



# Main Communication Network

Project:

High Speed Fiber Optic Based LAN Establishment  
with Wireless Computing Support  
at University of Karachi

## Project Profile 2003- 2006



Project Sponsored By:  
Higher Education Commission  
Executed by : University of Karachi

# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

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# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Message from the HEC Chairman



### HIGHER EDUCATION COMMISSION

H-9, ISLAMABAD, PAKISTAN Website: [www.hec.gov.pk](http://www.hec.gov.pk)



Prof. Dr. Atta-ur-Rahman

**FRS**

*Nishan-i-Imtiaz, Hilal-i-Imtiaz, Sitara-i-Imtiaz,*

*Tamgha-i-Imtiaz*

*Ph.D. (Cambridge), Sc.D. (Cambridge)*

*UNESCO Science Laureate*

**Federal Minister/Chairman**

#### MESSAGE

January 27, 2007

It gives me great pleasure to write a few lines at the completion of the project "High Speed Fiber Optic based LAN Establishment with Wireless Computing Support at the University of Karachi".

This project has indeed been a very inspirational and encouraging one. To see Pakistan's largest academic Fiber Optic Network established is indeed a feeling of joy and pride. I certainly take pride in the efforts put in by the Vice Chancellor, University of Karachi, Prof. Dr. Pirzada Qasim, the Project Director, Prof. Dr. S. M. Aqil Burney and the entire project team. I congratulate them the entire faculty and staff of University of Karachi on completion of this project.

This project has already started providing Internet, wireless computing and video conferencing services to the each and every faculty member as well as students at the University of Karachi. This indeed is an achievement in its own right. I hope that this project would serve as a reference point to all the other Universities of Pakistan.

**Prof. Dr. Atta-ur-Rahman, FRS**



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Message from the Vice Chancellor



University of Karachi

Karachi - 75270, Pakistan

Vice Chancellor

### MESSAGE



It is one of the brightest moments for the University of Karachi that the High Speed Fiber Optic Based LAN establishment project has been completed and is functioning at full potential.

The completion of this project is indeed a landmark achievement for the University of Karachi. I congratulate the Project Director, Prof. Dr. S.M. Aqil Burney and the entire project team who worked tirelessly to complete this project in an efficient manner.

I would also like to thank the chairman HEC, Prof. Dr. Atta-ur-Rehman for his unconditional support in developing Pakistan's largest academic fiber optic network at the University of Karachi.

This project has shifted the paradigm of the Karachi University and has taken us closer to the digital and electronic learning paradigm. Along with providing Internet facilities to the faculty, staff and students at the campus, the project has also enabled us to access recent research journals and periodicals through PERN (Pakistan Education Research Network) and HEC provided facilities. Through the project, latest technologies like VoIP, Hotspots and Video Conferencing facilities are also made available to the University. This is without a doubt a remarkable achievement and is a right step towards achieving academic excellence.

I congratulate all the faculty, staff and students of University and hope that this project contributes a lot for achievement of academic excellence at the University of Karachi.

Prof. Dr. Pirzada Qasim Raza Siddiqui



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## From the Desk of Project Director Prof. Dr. S.M. Aqil Burney



I feel honored and gratified to write a few lines at the auspicious occasion of completion of this project "Establishment of High Speed fiber Optic Based LAN with Wireless Computing Support at University of Karachi"

The idea of the University wide High Speed Fiber Based LAN Establishment with Wireless Computing at University of Karachi (HSFBLAN) was conceived in the year 2001 by yours truly to provide the Internet and Intranet facilities to all the departments, research institutes and administration units of the University. A proposal in the form of PC-I was submitted to the Ministry of Science & Technology, a very first proposal was transformed to Higher Education Commission (HEC) when it started working under the able guidance of Prof. Dr. Atta-ur-Rehman.

The PC-I of this project was approved in the year 2003. Now the project has been completely deployed for testing. All the 62 Departments (Academic & Administration) and 18 Research Institutes of the University of Karachi have been connected via Fiber Optic Cable with eight Access Switches, 62 Distribution Switches and One Core Switch. Currently, a bandwidth of 4MB has been made available for the University Fiber Optic Network through NTC. Ultimately this network will be linked to PERN (Pakistan Educational & Research Network) of HEC.

This network is now providing Internet, Intranet, VoIP, Video Conferencing Wireless Hotspots facilities to the students, staff and faculty of the University of Karachi. With the passage of time different administrative IT based facilities will be developed and deployed according to the growing needs & requirements of the University.

The very first Computer Network at University of Karachi was developed in the Department of Computer Science in 1995, which was later upgraded in 1998. In the year 2001, a 326 nodes network was developed under my supervision and internet facility was made available. Another Campus Wide Network was developed in the year 1999 for limited use only.

This newly deployed High Speed Fiber Optic Based LAN with Wireless Computing Support at University of Karachi has been continuously providing network facilities to the entire University of Karachi since 15th April 2006. This network has been deployed using 22km fiber optic cable with 12km single mode and 10km multi-mode fiber optic cable.



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

Message from the Project Director  
Prof. Dr. S.M. Aqil Burney

A phase wise user training program for this network was conducted in November 2005 and then again in April and May 2006 to impart working knowledge of this network so that the users are able to add value to their work utilizing the services of this High Speed Network. Prof. Dr. Muhammad Qaiser, the Dean Faculty of Science inaugurated the Training Program. About 175 University Staff members were trained on basic networking knowledge, knowledge about use and establishment of HSFBLAN at University of Karachi, web development and internet related issues.

Two Engineers Mr. Hussain Saleem (Hardware/Procurement), Mr. Sadiq Ali Khan (Network LAN), and one Software Engineer Mr. Syed Asim Ali worked for this project. Mr. Badar Sami who served as the deputy director of the project also contributed his bit. Mr. Nadeem Mehmood was also involved in this project as a database expert. All the project team members are faculty of Department of Computer Science and are performing additional duties in this project.

To ensure uninterrupted internet and intranet facilities, Electric Generator with 32KV power has been installed to provide electricity in the situation of electricity supply failure.

The University of Karachi has now appointed some more technical staff on contract basis for this "Fiber Optic Main Communication Network" to maintain, run and to provide value added services on the intranet of the University and internet for public in general.

Further more, HEC has been encouraging the Project Director to submit fresh proposal to enhance this network facility with updated technologies and facilities to all the staff of University of Karachi to create better environment for research and development.

It is important to point out that this project has been appreciated from all corners of the society and well covered in the media.

In the end I would like to once again thank the Vice Chancellor, Prof. Dr. Pirzada Qasim and Chairman HEC, Prof. Dr. Atta-Ur-Rehman for their unconditional support in making this dream a reality.

Prof. Dr. S. M. Aqil Burney  
Project Director / Advisor



## **The Project Team at Full Throttle**

**From Left to Right : Prof Dr. S.M. Aqil Burney, Engr. M. Sadiq Ali Khan,  
S. Engr. Syed Asim Ali, engr. Hussain Saleem at the newly established Data  
Center of University of Karachi**



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Introduction to the Project

### Project History

- Project Idea Conceived in 2001 by Prof. Dr. S. M. Aqil Burney
- PC-I developed in May 2002 by Project Director with the help of Project Engineers
- Proposal Presented to Vice Chancellor - September 2002
- Project Proposal sent to HEC - March 2003
- Proposal accepted in in DDWP - August 2003
- Approved Cost of Project - Rs.35.432 million
- Revised Project Deadline - 30th June, 2006

### Project Distinguishing Features

The largest Fiber Optic Network in Pakistan. About 22 km Fiber Optic Cable has been laid, which comprise the largest network in Pakistan. Data Center Room established which includes highly efficient latest technology servers.

### Project Goals

- The existence of Fiber Optic backbone.
- Facilities of having its own Intranet and Internet.
- Live Video Lectures
- New IP based Telephone System.
- Document Publishing.
- Application and Databases Sharing.
- Highly equipped Computing Center.
- Wireless LANS.

### Salient Features of HSFBLAN

- Scalable
- Wireless HotSpots
- Gigabit Backbone
- Centralized Network Management
- Easy fault isolation on network
- Fault tolerant network design
- Redundancy
- Structured Cabling
- Messaging System
- Security
- Paperless Environment
- VoIP Environment



Prof. Dr. S. M. Aqil Burney monitoring the switch installation process



Project Engineers involved in the configuration of switches



Director Finance & Project Director Chair the regular meeting



Project Director with his technical team discussing progress of the project





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Project Team

### Engr. M. Sadiq Ali Khan

Mr. M. Sadiq Ali Khan worked as the network engineer for this project. He was associated with the project from the start. He worked very hard to develop the network architecture in consultation with the project director. He also deployed and configured the network with the Siemens Teams. He is currently also a member of the network advisory team.



### Engr. Hussain Saleem

Mr. Hussain Saleem is also associated with the project since the start. Being an Engineer, he was associated with the hardware procurement of the highly sophisticated and technical equipments of the project. He also worked tirelessly to develop a computerized inventory of the hardware. Currently, he is also a member of the network advisory team.



### S. Engr. Syed Asim Ali

Mr. Syed Asim Ali is also associated with the project since the start. He worked as the team lead for the web information systems development. In consultation with the project director, he developed the new web architecture for the University of Karachi website. He also contributed in network development and deployment. He is also a member of the network advisory team.



### Mr. Badar Sami

Mr. Badar Sami acted as the deputy director for the project for a brief period of time. During his stay he worked for rapid deployment of the project. He was also involved in the training programs conducted to provide basic training of network to the participants.



### Mr. Nadeem Mehmood

Mr. Nadeem Mehmood acted as the deputy director in the absence of Mr. Badar Sami who went to perform Hajj. During his stay as deputy director, he made sure the smooth functioning of the project. He also served as a database expert for the project and provided his valuable insight at several occasions. He is also currently a member of the network advisory team.

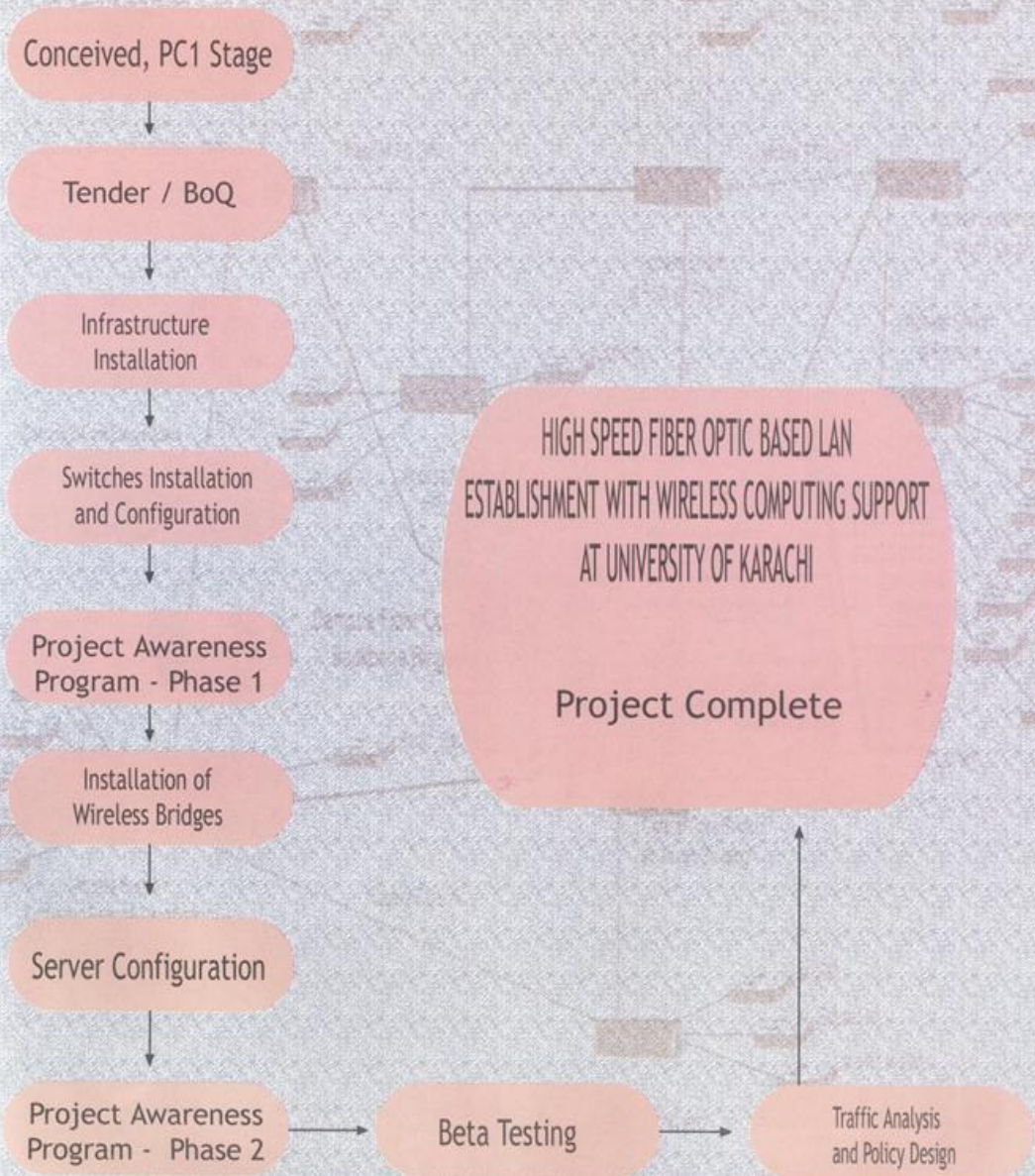




# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Project Phases

To accomplish the huge task of establishing this redundant network, the entire project was divided into many phases. During each phase, the project team worked tirelessly to complete the project with-in the specified timeline.





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

### Phase 1: Idea of the Project / PC1 Preparation

The idea of the project was conceived in March 2003 by the project director. The idea was given a final shape in the form of a PC-1 document after through analysis and design of the possible network.

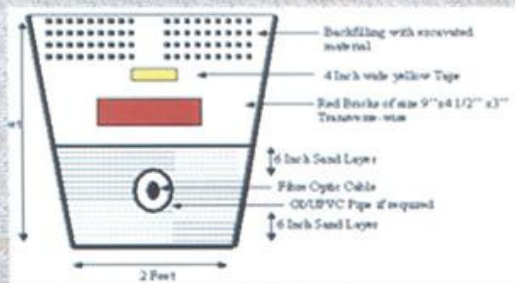
### Phase 2: Tendering / BoQ Preparation

After the approval of PC-1 from the concerned authorities of University of Karachi and HEC, tender was invited for this project. After a rigorous selection process, Siemens Pakistan was selected as the organization to execute this project.

### Phase 3: Infrastructure Installation

Digging, and laying of the Fiber Optic Cable was the next task for the project. This was a gigantic task keeping in view that over 90,000 feet ground was to be dug for the laying of the Fiber Optic Cable. By the Grace of Almighty, the digging and laying phase was completed efficiently. Mr. Zaki and Mr. Rizwan from Siemens played a significant role in completion of this work.

#### Digging Specification



Digging Specification for Laying the Fiber Optic Cable



Commencement of the digging work at the University of Karachi



Project team members pondering over digging map



A view of the digging at the University of Karachi.



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

### Phase 4: Switches Installation & Configuration

The next phase was the installation of switches and their configuration. First the switches were tested by the project engineers, along with the Siemens deployment team. Then project equipment inventory system was updated with the equipment list. A computerised record was maintained so that the tracking and management of the equipment remains easy.

Then began the phase of delivering the 15-U and 42-U switch and router cabinets to the Departments. The project director along with the team, working tirelessly, were themselves involved in trouble free delivery and



Siemens deployment team member along with project staff member, marking computer generated inventory lists.



Distribution of 15-U Racks to the departments

delivery of the communication racks. The project team carefully selected the location of the communication rack installation keeping in view every possible consideration regarding the safety and security of the communication rack and the switch / router.

After the delivery of communication racks, the phase to deploy and configure the switches began. One by one, all the departments of the University of Karachi were provided with inactive connectivity at this stage.



Digging plan for fiber optic cable deployment



Engr. Hussain Saleem during the switches distribution process



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

### Phase 5: Project Awareness Program

A very important aspect of the project, besides providing high speed fiber optic internet connectivity, was to bring to light the potential uses of the technology. Quite a few training programs were arranged for this purpose. The main objective of these programs was to equip the University human resource with the skills that are required to make efficient and effective use of this network.

The following training programs have been arranged so far :

- = Project Awareness at Audio Visual Center
- = User Training at Audio Visual Center
- = Network Training at Dept. of Comp. Sc.
- = Web Training at the Dept. of Comp. Sc.

Quite a few number of faculty members of different departments of University of Karachi attended the training programs. Along with the faculty members, selected members of the office staff also participated in the training workshops.

The course material and handouts of the training workshops was provided to the participants during the sessions.



Project Director Prof. Dr. S.M. Aqil Burrey explaining the network logical diagram to the training participants.



The trainers along with the staff of Department of Computer Science who provided assistance during training.



Participants listen to the lecture at the training workshop



Participants of the Hands On training program practice during a training session



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

Three training programs were conducted to train the university teachers and staff members related to web development and the basic networking issues. First training program was offered in November 2005 in which about 150 candidates participated. It was a full week program comprising of all faculties of University of Karachi inaugurated by the deans of the respective faculties.

Second training program was conducted in April 2006 for the web development. Third training program was conducted in May 2006 about basic networking and its infrastructure.

The basis objectives of these training programs were:

- 1- Awareness about HSFBLAN
- 2- Basic knowledge about Web Development
- 3- How to use and better utilize this network
- 4- Basic knowledge about Networking
- 5- Awareness about the latest technology used in this network



Participants with instructors and deputy project director



The training team with Department of Computer Science Lab Staff



Project Director Professor Dr. S.M Aqil Burney briefing the participants about the project.



Project Engineer M. Sadiq Ali Khan presenting the details about network.



Web Development training being given to participants by S. Engr. S. Asim Ali.



Participants taking notes during training sessions



# High Speed Fiber Optic Based LAN with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

### Phase 6: Installation of Wireless Bridges

A very important aspect of the project, besides providing high speed fiber optic internet connectivity, was to bring to light the potential uses of the technology. Quite a few training programs were arranged for this purpose. The main objective of these programs was to equip the University human resource with the skills that are required to make efficient and effective use of this network.

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### Phase 7: Server Configuration

Keeping in view the criticality of the project and the huge number of people it would cater to, it was necessary that the servers should be configured to provide robust services to the faculty of the University of Karachi. That is why this phase was very critical. No compromises were made while configuring the servers to provide absolute flawless connectivity to the faculty.



Project Engineer Configuring the network wireless bridges at the Data Center



Project Engineer M. Sadiq Ali Khan configuring the wireless bridge at the Data Center.



Server Configuration at Full Throttle at the Data Center of High Speed Fiber Optic Based Network.



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Brief Description of the Project Phases

### Phase 8: Beta Testing

For any project in IT, beta testing is a very important and critical phase. The beta testing provides an opportunity to generate sample traffic and then make a policy that can cater to such a huge amount of internet and intranet traffic.

For this purpose, four test accounts were provided to all the users in different segments. This was done to:

- start providing internet services at the earliest
- test the system
- generate sample traffic so that policies can be finalized

By this beta testing the project team was able to generate data that was very useful in policy design.

test1@uok.edu.pk  
test2@uok.edu.pk  
test3@uok.edu.pk  
test4@uok.edu.pk

The set of sample ids, that was initially assigned to to the faculty for internet use.

### Phase 9: Final Deployment and Project Completion

Project was finally ready for last phase deployment and handover. New staff have now been hired which is running the network under the supervision of the Project Director Prof. Dr. S.M. Aqil Burney and the project technical advisory team comprising of Mr. Sadiq Ali Khan, Mr. Nadeem Mehmood, Mr. Hussain Saleem and Mr. Syed Asim Ali of the Computer Science Department.

Prof. Dr. S.M. Aqil Burney has now been appointed advisor to the Vice Chancellor for this Main Communication Network.







# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Project Meetings

As many as 42 meeting were conducted during different stages in the project. All the matters regarding the project were discussed in the meetings.

Most of the meetings were held at the project office, but some of hte meetings were also held at the office of the Vice Chancellor in the presence of the Vice Chancellor, the Director Finance and other reputed dignitaries.



Prof. Dr. S.M. Aqil Burney presenting to the Vice Chancellor



The project director presiding a regular meeting of the project.



Mr. S. Asim Ali presenting details about the newly developed website of University.



Mr. Hussain Saleem & Mr. Sadiq Ali Khan in intense discussion over technical matters of the project.



Another meeting of the project.



Intense discussion with the Vice Chancellor and the Media Advisor.



From Left to Right : Prof M. Rais Alvi (Registrar), Prof. Dr. Qaiser, Prof. Dr. Pirzada Qasim (Vic Chancellor), Prof. Sarwar Nasim (Media Advisor), Prof. Dr. S.M. Aqil Burney (Project Director / Advisor), Mr. Syed Asim Ali (Web Development Team Lead), Mr. Sadiq Ali Khan (Network Engineer), Prof. Dr. Sohail Barkati (Member Syndicate) at a presentation about the website of University of Karachi.



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Network Description

For laying this network 10 km single mode fiber optics and 12 km multimode fiber optics have been used. One core switch (Cisco Catalyst 6506), 8 access switches (Cisco Catalyst 3550), 62 distribution switches (42 switches of 2950SX and 20 switches of 2950). All eight Access Switches are Catalyst 3550-12G connected to core switch catalyst 6506 R via Fiber optic.

## Equipment

The equipment that is used provides maximum uptime with redundancy and rapid 2-3 second failover across supervisor engine.

The Cisco Catalyst 6506 Firewall Security System is a three-slot model providing a turnkey solution that integrates a Cisco Catalyst 6000 Supervisor 2 (with integrated Policy and Multilayer Switch Feature cards for system control, routing services, and dual-Gigabit-Ethernet ports); a Cisco Catalyst Firewall Service Module providing 5 Gbps of firewall services; and a single open slot for site customization.

The Cisco Catalyst IPSec VPN systems take advantage of the Cisco Catalyst IPSec VPN Service Module and provide up to 2 Gbps of Triple Data Encryption Standard (3DES) encryption. The Cisco Catalyst 6506 IPSec VPN System provides a broad suite of services and a multitude of I/O interfaces inherent in the Cisco Catalyst 6500 Series.

The Catalyst 6506 switch is a 6-slot horizontal chassis.



HP Pro-Liant Servers are used in the data center to provide unprecedented support.

“Networking is evolving faster than ever before because the changing requirements of users and capabilities of communication technologies. High Speed Fiber Based LAN project is one of the great technological breakthroughs in the era of University of Karachi. In Main Communication Network UoK, all latest technologies are deployed and configured such as IP Telephony, video conferencing, and wireless hotspots. Network topology is highly reliable, redundant path are available for alternate routes of traffic. The network design is highly scalable and expandable. Network architecture is designed in such a way that it increases security options, performance and manageability. Technological access control is implements and configured to prevent un-authorized access.”

- [REDACTED]

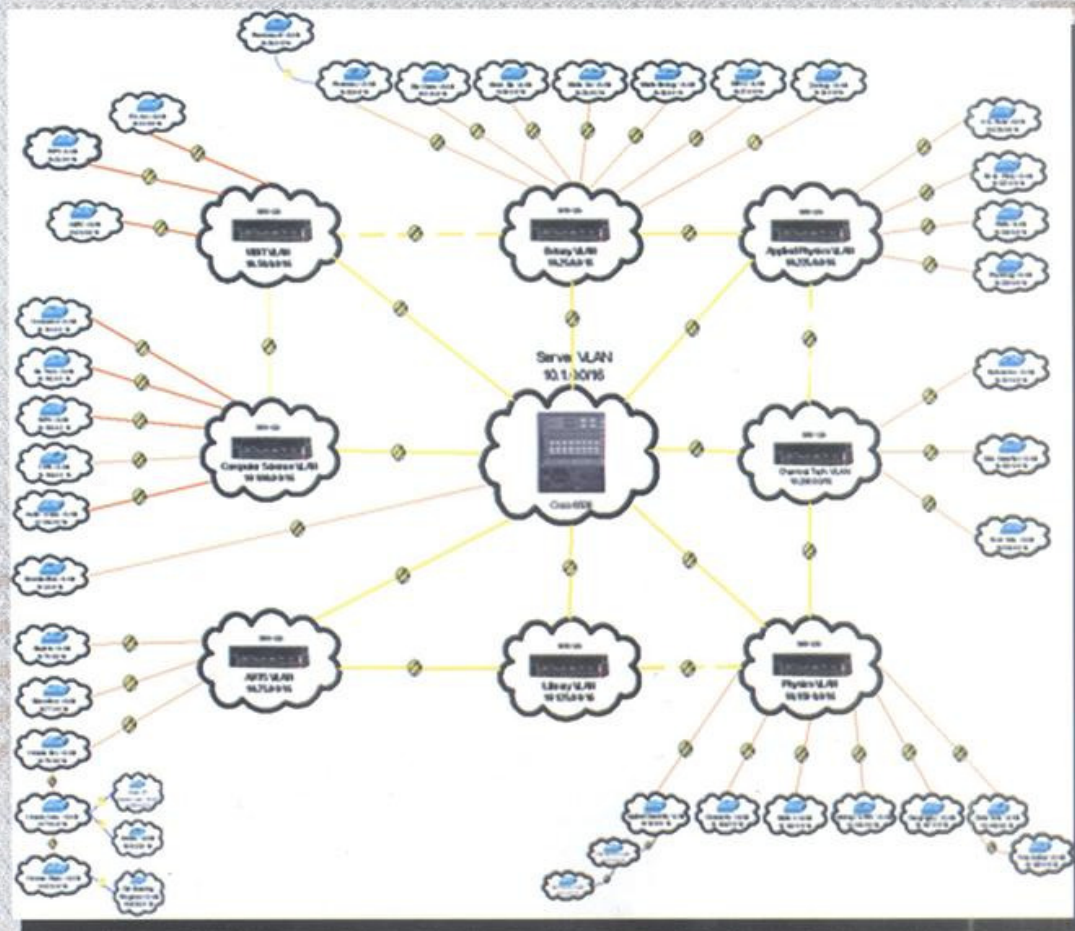


# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Network Architecture

Data Center in the Administration block is the place which act as a nerve center for the entire University. This is the place where all network connections of the entire university concentrate in a highly available, robust, high speed CORE switch system.

This Data Center centralizes and consolidates all resources, enabling it to continue to operate round-the-clock. It is dedicated to providing uninterrupted service to mission-critical data processing operations. The Network Architecture is described in the diagram below. Each department is divided into separate VLANs:



Network Architecture Diagram - HSFBLAN, UoK

## Voice over IP Communication

VoIP (Voice over Internet Protocol) is simply the transmission of voice traffic over IP-based networks. The Internet Protocol (IP) was originally designed for data networking. The success of IP in becoming a world standard for data networking has led to its adaption to voice networking.

At University of Karachi Hi-Path 4000 Server is being used to provide VoIP services.

The HiPath 4000 Manager key features include:

- # Server-based system administration application for single and multi-site networks
- # Single administration point for platforms (HiPath 4000, Hicom 300 H) and messaging systems
- # Centralized data collection hub for call accounting
- # Optional basic fault management and performance management
- # Open API for data exchange
- # SNMP for integration with network management systems
- # Intuitive browser interface

Connection with old 601 analogue telephone exchange of University of Karachi. 601 exchange tie with the Hi-Path 4000 via core switch. 6506 and provides voice over IP services to each and every node at the University of Karachi.

As enterprises evolve to IP communications, merging voice and data in converged platforms and applications, it becomes imperative to have an effective network management solution that addresses networks, platforms and applications at different stages of convergence. In recent years, network management has gained more attention due to both business and technical developments. In tune with this evolving market, University of Karachi decided to use HiPath 4000, which focuses on high availability and minimized system disruptions for these complex, multi-site, distributed and systems, where there is a mix of legacy, IP-enabled and converged communication platforms and messaging applications. HiPath 4000 enables and supports this convergence landscape, and allows large enterprises like University of Karachi to simplify and optimize the management of network availability, cost allocation and performance for single or multiple Hicom 300 H and HiPath 4000 systems.



Hi-Path 4000 Server at Data Center



IP Phone model 420



IP Phone  
Model 410



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## University of Karachi -- Website

<http://www.uok.edu.pk>

As part of the project, a new web architecture was designed and a new website was developed. The new website contains all the information about the departments, the degree programs that are offered at the University of Karachi. The news system of the website features current news about happenings at the University of Karachi.



The new outlook of University of Karachi website.  
The website can be accessed at <http://www.uok.edu.pk>

The website has been submitted to all the popular search engines and have now been optimized to appear on the first page results. The email system is also developed which is providing official email addresses to the faculty and staff of University of Karachi.



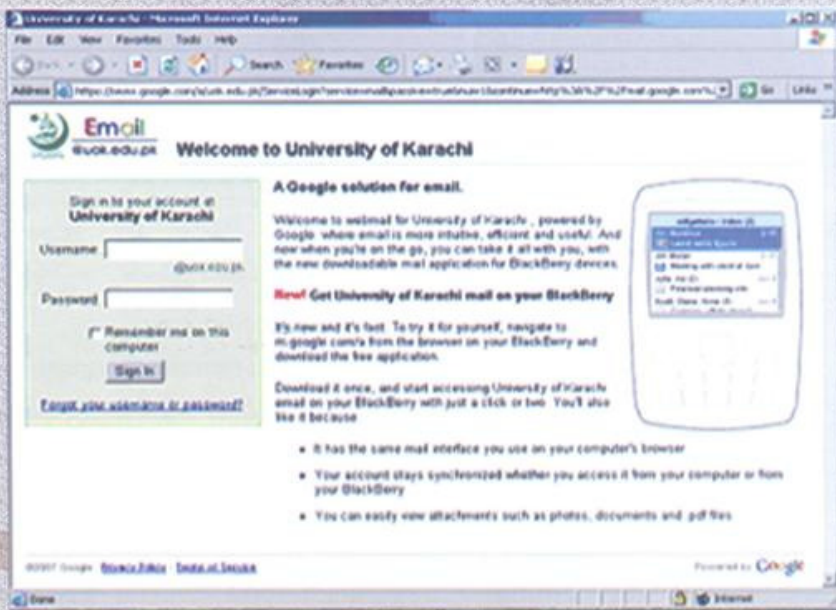
# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## University of Karachi -- Email System <http://mail.uok.edu.pk>

The University of Karachi email system has been developed to facilitate and provide professional email services to the faculty and staff of University of Karachi. The email system is powered by Google. This email system will provide emails in format of [username]@uok.edu.pk to all faculty of University.

In order to check your emails, you need to follow these steps:

- 1- Go to the website <http://www.mail.uok.edu.pk>
- 2- You'll see a login screen like the one below:



The login screen of University of Karachi email system

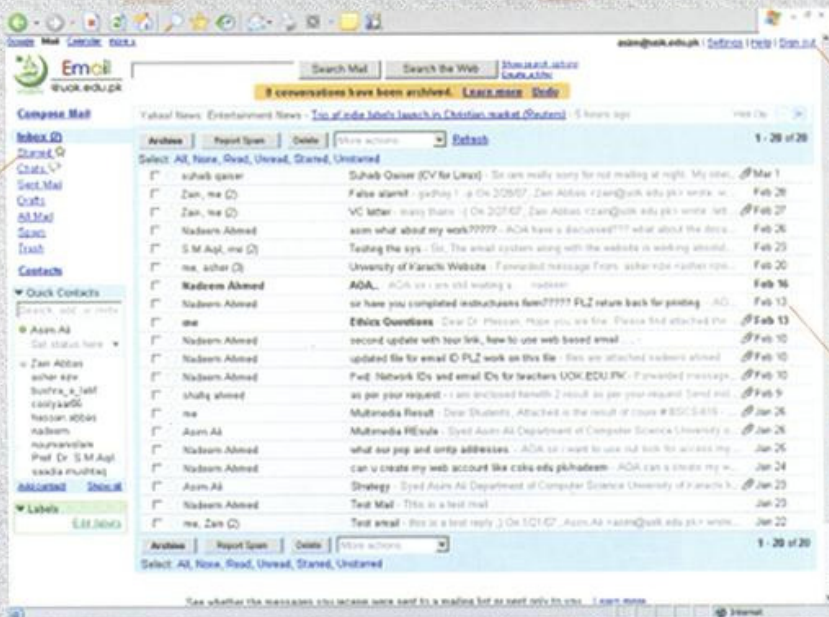
- a. In the Username field enter your username.
- b. In the Password field, enter your password.
- c. Sign In to go to your personal email account.



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## University of Karachi -- Email System http://mail.uok.edu.pk

3- After signing in, you see a screen like the one below:



- A** The panel menu allow you to compose new emails, check existing emails and save any email as a draft. The 'contact' link allows you to create an address book where you can keep information about important contacts.
- B** This is your email panel. All your emails will be displayed here.
- C** After logging in, you'll see your email address being displayed here. If you want to change color / font or any other settings about how you operate your emails, you can do so by clicking on to 'settings' and selecting the required options. You can also change your password from here.

Once you have checked your emails, you need to logout.

4- When you logout, you'll be taken to the login page.

Enjoy your experience of checking UoK emails.





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Strengthening of HSFBLAN

A proposal to strengthen the current architecture of network and to provide value added service to all the faculty of University of Karachi has already been submitted. The HEC have appreciated the efforts made by the Project Director and the Project Team to continue with the same vigor that enabled the completion of this project.

The recently submitted plan included steps to provide internet and intranet facilities to each and every faculty members' rooms and every class room as well. The proposal also include establishment of computer labs at different locations at the University to provide High Speed Computing facilities to teachers and students.

In a meeting conducted at the HEC Islamabad on 17th February 2007, the HEC team appreciated the efforts of University of Karachi and suggested some minor changes to the project plan. The changes are still in consideration and constant discussions are conducted about the proposed changes.





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Strengthening of HSFBLAN

The strengthening of HSFBLAN plan (Submitted to HEC as PC-1) include the establishment of following facilities for the students, staff and faculty at University of Karachi:

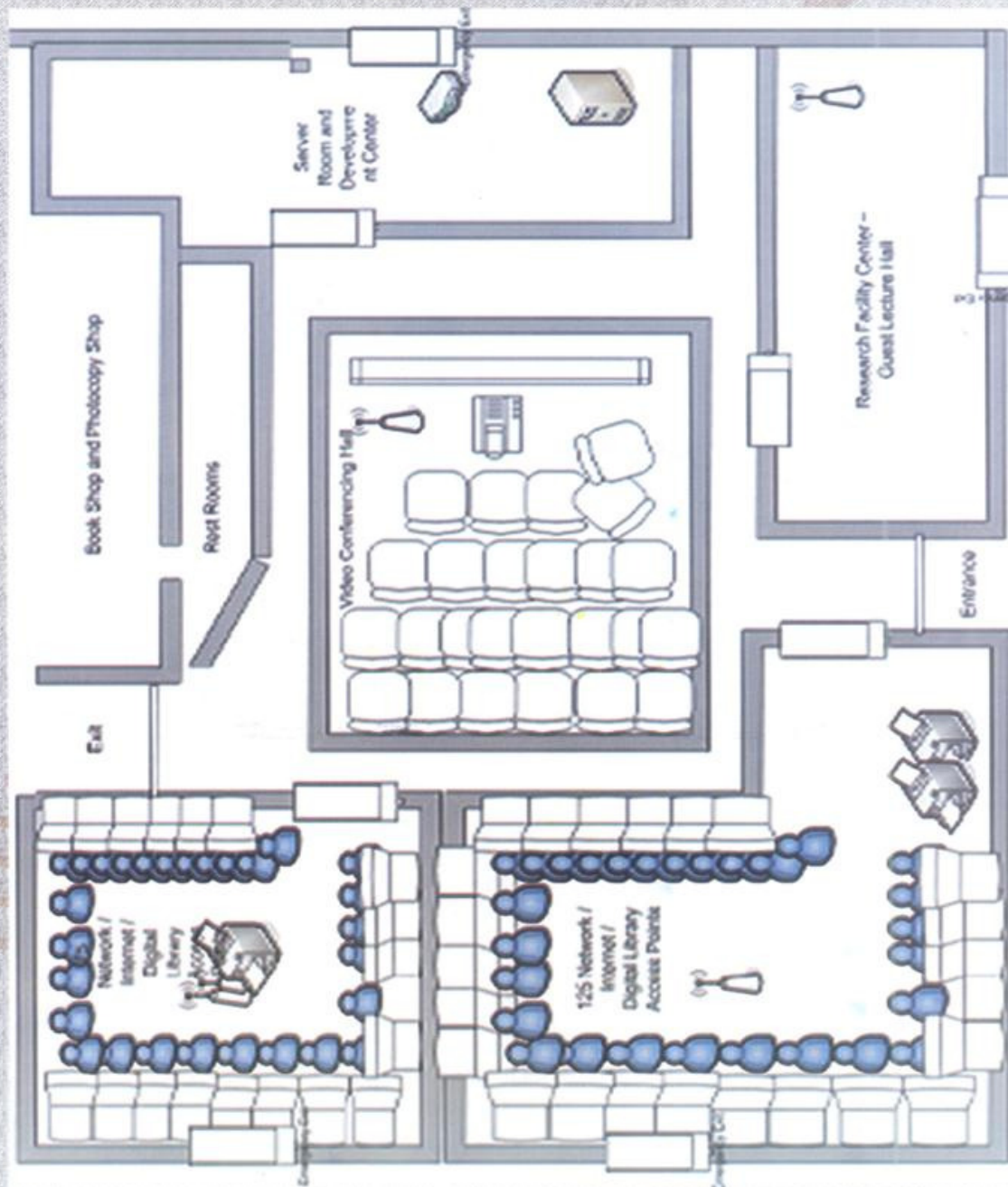
- + Establishment of networked Labs for research and development purposes at each department for the students and teachers.
- + To extend the network infrastructure by increasing the number of network nodes and take the network to each and every room (where required) of the University.
- + To provide Computers for research and development to each regular / permanent faculty member of University of Karachi.
- + To enhance the network security of the High Speed Fiber Optic Based LAN.
- + To balance the load on the main server by inclusion of 4 sub-servers at the data center.
- + To extend the VoIP infrastructure, already established with the High Speed Fiber Based LAN project, to further 50 nodes with IP Phone Licensing.
- + To provide uninterruptible power at the distribution and access switches through the induction of UPS.
- + To enhance the features of currently available video conferencing facility (through the HSFBLAN project).
- + To establish a telecommunication lab at the University of Karachi.
- + To develop an International Information Resource Center (with Digital Library Access), with the facilities such as video conferencing, digital library access, audio and video lecture recording studio.





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Floor Plan Prepare of International Information Resource Center





# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

## Beneficiaries of this project

Students	25000
Teachers	600 permanent + 300 co-operative
Research Fellows and Researchers	2500
Administration and Staff	2500
Information Accessibility for over .0.25 million students of affiliated colleges and privately enrolled students	

By the Grace of Almighty Allah and with kind help from Dr. Atta Ur- Rehman and under the leadership of our Vice Chancellor Dr. Pirzada Qasim, the project team has been able to come out with great success in this remarkable achievement of establishing the largest academic fiber optic network in Pakistan.

We once again seek the able guidance and kind support of the Chairman HEC and Vice Chancellor University of Karachi and the entire faculty and staff of University of Karachi, as we move ahead to initiate and extend this project to the next level and establish a world class international information resource center along with establishing a lot of other facilities.

May Allah help all of us in making University of Karachi even better.  
(Aameen)

- Director / Advisor and The Project Team -



# High Speed Fiber Optic Based LAN Establishment with Wireless Computing Support at University of Karachi

