NYU
Becoming a Global Network University

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April 2009
• In 1832, NYU was founded to be “in and of the city”

• By 2000, NYU had become the largest private university in US
  Enrollment of 51,000 students
  In 14 schools, colleges, divisions
  In New York City & at academic centers around the world

• In 2007, NYU launched vision to become a **global network university**
  Teaching & research presence “in and of the world”
  Sites integrally connected to main campus in NYC & to one another
  Scholars & students of talent from across the globe drawn together
  Addressing the challenges & seizing the opportunities of tomorrow.

• **TODAY, NYU is developing **NYU Abu Dhabi**
  In partnership with the government of Abu Dhabi
  Portal campus, a full-scale NYU liberal arts & sciences college
  Select NYU graduate programs driven by advanced research
  Backbone, with NYU NYC, of the global network university
“With these core portal campuses - NYU NY & NYU AD - providing a strong & unified educational & technological backbone for the system, NYU will have a faculty & student body of unparalleled international composition. Faculty & students will be encouraged to connect with the cities of the NYU network through both technology and travel.”

**What IT strategy helps NYU achieve this academic vision?**

- Connects people at NYU around the world to one another & to the other people & the other resources they need to accomplish their work;
- Provides NYU faculty & students with richer, better integrated scholarly experiences through collaboration & mobility across the globe;
- Enables streamlined administrative processes for NYU-wide efficiency;
- Takes advantage of innovations in IT-related energy efficiency, in cloud computing, & in other standards for IT interoperability as they emerge;
- Adapts to accommodate evolving needs & technologies, as NYU discovers all the ramifications of becoming a global network university.
NYU Abu Dhabi Development Phases

1. NYU AD Institute Offices
   - Currently operational in New York & in Abu Dhabi
   - NYU AD Institute seminars launched in Spring 2008
   - Sheikh Mohamed Scholars Program opened Fall 2008

2. NYU AD Downtown Campus
   - Opening two buildings in Fall 2009
   - NYU Study Away program opens January 2010
   - First NYU AD class (of 2014) enters September 2010

3. NYU AD Saadiyat Island Campus
   - Scheduled to open in Fall 2013

For further information:  www.nyuad.nyu.edu
NYU AD Institute in Abu Dhabi (VIEW from rented office space)

- 45 client computers
- Small server room, with support for 3 racks of equipment
- NYU AD network (two 4Mbps DSL links) (independent from rest of building)
- NYU applications accessed from NYU NY via commodity Internet
- Videoconferencing, using 8 ISDN phone lines
- Injazat Data Systems (www.injazat.com) provides
  - Full-time IT person on-site working under NYU ITS direction
  - HelpDesk call services, with supplemental support from NYU ITS
Downtown Campus, opening Fall 2009
NYU AD Downtown Campus Technology Acquisition

1. NYU ITS provided comprehensive document of technology specs

2. IT consulting firm assigned to NYU for this project
   - Developed the final Tender Bid Document
   - Managing procurement process
   - Will coordinate procurement, installation, and commissioning

3. NYU ITS will configure systems for operation:
   - NYU AD Downtown Campus Server Rooms
   - On-Site technologies
   - NYU-wide service delivery
   - Global Network Connectivity
NYU AD Downtown Campus Server Rooms

Building A (Academic Uses, including Classrooms, Library, Computer Lab)
- Maximum rack capacity: approximately 24 racks
- 37m² (~400 ft²) total floor space
- 23 tons of HVAC cooling capacity
- Two UPSes (three-phase power): voice system and critical network; servers

Building B (Administrative Uses, including Bookstore)
- Maximum rack capacity: approximately 26 racks
- 65 m² (~700 ft²) total floor space
- Single UPS (three-phase power)
- 32 tons of HVAC cooling capacity
- Can support modest HPC systems

Gas-based fire suppression systems

NYU Public Safety video surveillance and card access
NYU AD Downtown Campus On-Site Technologies

- Video Conferencing
  - 3 large classrooms
  - 1 Global Network Seminar room
  - 3 conference rooms
  - Support for desktop units and software-based clients

- Audio/Video Systems
  - Echo360 - In-room digital recording and video delivery of room content
  - Integrated A/V systems within classrooms and meeting rooms
  - Digital Signage systems in common areas

- NYU phone services and audio conferencing

- Wired 1Gbps Ethernet to every data jack

- Fiber optic cabling in research-oriented rooms for future network technologies
NYU AD Downtown Campus, NYU-wide Services

- NYU Roam 802.11n WiFi service throughout the facility & outdoors
- Shared, academic & administrative applications
- HPC and research resources

NYU Library

- Digital & physical library materials
- Automated RFID-based book checkout system

Public Safety

- NYU Card access
- Video surveillance

Bookstore, Cafeteria, Bursar

POS (Point of Sale systems) and OneCard ID & Cash system

- Point of Sale systems
- NYU Card Cash system
NYU AD Downtown Campus, Global Network Connectivity

NYU AD Downtown Campus will have four external connections:

- Commodity Internet Connection: 250Mbps
- ANKABUT, UAE NREN Access: 1Gbps (1000 Mbps)
- Direct link to NYU NY via NYU-NET: two redundant 250Mbps links

Anticipate communications latency between NYC to Abu Dhabi

- Delays due to the speed of light in fiber optic cabling
- 0.3ms latencies seen on NYU-NET in NYC
- Expect 280ms (~1000x) round-trip delay between NYC and AD
- Most applications are tolerant, but some are latency-sensitive
- WAN Accelerators attempt to compensate
- NYU plans a network simulation environment in NYC to help identify issues
In Fall 2009, NYU-NET goes global

NYU NY and NYU AD campuses will be directly linked

- On a secure, private high-speed network
- With dual redundant 250Mbps links, expandable to higher speeds
- Using MPLS (Multi-Protocol Label Switching) technology
- With additional connections to NRENs & the commodity Internet

Creating the foundation for NYU’s global university network
NYU welcomes ANKABUT!

ANKABUT ([www.kustar.ac.ae/ankabut](http://www.kustar.ac.ae/ankabut))

- New NREN for the United Arab Emirates, led by KUSTAR, Khalifa University of Science, Technology and Research
- 10Gbps network throughout the UAE, with 1Gbps links to each member
- Now beginning trials with the UAE federal universities
- With direct fiber optic connectivity to Internet2 in NYC at MAN LAN

Adds to the NRENs in which NYU participates globally:

- Internet2 (United States, via NYSERNet)
- National Lambda Rail (United States via NeLR)
- GARR (La Pietra at NYU In Florence, Italy)
- JANET (NYU In London, England)
- CESNET (NYU In Prague, Czech Republic)
NYU AD Saadiyat Campus

- Currently in planning stage
- Significant campus footprint in the Cultural District of the island
- Opening in Fall 2013 with approximately 1,100 students
- Planned matriculation of 2,600 students by Fall 2017
- Relying on the global NYU-NET network for shared services
- Integrally connected with NYU’s scholarly community

Berlin  Buenos Aires  Florence  Ghana

London  Madrid  New York  Paris

Prague  Shanghai  Singapore  Tel Aviv  ...

- As well as with scholars & scholarly resources throughout the world.