End-to-End Networking Solution

The Maharishi Markandeswar Education Trust was founded with the objective of social, educational and economic upliftment of society in 1993, in the name of Lord Shiva’s devotee, “Maharishi Markandeswar”. MM University Trust, Mullana - Ambala has become a symbol of quality education in technical, professional and medical streams in northern India and has been carrying on its lineage for over 16 years. Beginning with the courses in the area of engineering & technology, business management and computer technology with effect from the session 2010-11, the educational institute in the years to come will have programmes in medical sciences, dental sciences, nursing, fashion technology, etc. with special emphasis on research in emerging areas.

Need of the hour:
The university, with its focus on technology, wanted to upgrade its campus with high and easily expandable bandwidth. It also wanted to go for highest security assurance and most importantly, a centralized management of wireless network, as wireless is future technology. To make wireless as a back-up to fiber backbone, they needed a professional approach to the whole project. Since multiservice ready network platform for triple play services data, voice and video is/ was the call of the hour, the university wanted to implement the process on a priority basis.

Steps to solution:
Last year, the university started looking for the proper solution provider, customized to the need of the institute and its thousands of students. “We began our search with presentations by several companies for the ambitious project. Since our requirement was for a holistic solution on wireless technology we wanted to have the best of both of technology and value. Our selection on D-Link India was because of its range of solutions and it suits to our budget”, says Vishal Garg, a senior official of the university and also in charge of choosing the best company to implement the project. A robust solution with field support backed with a competitive pricing rate for Maharishi Markandeswar University did the trick for the company, which bagged the contract.

Solution:
D-Link India deployed managed wireless and outdoor wireless products based on open platform and conforming to industry standards. Infotech Computers & Communications was a partner of the project. Excellent follow-up by sales and pre-sales team assisted gaining the customer’s confidence in D-Link India as a brand acceptability against others.

Centralized Management Control
D-Link deployed Managed layer 2 switches (DES-3024). These
switches are optimized for wireless network deployment in business environments. These devices, helped the University create a high performance, secure, manageable and scalable unified wired/wireless LAN switching platform. These switches are the core units that consolidate the security, manage the bandwidth and maintain the intelligence of an entire wireless network. In addition to monitoring users’ identities and maintaining their authentication as they roam, these switches can configure and control all aspects of the wireless access points, including their RF channel/power management, wireless traffic segmentation, Access Point (AP) roaming/AP load balancing, rogue AP detection, and AP access security. 

The switch provides two features designed to increase the resiliency of a wireless network — namely a so-called “self-healing” process, and an AP load balancing function. To make up for a sudden RF signal vacuum created by any “dead” AP (AP with DC power failure, for example), the switch automatically increases the transmitter output power of all neighboring APs to expand their RF coverage, thereby “healing” the network “wound.” To ensure continuous connection for current clients, the switch performs load balancing across access points when network traffic reaches a certain threshold, while rejecting new client-to-AP associations to avoid bandwidth overcrowding.

**Adaptable Wireless Technology**

Most of the current wireless LAN controllers’ architecture requires wireless traffic to return to the controller for centralized processing, causing unnecessary traffic delay. In addition, these switches offer adaptable wireless technology, depending on the wireless application, wireless traffic can either be tunneled back to the switch for better security control, or locally forwarded at the access point for optimal performance. This device offers administrators maximized flexibility with options to tunnel guest traffic to the switch for centralized security control, and forward VoIP traffic directly from the access point for optimal performance.

Simultaneously, D-Link also installed 240 Nos of high-performance DWL-3500 Wireless Access Points that provide up to 108 Mbps transmission rates & supports Power over Ethernet, which makes it ideal for placement in a variety of locations. It has 802.11b/g WLAN standard and a solid die cast metal housing design best used for indoor deployment. The 802.3af Power over Ethernet facilitates physical setup and it’s managed via DWS-3024 WLAN controller switch. The DWL-3500AP supports 64/128/152-bit WEP data encryption, WPA/WPA2 security and multiple SSID. Connected to the DWS-3024/3026 switch, these functions along with wireless user MAC Address Filtering and SSID Broadcast Disable can be used to set up security and limit outsiders’ access to the internal network. The DWL-3500AP supports 802.1Q VLAN Tagging and WMM (Wi-Fi Multimedia) for important wireless transmissions such as VoIP and streaming media applications, delivering critical user-based services, such as prioritized delivery of voice traffic.

26 Nos of DWL-2700AP were deployed as Outdoor Access Points and bridges that offer high-performance outdoor solutions capable of delivering transfer rates of up to 54Mbps with three operational modes, including WDS. Maximum security was given with ACL, WPA2, WPA, and AES through this installation with 802.3af PoE and SNMP Support for Management.

Omni-directional antenna for creating hotspot at public places were installed and two directional antenna were put up to extend wireless coverage at some points also.

D-Link India also set up a directional antenna for building to building connectivity, backup to fiber link. The weatherproof & corrosion resistant antenna also has swivel mount for directional orientation.

**Network Management**

Lastly, the most important DV-600P, the Network Management Software (NMS) was set up at the university as a single window management for all D-Link products i.e. wireless and existing switches. D-Link’s Professional Network Management Software is tailored for networks with more than 1,000 nodes and facilitates the central administration of a network with various SNMP-enabled devices. It auto-generates network topology maps and periodically polls network devices, creates detailed network schematics, graphically represents real-time status of devices, supports client-server architecture (Professional Version only) and supports Batch Configuration and is capable of configuring multiple devices at a time. DV-600P manages wireless switches, access points and networked products such as IPS and UTM firewalls. It also supports multiple, concurrent administrators and it has a trap/alarm notification by e-mail and sound.

**Benefits:**

The university now enjoys excellent wireless coverage across the campus, especially in the hostels, where maximum users are on wireless. D-Link helped deploy a multiple services network i.e. (data, voice & IPTV) and IP surveillance traffic with an ease of network management. The reliability factor of D-Link India’s project made the university authorities more than satisfied. “Wi-fi services have firmed our commitment to students. Now, we will go for development of our future IT-based projects also,” added Garg.

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—VISHAL GARG, MM UNIVERSITY TRUST, MULLANA - AMBALA