

Telecom Value Added Service Bureau Infrastructure

Infrastructure and Project Plan

Infrastructure for Telecom Value Added Service Bureaus to provide services for the Voice Mail, Interactive Voice Response, Calling Cards, and Short Message Service Providers



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Introduction

A Telecom Value Added Service (VAS) Bureau provides the infrastructure and technology to businesses that offer Voice Mail, Interactive Voice Response, Calling Cards, and SMS services to the public.

The size of the infrastructure depends on the size of the market that is to be serviced. The infrastructure is comprised of the building, technology, and the interconnections between the different components.

Building and Facility

Location

The building must be near a telephone company switch or a point of presence (POP) for the telephone company. The building may also be near a facility where the phone companies interconnect with each other.

The building must be accessible by road and must have a wide door for the movement of heavy, large equipment.

The building should be reachable by public transportation. This will make it easy for the bureau to hire employees who may not live nearby.

There should be a local or international airport nearby to make it easy for vendor staff to visit the bureau.

The building should be near a good university that offers technical courses. The bureau can hire employees from the technical university.

If you are leasing the building, make sure that you have the rights to bring telecom fiber optic connections and electrical connections to the building.

Rooms

The building must have the following rooms:

- Computer room with adequate ventilation. (at least 400 Square feet)
- Media room where voice and video recording can be produced professionally
- Operations room

Parwan Electronics Corporation, 1230 Highway 34, Aberdeen, NJ 07747 – U.S.A.

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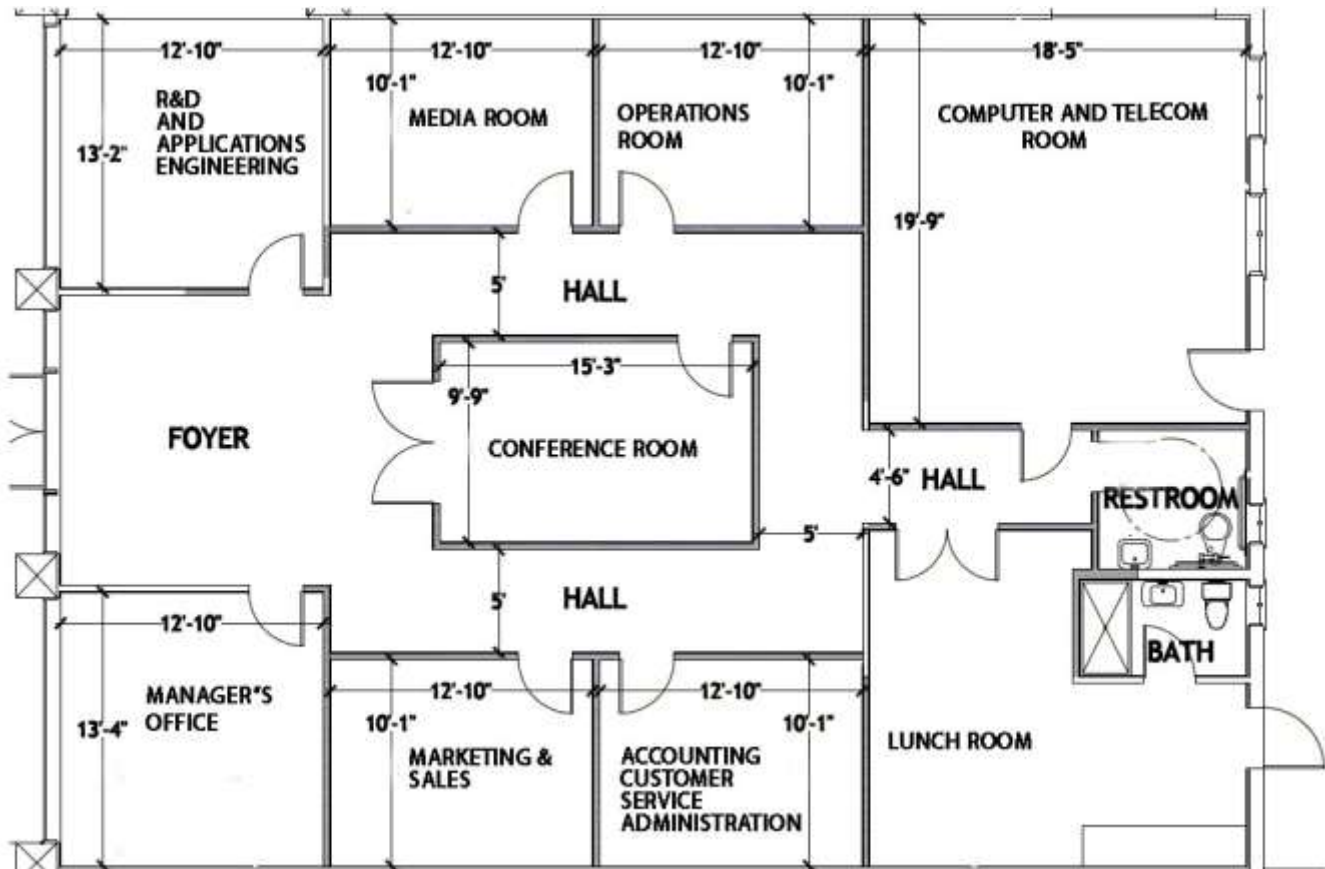
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- Conference room
- Customer service room
- Accounting and administrative room
- R&D and applications engineering room
- Marketing and sales room
- Manager's office
- Waiting area / hall

The building must have at least two bathrooms and one kitchen for employees.

The rooms must be properly furnished. The following floor plan is provided as an example for a small operation:



Electric / Power

The building must have enough power being delivered to it. The power must be sufficient for the computers, air conditioners, and office. It is preferred that you have 3 phase electric with up to 20 Kilowatts of power. The single phase power for the computer must be 120/240 Volts and 50/60 Hz.

You must have Uninterruptable Power Supplies (UPS) to run the computers for at least 30 minutes. The UPS's must be continuous type and should continually power the computers.

You must have a generator installed with a minimum capacity of 20KW. The generator should use diesel or natural gas as its fuel source.

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There should be a transfer switch that operates automatically. The wiring between the generator, public power and transfer switch must be connected properly. The transfer switch flips the power to generator when there is no electricity coming from the electric grid. It flips the power back to the grid when the grid power becomes available again.

It is a good idea to install your own power meter. This will give you a good idea of how much power is be used.

Power outlets should be located throughout the office. Each desk should have it's own outlet. In the computer room, there should be a higher concentration of outlets spread across multiple electrical circuits. For air conditioner, dedicated circuits must be installed, and the outlets must support high voltage and high current.

Infrastructure – electrical power

- ▶ Electrical installations with LV power panels
- ▶ Generating sets, voltage stabilisers
- ▶ UPS and STS supply devices, PDU distribution
- ▶ Intelligent power management – iPMM™



Telecommunications Connections

The building must be connected to the local telecommunications company and Internet service provider:

- The traditional telephone connections could include: E1/T1, Loop Start, STM1, or DID Lines with ISDN Primary, SS7, E&M, or R2 MFC Signaling. You should have at least 10,000 DID local DID numbers.
- The Internet connection must be dedicated with at least 100 megabits of bandwidth. The link can come to the building via fiber or cable. You should have at least 20 static IP addresses.

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Water

The building must be supplied by city water or well. This water is used by the office workers. Provisions should be made for drinking water.

Air Conditioning / Cooling

Computers and people do not function properly in high temperatures. The building must have proper air conditioning. Special provisions must be made for the computer room's dedicated air conditioning and heat management systems. Hot air should be pumped out and new cooler air should be brought back in. A drain pipe should be installed for the air conditioning condensation to exit the building. Air Conditioning units should be connected to the generator, but not to the UPS. A total of 16 tons of A/C must be considered for an average size service bureau. For large service bureaus, additional techniques and products, such as those listed below, can help:

Infrastructure – cooling

- Chillers, indoor CRAC units
- InRow cooling units for racks
- System solutions for cold/hot aisle containments
- Temperature, humidity and water leakage control



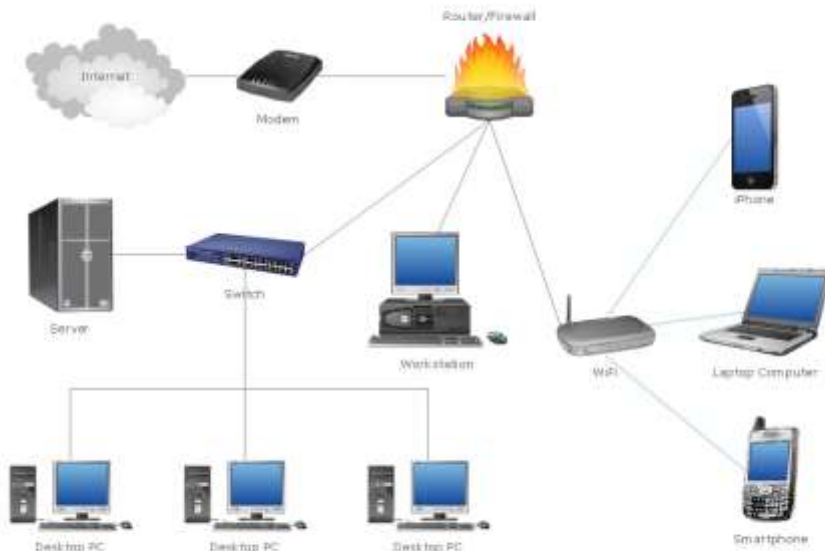
Local Area Network (LAN)

The different building rooms must be interconnected via a Local Area Network (LAN). Use high quality Category 6 Ethernet cables (CAT6) with high quality termination ends. The following diagram



shows an example of a local network.

Network Diagram



Lighting

All rooms in the building must be properly lit. To conserve energy and reduce heat, use only LED or fluorescent lighting. Cold white or bright white should be used in office spaces.

Fire Protection

Make sure the building is fully protected against fire. You may install alarms or add fire suppression systems in the computer and telecom rooms. The image on the right shows the system used fire suppression. You should also make sure to install LED door exit signs. The exit signs must have battery backups in case of a power failure.

In case of fire, you must turn off the power going to the computer and telecom room and make sure there is no chance of electric shorts.

The fire company must be called.



Computing Hardware

There should enough equipment to support the need of most of the customers. The need for equipment depends on the service offered:

Voice Response Units (VRU)



The voice response units are computers with voice processing boards or firmware. The units handle calls for voice mail, interactive voice response, and call recording applications. Depending on the telecommunications links and signaling, the proper voice processing boards or firmware must be selected. Each VRU may be configured to support up to 500 concurrent calls. The computers must be powerful and rack-mountable.



Call Routers and VoIP Gateways

Call routers connect to the Public Internet on one side and Local Area Network on the other side. Some call routers support Voice over Internet (VoIP). The most common call routers are made by Cisco Corporation and they handle VoIP. The VoIP Gateways also convert from regular telephone digital lines such as E1/T1 to regular VoIP.



Firewalls

In order to protect your network from public attacks, Firewall must be installed. You must install a firewall between the Internet Router and your Internet Switch. The firewall must be programmed to prevent your network from external attacks. Many times the Internet Router and Firewall are in the same unit. Make sure you use a firewall with very high performance rating.



Data Backup Facilities

All critical data from all systems throughout the network must be backed up daily onto a remote data storage device or a USB / thumb drive. The data should be available offsite at all times. In the event of a natural disaster or fire, this may be the only way to preserve the integrity of the data.



Internet Routers

These units connect your local area network to public Internet. You should have two routers in your facility, one for general office use, and one for the computer room. The image shows a basic Internet router. For your computer room with the servers, you should use a very high performance router.



Ethernet / Network Switch

All your LAN cables must be connected to Ethernet switch. The Ethernet switch must support 10/100/1000 Mb. Some switches support power over Ethernet, make sure you use them properly. The Cisco Catalyst is a very common Ethernet switch:





Businesses Supported

Once the service bureau is set up, you may offer platform services to your customer base. Most of the customers who will use your infrastructure are those who are good in marketing, advertising, and applications.

The following business may be supported by your infrastructure:

Voice Mail Service

This is a business that rents voice messaging and notifications services to a subscriber base. They charge a set amount per mailbox per month. The service essentially provides the logic as per the following call flow:



Call Routing and Recording

This is a business that routes cell phone or landline calls and records the two way conversation between the caller and called party. The subscribers can listen to the recorded messages at any time.

Fax to Email and Email to Fax

This business supports fax mail boxes.

- The business assigns a phone number for all the subscriber’s incoming faxes. Once the platform receives the fax, it forwards the fax to the subscriber via e-mail.
- The Email to Fax allows the subscriber to send a fax from his e-mail.

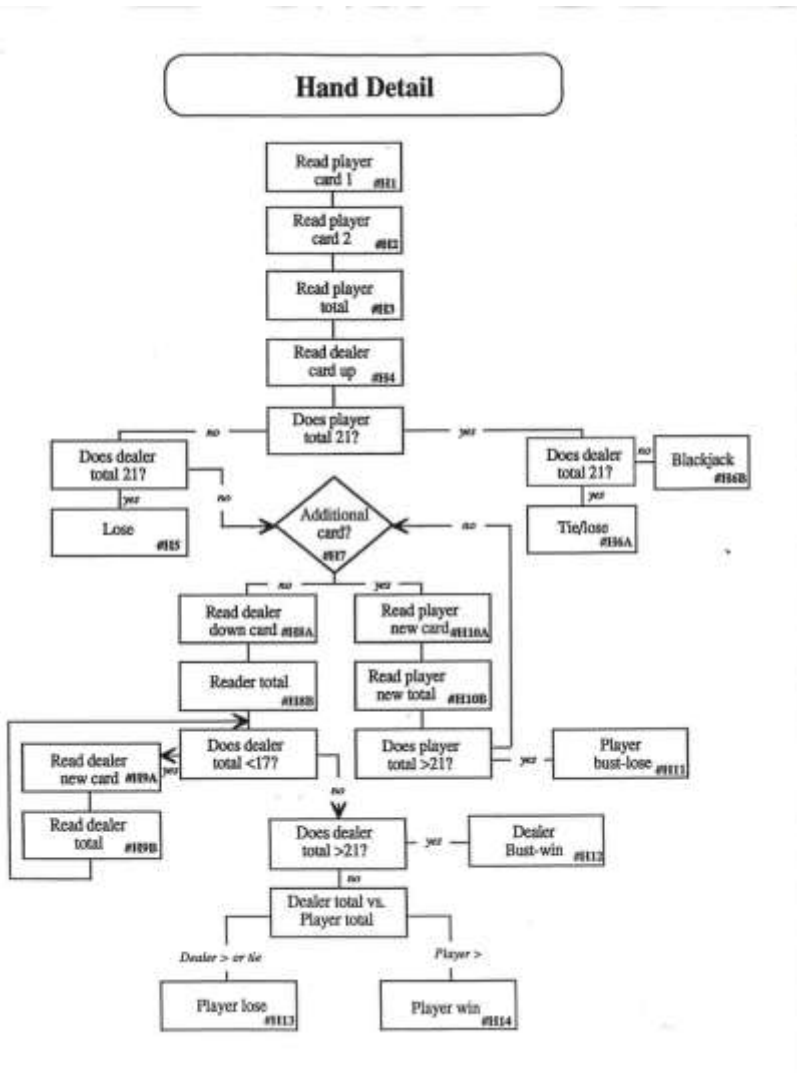


Prepaid Calling

This business offers calling card, PIN less, and call back services to customers. The business usually rents the platform, telecom interconnection, DID numbers, termination, and Internet bandwidth from the infrastructure provider.

Premium Rate Services

This is a business that processes premium rate calls such as horoscope, music, and dating. The game or application designer must design the game and express it in a flow chart. Then, using the application generator of the software, it can be implemented for the customer. The example below is the flow chart of a game that a designer created:



Autodialers and Robocall Machines

This business provides call out services for different applications. There are three scenarios that the business supports:



- The service calls a phone number and once the called party answers, it plays a message and disconnects.
- The service call a phone number and once the called party answers, it plays a message and allows the called party to record a response message.
- The service calls a phone number and once the called party answer, the plays a message and allows the called party to talk to a live person.

Session Initiation Protocol (SIP) Trunks

This business provides voice telephone trunks to their customers over the Internet. The users of SIP trunks must have voice gateways that support VoIP to handle the phone calls.

Direct Inward Dialing (DID) Numbers

This business provides phone numbers for its customers. The DID numbers could be domestic or international. No matter where the calls come from, the service consolidates them and delivers calls to users over one SIP trunk.

Interactive Voice Response (IVR)

This business provides connectivity to databases for the callers. When a person calls in, the service asks the caller to enter a number. Based on the number, it retrieves information from a database and plays the results to the caller in voice. Examples are bank balances, shipment dates, and surveys.

The software application generators allow a business to implement custom call flows as needed.

Teleconferencing and Video Conferencing Services

This business offers teleconferencing and video conferencing services to its business customers.

Short Message Services (SMS)

This business provides a facility to its customer base to allow them to send SMS to anywhere in the world. The telephone companies handle the SMS messages over their SS7 networks.

Email Broadcasting

This business provides e-mail broadcasting services to customers

Reminder Services

This business provides reminder services for clients such as doctors, hair dressers, and automobile repair shops. These services eliminate the need for a human to call end-users and increase client efficiency.

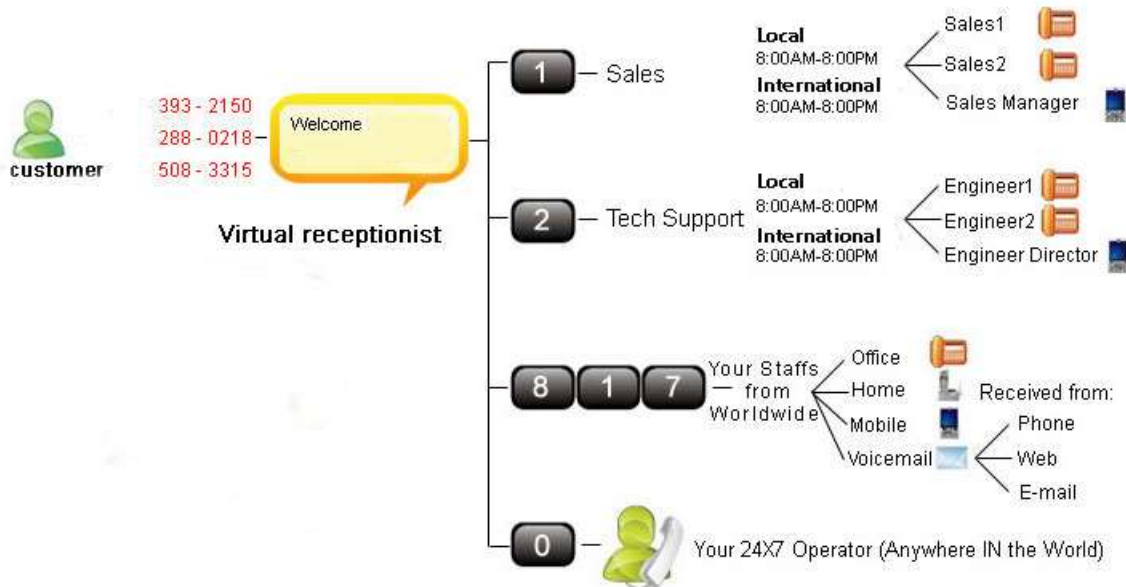
Transcription Services

This business provides transcription services for business clients. The infrastructure captures the voice from the doctors and lawyers and makes them available for transcribers to convert into text.



Internet Telephone Service Providers (ITSP)

This business provides regulated PBX services to enterprise customers. The enterprise customers may call internally or call outside. The following diagram shows a most common scenario of the business:



Payment Gateway

This business offers payment facilities to consumer customers. Consumer customers may pay their utility and phone bills through this service.

International Termination and Billing

This business offers connections for international telephone calls to businesses and calling card companies. The calls must be routed and billed properly. The platform can handle millions of calls per day and thousands of calls per second.

Colocation Services

The infrastructure may be used by other businesses to host their computing equipment. You must have ample power, Internet, and space to resell these services. You must also be extremely selective on who should use your computer room.





Human Resources

To run the infrastructure and help your customers achieve success, you must hire talented individuals or outside services. You need the following staff members:

Chairman

He/she is responsible for the overall success of the company. The chairman must be able to deal with telecommunications companies, advertisement companies, government agencies, lawyers, and accountants.

The Chairman must be able to interview employees and assess the potential of employees to be hired. The chairman must be able to judge employee integrity and dedication.

The Chairman must have a fundamental understanding of corporate accounting and tax issues involved with business.

The Chairman should be able to interact with different vendors and make sure he understands the value of the equipment and other product purchased.

Lawyer

The lawyer must know the corporate laws of the land and must be able to draft proper agreements. He/she must also have some knowledge regarding trial law in the event that a case goes to court. The lawyer should be well-versed with the telecom laws, labor laws, insurance laws, and some finance.

Accountant

The accountant must understand corporate accounting and corporate taxation issues. The accountant must be familiar with tax incentive points and other incentives for value added services. The accountant must be familiar with auditing and fraud detection. He should be able to put an accounting system in place that catches fraud and embezzlements. The accounting system used should be available to all key members of the company and should be compliant with the laws of operating country. All reporting should be open, honest and accurate.

Accounts Payable and Accounts Receivable

The person in charge of accounts receivable must be vigilant and persistent with regard to collections. He/she should not hesitate to make calls and send e-mails to the customers to collect funds owed. He/she should be organized and make sure bills are sent promptly for services rendered. He/she should understand the different payment methods such as credit card, PayPal, direct deposit, wire transfer, Western Union, ACH, and mobile payments.

The Accounts payable person should be proficient with regards to examining invoices received from vendors and telecom companies. If the AP person finds discrepancies in the invoice, it is his/her job to resolve the issue. He/she should be vigilant in getting discounts and benefits. All outgoing payments above a predetermined amount should require two signatures before being sent out.

Media Engineer

He/she must be able to handle recorded voice, conversions, transcriptions, and videos. This person must be able to deal with different talents such as singers, writers, and game producers. The person



should be proficient with Adobe Audition, Adobe Photoshop and other media programs. The person should be able to edit music and video for commercial and other work.

Marketing

This person must be able to create advertisements, newsletters, telemarketing scripts, and other forms of marketing material. The marketing person should understand the market properly and make sure new requirements are communicated to the Chairman. Customers for the service include media companies, radio stations, TV stations, and independent business people who offer services to the public.

Sales

This person handles leads, sales and follow-ups with new prospects and existing customers. The main function of the salesperson is to close deals and obtain a deposit check from the client. In addition, the salesperson is responsible for helping customers to achieve their profit goals.

Operations Engineer

This person is responsible for the operation of the computers and the infrastructure. The operations engineer should make sure the computer room A/C's are working properly, the computers are working properly and also make sure there are no viruses in the network. The operations engineer must be familiar with Windows, Linux, Cisco, and other utilized equipment commands. The operations engineer should be capable of quickly learning how to configure new technologies.

Application Engineer

This person is responsible for speaking/interacting with customers and developing the required call flow. The application engineer is responsible for the success of the application that is being launched, including uptime and revenue generation. If an application is not generating revenue, he should interfere and bring it to light. The application engineer must always make changes to the applications to make sure it producing the optimal results.



Corporate and Management

Incorporation

Your business must be properly incorporated with local and federal authorities. Your company's name should be easy to spell and communicate over the phone. If the corporation is a foreign corporation, then it should be registered as such. If there are incentives associated with different corporations, then you should take advantage of those.

Get a very good phone number for the business. It should be very easy to remember and advertise. A phone number can be very difficult to change once you have launched and have clients.

Your domain name should be clear, easy to spell and easy to communicate. Avoid dashes or words that can easily be misspelled.

Interconnection Agreements

Make sure you have proper interconnection agreements with carriers. The agreements must address the issue of billing and reconciling. It must have a clause against fraud and damage limitations. This is critical to limit your liability in case of a major lawsuit.

Employee Agreements

For every employee that you hire you must have an agreement. You must clarify the duties, compensation, and notices. All employees must be hired and fired according to your local laws.

Accounting System

You must use a standard accounting software package that can be accessed easily by all key members of the company

Insurance

You must get the needed insurances required by law.



Budgeting

The cost of hardware and software is in constant flux. The budgeting table below is the capital expense and also the recurring income and expense:

Capital Expense

You need the following:

	Description	Cost Estimate in US Dollar
1.	Building and office Space	\$200,000
2.	Generator and UPS's	\$40,000
3.	A/C's	\$10,000
4.	Network and LAN	\$10,000
5.	Furniture	\$20,000
6.	Office Computers + Office Software	\$15,000
7.	Racks and Equipment for the Computer Room	\$10,000