

Smooth LAN

ADNOC TECHNICAL INSTITUTE'S CONVERGED IP NETWORK IS THE BEST EXAMPLE OF A ROBUST AND RESILIENT CAMPUS LAN DESIGN

ADNOC TECHNICAL INSTITUTE (ATI)

was established in 1978 to offer training programs that meet the needs of ADNOC and its Group Companies for skilled national manpower and to identify young UAE Nationals with a potential for upward mobility.

Since its inception, the ATI has trained hundreds of technical staff in different disciplines. ADNOC Group Companies assist the ATI by providing job instructional training (JIT) opportunities for trainees in relevant areas within each company's operational sites. These JIT sessions provide the trainees with skills in the field and environment in which they will eventually work. ADNOC Technical institute is a "vocational training" institute that trains UAE nationals and operators in the oil and gas industry.

The Institute has recently set up a new campus at Shawamekh, on the outskirts of Abu Dhabi, which boasts of an IP-based converged network. The campus comprises five main buildings – Administration, Foundation, Engineering, Operation and Warehouse. The campus LAN is based on 10 Gigabit Switched Ethernet network with 1400 ports providing gigabit connectivity to the desktop. Currently 400 nodes are active on the network.



PHOTOGRAPHED BY MARK CANTALEJO

"WE WERE RACING AGAINST TIME TO GET THE NETWORK UP AND RUNNING BEFORE THE OPENING DATE OF THE INSTITUTE. WE ARE PROUD OF WHAT WE HAVE ACHIEVED. ALL OF THIS WOULD NOT HAVE BEEN POSSIBLE WITHOUT THE SUPPORT AND DIRECTION WE RECEIVED FROM OUR SENIOR MANAGEMENT."

SAIF SALEM BAMADHAF, HEAD, NETWORK & TELECOMMUNICATION SECTION, ADNOC

"Our key objective while designing this network was to have a robust, secure and scalable network infrastructure with redundancy at every level. In this campus, we have deployed IP telephony for the

first time, and one key requirement was to integrate this network with the corporate voice network (ADNOC ITS network),” says Saif Salem Bamadhaf, Head of Network & Telecommunications, ADNOC.

The ATI network infrastructure is based on best of breed network equipment handling HP ProCurve LAN devices, Cisco WAN-Security devices and NEC IPT server-IP phones. He pointed out that the network vendor was chosen after a careful technical evaluation process. “The criteria included high-speed switching architecture, resilient network design and other technical parameters related to implementation of IP Telephony. It was especially important to ensure that the IPT server can understand the NEC proprietary signaling system (SS7) protocol, which is the key to integration with ADNOC ITS network. Furthermore, support of Link Layer Discovery Protocol (LLDP) was necessary for reliable network connectivity between HP Edge Switch and NEC IP phone.”

The ATI LAN architecture is made up of core and distribution layers. Two HP ProCurve 8212 switches provide high-speed switching at the core and are configured with L2 and L3 redundancy, load balancing and high availability options. Edge connectivity is achieved through HP ProCurve 5400, 3500 and 2600 series switches. These edge switches have redundant 10 Gigabit connections to the core switches. The ATI campus is connected to ADNOC headquarters in Abu Dhabi via 10 Mbps “MPLS IP Connect” link. The network

is also configured with separate VLANs for voice and data, which ensures consistent QoS for voice traffic. All traffic traversing on the WAN is scanned and monitored by two Cisco 4240 Intrusion Prevention appliances.

The NEC SV7000 IP PBX connects directly to the core switches in a redundant manner. NEC IP phones are distributed across the network in a single socket installation – PC connects to the IP phone which in turn connects to the wall socket.

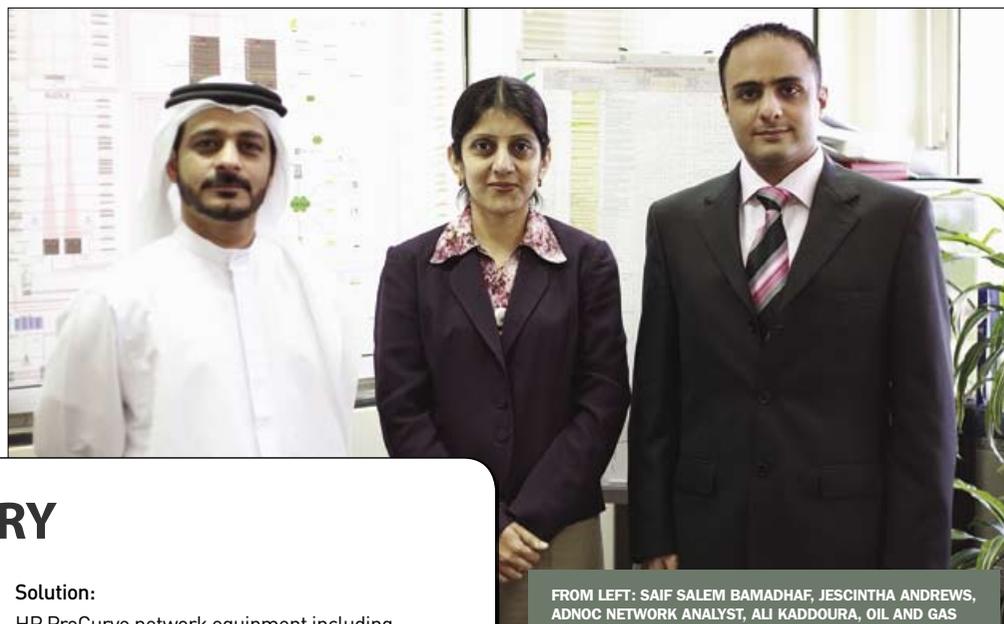
ATI network supports a wide variety of applications such as Maximo (material management software), multimedia applications, Student Information Database and CCTV over the IP-based network.

The ATI wired network infrastructure is complemented by a campus-wide wireless LAN with around 60 HP access points providing roaming facility to users. The WLAN is managed by redundant HP wireless controllers

installed on the core switches.

Bamadhaf says the implementation and commissioning of IP Telephony at ATI campus was completed in a record time of 15 days. “We were racing against time to get the network up and running before the opening date of the institute. We are proud of what we have achieved. All of this would not have been possible without the support and direction we received from our senior management.”

The ATI campus network was implemented by Emitac. “Emitac was seeking to provide ADNOC a solution that combines excellent performance with low cost of ownership. Our team worked jointly with ADNOC network team to design and then fine-tune the LAN infrastructure design to meet ADNOC’s requirements and the time frame set for going live,” says Ali Kaddoura, Oil and Gas Sector Manager, Emitac - Technology Solutions Group. The campus is still in the process of expanding.



FROM LEFT: SAIF SALEM BAMADHAF, JESCINTHA ANDREWS, ADNOC NETWORK ANALYST, ALI KADDOURA, OIL AND GAS SECTOR MANAGER, EMITAC TECHNOLOGY SOLUTIONS GROUP

EXECUTIVE SUMMARY

Challenge:

- Integration of ATI IP telephony network with ADNOC ITS network that facilitates voice services between ADNOC and its group companies.
- Seamless integration of core switches with NEC IP PBX
- A network that caters for 10G on the backbone and 1G to the desktops

Solution:

HP ProCurve network equipment including 8212 core switches and 5400, 3500 and 2600 edge switches

Benefit:

An IP-based converged network that supports next-gen applications

In the second phase of the project six more switches and 35 wireless APs will be added to the network. When completed, ATI’s robust network architecture could make it an ideal example of campus network for other technical institutes in the region.