Shahjalal University of Science and Technology also known as SUST is a state supported not-for-profit research university located in Sylhet, Bangladesh. It is also one of the nine PhD granting research universities of Bangladesh.

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Phone: 0821-713491

Founded: August 25, 1987

SUST

All about SUST

Shahjalal University of Science and Technology (SUST) was established in 1987. Now a days it has 7 schools, 25 departments and one institute. The number of teachers has grown to 424 and the students to 9262. Besides, the University has six affiliated medical colleges under the School of Medical Sciences with 2744 students.

Every student has to take two computer courses; one is computer literacy and the other is about learning a computer language. The computer center of SUST offers courses to every employee. It is indeed that SUST is the most IT enabled university in this country.

SUST has started its graduate course and master's degree to most of the departments. Several departments have hosted International Conferences and they are planning to organize similar events in the near future.

"Spectrum's participation in implementing DWDM Backbone, MPLS Backbone and Unified Communication had significantly impacted the entire project positively. The team had done great job and we appreciate that."

Name

Technology challenges that matter

SUST has more 8 academic building with 8 residence places for teachers & students. There are almost 5000 users using computer services around the campus.

- Previously a few of these buildings had connections with central distribution and

- Challenges were to make the Wi-Fi centrally managed and maintained security for each of

some building was not totally connected and managed their own internet services. So the main challenges were to connect all the buildings together with **central Data Center** and managed users centrally for application and internet usage. Also they were using standalone wireless facility. That doesn't have much user capacity and scattered on individual buildings.

different user groups. Again university officials want to move from traditional PABX system to IP PABX, that's why unified IP Telephony system required with integration facility for old PABX. These whole network, wireless and IP Telephony infrastructure need monitor from central location for troubleshooting and managing centrally.

Solutions which were provided from Spectrum

For Campus LAN

- o Hierarchical Tier-2 segmented campus architecture(Core-Access)
- o 1Gbps fiber backbone around the campus
- o 5 km. & 12 cores fiber backbone to connect all the buildings into Data Center
- o Managed access on each building which handles other non-managed user access switches
- o VLAN wise user segregation according to user groups
- o Managed access connections
- o through Core switch and also connects Server Farm for service availability

- o DHCP server configuration on switch for user IP allocation
- o Dynamic ARP inspection, DHCP snooping and Broadcast storm control for LAN network security
- o Power-over-Ethernet facility on managed access switches ensure robust implementation of wireless and IP Telephony equipment power supply
- o Managed dual internet link and provide load sharing with failover from router

For Secure wireless mobility

- o Controller based unified wireless around the campus
- o Automatic Radio Frequency and channel management through wireless controller
- o Multiple wireless VLAN with multiple SSID according to user groups
- o WPAv2 wireless access security implementation
- o Seamless wireless layer-2 mobility on multiple Access Points around the campus

For IP Telephony system

- o Cisco unified IP Telephony system implement
- o Voice gateway router performs unified call management system
- o End user telephone set register with call manager and telephones are distributed around campus
- o BTCL PSTN outgoing connections are terminated on Voice gateway FXO ports to provide outside voice communication

FXS/FXO ports are connected with traditional PABX system to provide integration between new IP Telephony

For Monitoring system

- o Monitoring system provide view of entire network infrastructure
- o Configure graph and monitor physical links along with network nodes
- o Configure alert system for any critical resources failure through mail
- o Provide historical data for link usage for wired and wireless user activities

Major component used in solution:

- o Cisco 3750-E as Campus Core switch
- o Cisco 2960 LAN base switches as Managed Access
- o Cisco 2500 series Wireless LAN controller
- o Cisco Aironet 1041 as Wireless Access Points
- o Cisco 2900 series router for Internet and IP Telephony gateway router
- o Cisco 7900 series IP Telephone set
- o Solar winds network monitoring system

Achieved customer benefits by Spectrum technology

- ✓ More than 5000 users are connected on a centralized infrastructure
- ✓ All users can access internal resources as well as internet's
- ✓ With Wi-Fi system mobility ensures around the campus to access.
- ✓ Multiple redundant uplink facility ensure less downtime
- ✓ IP Telephony
- ✓ system provide all telephony facility with reduce the cost of traditional telephony system installation and again provide the expansion facility
- ✓ **Central monitoring system provide user traffic monitoring and root cause analysis for network infrastructure which can help minimize system administrator overhead in operations**