

**UM-SJTU Joint Institute (JI) Information Technology
Network Infrastructure Enhancement Proposal**

**JI IT Office
06/27/2014**

General Information

JJ is looking to replace the current network infrastructure with a more robust solution. At present, the existing campus (SJTU) wireless network and JJ's wireless network are being stressed and does not offer a number of necessary security features. Additionally, the existing architectures are not scalable and will inhibit performance and future growth, so the network infrastructure improvements will be for both "wired" and "wireless" network services available to JJ's faculty and staff.

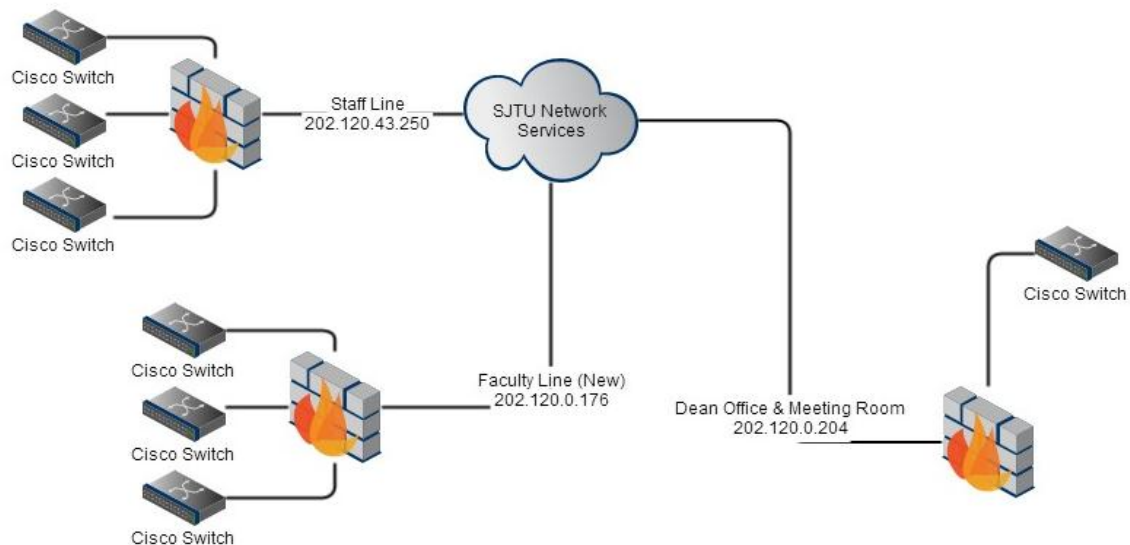
Project Scope

The scope for this project includes the design, purchase, configuration and installation of additional network switches, firewalls, software, and wireless panels in an effort to enhance the JJ "network access" experience. Deploying these components keeps JJ current with the most recent technology trends and offers faculty and staff faster, more reliable, and more robust connectivity options.

Action Plan

Action #1: Improvement of the existing wired network bandwidth accessibility with an additional line.

Current faculty and staff are sharing one bandwidth link to access internet. We will add an additional line for our faculty member to use. Below is the network architecture diagram that could be used to guide the implementation:



Upon completion of the research, we would like to purchase additional two firewalls, and two Cisco Switches to support this new structure. The funds of this phase by IT Office will be 38,400 (RMB) for equipment.

The estimated cost for purchase of additional wired LAN system equipment, is provided below:

Equipment Names	Unit Price	Units	
Firewall System	5,000	2	10,000
Cisco Switch	7,200	2	14,400
UPS Power Supplies	7,000	2	14,000
Total (RMB)			38,400

Action #2: Replacement of the existing wireless network with a more scalable and robust solution.

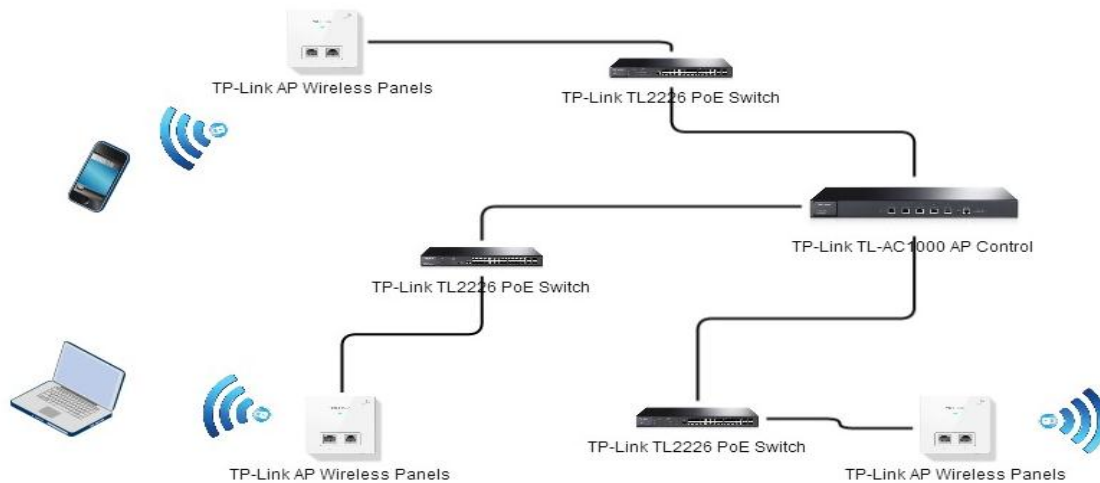
IT Office reviewed the set of issues associated with the current infrastructure limitations, wireless equipment vendors, developed a set of requirements that could be used to guide equipment procurements.

Hardware Architecture Requirements:

The new wireless network architecture must support ubiquitous (or near ubiquitous) coverage of the JI building for general use of wired & wireless access. Also the wireless network hardware and architecture will provide a centrally managed component offering authentication service, network security/encryption services as well as traffic and equipment management.

Authentication System General Requirements:

The authentication system must be scalable solution capable of integrating with domain control authentication services to allow only authorized user access to the wireless network. Also using Mac Address filtering to control the wireless access.



Upon completion of the research, we selected the TP-Link AP wireless Panel to provide wireless connection to end users. Also TP-Link TL2226 PoE Switches and AP Control have been selected to replace the existing Cisco switch and manage the wireless network authentication and stability. The funds of this phase by IT Office will be 23,060 (RMB) for equipment and software.

The estimated cost for purchase of wireless LAN system, is provided below:

Equipment Names	Unit Price	Units	
TP-Link AP Wireless Panel	230	52	11,960
TP-Link TL2226 PoE Switch	2,300	3	6,900
TP-Link TL-AC1000 AP Control	3,900	1	3,900
RJ45 Cable Connector	150 per bag	2	300
Total (RMB)			23,060

Action #3: The Implementation and Ongoing Support

Tentative Milestones and Timelines:

July 7, 2014 – July 11, 2014

Finalize wired & wireless network software, hardware and infrastructure design

July 14, 2014 – July 25, 2014

Order software and hardware, and communicate with faculty and staff

August 9, 2014 – August 24, 2014

Setup and configure the Firewall and Switches for wired network

Install the wireless panels to all the floors of JI building, and setup the PoE Switches and AP Control

The upgrade and expansion of JI Building's network coverage is expected to be completed by the end of August. Ongoing support for this new network infrastructure will be incorporated into the IT Office regular network operating support.

Project Team:

Individuals who will complete the project include the following:

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Sherry Yao

Mian Li

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