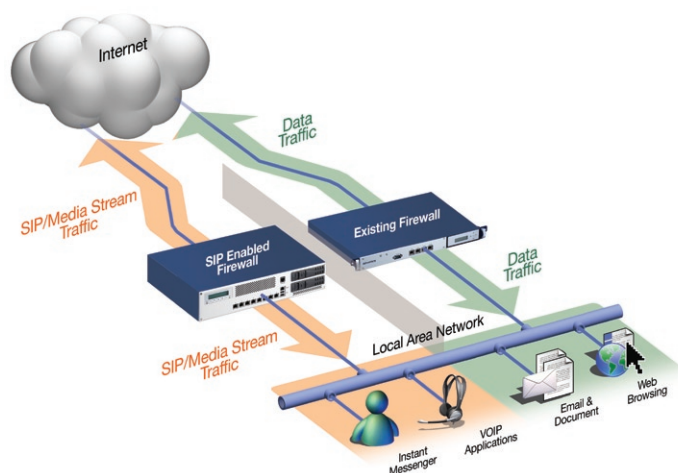
Solution

Our customer develops network firewalls and is a leader for the industry. They are looking into products that can enable SIP-based live communications while maintaining control and network security. The solution Advantech helped to develop can be a stand-alone firewall or a SIP proxy that complements existing firewalls. The company was searching for two platforms, one that was suitable for Small to Mid-size Business (SMB) and another to target large organizations or enterprises. Based on these requirements, they chose the FWA-3140 and the FWA-6280 network platforms as ideal solutions. They both command high levels of computing power, which makes them suitable for a stand-alone firewall application or a complementary proxy server to support existing firewalls.

System

The customer's enterprise-level security application was powered by the Advantech FWA-6280-AF platform with the high-performance Intel Xeon processor. The platform is capable of managing the busy traffic of large enterprises and handles up to 1500 concurrent VoIP calls (e.g. RTP sessions). The SMB solution is powered by the Advantech FWA-3140-C, and the system can handle up to 240 concurrent RTP sessions. The platform is designed for the Intel Pentium 4 processor and supports 4 GbE LAN ports for fast and robust connectivity. Both platforms can be used as independent firewalls dedicated to SIP media inspections, or to complement existing enterprise firewalls by off-loading SIP media sessions.

Advantech also offers system integration services, which includes software installation and final system testing. Network systems are turnkey solutions that are ready to go. This service helps customers to focus on their software development to maintain their competitive edge, and leave the rest of the turnkey configuration work up to Advantech.



Benefits

- High performance computing can provide real-time threat management solutions
- Supports best-performing Intel Pentium and Intel Xeon processors for maximum platform efficiency and reliability
- Advantech offers a full range of network security platforms to service diverse applications

All-in-one Unified Threat Management Solution

Application Field: UTM Solution

Location: Taiwan

Introduction

Unified Threat Management (UTM) is a term introduced in 2004, to describe a network appliance that has many security features built into a single box. It aims to provide an integrated and comprehensive solution rather than the limited “point solution” that a traditional firewall offers. However, there is a trade off between security and connectivity. As all security functions demand a lot of system resources, they inevitably reduce throughput, which is not desirable for real-time network management. Therefore, the ideal UTM solution must provide all-round protection without undermining the performance of network traffic. For this application, hardware acceleration delivers the greatest network performance improvement.

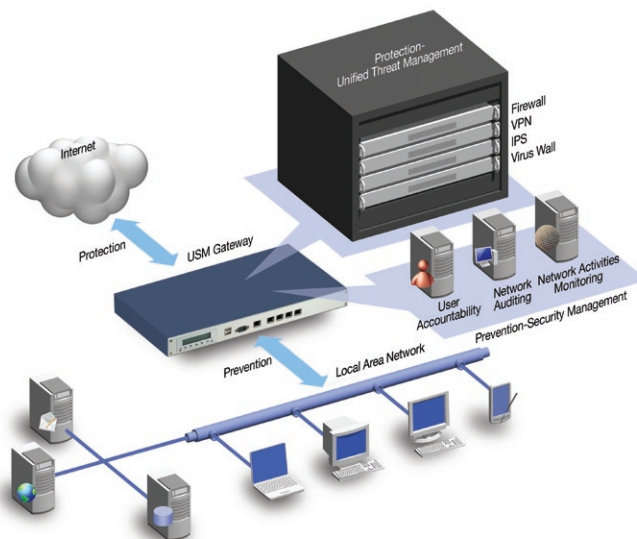
Solution

Our customer has introduced a new UTM device, called the “USM” (Unified Security Management) appliance. USM is capable of generating a network-traffic forensic analysis that provides a detailed on-going analysis of any system anomaly. This forensic analysis distinguishes the USM device from competitors by providing an extra layer of protection that has never been seen before. Even with the enhanced security features, the overall efficiency of the system must be maintained as the number of security signatures increases. The use of hardware security performance enhancers, including security accelerators, x86 processors or FPGA processors, can significantly improve network efficiency.

System

The customer has chosen Advantech's 1U Rackmount Platform, the FWA-3700, to implement a complete line of USM products for different business usage. Powered by Intel Pentium M processors, the new system supports high-speed PCI Express (PCIe) connectivity and a LAN Bypass function for consistent network connectivity. The customer selected the Pentium M 1.73 GHz and Celeron M 1.5 GHz processors for their performance and mainstream platforms respectively. Accommodating variations in system memory and application features, a total of six platform versions are available to meet various user applications and segments.

In addition, the FWA-3700 has one proprietary PCIe x4 connector for further LAN expansions. Advantech offers a LAN module with a built-in encryption/decryption accelerator to increase hardware security performance. Customers may also develop and integrate their custom-built security acceleration modules to meet unique processing needs.



Benefits

- High-performance computing provides real-time security management solutions
- The PCIe based module provides additional high-speed GbE ports as well as VPN accelerators
- Modular design offers unlimited opportunities for customers to design their desired platforms