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TECHNICAL ASSISTANCE
FOR POLICY REFORM

IT STRATEGY AND IMPLEMENTATION PLAN

Commercial Registry

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Commercial Registry

TECHNICAL ASSISTANCE FOR POLICY REFORM II
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BEARINGPOINT, INC.
USAID/EGYPT POLICY AND PRIVATE SECTOR OFFICE
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1.0 INTRODUCTION

The Egyptian Commercial Registry is responsible to register all natural and legal persons that want to become legal entities.

As part of the Component E: “Facilitating Services for the Private Sector” of the Egypt TAPR-II engagement the modernization of the Commercial Registry is an essential part of the efforts to help Egypt’s enterprises increase their competitive position.

In Egypt, the growth of productive enterprises, especially small and medium-sized business, is constrained by burdensome registration processes, lack of standardized procedures, and a highly inefficient bureaucracy.

A well designed and implemented commercial business registry will assist the Government of Egypt in providing services to businesses and transparency and operational efficiencies to the entire registration process.

Currently all registrations of individuals, partnerships or companies are done hand written. There is almost no IT technology involved in those registries. In addition, the costs associated with registering a legal entity in Egypt are very high.

Some of the factors highlighted in the initial assessment of the Commercial Registry (CR) carried out by Component ‘E’ are:

- There is no codification or unique legislation dealing with trade names and registration of different types of entities.
- The Business Registry process lacks transparency; it is ineffective; re-registration is required in each governorate in case of opening branches,
- Description of business activities is not in accordance with International Statistical Industrial Classification (ISIC) Code
- Registration and compilation of all documents, at the Business Registry, is poorly done and maintained, entries in the forms and in the ledgers are done manually and hand written; protection of archives is almost non-existent.
- Infrastructure is almost non-existent (and/or poorly maintained) coupled with lack of IT equipment and software.
- Internal and external communication problems are real;
- Data produced are not reliable for statistical and economic analysis which is needed to underpin policy-making issues and is not provided in conformity with legal requirements.

In order for the registry system to be able to delivery services, and satisfy the dual goals of providing services to the CR customers while helping the CR to become a modern and efficient organization the implementation of several major project activities that are already underway or planned to be implemented in the nearly future must be accomplished:

- Draft, modify and adopt legislation setting up a modern Business Registry, reservation and approval of company’s names and business registration.
- Draft forms and Ministerial Instructions / Decrees for reserving and approving company names and registration of companies and others necessary forms requested for the implementation of the modern BR.

- Develop future state IT business processes to provide the opportunity to improve the current Business Registry's processes.
- Develop a detailed IT procurement plan (this document) to purchase and install the required hardware, software and networking infrastructure to support the Business Registries.
- Develop the required functionality based on the new IT functional and system requirements including interfaces with other agencies and organizations
- Develop a migration plan for transferring existing data and databases into the new system and develop a plan for validating the completeness of the migrated data country wide.
- Develop the Commercial Registry Web Portal (website).

1.1 Purpose

The purpose of this document is to describe in detail the IT Strategy that will serve and is aligned to the Commercial Registry business strategy, the IT architecture that supports the main CR business applications and the IT infrastructure required to operate the CR business applications.

In addition the document contains a detailed description of the IT system requirements for the CR offices, the Data Center and the Headquarters users with price estimates.

The document identifies also the goals and objectives of the IT Department, highlighting the department's priorities, and provides a roadmap for realizing the IT strategy.

The IT strategy must be approved by the Head of the Commercial Registry Authority and the head of the IT Department. It must also be updated on a regular basis but at least once every year.

1.2 Background

The Commercial Registry computerization efforts started back in 1996 with the development of the Commercial Registry system that was commissioned to IBM Egypt. The major evolution steps of these efforts are:

- ***1996 – Initial Application:*** System designed, programmed and implemented by IBM. The system was installed in 70 CR offices around the country. It is a UNIX based system using DB2 as the underlying database and IBM AIX as the operating system.
- ***2005 – Enhanced Application:*** The Ministry of State Administrative Development (MSAD) contracted IBM to enhance and fix all known bugs in the application. It included also the implementation of a Graphical User Interface (GUI) to replace the dumb terminals.
- ***2006 – New MSAD Application:*** Due to IBM delays in the delivery and installation of the enhanced system, the MSAD took the initiative to develop a new system using MS SQL Server as the underlying database. The Application is currently being installed in six new Commercial Registry offices collocated with the Chamber of Commerce. In addition, the application has been installed in the General Investment Authority (GAFI) office in Cairo and will be installed in three other Investment offices around the country (Alexandria, Assiut, and Ismailaya).
- ***2006 – New IBM Application:*** IBM finalized the development of the new application including a complete re-design of the user interface. The application is still a DB2 based

distributed Client/Server application. The application includes the front-end (data entry, inquire and search capability), cashier and back-end (maintenance) modules. Functionality and Architecture Documentation is not available.

1.3 Constraints, Assumptions and Dependencies

Constraints, assumptions and dependencies must be highlighted to explain the reasons behind the decisions made in the strategy.

1.3.1 Constraints

The following constraints must be addressed while implementing the IT Strategy

- IT department staffs are poorly trained.
- Inability to improve the infrastructure of all CR offices in a timely manner to sufficiently support an IT system.
- The lack of a clear strategy of creating new offices collocated with the Chamber of Commerce and the use of the existing (70) offices.
- The lack of competent human resources to implement the modernization of the CR offices across Egypt e.g. transfer of data

1.3.2 Assumptions

- The IBM system in the new version will not be used by the Commercial Registry in the current distributed environment.
- TAPRII is proposing the set of activities that will provide the Ministry of Trade and Industry (MOTI) and CRA with a modern and technologically up-to-date Business Registration System.
- In the meantime the Commercial Registries will be using the SQL Server based system developed by the Ministry of State Administrative Development (MSAD).
- The Commercial Registry will coordinate and align these activities with the global MOTI IT Strategy to ensure that there are no discrepancies and duplication of efforts.

1.3.3 Dependencies

- Sufficient hardware and software must be procured to support the planned IT project.
- IT staff must be properly trained before some activities like operating the IT Application and administrating the IT operations can begin.
- Funding must be secured before procurements can begin.
- A properly trained and functionally organized staff must be in place to implement changes that the IT system is automating.
- Infrastructure of the CR Offices should be improved
- Clarification with the Chamber of Commerce about the implementation of new IT Systems, vi-a-vis security, database, etc. is required
- Overall System Security must be in place for the Headquarters Office and all CR Offices collocated with the Chamber of Commerce
- The remaining CR offices that will receive IT Equipment from the Government of Egypt must be aligned to the proposed standards and security approach
- Start to computerize the existing data for facilitating the conversion.
- Strong involvement of the Ministry of Trade and Industry and the Commercial Registry Authority.

2.0 GOALS

The primary goal of Commercial Registries is to register all natural and legal entities doing business in Egypt. In order to accomplish this primary goal efficiently, we need to achieve the full “computerization” of the Commercial Registries. The following specific goals are necessary in achieving the primary goal.

2.1 Commercial Registry Authority Goals

- Provide the natural and legal entities with all the necessary information to comply with the law.
- Maintain an accurate registry database by exchanging information among CRs and with the following agencies:
    - General Authority for Investments (GAFI),
    - Commercial Courts,
    - Chamber of Commerce,
    - Tax Commission,
    - Commercial Banks
    - Statistics Office
    - Commercial Banks
    - Ministry of Social Affairs
- Develop a unique database that could allow CR research for all Governorates in Egypt
- Extract easily and fast different kind of reports requested by the MOTI or, others

2.2 IT Goals

The Commercial Registry will be recognized as an organization for the way in which it embraces information technology to enhance the services it provides. The Commercial Registry will distinguish itself by:

a) boldly embracing state-of-the-art technology, and

b) equipping its CR offices, staff and customers with tools and support to become highly proficient technology users in pursuit of their respective endeavors

Toward this end, the Commercial Registry IT Department will concentrate in two wide areas of technology support:

c) will provide strong, secure information technology infrastructure, and

d) provide its users (external and internal), and staff with support that will both allow and encourage the effective use of information technology.

The IT department’s specific goals include:

- Building the basic IT infrastructure to support the CR information systems.
- Developing the required software based on CR priorities.

- Upgrading data communications with CR offices to support electronic transfer of information.
- Procuring and installing all equipment and software required to support CR information system.
- Implementing formal policies and procedures for all aspects of IT.
- Building the knowledge and expertise of IT staff for:
    - Maintenance of the IT Application and support, and
    - Maintenance of the Web Portal (website) and support
- Maintenance of the IT Application and pay service providers for the IT connections

2.3 Key IT Automation Tasks

The key IT automation tasks must support the overall goals of the Commercial Registry Authority (CRA). These tasks must be identified and prioritized to establish the work plan for the coming years.

- Design and develop the on-line "Name Reservation System"
- Design and develop the "Pre-Registration System" (case tracking capabilities)
- Design and Develop the "Registration System"
- Establish the processing facility at CR Headquarters.
- Migration of data from old system.
- Procure and implement a Document Management System
- Procure computer hardware and software for the headquarters building.
- Procure computer hardware and software for the 27 CR offices collocated with the Chamber of Commerce[1].
- Develop backup and recovery policies and procedures
- Develop disaster recovery policies and procedures
- Develop security policies and procedures.
- Develop software testing procedure.
- Reorganize the IT Department
- Provide training for IT-staff and managers
- Establish a Central helpdesk.
- Develop training plan and manuals for the IT system
- Provide training for CRA employees
- Write user manuals
- Develop forms

[1] Equipment for 6 offices collocated with the Chamber of Commerce has been already done.

3.0 SYSTEM IMPLEMENTATION OPTIONS

In general, in any implementation there are four different options of a Commercial Registration System that can be used in Egypt: enhance the current IT system, develop a new IT system, purchase and customize a "commercial off-the-shelf" (COTS) Business Registry software.

3.1 Current IT System

The Commercial Registry currently has a ledger recording system. The system keeps records of the data from the ledger. Information is handwritten in the ledger (new registration, modifications, etc.); and then, in some CR Offices, the ledger is passed to the data entry unit, which enters the information in the "electronic" ledger (database with the same (one-to-one) number of columns as the book (e.g. CR offices situated in GAFI premises). This option is not the recommended one because the current system operates in distributed environment and the CRA has not enough resources to maintain and support the operations of the system.

3.2 Develop a New IT System

A second option is to develop a brand new IT system by subcontracting the development to a local vendor. TAPR II will manage and supervise all steps of the development activities and prepare testing plan for the modules being developed.
However, during the development, CR IT Staff will be involved in order to be familiar with design concepts, development and implementation of the system ensuring that the IT staffs have the expertise to manage future modifications.

3.3 Procure a COTS Solution

The third option is to purchase commercial off-the-shelf software and customize it to meet the needs of CR offices. This option has a relatively short implementation time. Off-the-shelf software incorporates the best commercial registration practices around the world. However this option is expensive and if not managed properly, the Commercial Registry will not have the expertise to make future modifications.

3.4 Use an Existing Solution

Explore the possibility of using an existing Commercial Registry IT application implemented in other countries under USAID funding. [2]

3.5 Proposed Solution

Subcontracting the development to a local vendor would be best for the Commercial Registry. CR IT staff must be trained and involved in the implementation process to ensure that future changes can be incorporated into the system.

Procuring (conduct RFP for the selection of a local vendor) and developing the software will take at least 12 months. In the meantime, the Commercial Registry offices should use the system developed by the MSAD as an interim system to fix existing data and collect new registration data.

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[2] At the beginning Dr. Mostafa would like to explore the 3rd option. TAPR II is exploring this possibilities. A trip to Amman is planned to visit a CR office and to see the Iraqi Business Registry Application

4.0 COMMERCIAL REGISTRY SYSTEM COMPONENTS

In order for the registry system to be able to deliver e-services, and satisfy the dual goals of providing services to the CR customers while helping the CR offices to become a modern and efficient organization, several new high level functions are required. The system must maintain status of all transactions coming into the system from the time a pre-registration of a company name reservation is started until the registration or other type or transaction is completed.

Therefore, the objective of the Commercial Registry system is to computerize the activities of the functional departments within CRA.

It includes:

1. Name Reservation,
2. Pre-registration (in-process registration, e.g. case tracking),
3. Registration (Approval and Issue of Certificate),
4. MIS (Reporting),
5. Web Portal,
6. Document Management System,
7. Interfaces with other Agencies, e.g. IPR, Tax Commission, etc.

4.1 Name Reservation

Online Pre-reservation of natural and legal entities names at the Commercial Registry. An interface with the Authority Trademark Registration system is also required so that both organizations can search and compare names.

The emphasis is that the system should capture in-process status starting at the very beginning where the founder or representative checks or validates the natural or legal entity name before receiving the certificate for practicing trade from the Chamber of Commerce, receiving its ID card from the Tax Commission or getting approval from GAFI. The system should also be able to reject automatically all names already used or reserved.

4.2 Pre-registration

The system must maintain status of all transactions coming in to the system from the time a pre-registration of a natural or legal name reservation is started until the registration has been finalized by issuing the certificate or other type or transaction is completed. It should provide online status of a registration including those that are on hold, incomplete, rejected, deleted, in suspense, in appeal, waiting customer information (and what information), and completed; and indications of what documents or other information is missing.

4.3 Registration

Provide sufficient data entry of registration data so that the registration transactions could be completed and approved assuming the customer had provided all the required documentation and issue (printing) of a formal Business Registration Certificate (not a copy of a page of the ledger).

Online renewal of company registration and modification to certain registration data shall also be available

High priority or exceptional conditions that arise from processing need to be identified and when these occur; the office manager needs to be notified online that there is a condition that requires immediate attention.

4.4 Reporting

Automatic daily summaries will be produced by transaction type, by employee or department, and by transaction status. These should be provided online and made available to the appropriate office management to control and measure work performed, indicate backlogs of work, provide information with which to reallocate work or seek additional resources, and overall office performance.

4.5 Web Portal

The Web Portal should provide very clear instructions of what documents and other information are required for each type of transaction, and for each type of company or individual who wishes to initiate a registration transaction. The Web Portal should show all forms and show a step by step example of how these are filled out correctly, what common mistakes should be avoided, and a list of Frequently Asked Questions and Answers (FAQ). Forms must be available on-line (printing).

4.6 Document Management System

A document management subsystem supporting a variety of scanned documents should be provided and interfaced with the Commercial Registry system. The requirements and design should clearly specific where (central site and/or individual offices) scanned documents are archived and how they are retrieved and displayed.

4.7 Case Tracking

Case tracking will support manual reviews and approvals by managers before a registration can be completed. Registrations in process may require additional data entry or reviews by the customer window employees. The CR employee should be notified by the system that there are registrations in process that require additional data (or that application is incomplete). The Functional Requirement Specifications will identify where these tracking are required in the different modules.

4.8 Interfaces

A real time exchange of information capability, in a secure environment will be provided to various agencies and organizations, such as the Chamber of Commerce, GAFI, Commercial Courts, Custom Authority, Department of Statistics, Tax Department, and the Trademark System in the CR office

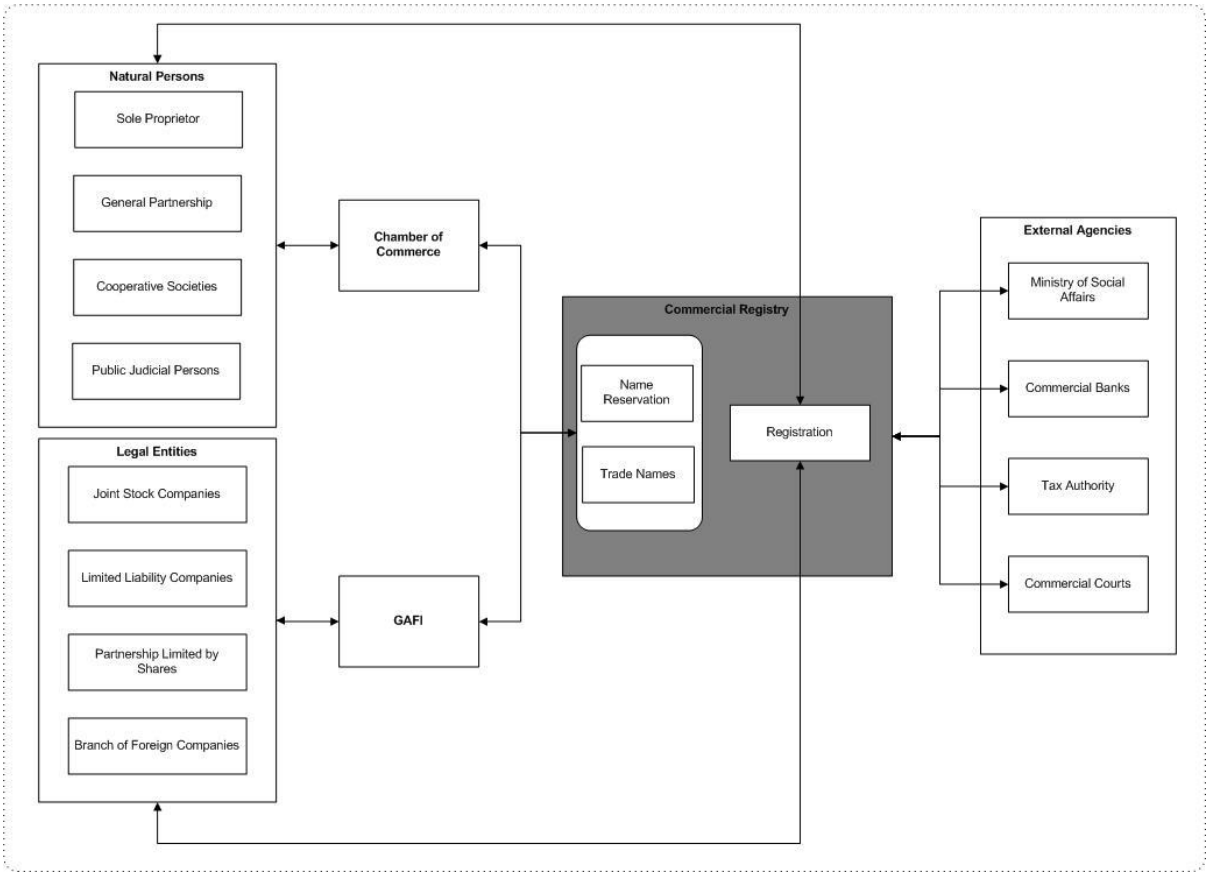
4.9 Help Desk

The Help Desk should provide support for users. It will be the single access point for any IT request.

5.0 COMMERCIAL REGISTRY SYSTEM DESIGN

5.1 General Data Flow

The figure below describes the general data flow between customers, Chamber of Commerce, General Authority for Investment (GAFI), Commercial Registry, etc.



According to the current legislation, natural persons must first apply for a membership and license for doing business with the Chamber of Commerce. After the license is issued and fees are paid, the person whishing to do business can register his business with the Commercial Registry. Businesses that must get first a certificate for practicing trade at the Chamber of Commerce are:

- Sole Proprietorship (SP)
- General Partnership (GP)
- Cooperative Societies (CS)
- Public Judicial Persons (JP)

However, in the case of General Partnership, Cooperative Societies and Public Judicial Persons, they should check first if the proposed name is available in the IPR' Trade and Legal Names database.

Legal entities must get approval from the General Authority for Investment (GAFI) before they are registered with the Commercial Registry. Legal entities must also check if the

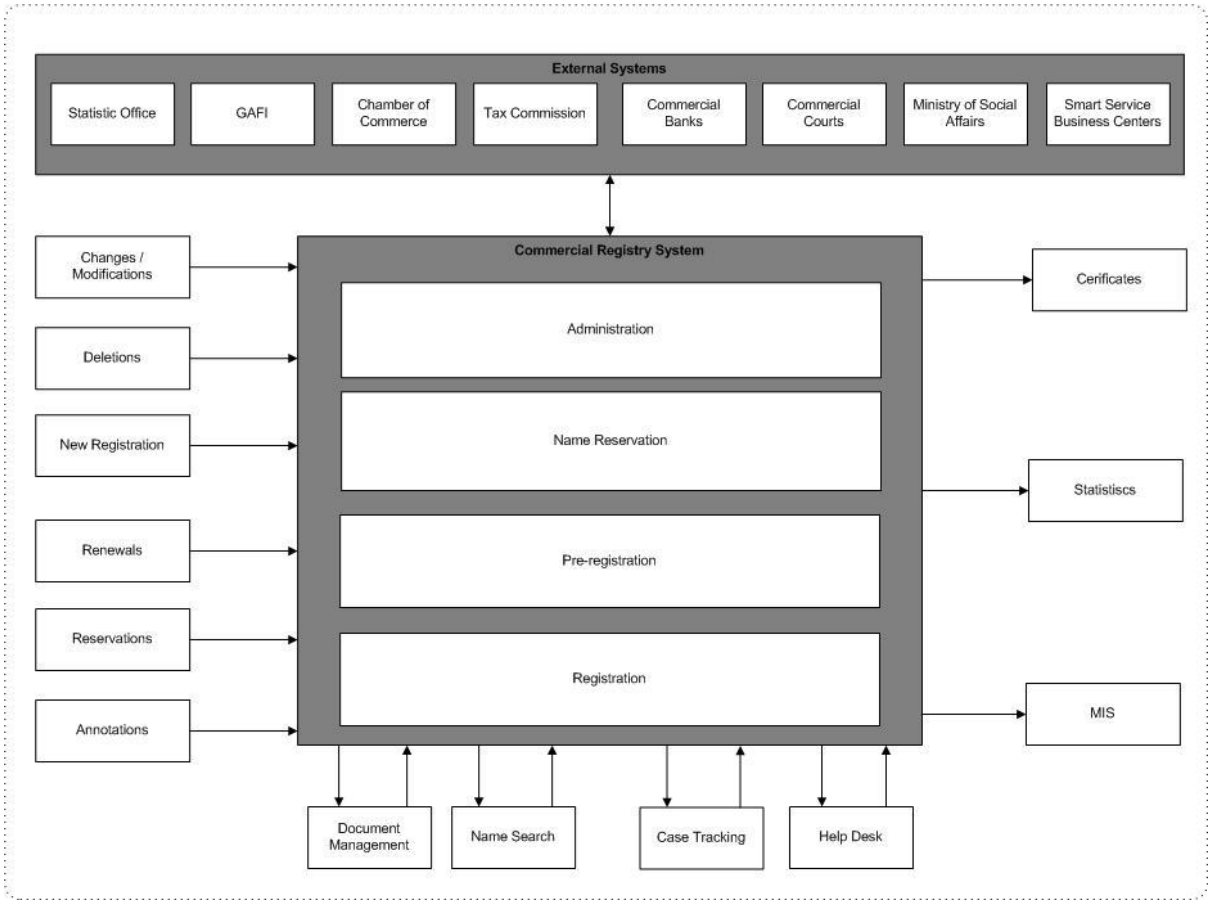
proposed name is available before going to GAFI. Companies that must get approval from GAFI are:

- Joint Stock Companies (JSC)
- Limited Liability Companies (LLC)
- Partnerships Limited by Shares (PLS)
- Branches of Foreign Companies (BFC)

Tax Commission should not issue an ID Card without checking if the name is available.

5.2 Logical Design

The figure below shows the major components required for the Commercial Registry System and outlines the underlying high level functionality.



The IT system is comprised of the following modules:

- Administration Module
  - Access Privileges
  - User Groups
  - User Roles
  - User Login

    - Backup
    - Import/Export
    - Interfaces
- Staff Module
    - Deactivate Reservation from Appeals
    - Deactivate Name Reservation
- Registration Module
- Nomenclature Module
    - Cities
    - Governorates
    - ISIC Codes
- MIS (Reporting)
    - Renewed Reservations
    - Expired Reservations
    - Printing
    - Re-print Certificates
- Document Management

In addition, the system will exchange information with agencies such as:

- Chamber of Commerce
- GAFI
- Commercial Banks
- Commercial Courts
- Tax Authority
- Smart Service Business Centers
- Ministry of Social Affairs

5.3 Architecture

Two models for delivery of information services and data to an organization are a centralized system and a distributed system. A centralized system provides services and data through a single departmental unit. A distributed system relays on many interconnected departments or units to provide services and data.

The original approach followed by the CRA with the implementation of the IBM system point to the several reasons why in Egypt a distributed approach failed, at that time, to deliver the necessary results. These reasons include:

- Lack of IT resources to provide support and maintain the systems in the distributed environment.
- Incomplete training of CR IT resources to support the system, both software and hardware.
- Unreliable dial-up network links to the central site, resulting in many offices using the system independently.
- The central database was not current and could not be relied on to provide valid information to the various stakeholders.
- Consolidated reports not accurate

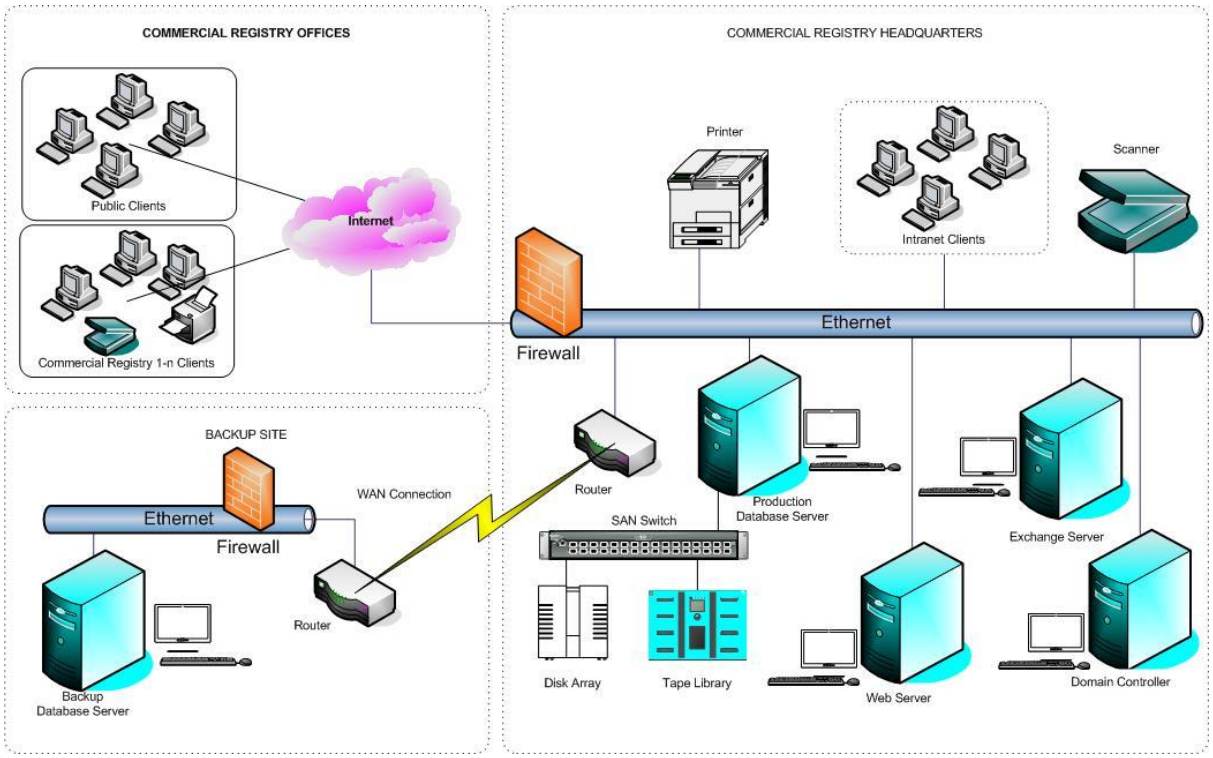
TAPR II will implement a web enabled centralized system for the following reasons:

- Egypt has improved and expanded considerably their communication infrastructures.
- New secure and reliable communication technologies available (MPLS, VPN, IPSec, SSL, etc) that provide secure remote access to users.
- Reduced IT resources needed to operate, and maintain the new system. A strong Central IT Department with all required resources (network administrators, database administrators, system administrators, and applications maintenance and support staff) will be sufficient to provide services to all CR offices.
- Reduced cost of implementation due to reduced number of resources required e.g. software licenses, and software and hardware requirements (distributed database servers, backup servers, replication servers, etc.).
- Version control and in general software upgrades become more manageable.
- Functionality requirements e.g. in the Name Reservation Module, the name of a new company must be checked on-line for existence, either country or by governorate in order to complete the Name Reservation process.

The Commercial Registry solution will be a Web enabled centralized system where data entry takes place using thin-clients (desktops connects directly to the central servers without the need of servers at the remote offices) accessing the unique database at the HQ Data Center.

Customers can submit their applications and required documents in any office by mail, facsimile or other means or online. All data will be stored in the headquarters database. Scanned document will be managed, stored, and maintained at the Data Center's Storage Area Network (SAN).

The following diagram shows the proposed architecture of the IT system.



The estimated software platform requirement for this design is as follows:

- Firewall – MS ISA 2004 Server
- Mail System – MS Exchange 2003
- Operating System – MS Windows Server 2003
- Database Platform – MS SQL Server 20005
- Backup – (TBD)
- Antivirus – (TBD)

If the selected implementation solution is to purchase a commercial off-the-shelf (COTS) software package or use an already existing application developed and funded by USAID, the above requirements must be adjusted accordingly.

5.4 Data Migration

Data from the MSAD System will be migrated to the new Commercial Registry IT system. When the commercial registry software has been selected and a vendor identified, a full data migration plan will be developed. Required forms will be developed to map the existing data with the new database structure.

5.5 Web Portal

The Internet provides some opportunities for the Commercial Registry to improve the effectiveness of communicating with the public. A web site will be developed to publish information on registration of business and provide downloadable registration forms, online reservation of names, and online registration capabilities (customer will receive a tracking number regarding the operation).

5.6 Data communications

The Commercial Registry system will be a centralized system. Remote offices (existing ones and the new collocated with the Chamber of Commerce and GAFI) access the HQ office using one of the methods described below. A more independent analysis regarding service providers for communication is required.

Securing the communication between the remote sites and the HQ can be achieved via different methods and techniques, but these methods are related to the requirements of the remote access needs.

The following sections discuss in detail the available options/methods to achieve the communication requirements of the Commercial Registry. The proposed solution will be selected and included in the IRM Report for the implementation of the CR System.

Method 1: Site-to-Site VPN

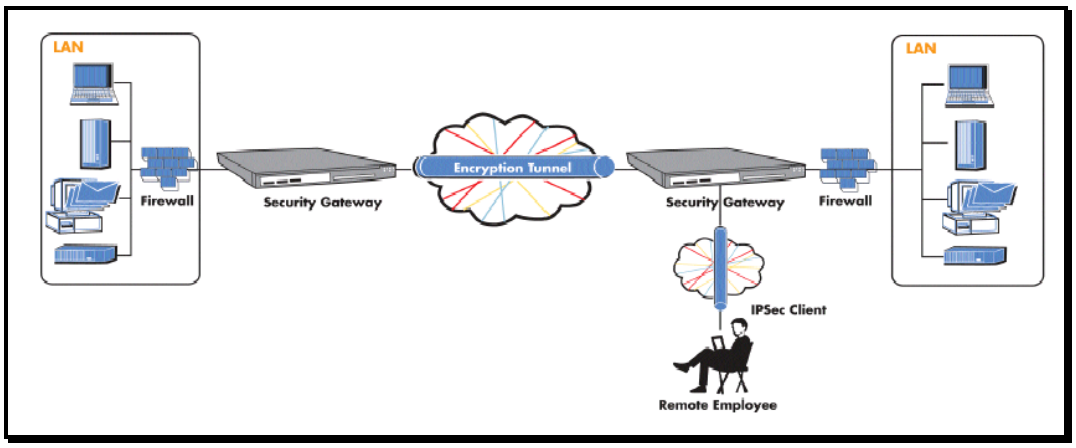
Here it is assumed that the communication lines are using the normal internet (using ADSL) on each remote site, so in order to protect the communication path, a VPN tunnel can be created from each remote site's router with the HQ VPN server.

This will ensure that all the traffic coming from the site is legitimate and correct (no eavesdropping or changing is happening on the traffic). This also ensures that no one can access the system unless the user is within the remote site but might cause some restriction on users' mobility.

Method 2: PC-to-Site VPN

1. Using Client-Server VPN application

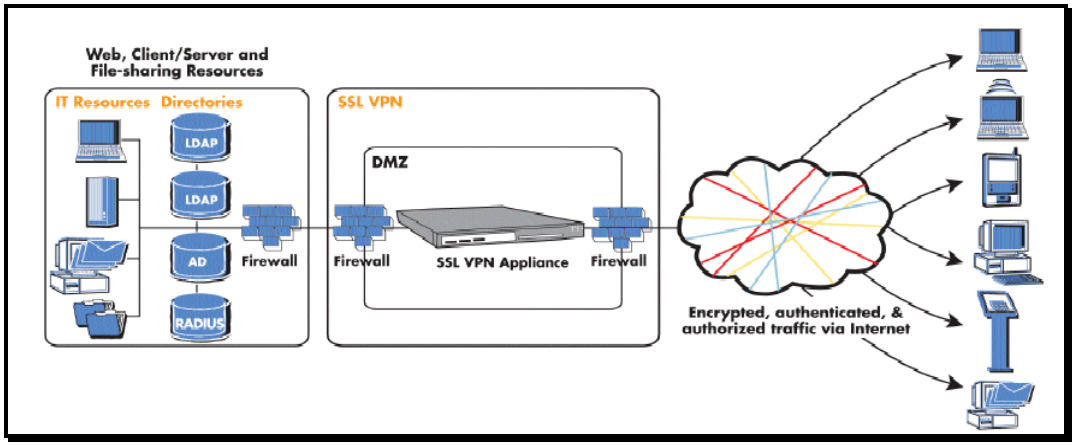
In this method each machine (PC or Laptop) has installed the required application that is needed to create the tunnel with the HQ VPN Server. This means more users' mobility, but this also means more support needed.



Typical IPSec VPN provides site-to-site and remote access via an encryption tunnel.

2. Using SSL

Using the Secure Socket Layer has the same concept of PC-to-Site VPN, but it uses the web browser to create the tunnel also it uses many compression techniques to enhance the speed of the connection. This method requires less support (or does not require knowledgeable support) because it only needs active internet and web browser.



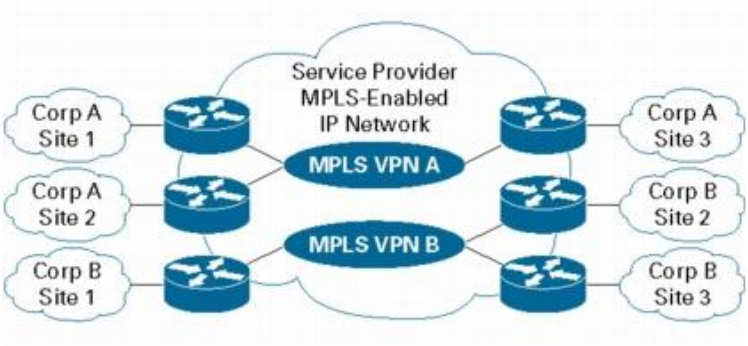
An SSL VPN solution provides secure remote access to corporate resources.

Method 3: Using MPLS

This is a new communication protocols that uses different techniques from traditional ones, also it can run on different carriers (ATM, TCP/IP, etc) and in the mean time it can achieve security (because it uses a built in VPN concept) also it can provide communication reliability. But this method is very similar to the Site-to-Site VPN.

As a network-based VPN service, MPLS does not require the use of a VPN client. Enterprise end users typically interact with the network as they would ordinarily

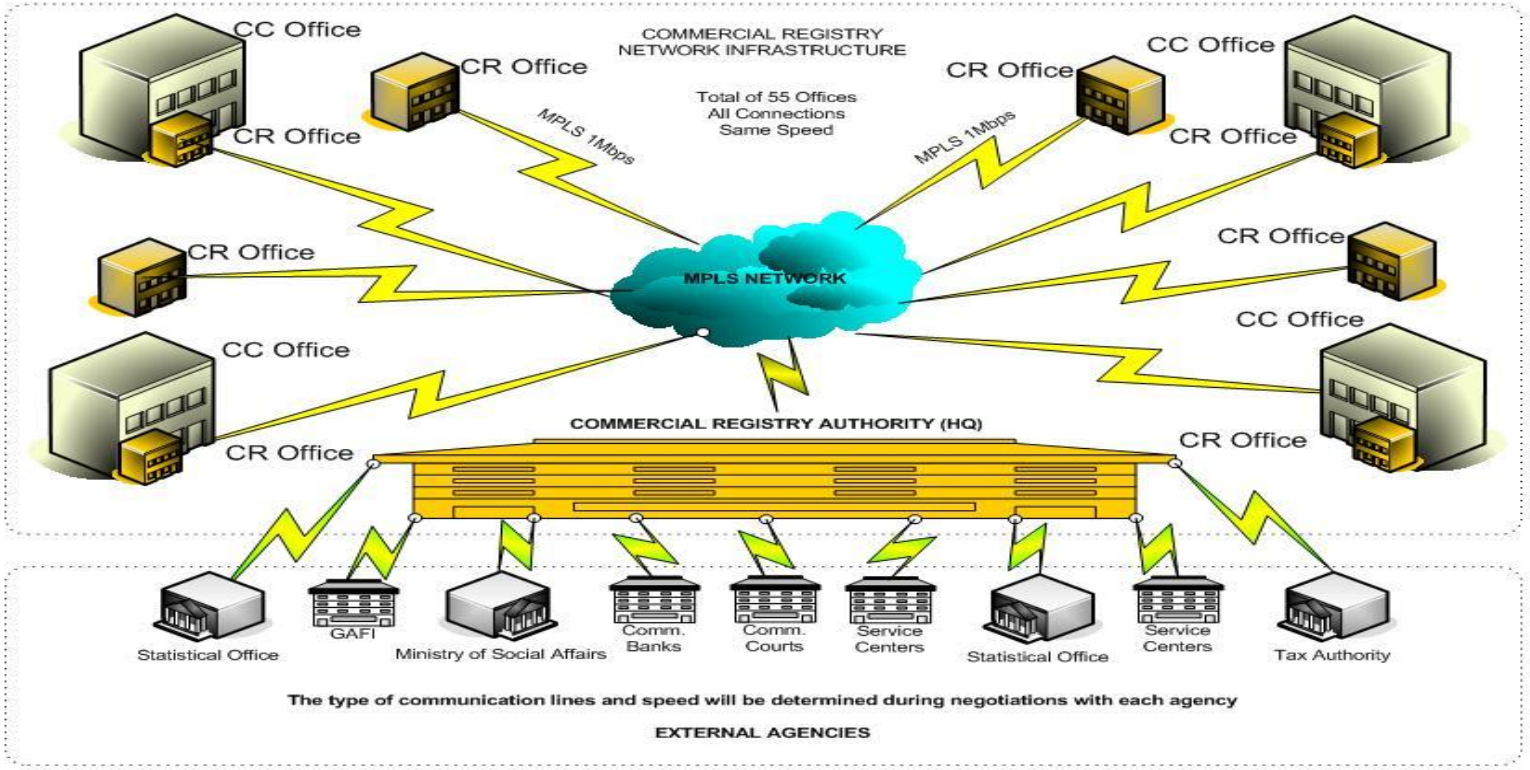
A primary advantage of MPLS is that it provides the scalability to support both small and very large-scale VPN deployments: up to tens of thousands of VPNs on the same network core.


Service Provider
MPLS-Enabled
IP Network
MPLS VPN A
MPLS VPN B
Corp A
Site 1
Corp A
Site 2
Corp B
Site 1
Corp A
Site 3
Corp B
Site 2
Corp B
Site 3

Proposed Solution

TAPR II recommends strongly the implementation of a MPLS communication infrastructure. The Commercial Registry Authority needs to secure the sustainability of this service from MSAD or secure the funds to pay for the services. The selected service provider should provide the necessary equipment (routers) to connect from remote offices to the center.

By implementing a VPN, the CRA can provide access to the internal private network to users around remote sites with access to the public Internet. If implemented, it will ensure the security and integrity of the computer systems and data on the private network.



6.0 DATA MANAGEMENT

The core of all information systems is the data that are entered, processed, transferred and stored. Therefore, it is important to highlight the data management requirements for the commercial registry system.

6.1 Data Storage Principles

The following data storage principles will be applied:

- Required fields must be identified on all registration documents, and this information must be captured in the Commercial Registry system.
- The central (headquarters office will be fully mirrored by employing RAID technology. Additionally, a backup server with a complete copy of the database will be located in one off-site facility.
- Data over 5 years old will be archived in low cost permanent storage, such as tape.

6.2 Paper Archives

It is important that changes to the electronic data be traced back to a paper document. This ensures that if there is a legal question as to the accuracy of the data, it can be verified against the paper document. This is especially significant when there is an appeal made on a name reservation and/or registration request.

To facilitate the ease of locating and retrieval of documents, a Document Management System will be implemented and integrated with the Commercial Registry System. The Document Management System will allow users to instead of retrieving the paper document from the archive, to display it on the computer screen. Therefore, the scanning and storing images of the paper documents will be achieved by the purchase of a Document Management System.

7.0 IT SYSTEM REQUIREMENTS

This section highlights the importance of hardware and software standards and presents the recommended quantities of hardware for the CRA HQ Office and Commercial Registry offices.

Standards

Defining hardware and software standards is very important for several reasons. First, it ensures that all hardware and software procured are compatible, thus avoiding interoperability problems. Second, hardware and software is easier to support and training requirement is streamlined. Third, procurement time is reduced.

Appendix B shows the software standards. These standards will change over time as technology evolves. It should be periodically reviewed and updated together with the IT strategy.

The hardware requirements for the Commercial Registry IT System, the Commercial Registry Offices, and the Commercial Registry Headquarters are shown in the next paragraphs.

The Headquarters Data Center requirements are described in more detail to indicate the critical role that they play in a modern, reliable, scalable and sustainable Data Center solution.

7.1 Commercial Registry Offices

The Commercial Registry solution will be a Web enabled centralized system where data entry takes place using thin-clients (desktops connects directly to the central servers without the need of servers at the remote offices) accessing the unique database at the Headquarters Data Center. Therefore, there is no need for server and/or server rooms in every office to access or run the application.

7.1.1 CR Offices Facilities

In this implementation, the Commercial Registry Authority should ensure that appropriate space and desks to accommodate the desktops should be addressed early enough so that required civil works are implemented before the cabling can take place. In addition, the CR offices should ensure that sufficient power and telephone outlets are in place and can accommodate the network outlets to be installed. A secure place to install the connectivity devices should also be available and finally, enough room must be available for the archive.

7.1.2 CR Offices Hardware

The actual number of hardware equipment (5 desktops) for the CR offices is an initial requirement and will change as the CR progresses in the modernization process. The scope of equipment below, applies for all offices 27 offices collocated with the Chamber of Commerce.

1. Five (5) Desktop Computers
2. Five (5) UPS, one for every computer
3. One (1) 24 ports switch

4. One (1) ADSL broadband router/modem
5. One (1) Local Area Network comprising of
    - Cabling for 10 nodes
    - A 9U Rack w/FAN
    - A 24-port patch panel
    - Ten (10) Sockets RJ-45
    - Patch Cords 10*1m long plus 10*3m long
    - A 500 - 650 VA UPS
6. One (1) Photocopy Machine
7. One (1) FAX Machine
8. One (1) Network Printer
9. One (1) Flatbed Scanner
10. One PIX Firewall Appliance

See procurement estimates for a more detailed description of the equipment proposed.

7.2 CRA Headquarters

As per the current IT assessment done by the TAPR II team, the Commercial Registry Authority currently does not have a Data Center to support its current operations, or the new Commercial Registry Application to be developed. Therefore TAPR II recommends the establishment of a Data Center in the Trade Information Center building where the Head of the CRA is located.

7.2.1 Data Center Facility

The recommended Data Center should be built to high standards. The goal is to provide a reliable and cost-effective incubator for the Commercial Registry Infrastructure. The Data Center must be big enough in size to accommodate the proposed equipment for the first implementation and allow for future expandability.

General Recommendations

The following outlined specifications are the TAPR II recommended standards.

- Minimum 25 square meters (4 meters X 5 meters)
- Earthquake, Water and fire resistant under conceivable circumstances
- To accommodate at least 2 19-inch standard racks for mounting of servers, routers and other system equipment.
- Minimum of 8’5” (2.6 Meters) ceiling height
- Electrical Sockets (>10)
- Proper lighting
- Circuit breaker protection
- Power Distribution Panels
- Telecommunications equipment (Telephone jacks, Telephones)
- Grounding

Security

- Card access control at all exterior doors
- 24/7/365 on-site security staff

AC Power Systems

- N+1 redundancy in all systems
- Parallel redundant Uninterruptible Power Sources (UPS)
- 24-hour backup at full load with power generator

Power Generator

- Supports data center and all equipment within at maximum load for 12 hours without refueling

- ***Uninterrupted transfer of power*** - with the use of high capacity UPS and Automatic Transfer Switch (ATS), transfer of power is completely automatic and almost transparent in the event of an outage

Environmental Control

- Equipped with High Capacity HVAC systems
- Data center environment maintained at optimal temperature and humidity levels for equipment
- 24/7/365 HVAC emergency service by certified contactors
- Contracted maintenance with certified HVAC contractors to discover and fix problems before they become emergencies

Fire Protection

- Fire Detection and Suppression systems
- Smoke and high temperature detection and alarm system
- Concrete floors and fireproof walls to protect data center in case of fire in surrounding areas
- Fire-extinguishers

Help Desk Center

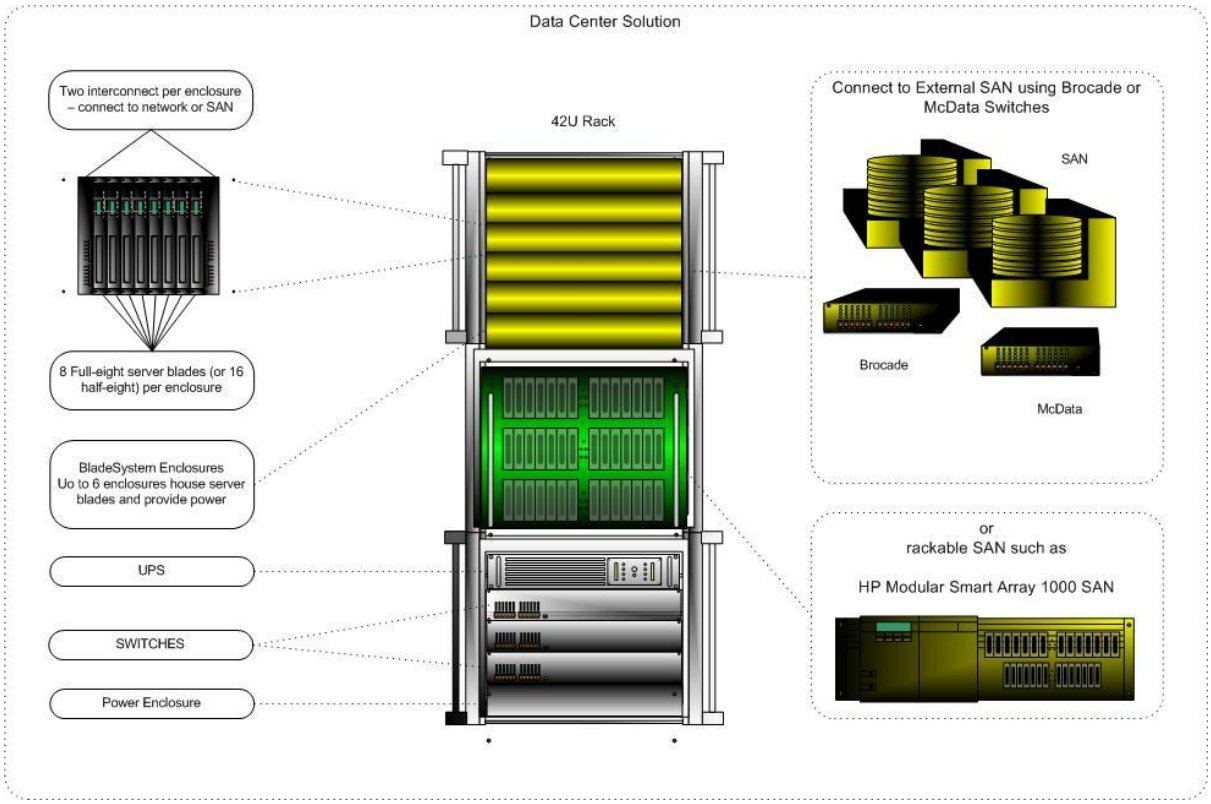
The TAPR II recommends also the establishment of the CRA Help Desk as the single access point for any IT request. The Service Desk operator(s) will log the service request's information into the Help Desk System. As part of the work plan, TAPR II will develop the Help Desk Policies and Procedures and provide training to the Help Desk staff.

7.2.2 Data Center Requirements

In order to achieve the highest level of performance, scalability and functionality, TAPR II proposes to establish the Data Center using the latest technologies as follows:

- Use of a BladeSystem Servers,
- Install a Modular Smart Array – Storage Area Network SAN
- Install a tape library to automate backup and recovery tasks
- Implement a high level security infrastructure

The diagram below depicts the proposed SAN and Blade System Solution:



The next sections describe more in detail the proposed equipment (servers, UPS, Switches) for the CRA Data Center.

PDC Server

The Primary Domain Controller (PDC) is a server computer that is the first created domain. This server will use Active Directory to manage users and to grant access to a number of computer resources within the domain. TAPR II proposes the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Application Servers

The web application Server is the server where the executable of the Commercial Registry System will be stored. The server will be used as a common repository for forms generation, templates and to activate common application components.

The web application server does the real work of servicing a user's request. It is accessed only through the Intranet Web services. In response to a user request, it will execute the CR application code. That code, operating within site-specific parameters, makes database connections, executes database queries, manages database transactions, and accesses the imaging server. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Testing and Training Server

The Testing and Training Server is the server where the executable of the CR Application pre-production releases will be stored. The server will be used for test and training purposes. The server has a similar configuration as the Application server. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Public Web Servers

This server supports the browser-based public access to the public modules of the application and also the local users and remote users. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Document Management (Imaging) Server

The document management server is used to manage the storage, retrieval and indexing of scanned images as well as other electronic documents. It will host the Document Management software. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Tape Backup Server & Tape Backup System

Since the TAPR II team recommends the use of a Centralized Storage Array as the central repository for all servers and databases. Tape backup server with the tape backup system will be used to manage the backups of the Commercial Registry on a regular basis. TAPR II team recommends the use of HP Storage Works MSL6030 as the Tape Library. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Firewall Appliances

The proposed Internet firewall appliances will protect the CRA LAN from unauthorized access. All messages (inbound and outbound) are tracked and controlled by the firewall. TAPR II recommends the use of ISA Server 2004 appliance as the firewall. TAPR II

recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Exchange Server

The exchange server will provide e-mail services to the Commercial Registry. TAPR II recommends the use of a two processors Medium Server (see Appendix B for the detailed specifications). TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Help Desk Server

The Help Desk server will host the Tracking software to be purchased for the Help Desk Center at the Headquarters Office. In addition, this server will be used to provide Antivirus management and distribution services, image and Windows software update services to the all CR users. TAPR II recommends the use of a two processors Type B Server (see Appendix B for the detailed specifications).

Database Servers

For maximum performance, TAPRII recommends to connect the Centralized Storage Array to the database server using a fiber channel configuration. Regular Small Computer Systems Interface (SCSI) connections can be optimized for performance, but fiber channel configurations offer the most throughputs between the Centralized Storage Array and the database server. The database servers will be four processors Type A Server (see Appendix B for the detailed specifications).

1. ***Production Database Server:*** The Production Database server is the primary repository for the Commercial Registry's data.
2. ***Backup Database Server:*** The Backup Database Server is a standby High availability server to be installed in the fail-over site to ensure business continuity in case of unavailability of the Data Center do to any disaster.
3. ***Testing/Training Database Server:*** The Testing/Training Database server will have a similar configuration as the Production Database Server and will be used for testing of pre-production releases of the CR system. Also the server will be used for training purposes.

Storage Array

A number of options exist for configuring storage depending on volume considerations and internal retention policies. Smaller implementations may select a storage solution contained within the server itself, whereas larger ones may choose an externally connected disk array supporting larger data retention. Other considerations, including SCSI connections and RAID implementations also apply.

Since TAPR II is recommending to purchase and installation of a Document Management System, a Storage Array with Approximately 1 TB. Available Storage, with SAN Switches (16

Port, 2-Gbit Fiber Channel Switch) is recommended as the central storage array for all servers and databases.

7.2.3 Estimated Software Requirements

The software requirements for the Commercial Registry IT system are shown below. The list will evolve over time especially after the decision as to which implementation option will be decided.

1. MS Windows Server 2003 for all servers
2. MS Exchange Server 2003 for Headquarters
3. MS SQL Server 2005 (for the production database server, backup database server, and testing and training.
4. MS Office Standard Edition for all Desktop Computers and laptops
5. MS Windows XP/VISTA Professional Edition for all desktop and laptops
6. MS Project 2003 for IT Staff
7. Antivirus/Spyware software for all computers and servers
8. Help Desk Software for Headquarters
9. Security Intrusion and Detection Software for HQ
10. Backup Software
11. Storage Area Network (SAN)
12. Software Configuration and Distribution for HQ

8.0 PROCUREMENT ESTIMATES

Since the Commercial Registry Authority has embarked in the opening of Commercial Registry offices collocated to the Chamber of Commerce to provide a one-stop-shop for registration, the procurement has been phased to allow for the incremental opening of the offices. When all offices collocated with the Chamber of Commerce has been opened, the CRA will close forty two of the existing seventy offices around the country.

8.1 Procurement Assumptions

The procurement phases below are subject to the following assumptions:

- The Commercial Registry will open the offices collocated the Chamber of Commerce in April and July and in the interim time use computer equipment provided by MSAD until the final equipment has been procured by TAPR II.
- USAID has provided and/or will provide CTO approval for the purchase, installation and delivery of equipment under "Local Purchase" for which waivers exist.
- The CRA will open a total of 27 offices collocated with the Chamber of Commerce and will close 42 existing CR offices. Therefore, the future number of offices will be reduced to 55 offices down from the current 70 offices in the whole country.
- TAPR II will provide IT equipment and software for the Data Center and for the 27 offices collocated with the Chamber of Commerce. MSAD will provide the required equipment for the remaining 28 CR offices around the country.
- Coordination between TAPR II and MSAD about the IT requirements will take place to ensure that the MSAD procurement is compliant with the requirements set by the TAPR II project.

8.2 Procurement Phases

The procurement will be implemented in two phases as follows:

1. Phase 1: This procurement is divided in the sub-tasks as planned by the CRA as follows:
   a. Includes the necessary equipment to open six offices collocated with the Chamber of Commerce (already done). However, this procurement did not include equipment necessary to ensure the future connectivity of these offices to the CR Headquarters. These equipment will be procured, subject to approval, in this Phase 2 (see Appendix A Detailed Cost Estimates – Six Offices January 2007 for details)

   b. This procurement includes the necessary equipment to open additional 11 offices collocated with the Chamber of Commerce (already formal approved) and is scheduled by the CRA to start in April 2007. These equipment will be procured after the IRM Report has been approved by USAID (see Appendix A Detailed Cost Estimates – Eleven Offices April 2007 for details)

   c. This procurement includes the necessary equipment to open additional 10 offices collocated with the Chamber of Commerce and is scheduled by the CRA to start in July 2007. These equipment will also be procured after the IRM Report has been approved by USAID (see Appendix A Detailed Cost Estimates – Ten Offices July 2007 for details)

2. Phase 2: This phase is divided in two major tasks and their implementation is subject to the establishment of the Data Center Facility and the existence of the Commercial Registry WAN to be subcontracted from a local Service Provider and paid by the Government. The major tasks in this phase are as follows:

    a. This procurement includes the purchase and customization of a COTS Commercial Registry Application or the subcontracting a local vendor for the Development of the new Commercial Registry Application from scratch.

    b. In addition, the procurement of the IT Equipment for the establishment of the CRA Data Center to host and operate the new Commercial Registry Application (see Appendix A Detailed Cost Estimates – CR Application and Data Center for more details.

8.3 Procurement Costs by Phases

The summary table below shows the total costs by phases separated into US Purchase and Local Purchase. In addition, the schedule shows which of the costs are going to be financed by the TAPR II project and which costs must be committed by the Government of Egypt or the Ministry of Trade/Commercial Registry Authority.

See Appendix A for detailed cost estimates and appendix B for specifications of the proposed equipment.

#	Item	Total Budget	Year 1			Year 2			Year 3		
			Total Year 1	USAID	CRA	Total Year 2	USAID	CRA	Total Year 3	USAID	CRA
1	Initial IT Equipment CR Offices - 6 Offices (CoC)	42,024.00	42,024.00	42,024.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Additional IT Equipment CR Offices - for the same 6 Offices (CoC)	23,040.00	23,040.00	23,040.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	IT Equipment CR Offices - 11 Offices (CoC)	143,530.00	143,530.00	143,530.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	IT Equipment CR Offices - 10 Offices (CoC)	131,800.00	131,800.00	131,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	IT Equipment Headquarters (50 Users - Desktops, Ups, Printers, etc.)	72,930.00	0.00	0.00	0.00	72,930.00	72,930.00	0.00	0.00	0.00	0.00
6	IT Equipment CR Offices - 28 Offices	369,040.00	0.00	0.00	0.00	369,040.00	205,520.00	163,520.00	0.00	0.00	0.00
7	All Software Software	552,306.89	0.00	0.00	0.00	552,306.89	378,906.89	173,400.00	0.00	0.00	0.00
8	Security & Infrastructure	207,500.00	0.00	0.00	0.00	207,500.00	99,500.00	108,000.00	0.00	0.00	0.00
9	Data Center IT Equipment	91,378.00	0.00	0.00	0.00	91,378.00	91,378.00	0.00	0.00	0.00	0.00
10	Data Center Facility	75,000.00	75,000.00	0.00	75,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL COST OF GOODS	**1,708,548.89**	**415,394.00**	**340,394.00**	**75,000.00**	**1,293,154.89**	**848,234.89**	**444,920.00**	**0.00**	**0.00**	**0.00**
11	Installation (8.5%)	101,033.46	28,933.49	28,933.49	N/A	72,099.97	72,099.97	N/A	0.00	0.00	N/A
12	Airfright (10%)	118,862.89	34,039.40	34,039.40	N/A	84,823.49	84,823.49	N/A	0.00	0.00	N/A
13	Support and Maintenance Costs (see notes)	101,843.19	17,019.70	17,019.70	N/A	42,411.74	42,411.74	N/A	42,411.74	0.00	42,411.74
	Total Goods	**2,030,288.42**	**495,386.59**	**420,386.59**	**75,000.00**	**1,492,490.09**	**1,047,570.09**	**444,920.00**	**42,411.74**	**0.00**	**42,411.74**
Other Costs											
14	Training	501,923.86	301,923.86	301,923.86	0.00	100,000.00	100,000.00	0.00	100,000.00	100,000.00	0.00
15	Office Supplies (US$ / Office / Year)	1,050,000.00	350,000.00	0.00	350,000.00	350,000.00	0.00	350,000.00	350,000.00	0.00	350,000.00
16	Infrastructure - Opening (3,000 EGP per Person)	229,090.91	81,818.18	0.00	81,818.18	81,818.18	0.00	81,818.18	65,454.55	0.00	65,454.55
17	Infrastructure - Closing (500 EGP per Person)	38,181.82	13,636.36	0.00	13,636.36	13,636.36	0.00	13,636.36	10,909.09	0.00	10,909.09
18	Cost of Moving (300 EGP per Person)	22,909.09	8,181.82	0.00	8,181.82	8,181.82	0.00	8,181.82	6,545.45	0.00	6,545.45
19	Infrastructure - Renovation (3,000 EGP per Person)	300,000.00	109,090.91	0.00	109,090.91	109,090.91	0.00	109,090.91	81,818.18	0.00	81,818.18
20	Renting Space	30,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00
21	Communication (Telephone, Fax)	45,000.00	15,000.00	0.00	15,000.00	15,000.00	0.00	15,000.00	15,000.00	0.00	15,000.00
22	Furniture (3,300 EGP per Person)	381,000.00	180,000.00	0.00	180,000.00	111,000.00	0.00	111,000.00	90,000.00	0.00	90,000.00
23	Air Conditioning (1000 EGP per Person)	152,727.27	80,000.00	80,000.00	0.00	36,363.64	36,363.64	0.00	36,363.64	36,363.64	0.00
24	Transportation, Accomodation and Perdiem (9,000 US$ / Month)	324,000.00	108,000.00	0.00	108,000.00	108,000.00	0.00	108,000.00	108,000.00	0.00	108,000.00
25	Purchase of Generators (25KW @ 12,000 per Office)	80,000.00	60,000.00	60,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00
	Total Other Activities	**3,154,832.95**	**1,317,651.13**	**441,923.86**	**875,727.27**	**953,090.91**	**146,363.64**	**806,727.27**	**884,090.91**	**146,363.64**	**737,727.27**
	Grand Total	**5,185,121.37**	**1,813,037.72**	**862,310.45**	**950,727.27**	**2,445,581.00**	**1,193,933.72**	**1,251,647.27**	**926,502.65**	**146,363.64**	**780,139.02**
	Total USAID	**2,202,607.81**	**Total CRA**	**2,982,513.56**	**Total**	**5,185,121.37**					

9.0 HUMAN RESOURCES

The IT department of the Commercial Registry Authority is extremely understaffed and does not have the proper expertise to support and maintain an enterprise wide IT system. There is lack of specialized expertise such as database administration and network administration. The following subsections describe the current staffing and suggest the optimal staffing requirements and the training requirements.

9.1 Current Staffing

The current staffing of the Commercial Registry is four IT staff supporting the operations of the Commercial Registry. They are distributed as follows:

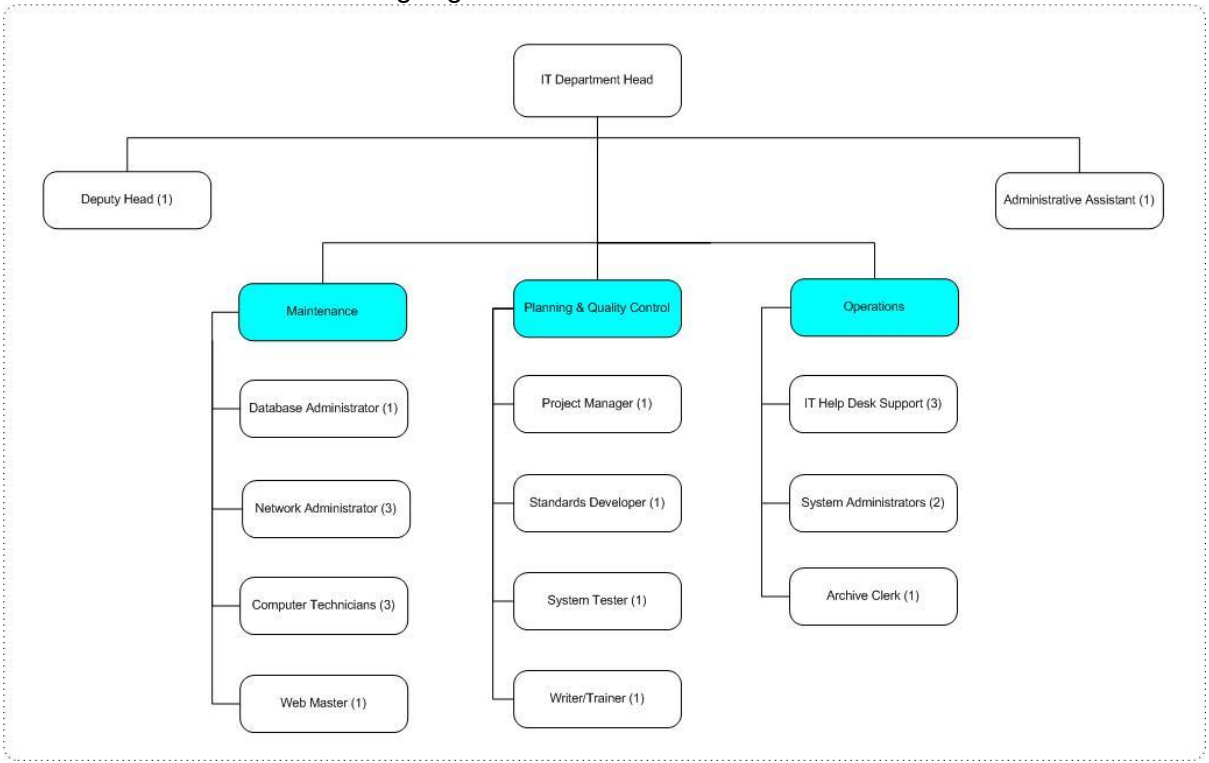
- Two supporting the Commercial Registry Head Office
- Two supporting the Trade Marks and Industrial Designs offices.

The roles of the four IT staff are:

- Oversight and maintenance of databases
- Troubleshooting existing applications and computers
- Conducting training
- Supporting the staff of the Commercial Registry, Trade Marks and Industrial Design staff in all related IT matters.

9.2 Optimal Staffing Requirement

To assist the Commercial Registry Authority in achieving its objectives, the IT Department must have IT personnel in sufficient quantity and with the proper skills. The IT Department must have at least the following organizational structure.



10.0 IMPLEMENTATION, MAINTENANCE AND SUPPORT

The Commercial Registry must also have the capacity to provide implementation, maintenance and support. The key services can be broken down into testing, installation, technical support, documentation, and training.

10.1 Institutional Development & Ministry of Trade and Industry Support

To ensure sustainability of operations and modernization of the Commercial Registry, the Ministry of Trade and Industry must be committed to support the CRA in the following areas:

- Hire new or improve qualification skills and knowledge of CR officials
- Identify and proceed with the closing over time of excessive CR offices
- Renew or renovate existing infrastructure (buildings)
- Procure and purchase some IT equipment
- Secure funding for the operations of the commercial registries covering:
    - Maintenance and Support Contracts with local vendors
    - Service provider fees for the interconnection up to 55 CR offices with headquarters
- Establish a working coordinating group with relevant ministries that will allow streamlining and improving the registration process.

10.2 Sustainability Measures

In order to sustain the IT environment and operations, the Commercial Registry Authority the CRA will:

- Build skills of the IT staff in supporting computer hardware, operating systems and networking
- Build skills of CR officials in the use of the Web, business applications and databases.
- Ensure the accessibility of stakeholders to all required information resources
- Establish a fail-over site to ensure the full continuity of operations in case of disaster events.

10.3 Testing

Before new systems or modifications to systems are installed, they must be thoroughly and properly tested. This is the first line of defense when implementing and supporting a system. Otherwise, technical support will be overwhelmed with system problems. Additionally, a poorly tested system may cause damage to the data that may not be detected for several years. The following key tasks must be addressed to support the testing satisfactorily.

- Testing responsibilities must be assigned to specific staff.
- Standard system configurations must be determined before testing commences.
- Testing plans for unit and integration test must be drafted for all new systems before implementation.
- All problems encountered during testing must be thoroughly documented.

10.4 Installation

Key steps must be performed to ensure that system installation runs smoothly and is performed efficiently. Steps that must be addressed include:

- Site preparation
- Installation instructions must be developed.
- Standard system configurations must be provided to installation locations.
- Version control policies and procedures must be established and instituted.
- User manuals must be prepared for all new systems before implementation.
- Historical data must be converted and ready to load at the time of system installation.

10.5 Technical Support

All technical support requests will initially be handled by the helpdesk located at headquarters. If the helpdesk cannot resolve the problem, it will be referred to the appropriate technical specialists. All technical support requests will be recorded and tracked on a database. Daily reports of outstanding help requests will be printed. The helpdesk will also handle requests for changes to the existing IT system. This support function must be formalized.

10.6 System Documentation

The IT system must be thoroughly documented. Good documentation will provide the CR with at least minimal protection against losing key personnel. System documentation is also essential in making changes to the IT system.

System documentation will be developed by the Technical Writer with the assistance of the Systems Analyst.

10.7 System Maintenance

The time and human resources required to maintain implemented systems must not be underestimated. These efforts can easily take up more than fifty percent of a development team's time after the implementation of the core information systems. System maintenance includes the following activities.

- Ongoing enhancements and upgrades to the system.
- Implementing approved changed requests.
- Updating systems due to changes in the law or procedures.

10.8 User Training

It is critical that training be given to IT system users before they are allowed to use the system. This limits the instances of users recording transactions improperly due to ignorance. The CR's user training efforts will be focused on basic PC training, systems training and development of user manuals.

10.8.1 Basic PC Training

Most staff will have the opportunity to receive basic PC literacy training. This training will focus on MS Windows, Word and Excel. The productivity of employees will increase noticeably as they become more proficient with basic office applications. The basic PC training will be part of the overall training plan for the CR. The following courses will be available for staff:

- Introductory Windows
- Introductory and Intermediate Word
- Introductory and Intermediate Excel
- Basic Email

10.8.2 Systems Training

Whenever new systems are rolled out or new employees are hired, systems training must be provided. A training plan and training manuals must be developed before the system is rolled out. Different training must be developed for each of the following audience:

- Managers
- System Administrators
- CR Staff

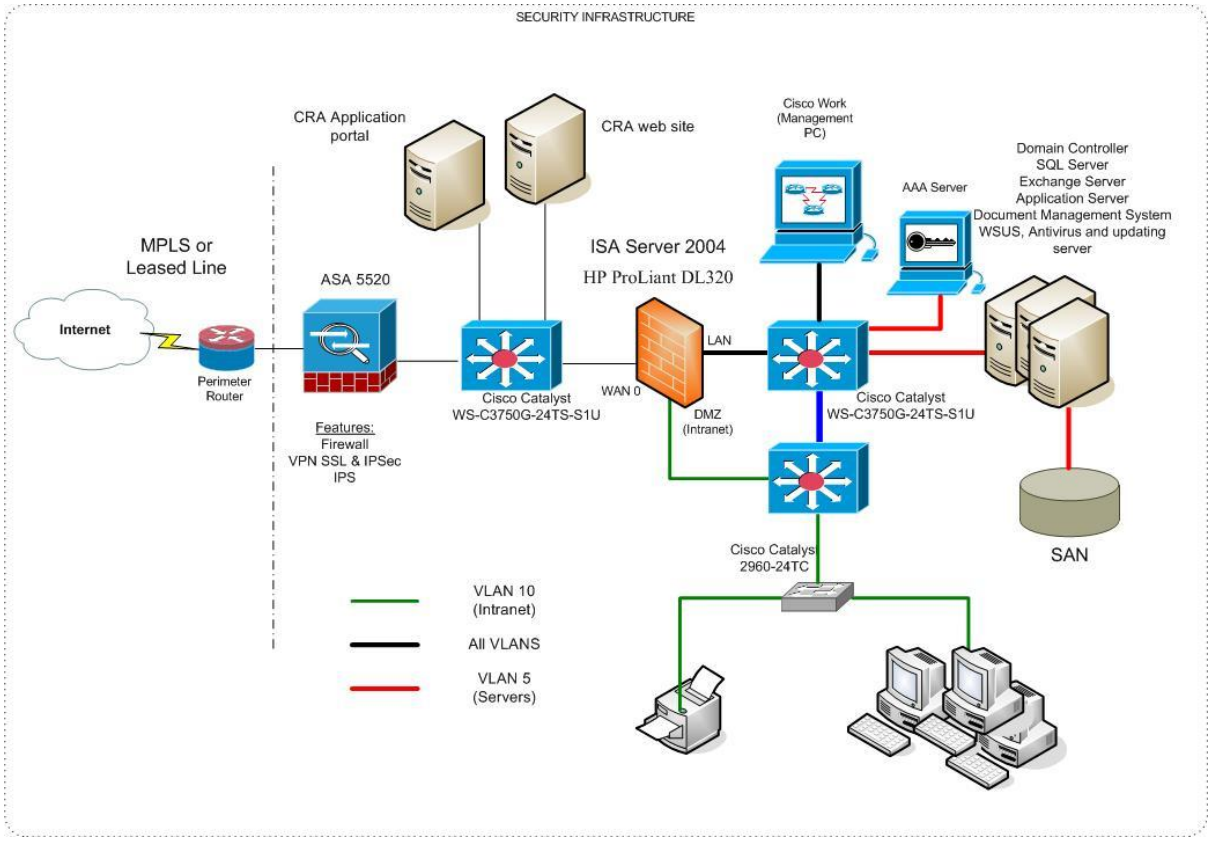
10.8.3 User Manuals

Manuals are the first source of information for users with questions regarding the IT system. There must be a user manual for all the IT systems and it must be written using simple language. It is important to note that a good user's manual is very helpful for inexperienced computer users and can significantly reduce reliance on technical support.

11.0 INFORMATION SYSTEM SECURITY

Commercial Registry information must be completely secure because they store sensitive and in some cases confidential information. This means appropriate steps must be taken to ensure system security, as well as physical security.

The diagram below depicts the proposed Information System Security Infrastructure.



A full information system security review must be conducted and a formal security policies and procedures instituted. The following security issues should be included in the review:

11.1 Login Security/User Authentication

In order to protect the data from any threats and associated vulnerabilities, the CR office should have a written down security policy. It should use active directory service feature as well as user defined privilege levels.

11.2 User Access:

The Commercial Registry will use the AAA Protocol (Authentication, Authorization and Accountability), to manage and administer user access for routers, VPNs, firewalls, storage, content, wireless solutions, and switches using IEEE 802.1 X access control.

11.3 Data Backup and Recovery:

Successful data back-up and recovery is composed of four key elements: the database server, the network, the OS, and the storage devices. The Ministry of Trade and Industry has included Storage Area Networks SANs in their implementation strategy and the CR should coordinate with them to achieve the best backup and recovery solution.

11.4 Network Security:

By using the AAA protocol, SAN and VPNs the CR office will address the major issues required to implement network security and data privacy.

11.5 Data Transfer:

With the implementation of a SAN the CR office will be connected to a common communications and data transfer infrastructure.

11.6 Antivirus Protection:

Antivirus for web communication will prevent viruses, Trojans horses, worms, and spy-ware from entering the Commercial Registry systems.

11.7 Physical Security

To provide Power Protection, the use of generators for an emergency greed or redundant electricity greed is recommended. Server security will be achieved by installing e–cards Control Access systems in the server rooms and sufficient Air Conditioning (AC) units must be installed in the server rooms to ensure that the equipment is operating within the temperature requirements. In addition, 24/7 security guards must be available

12.0 HUMAN RESOURCES

The IT department of the Commercial Registry Authority is extremely understaffed and does not have the proper expertise to support and maintain an enterprise wide IT system. There is lack of specialized expertise such as database administration and network administration. The following subsections describe the current staffing and suggest the optimal staffing requirements and the training requirements.

12.1 Current Staffing

The current staffing of the Commercial Registry is four IT skilled staff members supporting the operations of the Commercial Registry. The IT staff is distributed as follows:

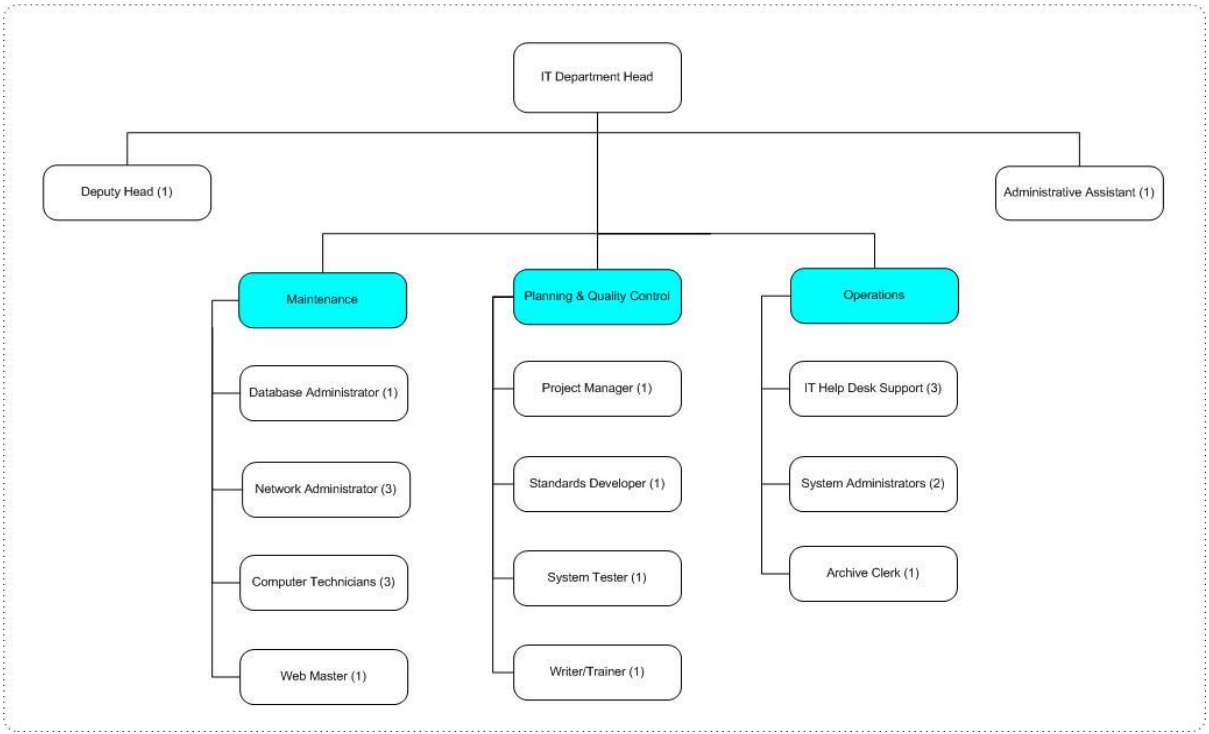
- Two (2) supporting the Commercial Registry Head Office
- Two (2) supporting the Trade Marks and Industrial Designs offices.

The roles of the four IT staff members are:

- Oversight and maintenance of databases
- Troubleshooting existing applications and computers
- Conducting training
- Supporting the staff of the Commercial Registry, Trade Marks and Industrial Design staff in all related IT matters.

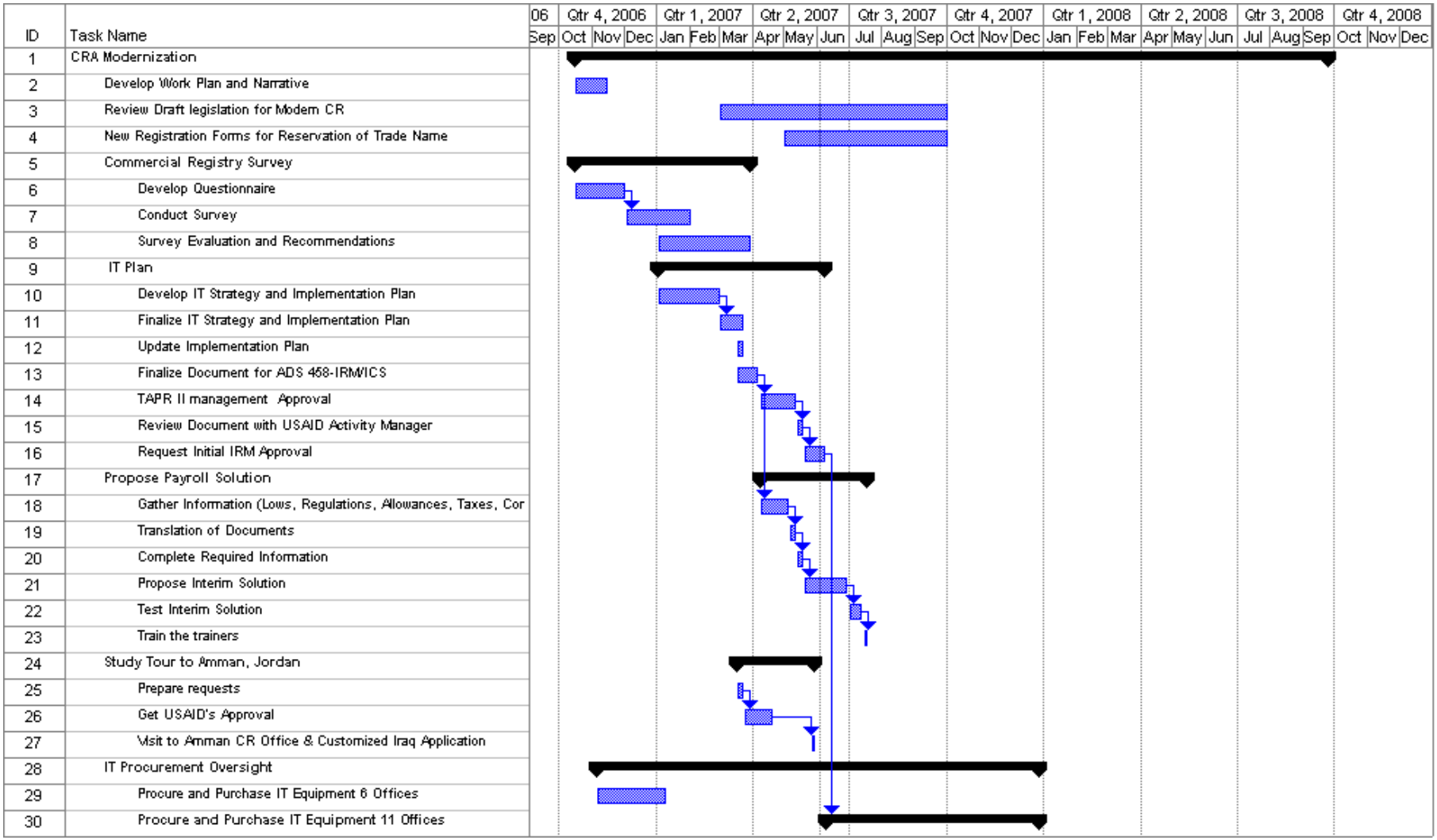
12.2 Optimal Staffing Requirement

To assist the Commercial Registry Authority in achieving its objectives, the IT Department must have IT personnel in sufficient quantity and with the proper skills. The IT Department must have at least the following organizational structure.



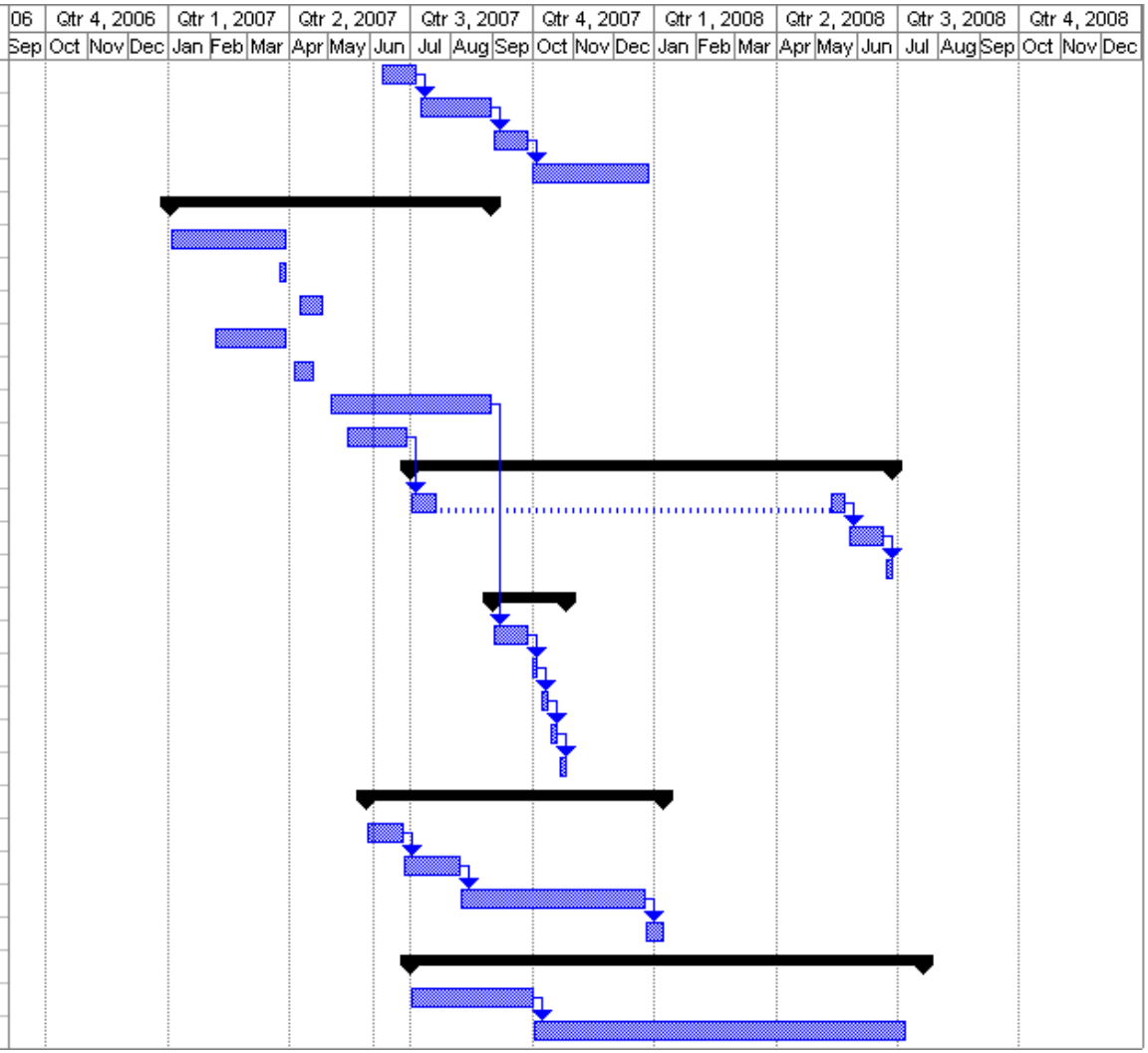
13.0 WORK PLAN

The following work plan sets out the tasks of the IT department in the short term to automate the functions of the Commercial Registry.

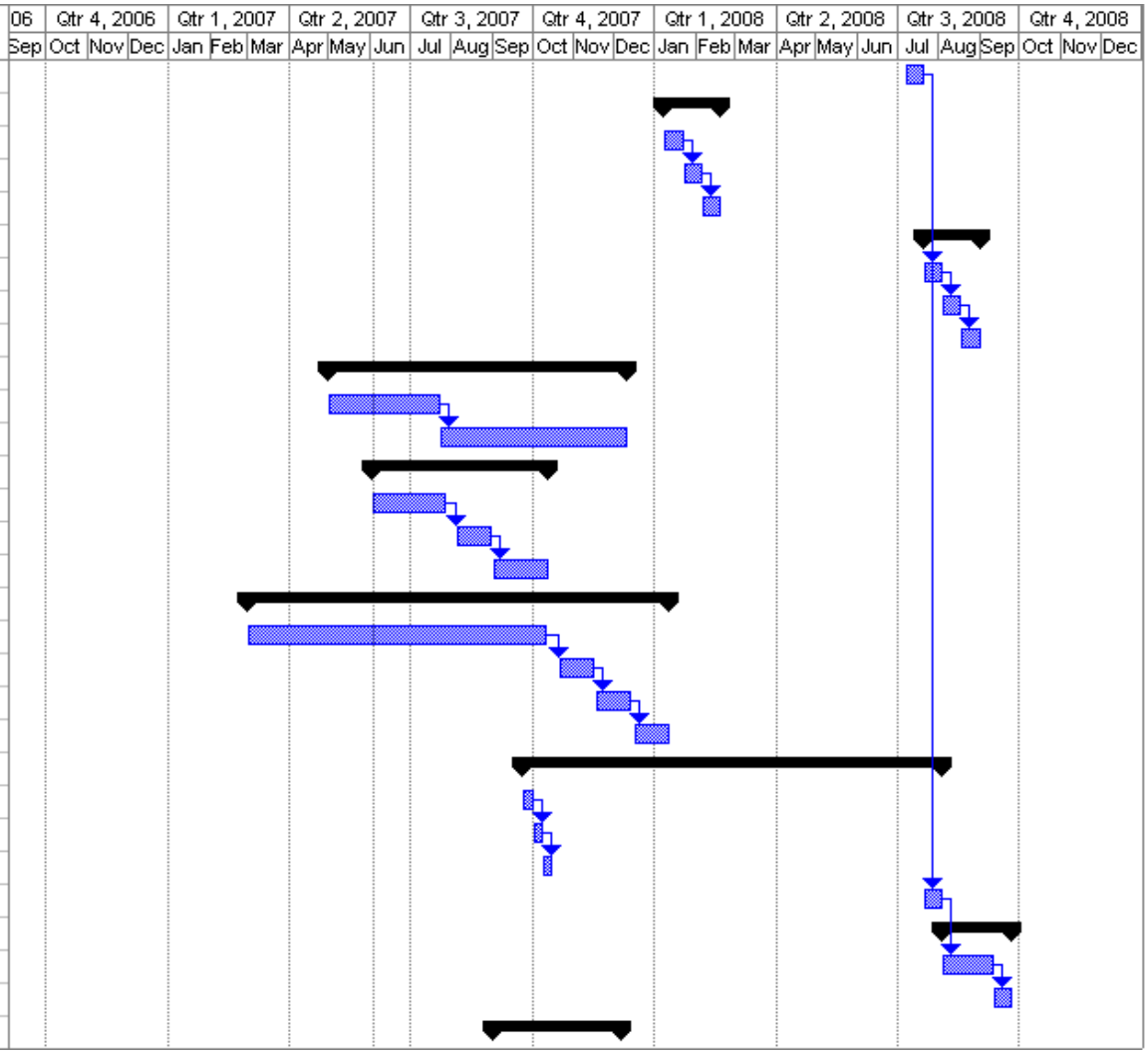


ID	Task Name
1	CRA Modernization
2	Develop Work Plan and Narrative
3	Review Draft legislation for Modern CR
4	New Registration Forms for Reservation of Trade Name
5	Commercial Registry Survey
6	Develop Questionnaire
7	Conduct Survey
8	Survey Evaluation and Recommendations
9	IT Plan
10	Develop IT Strategy and Implementation Plan
11	Finalize IT Strategy and Implementation Plan
12	Update Implementation Plan
13	Finalize Document for ADS 458-IRM/ICS
14	TAPR II management Approval
15	Review Document with USAID Activity Manager
16	Request Initial IRM Approval
17	Propose Payroll Solution
18	Gather Information (Laws, Regulations, Allowances, Taxes, Cor
19	Translation of Documents
20	Complete Required Information
21	Propose Interim Solution
22	Test Interim Solution
23	Train the trainers
24	Study Tour to Amman, Jordan
25	Prepare requests
26	Get USAID's Approval
27	Visit to Amman CR Office & Customized Iraq Application
28	IT Procurement Oversight
29	Procure and Purchase IT Equipment 6 Offices
30	Procure and Purchase IT Equipment 11 Offices

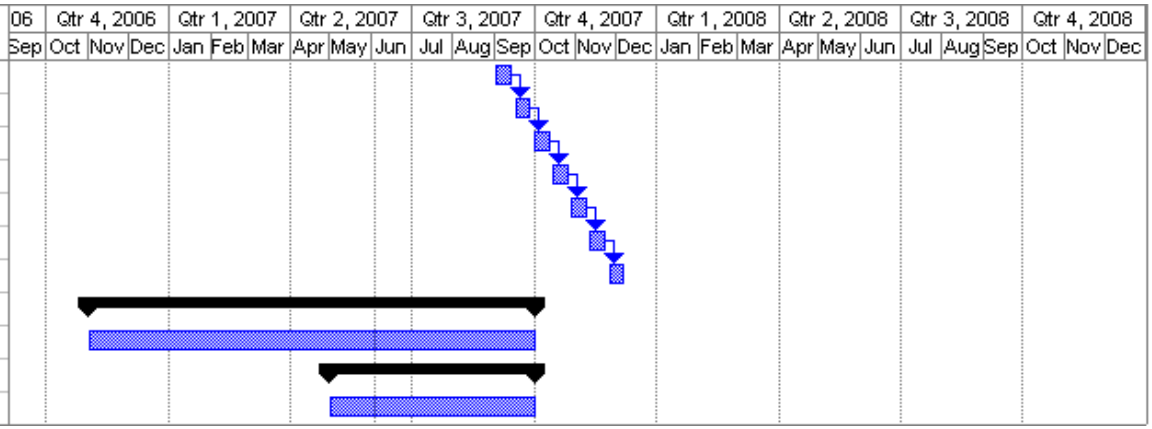
ID	Task Name
31	Prepare RFP for IT Equipment & Software
32	Publish RFP for IT Equipment & Software
33	Build Evaluation and Contract Award
34	Delivery and Installation
35	CR Functional and System Requirements
36	Reservation of Trade Names
37	Develop New Organizational Chart
38	Interview Proposed Candidates
39	Propose Amendents to Legislation - Trade Names
40	Monique's Holidays
41	Registration
42	Propose Amendments to Legislation - Reservation
43	CR Information Systems Architecture
44	Develop Case Tracking Requirements for CR System
45	Develop Software Architecture Document
46	Review and Approval
47	CR IT Network and Infrastructure
48	Design Network Infrastructure
49	Develop Backup and Recovery Policies and Procedures
50	Develop Disaster Recovery Policies and Procedures
51	Develop Security Policies and Procedures
52	Review and Approval
53	Implement CR Application - Option I
54	Secure rights and full copy of the COTS package
55	Prepare RFP to select local IT Vendor
56	Customization of CR System
57	Installation of new CR System
58	Implement CR Application - Option II
59	Prepare RFP to select local IT Vendor
60	Development of New CR System



ID	Task Name
61	Installation of new CR System
62	Acceptance Testing Option I
63	Develop Test Case Scenarios
64	Develop Testing Plan
65	Conduct Acceptance Testing
66	Acceptance Testing Option II
67	Develop Test Case Scenarios
68	Develop Testing Plan
69	Conduct Acceptance Testing
70	Site Preparation
71	Prepare Site Preparation Plan and Budget (CRA)
72	Implement Site Preparation Plan
73	Implement CR Website
74	Define Website Content (CRA)
75	Prepare RFP to subcontract website development
76	Development and Installation of Website
77	Data Preparation and Data Migration
78	Data Checking and Quality Control (CRA)
79	Prepare Data Migration Plan (TAPR II)
80	Implement Data Migration Plan
81	Validate Data Quality
82	Traning
83	Conduct System Administrators Training
84	Conduct Network Administration Training
85	Conduct Datanbase Administration Training
86	Conduct Train the Trainer Sessions (application training)
87	Maintenance and Support
88	Establish the CRA Help Desk Facility
89	Train Help Desk Operators
90	Negotiate and Develop Interfaces (CRA)



ID	Task Name
91	GAFI
92	Chamber of Commerce
93	Tax Authority
94	Statistical Office
95	Commercial Banks
96	Commercial Courts
97	IPR
98	Consultation Oversight
99	Conduct consultations, seminars
100	Consultation Oversight
101	Develop Staff manual and Job Description



APPENDIX A – DETAILED COST ESTIMATES

Appendix A1 – Summary

#	Item	Total Budget	Year 1			Year 2			Year 3		
			Total Year 1	USAID	CRA	Total Year 2	USAID	CRA	Total Year 3	USAID	CRA
1	Initial IT Equipment CR Offices - 6 Offices (CoC)	42,024.00	42,024.00	42,024.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Additional IT Equipment CR Offices - for the same 6 Offices (CoC)	23,040.00	23,040.00	23,040.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	IT Equipment CR Offices - 11 Offices (CoC)	143,530.00	143,530.00	143,530.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	IT Equipment CR Offices - 10 Offices (CoC)	131,800.00	131,800.00	131,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	IT Equipment Headquarters (50 Users - Desktops, Ups, Printers, etc.)	72,930.00	0.00	0.00	0.00	72,930.00	72,930.00	0.00	0.00	0.00	0.00
6	IT Equipment CR Offices - 28 Offices	369,040.00	0.00	0.00	0.00	369,040.00	205,520.00	163,520.00	0.00	0.00	0.00
7	All Software Software	552,306.89	0.00	0.00	0.00	552,306.89	378,906.89	173,400.00	0.00	0.00	0.00
8	Security & Infrastructure	207,500.00	0.00	0.00	0.00	207,500.00	99,500.00	108,000.00	0.00	0.00	0.00
9	Data Center IT Equipment	91,378.00	0.00	0.00	0.00	91,378.00	91,378.00	0.00	0.00	0.00	0.00
10	Data Center Facility	75,000.00	75,000.00	0.00	75,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL COST OF GOODS	**1,708,548.89**	**415,394.00**	**340,394.00**	**75,000.00**	**1,293,154.89**	**848,234.89**	**444,920.00**	**0.00**	**0.00**	**0.00**
11	Installation (8.5 %)	101,033.46	28,933.49	28,933.49	N/A	72,099.97	72,099.97	N/A	0.00	0.00	N/A
12	Airfright (10%)	118,862.89	34,039.40	34,039.40	N/A	84,823.49	84,823.49	N/A	0.00	0.00	N/A
13	Support and Maintenance Costs (see notes)	101,843.19	17,019.70	17,019.70	N/A	42,411.74	42,411.74	N/A	42,411.74	0.00	42,411.74
	Total Goods	**2,030,288.42**	**495,386.59**	**420,386.59**	**75,000.00**	**1,492,490.09**	**1,047,570.09**	**444,920.00**	**42,411.74**	**0.00**	**42,411.74**
Other Costs											
14	Training	501,923.86	301,923.86	301,923.86	0.00	100,000.00	100,000.00	0.00	100,000.00	100,000.00	0.00
15	Office Supplies (US$ / Office / Year)	1,050,000.00	350,000.00	0.00	350,000.00	350,000.00	0.00	350,000.00	350,000.00	0.00	350,000.00
16	Infrastructure - Opening (3,000 EGP per Person)	229,090.91	81,818.18	0.00	81,818.18	81,818.18	0.00	81,818.18	65,454.55	0.00	65,454.55
17	Infrastructure - Closing (500 EGP per Person)	38,181.82	13,636.36	0.00	13,636.36	13,636.36	0.00	13,636.36	10,909.09	0.00	10,909.09
18	Cost of Moving (300 EGP per Person)	22,909.09	8,181.82	0.00	8,181.82	8,181.82	0.00	8,181.82	6,545.45	0.00	6,545.45
19	Infrastructure - Renovation (3,000 EGP per Person)	300,000.00	109,090.91	0.00	109,090.91	109,090.91	0.00	109,090.91	81,818.18	0.00	81,818.18
20	Renting Space	30,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00
21	Communication (Telephone, Fax)	45,000.00	15,000.00	0.00	15,000.00	15,000.00	0.00	15,000.00	15,000.00	0.00	15,000.00
22	Furniture (3,300 EGP per Person)	381,000.00	180,000.00	0.00	180,000.00	111,000.00	0.00	111,000.00	90,000.00	0.00	90,000.00
23	Air Conditioning (1000 EGP per Person)	152,727.27	80,000.00	80,000.00	0.00	36,363.64	36,363.64	0.00	36,363.64	36,363.64	0.00
24	Transportation, Accomodation and Perdiem (9,000 US$ / Month)	324,000.00	108,000.00	0.00	108,000.00	108,000.00	0.00	108,000.00	108,000.00	0.00	108,000.00
25	Purchase of Generators (25KW @ 12,000 per Office)	80,000.00	60,000.00	60,000.00	0.00	10,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00
	Total Other Activities	**3,154,832.95**	**1,317,651.13**	**441,923.86**	**875,727.27**	**953,090.91**	**146,363.64**	**806,727.27**	**884,090.91**	**146,363.64**	**737,727.27**
	Grand Total	**5,185,121.37**	**1,813,037.72**	**862,310.45**	**950,727.27**	**2,445,581.00**	**1,193,933.72**	**1,251,647.27**	**926,502.65**	**146,363.64**	**780,139.02**
	Total USAID	**2,202,607.81**	**Total CRA**	**2,982,513.56**	**Total**	**5,185,121.37**					

Appendix A2 – Data Center Facility

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Refurbishing of Data Center Room	Partitioning & Civil Works	1	10,000.00	10,000.00	0.00	10,000.00	0.00	10,000.00
2	Ceiling	Ceiling (Sq. meters)	25	1,500.00	37,500.00	0.00	37,500.00	0.00	37,500.00
3	Access Control	Access Control	1	1,500.00	1,500.00	0.00	1,500.00	0.00	1,500.00
4	Fire Detection	Fire Detection & FM 200 System	1	10,000.00	10,000.00	0.00	10,000.00	0.00	10,000.00
5	Emergency Greed (Electricity)	Gillete (Diesel Powered) 25KW Standbay Generator	1	12,000.00	12,000.00	0.00	12,000.00	0.00	12,000.00
6	Electricity Distribution	Main Power Distribution Panel	1	1,000.00	1,000.00	0.00	1,000.00	0.00	1,000.00
7	Outlets	Electrical Sockets, Network Outlets, Telephone Outlets	10	100.00	1,000.00	0.00	1,000.00	0.00	1,000.00
8	Room Cooling	Precision Air Conditioning Unit	1	2,000.00	2,000.00	0.00	2,000.00	0.00	2,000.00
			TOTAL COST OF GOODS		**75,000.00**	**0.00**	**75,000.00**	**0.00**	**75,000.00**
9	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	0.00	N/A	0.00	N/A
10	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	0.00	N/A	0.00	N/A
11	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	0.00	7,500.00	0.00	N/A
12	Support and Maintenance Costs	05.0% * Total Cost	1	N/A	N/A	0.00	3,750.00	0.00	N/A
			TOTAL OF US AND LOCAL COSTS			**0.00**	**86,250.00**	**N/A**	**N/A**
			TOTAL OF TAPR II AND CR COSTS			**N/A**	**N/A**	**0.00**	**75,000.00**
								GRAND TOTAL	**75,000.00**

Appendix A3 – Data Center Solution

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Storage Area Network	HP StorageWorks 1000 MSA for Small Business SAN G2 Kit	1	8,999.00	8,999.00	8,999.00	0.00	8,999.00	0.00
2	BladeSystem Enclosure	HP BladeSystem starter kit	1	3,099.00	3,099.00	3,099.00	0.00	3,099.00	0.00
3	Type A - Database Servers	HP ProLiant BL20p Server Blade Quad Core	3	4,129.00	12,387.00	12,387.00	0.00	12,387.00	0.00
4	Type B - Other Purpose Servers	HP ProLiant BL20p Server Blade Dual Core	5	2,879.00	14,395.00	14,395.00	0.00	14,395.00	0.00
5	Extra memory for Type A Servers	HP 2GB Fully Buffered DIMM PC2-5300 2X1GB Memory	3	520.00	1,560.00	1,560.00	0.00	1,560.00	0.00
6	Hard Drives for Servers	HP 36GB Hot Plug 2.5 SAS 15,000 rpm Hard Drive	8	369.00	2,952.00	2,952.00	0.00	2,952.00	0.00
7	Pass-Thru Card	HP PCI Express Mezzanine Card for HP BladeSystem c-Class	1	192.00	192.00	192.00	0.00	192.00	0.00
8	SAN Switch	McData 4GB SAN Switch for HP p-Class Blade System	1	6,500.00	6,500.00	6,500.00	0.00	6,500.00	0.00
9	SAN Storage (SCSI HDD)	HP 146GB 10K U320 pluggable hard drive WW	6	479.00	2,874.00	2,874.00	0.00	2,874.00	0.00
10	Tape Library	HP MSL6030 1 Ultrium 960 Dr Tape Library	1	12,120.00	12,120.00	12,120.00	0.00	12,120.00	0.00
11	UPSs	APC Symmetra LX 12kVA Scalable to 16kVA Rack-mount	2	11,200.00	22,400.00	22,400.00	0.00	22,400.00	0.00
12	KVM Server Switch	HP CAT5 0x1x8 KVM Server Console Switch	1	1,700.00	1,700.00	1,700.00	0.00	1,700.00	0.00
13	LCD Monitor, Keyboard and Mouse	Rack mountable	1	2,200.00	2,200.00	2,200.00	0.00	2,200.00	0.00
		TOTAL COST OF GOODS			**91,378.00**	**91,378.00**	**0.00**	**91,378.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	7,767.13	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	9,137.80	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	9,137.80	0.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	4,568.90	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**117,420.73**	**4,568.90**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**91,378.00**	**0.00**
								GRAND TOTAL	**91,378.00**

Appendix A4 – Security Infrastructure

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Cisco Catalyst Switch 4948	Cisco Catalyst 4948, IP Base software image	0	8,500.00	0.00	0.00	0.00	0.00	0.00
2	Spare Fan for Switch 4948	Cisco Catalyst 4900 fan tray (spare)	0	200.00	0.00	0.00	0.00	0.00	0.00
3	Redundant Power Supply	Cisco Catalyst 4948 300-Watt Ac Power Supply Redundant	0	500.00	0.00	0.00	0.00	0.00	0.00
4	Cisco Catalyst 3750G Switch	24 Ethernet 10/100/1000+ 4 SFP-Based Gb Ethernet ports	3	5,500.00	16,500.00	16,500.00	0.00	16,500.00	0.00
5	Stackable Cables	Cisco StackWise 50cm stacking cable	2	150.00	300.00	300.00		300.00	
6	Cisco Catalyst 2960-24TT	24 Ethernet 10/100 & 2 fixed Ethernet 10/100/1000 uplink ports	2	1,300.00	2,600.00	2,600.00	0.00	2,600.00	0.00
7	Cisco ASA5520 with IPS module	ASA 5520 VPN/Firewall with SSM-AIP-20 (IPS) bundle	1	13,000.00	13,000.00	13,000.00	0.00	13,000.00	0.00
8	SSL VPN license	Cisco ASA 5500 Series 50-user SSL VPN license	2	3,000.00	6,000.00	6,000.00	0.00	6,000.00	0.00
9	Cisco AAA Server Applaince	Cisco Secure ACS Solution Engine 4.1	1	55,000.00	55,000.00	55,000.00	0.00	55,000.00	0.00
10	Cisco PIX515E with 3 interfaces	PIX 515E Unrestricted Bundle with additional interface	0	4,750.00	0.00	0.00	0.00	0.00	0.00
11	ISA Server Appliance	HP ISA Server Appliance with 3 interfaces	1	4,000.00	4,000.00	4,000.00	0.00	4,000.00	0.00
12	Servers' Enclosure Rack	HP 42U Rack (10642)	1	2,000.00	2,000.00	2,000.00	0.00	2,000.00	0.00
13	UTP Cables	CAT 6, UTP Cables (3m)	20	5.00	100.00	100.00	0.00	100.00	0.00
14	MPLS Network Services	2 Mbps connection (routers included)	27	4,000.00	108,000.00	0.00	108,000.00	0.00	108,000.00
		TOTAL COST OF GOODS			**207,500.00**	**99,500.00**	**108,000.00**	**99,500.00**	**108,000.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	8,457.50	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	9,950.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	9,950.00	10,800.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	10,375.00	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**127,857.50**	**129,175.00**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**99,500.00**	**108,000.00**
								GRAND TOTAL	**207,500.00**

Appendix A5 – IT Equipment HQ Office (CRA)

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	50	988.00	49,400.00	49,400.00	0.00	49,400.00	0.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	50	180.00	9,000.00	9,000.00	0.00	9,000.00	0.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	2	1,300.00	2,600.00	0.00	2,600.00	2,600.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem	1	650.00	650.00	0.00	650.00	650.00	0.00
5	Local Area Network	Rack, 1 24-port patch panel, 35 RJ-45, patch cords and UPS	10	100.00	1,000.00	0.00	1,000.00	1,000.00	0.00
6	Copying Machine	Xerox C118	2	2,250.00	4,500.00	0.00	4,500.00	4,500.00	0.00
7	FAX	Panasonic	2	350.00	700.00	0.00	700.00	700.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer	7	440.00	3,080.00	0.00	3,080.00	3,080.00	0.00
9	Scanner	HP Scanjet 8270 Document Flatbed Scanner	2	1,000.00	2,000.00	0.00	2,000.00	2,000.00	0.00
		TOTAL COST OF GOODS			**72,930.00**	**58,400.00**	**14,530.00**	**72,930.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	4,964.00	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	5,840.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	5,840.00	1,453.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	3,646.50	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**75,044.00**	**19,629.50**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**72,930.00**	**0.00**
								GRAND TOTAL	**72,930.00**

Appendix A6 – Initial IT Equipment 6 Offices (CoC)

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	18	988.00	17,784.00	17,784.00	0.00	17,784.00	0.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	18	180.00	3,240.00	3,240.00	0.00	3,240.00	0.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	0	1,300.00	0.00	0.00	0.00	0.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem with IP/Firewall/IPSe	0	650.00	0.00	0.00	0.00	0.00	0.00
5	Local Area Network	1 9U Rack w/FAN, 1 24-port patch panel, 35 sockets RJ-45, 35*1	6	900.00	5,400.00	0.00	5,400.00	5,400.00	0.00
6	Copying Machine	Xerox C118	6	2,250.00	13,500.00	0.00	13,500.00	13,500.00	0.00
7	FAX	Panasonic	6	350.00	2,100.00	0.00	2,100.00	2,100.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer		440.00	0.00	0.00	0.00	0.00	0.00
9	Pix Firewall	Cisco PIX 501 Security Appliance (10 Users)	0	450.00	0.00	0.00	0.00	0.00	0.00
10	Scanner	HP Scanjet 8270 Document Flatbed Scanner	0	1,000.00	0.00	0.00	0.00	0.00	0.00
			TOTAL COST OF GOODS		**42,024.00**	**21,024.00**	**21,000.00**	**42,024.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	1,787.04	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	2,102.40	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	2,102.40	2,100.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	2,101.20	0.00	N/A
			TOTAL OF US AND LOCAL COSTS			**27,015.84**	**25,201.20**	**N/A**	**N/A**
			TOTAL OF TAPR II AND CR COSTS			**N/A**	**N/A**	**42,024.00**	**0.00**
								GRAND TOTAL	**42,024.00**

Appendix A7 – Additional IT Equipment 6 Offices (CoC)

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	0	988.00	0.00	0.00	0.00	0.00	0.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	0	180.00	0.00	0.00	0.00	0.00	0.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	6	1,300.00	7,800.00	0.00	7,800.00	7,800.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem with IP/Firewall/IPSe	6	650.00	3,900.00	0.00	3,900.00	3,900.00	0.00
5	Local Area Network	1 9U Rack w/FAN, 1 24-port patch panel, 35 sockets RJ-45, 35*1	0	900.00	0.00	0.00	0.00	0.00	0.00
6	Copying Machine	Xerox C118	0	2,250.00	0.00	0.00	0.00	0.00	0.00
7	FAX	Panasonic	0	350.00	0.00	0.00	0.00	0.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer	6	440.00	2,640.00	0.00	2,640.00	2,640.00	0.00
9	Pix Firewall	Cisco PIX 501 Security Appliance (10 Users)	6	450.00	2,700.00	0.00	2,700.00	2,700.00	0.00
10	Scanner	HP Scanjet 8270 Document Flatbed Scanner	6	1,000.00	6,000.00	0.00	6,000.00	6,000.00	0.00
		TOTAL COST OF GOODS			**23,040.00**	**0.00**	**23,040.00**	**23,040.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	0.00	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	0.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	0.00	2,304.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	1,152.00	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**0.00**	**26,496.00**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**23,040.00**	**0.00**
								GRAND TOTAL	**23,040.00**

Appendix A8 – IT Equipment 11 Offices (CoC)

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	55	988.00	54,340.00	54,340.00	0.00	54,340.00	0.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	55	180.00	9,900.00	9,900.00	0.00	9,900.00	0.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	11	1,300.00	14,300.00	0.00	14,300.00	14,300.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem with IP/Firewall/IPSe	11	650.00	7,150.00	0.00	7,150.00	7,150.00	0.00
5	Local Area Network	1 9U Rack w/FAN, 1 24-port patch panel, 35 sockets RJ-45, 35*1	11	900.00	9,900.00	0.00	9,900.00	9,900.00	0.00
6	Copying Machine	Xerox C118	11	2,250.00	24,750.00	0.00	24,750.00	24,750.00	0.00
7	FAX	Panasonic	11	350.00	3,850.00	0.00	3,850.00	3,850.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer	11	440.00	4,840.00	0.00	4,840.00	4,840.00	0.00
9	Pix Firewall	Cisco PIX 501 Security Appliance (10 Users)	10	450.00	4,500.00	0.00	4,500.00	4,500.00	0.00
10	Scanner	HP Scanjet 8270 Document Flatbed Scanner	10	1,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00
		TOTAL COST OF GOODS			**143,530.00**	**64,240.00**	**79,290.00**	**143,530.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	5,460.40	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	6,424.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	6,424.00	7,929.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	7,176.50	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**82,548.40**	**94,395.50**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**143,530.00**	**0.00**
								GRAND TOTAL	**143,530.00**

Appendix A9 – IT Equipment 10 Offices (CoC)

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	50	988.00	49,400.00	49,400.00	0.00	49,400.00	0.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	50	180.00	9,000.00	9,000.00	0.00	9,000.00	0.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	10	1,300.00	13,000.00	0.00	13,000.00	13,000.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem with IP/Firewall/IPSe	10	650.00	6,500.00	0.00	6,500.00	6,500.00	0.00
5	Local Area Network	1 9U Rack w/FAN, 1 24-port patch panel, 35 sockets RJ-45, 35*1	10	900.00	9,000.00	0.00	9,000.00	9,000.00	0.00
6	Copying Machine	Xerox C118	10	2,250.00	22,500.00	0.00	22,500.00	22,500.00	0.00
7	FAX	Panasonic	10	350.00	3,500.00	0.00	3,500.00	3,500.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer	10	440.00	4,400.00	0.00	4,400.00	4,400.00	0.00
9	Pix Firewall	Cisco PIX 501 Security Appliance (10 Users)	10	450.00	4,500.00	0.00	4,500.00	4,500.00	0.00
10	Scanner	HP Scanjet 8270 Document Flatbed Scanner	10	1,000.00	10,000.00	0.00	10,000.00	10,000.00	0.00
		TOTAL COST OF GOODS			**131,800.00**	**58,400.00**	**73,400.00**	**131,800.00**	**0.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	4,964.00	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	5,840.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	5,840.00	7,340.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	6,590.00	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**75,044.00**	**87,330.00**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**131,800.00**	**0.00**
								GRAND TOTAL	**131,800.00**

Appendix A10 – IT Equipment 28 Offices

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	Desktop Computers	HP dc5700 desktop Computer, HP L1706 17" LCD Monitors	140	988.00	138,320.00	0.00	138,320.00	0.00	138,320.00
2	Desktop UPS	APC RS 800VA UPS 220V with Egyptian style Cables	140	180.00	25,200.00	0.00	25,200.00	0.00	25,200.00
3	Switch	24-port Cisco Switch WS-C2960-24TT-L	28	1,300.00	36,400.00	0.00	36,400.00	36,400.00	0.00
4	ADSL Modem	Cisco 837 ADSL broadband Router/Modem with IP/Firewall/IPSe	28	650.00	18,200.00	0.00	18,200.00	18,200.00	0.00
5	Local Area Network	1 9U Rack w/FAN, 1 24-port patch panel, 35 sockets RJ-45, 35*1	28	900.00	25,200.00	0.00	25,200.00	25,200.00	0.00
6	Copying Machine	Xerox C118	28	2,250.00	63,000.00	0.00	63,000.00	63,000.00	0.00
7	FAX	Panasonic	28	350.00	9,800.00	0.00	9,800.00	9,800.00	0.00
8	Network Printer	HP LaserJet 1022nw Printer	28	440.00	12,320.00	0.00	12,320.00	12,320.00	0.00
9	Pix Firewall	Cisco PIX 501 Security Appliance (10 Users)	28	450.00	12,600.00	0.00	12,600.00	12,600.00	0.00
10	Scanner	HP Scanjet 8270 Document Flatbed Scanner	28	1,000.00	28,000.00	0.00	28,000.00	28,000.00	0.00
		TOTAL COST OF GOODS			**369,040.00**	**0.00**	**369,040.00**	**205,520.00**	**163,520.00**
15	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	0.00	N/A	0.00	N/A
16	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	0.00	N/A	0.00	N/A
17	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	0.00	36,904.00	0.00	N/A
18	Support and Maintenance Costs	05.0% * Total Cost (Annualy)	1	N/A	N/A	0.00	18,452.00	0.00	N/A
		TOTAL OF US AND LOCAL COSTS				**0.00**	**424,396.00**	**N/A**	**N/A**
		TOTAL OF TAPR II AND CR COSTS				**N/A**	**N/A**	**205,520.00**	**163,520.00**
								GRAND TOTAL	**369,040.00**

Appendix A11– Software

#	Item	Description	QTY	Unit	Extended	Procurement		Financed	
				Price	Price	US	Local	TAPR II	CRA
1	MS Windows Server OS	Windows 2003 SP1 CALs	200	150.00	30,000.00	0.00	30,000.00	0.00	30,000.00
2	Firewall Application	MS Windows ISA Server 2006	0	1,500.00	0.00	0.00	0.00	0.00	0.00
3	Database Server	SQL Server 2005 (Enterprise Edition)	3	4,500.00	13,500.00	0.00	13,500.00	0.00	13,500.00
4	Database Server Licenses	SQL CAL per Device	200	140.00	28,000.00	0.00	28,000.00	0.00	28,000.00
5	Mail Server	MS Exchange Server 2007	1	3,900.00	3,900.00	0.00	3,900.00	0.00	3,900.00
6	Mail Server Licenses	MS Exchange CALs	200	5.00	1,000.00	0.00	1,000.00	0.00	1,000.00
7	Data Backup	Veritas with SQL and exchange module	1	4,189.08	4,189.08	4,189.08	0.00	4,189.08	0.00
8	Imaging and deployment s/w	Acronis	1	999.00	999.00	999.00	0.00	999.00	0.00
9	HelpDesk Support	Track-IT Enterprise by Numara	1	5,000.00	5,000.00	5,000.00	0.00	5,000.00	0.00
10	Document Management System	Arab Docs (Sakhr)	1	100,000.00	100,000.00	100,000.00	0.00	100,000.00	0.00
11	Symantec Antivirus 10.2	Corporate Edition for Workstation and Network Servers	200	35.00	7,000.00	7,000.00	0.00	7,000.00	0.00
12	MS Windows Desktop OS	Windows XP Professional SP2 or Vista	200	0.00	0.00	0.00	0.00	0.00	0.00
13	Virtual Server (Test/Training environemt)	MS Virtual Server 2005	3	1,000.00	3,000.00	0.00	3,000.00	0.00	3,000.00
14	Office Application	MS Office 2007 (Standard)	200	350.00	70,000.00	0.00	70,000.00	0.00	70,000.00
15	Other Office Application - Graphics	MS Visio 2007	20	200.00	4,000.00	0.00	4,000.00	0.00	4,000.00
16	Other Office Application - Planning	MS Project 2007	20	1,000.00	20,000.00	0.00	20,000.00	0.00	20,000.00
17	CR - Application	Commercial Registry Application Customization/Development	1	250,000.00	250,000.00	0.00	250,000.00	250,000.00	0.00
				TOTAL COST OF GOODS	**540,588.08**	**117,188.08**	**423,400.00**	**367,188.08**	**173,400.00**
18	Installation	08.5% * Total Cost of US Purchase (G11*8.5%)	1	N/A	N/A	N/A	N/A	0.00	N/A
19	Airfright	10.0% * Total Cost of US Purchase (G11*10%)	1	N/A	N/A	N/A	N/A	0.00	N/A
20	Contingency	10.0% * Total Cost (J18*10%)	1	N/A	N/A	11,718.81	42,340.00	11,718.81	N/A
21	Support and Maintenance Costs	05.0% * Total Cost (J18*5%) (Annualy)	1	N/A	N/A	5,859.40	21,170.00	0.00	N/A
					TOTAL OF US AND LOCAL COSTS	**134,766.29**	**486,910.00**	**N/A**	**N/A**
					TOTAL OF TAPR II AND CR COSTS	**N/A**	**N/A**	**378,906.89**	**173,400.00**
								GRAND TOTAL	**552,306.89**

APPENDIX B – SPECIFICATIONS

Appendix B1 – Data Center Facility

DATA CENTER FACILITY		
#	**ITEM**	**QTY/VALUE**
B1.01	**EMERGENCY GREED (GILLETTE (DIESEL POWERED) 25 KW STANDBAY GENERATOR**	
B1.01.01	Maximum KW @ single phase	25
B1.01.02	Standby KW @ single phase	23
B1.01.03	Standby Amps @ 120 Volts	192
B1.01.04	Standby Amps @ 240 Volts	96
B1.01.05	Engine Induction System	Naturally Aspirated Turbo Charger
B1.01.06	Engine HP Max Rating	35
B1.01.07	Engine Cylinders	4
B1.01.08	Fuel Injection System	Direct with "glo" plugs
B1.01.09	Fuel Use @ 100% Load (Gal/hr)	1.8
B1.01.10	Engine Cooling	Liquid cooling
B1.01.11	Protection Controls	Shutdown for: Low oil, High Temp, overspeed, overcrank
B1.01.12	Batteries Requires	12 VDC, 660 CCA, 55 Amp/hr
B1.02	**AIR CONDITIONING UNIT**	
B1.02.01	Chassis Type	Slide out
B1.02.02	Cooling Capacity	36000 BTU
B1.02.03	Heating Capacity	0
B1.02.04	Maximum Cooling Amps.	19.6
B1.02.05	Maximum Cooling Watts	4235
B1.02.06	Control Type	Knobs

DATA CENTER FACILITY		
#	**ITEM**	**QTY/VALUE**
B1.02.07	CFM Room Circulation	725
B1.02.08	Energy Efficiency Rating	8.5
B1.02.09	Plug Type	D - 30 AMP
B1.02.10	Voltage	208/230 Volts

Appendix B2 – Data Center Solution

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.01	**HP STORAGE WORKS 1000 MODULAR SMART ARRAY FOR SMALL BUSINESS SAN G2 KIT**	
B2.01.01	MSA1000 Controller	1
B2.01.02	MSA Fiber Channel I/O Module with 2 Gb SFP	1
B2.01.03	Redundant Hot Pluggable Power Supplies	1
B2.01.04	HP QLE220 FC SMB HBA	2
B2.01.06	4/10q FC 10 Port Switch w/4 - SPFs	1
B2.01.07	Rack shelf for installation of 4/10 switch	1
B2.01.08	Rack mounting Kit for MSA1000	1
B2.01.09	SMB Support CD	1
B2.01.10	Serial Cable	1
B2.01.11	Power Cables	2
B2.01.12	5m FC Cables	3
B2.01.13	Small Business SAN Installation CD	1
B2.01.14	Total Drive Count	0/42
B2.01.15	Maximum Storage	12.6TB

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.01.16	Expansion Options	MSA30
B2.01.17	Host Interface	2Gb Fiber Channel
B2.01.18	Drive Interface	SCSI
B2.01.19	Drive Form Factor	3.5in
B2.01.20	Clustering Support	Yes
B2.01.21	SAN Backup Support	Yes
B2.01.22	Storage Mirroring Support	Yes
B2.01.23	Systems Insight Manager Support	Yes
B2.01.24	OS Support	Windows, Linux
B2.01.25	Rack Height	4U
B2.01.26	Warranty (parts/labor/onsite)	3-1-1
B2.02	**HP BLADE SYSTEM STARTER KIT (P-CLASS ENCLOSURE)**	
B2.02.01	Power Enclosure	1U
B2.02.02	Power Supplies	2
B2.02.03	Blade System	p-Class
B2.02.04	Rapid Deployment Pack Licenses	8
B2.02.05	Form Factor (Rack-mountable)	7U
B2.02.06	Dimensions (WxDxH) (inches)	17.6 x 28.9 x 10.5
B2.02.07	Power Device	2
B2.03	**HP BLADE SYSTEM C-7000 ENCLOSURE**	
B2.03.01	Half-Height Blades Device Bays	Up to 16
B2.03.02	Full-Height Blades Device Bays	Up to 8
B2.03.03	Mixed configurations supported?	Yes
B2.03.04	Interconnect bays	8 any I/O fabric

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.03.05	Power supply	Up to 6 x 2250W
B2.03.06	Fans	Up to 10
B2.03.07	Onboard Administrator	2
B2.03.08	Height	10U
B2.03.09	3-phase International model	2 x IEC 309 5-Pin
B2.03.10	Single-phase model	6 x IEC-320 C20
B2.03.11	Ethernet Module	HP 1Gb Pass-Thru
B2.03.12	Ethernet CISCO Blade Switch	Catalyst 3020
B2.03.13	Ethernet Blade Switch	GbE2c
B2.03.14	Fiber channel Inter-connector	HP 16 port 4Gb FC Pass-Thru Module
B2.03.15	SAN Switch	Brocade 4Gb
B2.03.16	InfiniBand Switch Module	HP 4X DDR IB
B2.03.17	Height	10U
B2.03.18	Width	17.5in (445 mm) fits 19 inch rack
B2.03.19	Depth	32in (813 mm)
B2.03.20	Management	Insight Control Datacenter Edition
B2.03.21	Warranty - year(s) (parts/labor/onsite)	3-3-3
B2.04	**HP PROLIANT BL20P G4 SERVER (TYPE A)**	
B2.04.01	Processors	Quad-Core Intel Xeon X5355, 2x4MB L2
B2.04.02	Processor Type	2.66 GHz, 1333 MHz FSB
B2.04.03	Processor Capacity	2
B2.04.04	Memory Type	PC2-5300 ECC DDR2 FBDIMMs
B2.04.05	Standard Memory	2GB
B2.04.06	Required Memory	4GB

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.04.07	Max Memory	32 GB
B2.04.08	Storage Type	Hot plug 2.5" SAS/SATA
B2.04.09	Max Drive Bays	2 × 2.5" (none shipped standard)
B2.04.10	Required Hard Drives	2 x 36GB
B2.04.11	Connects to Fibre Channel Storage	Yes
B2.04.12	Storage Controller	Smart Array E200 SAS RAID Controller
B2.04.13	Form Factor Chassis	Blades
B2.04.14	Form Factor Size	6U for 8 blades
B2.04.15	Embedded HP NC373i PCI-X Gigabit Multifunction Server Adapters	2
B2.04.16	10/100T iLO NIC (dedicated to management)	1
B2.04.17	Remote Management	Integrated Lights-Out 2
B2.04.18	Warranty - year(s) (parts/labor/onsite)	3-3-3
B2.05	**HP PROLIANT BL20P G4 SERVER (TYPE B)**	
B2.05.01	Processors	Dual-Core Intel Xeon 5100
B2.05.02	Processor Type	3.0 GHz, 1333 MHz FSB
B2.05.03	Processor Capacity	2
B2.05.04	Memory Type	PC2-5300 ECC DDR2 FBDIMMs
B2.05.05	Standard Memory	2GB
B2.05.06	Required Memory	2GB
B2.05.07	Max Memory	32 GB
B2.05.08	Storage Type	Hot plug 2.5" SAS/SATA
B2.05.09	Max Drive Bays	2 × 2.5" (none shipped standard)
B2.05.10	Required Hard Drives	2 x 36GB
B2.05.11	Connects to Fibre Channel Storage	Yes

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.05.12	Storage Controller	Smart Array E200 SAS RAID Controller
B2.05.13	Form Factor Chassis	Blades
B2.05.14	Form Factor Size	6U for 8 blades
B2.05.15	Embedded HP NC373i PCI-X Gigabit Multifunction Server Adapters	2
B2.05.16	10/100T iLO NIC (dedicated to management)	1
B2.05.17	Remote Management	Integrated Lights-Out 2
B2.05.18	Warranty - year(s) (parts/labor/onsite)	3-3-3
B2.06	**HP PROLIANT BL460C G4 SERVER (TYPE A)**	
B2.06.01	Processors	Quad-Core Intel Xeon Processor 5160
B2.06.02	Processor Speed	3.0 GHz, 1333 MHz FSB, 2x4MB L2
B2.06.03	Processor Capacity	2
B2.06.04	Memory Type	PC2-5300 ECC DDR2 FBDIMMs
B2.06.05	Standard Memory	2GB
B2.06.06	Required Memory	4GB
B2.06.07	Max Memory	32 GB
B2.06.08	Storage Type	Hot plug 2.5" SAS/SATA
B2.06.09	Max Drive Bays	2 × 2.5" (none shipped standard)
B2.06.10	Required Hard Drives	2 x 36GB
B2.06.11	Connects to Fibre Channel Storage	Yes
B2.06.12	Storage Controller	Smart Array E200 SAS RAID Controller
B2.06.13	Form Factor Chassis	Blades
B2.06.14	Form Factor Size	6U for 8 blades
B2.06.15	Integrated Gigabit Ethernet NIC Ports	2
B2.06.16	10/100T iLO NIC (dedicated to management)	1

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.06.17	Remote Management	Integrated Lights-Out 2
B2.06.18	Warranty - year(s) (parts/labor/onsite)	3-3-3
B2.07	**HP PROLIANT BL460C G4 SERVER (TYPE B)**	
B2.07.01	Processors	Dual-Core Intel Xeon 5150
B2.07.02	Processor Speed	2.66 GHz, 1333 MHz FSB, 2x4MB L2
B2.07.03	Processor Capacity	2
B2.07.04	Memory Type	PC2-5300 ECC DDR2 FBDIMMs
B2.07.05	Standard Memory	2GB
B2.07.06	Required Memory	2GB
B2.07.07	Max Memory	32 GB
B2.07.08	Storage Type	Hot plug 2.5" SAS/SATA
B2.07.09	Max Drive Bays	2 × 2.5" (none shipped standard)
B2.07.10	Required Hard Drives	2 x 36GB
B2.07.11	Connects to Fibre Channel Storage	Yes
B2.07.12	Storage Controller	Smart Array E200 SAS RAID Controller
B2.07.13	Form Factor Chassis	Blades
B2.07.14	Form Factor Size	6U for 8 blades
B2.07.15	Integrated Gigabit Ethernet NIC Ports	2
B2.07.16	10/100T iLO NIC (dedicated to management)	1
B2.07.17	Remote Management	Integrated Lights-Out 2
B2.07.18	Warranty - year(s) (parts/labor/onsite)	3-3-3
B2.08	**HP PCI EXPRESS MEZZANINE PASS-THRU CARD FOR HP BLADESYSTEM C-CLASS**	
B2.08.01	Bus Type	PCI Express
B2.08.02	Number of Lanes	Quad (4)

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.08.03	Power	<15 Watts
B2.08.04	Operating Temperature	0°C to 55°C
B2.08.05	Operating Humidity	10% to 90%
B2.08.06	Non-operating Temperature	-65°C to 85°C
B2.08.07	Non-operating Humidity	5% to 95%
B2.08.08	Usage	Slot 3
B2.08.09	Warranty - year(s) (parts/labor/onsite)	1-0-0
B2.09	**MCDATA 4GB SAN SWITCH FOR HP P-CLASS BLADESYSTEM**	
B2.09.01	Performance	4.0 Gbps
B2.09.02	Maximum Ports	10
B2.09.03	Minimum Ports	10
B2.09.04	Aggregate Switch Bandwidth	48.0 Gbps
B2.09.05	Protocol Support	Fibre Channel
B2.09.06	Blade Type Supported	HP p-Class BladeSystem
B2.09.07	High Availability Features	Redundant switches per Blade system
B2.09.08	Management	McDATA Web Server
B2.09.09	Form Factor	embedded
B2.09.10	Media Types	Small Form-Factor Pluggable (SFP)
B2.09.11	Upgradability	Standard 10 port configurations
B2.09.12	Width	1.5 in (3.8 cm)
B2.09.13	Height	3.4 in (8.6 cm)
B2.09.14	Depth	4.75 in (12.1 cm), 7 in (17.9 cm)
B2.09.15	Product Weight (lbs)	1.94 lbs (.88 kg)
B2.09.16	Warranty (parts, labor, on-site)	1-1-1

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.10	**BROCADE 4GB SAN SWITCH FOR HP C-CLASS BLADESYSTEM**	
B2.10.01	Performance	4 Gbps
B2.10.02	Ports	24
B2.10.03	Minimum/Maximum Ports	12/24
B2.10.04	Aggregate Switch Bandwidth	192 Gbps (end-to-end)
B2.10.05	Protocol Support	Fibre Channel
B2.10.06	BladeSystem Supported	HP BladeSystem c-Class
B2.10.07	High Availability Features	Redundant switches per Blade system
B2.10.08	Web Tools License(Management Features)	1
B2.10.09	Advanced Zoning License (Management Features)	1
B2.10.10	Form Factor	Embedded
B2.10.11	Media Types	Small Form-Factor Pluggable (SFP) transceivers
B2.10.12	Models Available	12-Port Full Fabric, 24-Port Full Fabric, 24-Port Full Fabric Power Pack
B2.10.13	Warranty (parts, labor, on-site)	1-1-1
B2.10.14	Product Dimensions (height/width/length)	11 x 1.13 x 7.63 inches
B2.10.15	Product Weight (lbs)	Approx. 2.85 lb.
B2.11	**HP MSL6030 1 ULTRIUM 960 DR TAPE LIBRARY**	
B2.11.01	Native performance	80 MB/s 1 Ultrium 960 Drive
B2.11.02	Drive Bays	2 Drive bays, 1 drives installed
B2.11.03	SCSI interface	Ultra320 LVD SCSI, VHDCI interconnect interface
B2.11.04	Drive bays	2 Drive bays, 1 drives installed
B2.11.05	Form factor	5U form factor
B2.11.06	Tape drives supported	Ultrium 960, Ultrium 460
B2.11.07	Maximum drives	Maximum drives per unit: 2

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.11.08	Maximum capacity	12 TB native capacity, 24 TB compressed capacity
B2.11.09	Max number of units stacked	8
B2.11.10	Maximum transfer rate	576 GB/hr native, 1.1 TB/hr compressed (with Ultrium 960)
B2.11.11	Interface	Ultra320 SCSI LVD/SE, Ultrium 160 SCSI LVD/SE, 4Gb Fibre Channel, 2Gb Fibre Channel
B2.12	**DATA CENTER UPS - APC SYMMETRA LX**	
B2.12.01	Output Power Capacity	9600 Watts / 1200 VA
B2.12.02	Max Configurable Power	12800 Watts / 1600 VA
B2.12.03	Nominal Output Voltage	120 V, 208 V
B2.12.04	Ouput Voltage Note	Configurable for 120/208 or 120/240 output voltage
B2.12.05	Efficiency at full load	90%
B2.12.06	Output Voltage Distortion	Less than 5% at full load
B2.12.07	Output Frecuency (sync to mains)	47 - 63 Hz
B2.12.08	Crest factor	up to 5:1
B2.12.09	Wave form type	Sine wave
B2.12.10	Output Connections	1 Hard Wire 4-wire (2PH + N + G), 4 NEMA L14-30R, NEMA L5-20R
B2.12.11	Baypass	Internal Bypass
B2.12.12	Nominal Input Voltage	208 V
B2.12.13	Input Freceuency	45-65 Hz (auto sensing)
B2.12.14	Input Connections	1 Hard Wire 4-wire (2PH + N + G)
B2.12.15	Input Voltage Range	96 - 138 (Line to Neutral)V
B2.12.16	Other Input Voltages	240 V
B2.12.17	Battery Type	Maintenance-free sealed Lead-Acid
B2.12.18	Battery Modules	3 included
B2.12.19	Available Battery Slots	1

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.12.20	Typical Recharge Time	3 hours
B2.12.21	Typical Backup Time at Half Load	17.1 minutes (4800 Watts)
B2.12.22	Typical Backup Time at Full Load	6 minutes (9600 Watts)
B2.12.23	Interface Ports	DB-9 RS-232, Smart Slot
B2.12.24	Available Smart Slot Interface Quantity	1
B2.12.25	Pre-Installed SmarSlot Cards	AP9619
B2.12.26	Control Panel	Multi-Function LCD Status and Control Console
B2.12.27	Alarm	Audible Alarm
B2.12.28	Emergency Power Off (EPO)	Yes
B2.12.29	Operating Environment	0 - 40°C
B2.12.30	Operating Relative Humidity	0 - 95%
B2.12.31	Operating Elevation	0 - 3000 meters
B2.12.32	Storage Temperature	-15 - 45°C
B2.12.33	Audible noise at 1 meter from surface of unit	62 dBA
B2.12.34	Standard Warranty	2 years repair or replace
B2.13	**HP RACK 10642 G2 CRATED - RACK - 42U**	
B2.13.01	Manufacturer Warranty - Service & Support	3 years warranty
B2.13.02	Manufacturer Warranty - Service & Support Details	Limited warranty - parts - 3 years
B2.13.03	Weight	253.1 lbs
B2.13.04	Height (Rack Units)	42U
B2.13.05	Depth	39.8 in
B2.13.06	Rack Size	19"
B2.13.07	Product Type	Rack
B2.13.08	Color	Carbon, metallic graphite

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.13.09	Height	78.7 in
B2.13.10	Width	24 in
B2.13.11	Compliant Standards	EIA-310-D, RoHS
B2.13.12	Weight Limit	2000 lbs
B2.14	**KVM SERVER SWITCH**	
B2.14.01	Product Description	HP Server Console Switch KVM switch - 16 ports
B2.14.02	Device Type	KVM switch - CAT5 - stackable
B2.14.03	Form Factor	Rack-mountable - 1U
B2.14.04	Dimensions (WxDxH)	17.2 in x 6.5 in x 1.7 in
B2.14.05	Weight	4.4 lbs
B2.14.06	Ports Qty	16
B2.14.07	KVM Users Qty	2 local users
B2.14.08	Power	AC 120/230 V (50/60 Hz)
B2.14.09	Device Type	KVM switch - stackable
B2.14.10	Enclosure Type	Rack-mountable - 1U
B2.14.11	Width	17.2 in
B2.14.12	Depth	6.5 in
B2.14.13	Height	1.7 in
B2.14.14	Weight	4.4 lbs
B2.14.15	Ports Qty	16
B2.14.16	Connectivity Technology	Wired
B2.14.17	Status Indicators	Active
B2.14.18	KVM Local Users Qty	2 local users
B2.14.19	Server Connection Via Twisted Pair	CAT5

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.14.20	KVM Features	Server connection via twisted pair
B2.14.21	Interfaces	16 x keyboard / video / mouse (KVM) - RJ-45
B2.14.22		1 x serial - 9 pin D-Sub (DB-9)
B2.14.23		1 x network stack device - RJ-45
B2.14.24	Connections	2 x mouse - generic - 6 pin mini-DIN (PS/2 style) - 2
B2.14.25		2 x keyboard - generic - 6 pin mini-DIN (PS/2 style) - 2
B2.14.26		2 x display / video - VGA - 15 pin HD D-Sub (HD-15) - 2
B2.14.27	Power Device	Power supply - internal
B2.14.28	Voltage Required	AC 120/230 V (50/60 Hz)
B2.15	**FLAT PANEL MONITOR - HP L1706**	
B2.15.01	Display type	Active matrix TFT
B2.15.02	Display size	17 in (43.2 cm)
B2.15.03	Viewable area	17 in (43.2 cm)
B2.15.04	Native resolution	1280 x 1024 @ 60 Hz
B2.15.05	Pixel pitch	0.264 mm
B2.15.06	Signal input	One 15-pin miniature D-sub connector
B2.15.07	Viewing angle (horizontal)	140 degrees
B2.15.08	Viewing angle (vertical)	130 degrees
B2.15.09	Cabinet Colors	Carbonite/Silver
B2.15.10	Brightness (typical)	Up to 300 nits
B2.15.11	Contrast ratio (typical)	Up to 500:1
B2.15.12	Pixel pitch	0.264 mm
B2.15.13	Frequency range (horizontal)	30 - 83 kHz
B2.15.14	Frequency range (vertical)	50 - 76 Hz

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.15.15	Preset resolutions - refresh rate	1280 x 1024 @ 60, 75 Hz
B2.15.16	User programmable modes	10
B2.15.17	Dimensions (w x d x h)	14.8 x 2.5 x 13 in (37.5 x 6.4 x 33 cm)
B2.15.18	Weight	13.4 lb (6.1 kg)
B2.15.19	Warranty - year(s)	Three years parts, labor
B2.16	**CISCO GIGABIT ETHERNET SWITCH MODULE FOR THE HP P-CLASS BLADESYSTEM**	
B2.16.01	ASIC Technology	Switch fabric and IOS Network Management
B2.16.02	Wire Speed Performance	on all ports
B2.16.03	Uplink Ports	six
B2.16.04	Gigabit Ethernent Ports	2 RJ-45
B2.16.05	SFP Ports	4
B2.16.06	Cross Connect Ports	2 internal Gibabit Ethernet Ports
B2.17	**HP BLP F-GBE2 SWICTH KIT**	
B2.17.01	Product Description	HP ProLiant BL p-Class F-GbE2 Interconnect Kit - switch - 4 ports
B2.17.03	Device Type	Switch
B2.17.04	Form Factor	Plug-in module
B2.17.05	Dimensions (WxDxH)	1.5 in x 27.7 in x 10.4 in
B2.17.06	Weight	11.9 lbs
B2.17.07	RAM	128 MB
B2.17.08	Flash Memory	32 MB
B2.17.09	Ports Qty	4 x Ethernet 1000Base-SX
B2.17.10	Data Transfer Rate	1 Gbps
B2.17.11	Data Link Protocol	Gigabit Ethernet
B2.17.12	Auxiliary Network Ports	2x10/100/1000Base-T

DATA CENTER SOLUTION		
#	**ITEM**	**QTY/VALUE**
B2.17.13	Remote Management Protocol	SNMP 1, SNMP, Telnet
B2.17.14	Communication Mode	Half-duplex, full-duplex
B2.17.15	Features	Auto-sensing per device, auto-negotiation, BOOTP support, auto-uplink (auto MDI/MDI-X)
B2.18	**HP BLADE SYSTEM P-CLASS NETWORKING (RJ-45 PATCH PANEL)**	
B2.18.01	External Network Ports	32
B2.18.02	FC Transceivers	16

Appendix B3 – Security and Communications Infrastructure

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.01	**CISCO CATALYST 4948 10/100/1000 ETHERNET, LAYER 2-4**	
B3.01.01	Expansion Slots	4 x Expansion Slot
B3.01.02	Manufacturer	Cisco Systems, Inc
B3.01.03	Interfaces/Ports	48 x 10/100/1000Base-T LAN
B3.01.04	Manufacturer Part Number	WS-C4948-S
B3.01.05	Standard Warranty	1 Year(s) Limited
B3.01.06	Form Factor	1U 19" Rack-mountable
B3.01.07	Interfaces/Ports Details	48 x RJ-45 10/100/1000Base-T LAN
B3.01.08	Interfaces/Ports Details	1 x RJ-45 10/100Base-TX Management
B3.01.09	Slot Details	4 x SFP Shared
B3.01.10	Dimensions	1.712" Height x 17.29" Width x 16.14" Depth
B3.01.11	Weight	16.49 lb
B3.01.12	Product Name	Catalyst 4948 Layer 3 Switch
B3.01.13	Product Type	Layer 3 Switch
B3.02	**CISCO CATALYST 3750G-24TS-S SWITCH**	
B3.02.01	Ethernet ports	24 (10/100/1000)
B3.02.02	Gigabit Ethernet ports	4 SFP-based
B3.02.03	Speed	32-Gbps, high-speed stacking bus
B3.02.04	Form Factor	1.5 RU stackable, multilayer switch
B3.02.05	Multilayer Software Image	Standard (SMI) installed
B3.02.06	Routing	Basic RIP and static routing, upgradeable to full dynamic IP routing

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.03	**CISCO CATALYST 2960G-24TC-L SWITCH**	
B3.03.01	Ethernet ports	24 (10/100/1000)
B3.03.02	Dual Purpose (Gigabit Ethernet)	4
B3.03.03	Form Factor	1 RU
B3.03.04	Switching Fabric	32 Gbps switching fabric
B3.03.05	Forwarding rate	based on 64-byte packets: 35.7 Mpps
B3.03.06	Memory	64 MB DRAM
B3.03.07	Flash Memory	32 MB
B3.03.08	MAC addresses	Configurable up to 8000
B3.03.09	IGMP groups	Configurable up to 255
B3.03.10	Configurable maximum transmission unit (MTU)	Up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes
B3.04	**CISCO ASA 5520 ADAPTIVE SECURITY APPLIANCE**	
B3.04.01	Concurrent Threat Mitigation Throughput (Firewall and IPS Services)	375 Mbps
B3.04.01	Memory	2 GB
B3.04.01	Flash Memory	256 MB
B3.04.01	Connectivity	Wired
B3.04.01	Firewall Features	Intrusion Prevention, Network Antivirus
B3.04.01	Filtering Features	Blacklist Spam Filtering, URL Filtering, Spyware Filtering
B3.04.01	Clear Text Throughput	450 Mbps
B3.04.01	VPN Throughput	225 Mbps
B3.04.01	Concurrent Connections	280000
B3.04.01	Installed RAM	512 MB
B3.04.01	Transport Protocol	IPSec, TCP/IP
B3.04.01	VPN Encryption Standards	Optional 3DES • Optional AES

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.04.01	VPN Peers	750
B3.04.01	Included Licenses	Unlimited Users
B3.04.01	Width	17.5 in.
B3.04.01	Depth	13.2 in.
B3.04.01	Height	1.75 in.
B3.04.01	Weight	20 lb.
B3.05	**CISCO ASA 5520 ADAPTIVE SECURITY APPLIANCE**	
B3.05.01	Concurrent Threat Mitigation Throughput (Firewall and IPS Services)	375 Mbps
B3.05.02	Memory	2 GB
B3.05.03	Flash Memory	256 MB
B3.05.04	Connectivity	Wired
B3.05.05	Firewall Features	Intrusion Prevention, Network Antivirus
B3.05.06	Filtering Features	Blacklist Spam Filtering, URL Filtering, Spyware Filtering
B3.05.07	Clear Text Throughput	450 Mbps
B3.05.08	VPN Throughput	225 Mbps
B3.05.09	Concurrent Connections	280000
B3.05.10	Installed RAM	512 MB
B3.05.11	Transport Protocol	IPSec, TCP/IP
B3.05.12	VPN Encryption Standards	Optional 3DES • Optional AES
B3.05.13	VPN Peers	750
B3.05.14	Included Licenses	Unlimited Users
B3.05.15	Width	17.5 in.
B3.05.16	Depth	13.2 in.
B3.05.17	Height	1.75 in.

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.05.18	Weight	20 lb.
B3.06	**CISCO ASA 5500 SERIES SSL VPN LICENSE**	
B3.06.01	Number of Users	50
B3.06.02	Part Number	ASA5500-SSL-50
B3.07	**SECURE ACS 4.0**	
B3.07.01	Includes	HW and SW
B3.07.02	Part Number	CSACSE-1113-K9
B3.07.03	License Pricing	Standard
B3.07.04	License Type	License
B3.07.05	License Quantity	1 Server
B3.07.06	Software Name	Secure Access Control Server Solution Engine v.4.1 - License
B3.08	**FIREWALL APPLIANCE – ISA SERVER APPLIANCE**	
B3.08.01	Interfaces	3
B3.08.02	Microsoft® ISA Server 2004 installed?	YES, Server 2004 Standard Edition SP2
B3.08.03	Microsoft® Windows® Server 2003 installed?	YES, Windows Server 2003 Standard Edition SP1
B3.08.04	Other software installed	HP Virus Throttle Software
B3.08.05	Available Languages	English
B3.08.06	Configure To Order (CTO)	Available to order CTO from HP in the United States and EMEA
B3.08.07	Application layer filtering	HTTP, SMTP, DNS, FTP, POP3, IMAP
B3.08.08	Management UI	MMC for local and remote management, CLI, Terminal Service or remote desktop
B3.08.09	Web caching	Included at no extra cost; forward/reverse
B3.08.10	Virus Throttle	Installed
B3.08.11	VPN Support	PPTP, L2TP, IPSec, SSL
B3.08.12	VPN Client	Free with all Microsoft Windows OS

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.08.13	Intrusion Detection System	Based on technology licensed from Internet Security Systems, Inc. (ISS)
B3.08.14	Concurrent sessions	Unlimited
B3.08.15	HP ProLiant DL320 G3 Firewall Throughput	938 Mbps
B3.08.16	NIC Ports	Up to 6 10/100/1000 (dual port NIC ships standard)
B3.08.17	USB Ports	4 USB ports (1 front, 1 internal, and 2 rear)
B3.08.18	Memory Support	Up to 8GB (4 slots)
B3.08.19	Available PCI-slots	2 available PCI-Express slots (1 8x full-length and 1 4x half length, low profile)
B3.08.20	Hard Drive Support	SATA/SCSI(G3 only)/SAS(G4 only)
B3.08.21	Internal Storage Support	1.44MB Diskette/CD-ROM/DVD-ROM/DVD-RW drives
B3.08.22	Fans Support	4 Non-Hot Plug Dual Rotor Fans with N+1 Redundancy
B3.08.23	Remote Management	Integrated Lights Out 2 (iLO 2) Remote Management
B3.08.24	Maximum VPN Tunnels	1000
B3.08.25	Licensing	Per processor - no additional licenses are required
B3.08.26	OS Hardening	Windows Server 2003 hardening
B3.09	**CISCO PIX® 515E FIREWALL**	
B3.09.01	Connectivity	Wired
B3.09.02	Firewall Features	Stateful Packet Inspection (SPI), DoS Prevention, Intrusion Prevention, Network Antivirus
B3.09.03	Filtering Features	Content Filtering, URL Filtering, Fragmented Packet Reassembly
B3.09.04	NAT Support	Static, Dynamic, Policy based, PAT
B3.09.05	Clear Text Throughput	190 Mbps
B3.09.06	VPN Throughput	135 Mbps
B3.09.07	Concurrent Connections	130000
B3.09.08	Processor Speed	433 MHz
B3.09.09	Installed RAM	128 MB

SECURITY AND COMMUNICATIONS INFRASTRUCTURE		
#	**ITEM**	**QTY/VALUE**
B3.09.10	LAN Ports	2
B3.09.11	Transport Protocol	ICMP/IP, IPSec, TCP/IP, UDP/IP, VoIP
B3.09.12	Routing Protocols	OSPF, Static Routing
B3.09.13	DHCP Support	Client, Server, Relay
B3.09.14	Remote Management Protocol	SNMP, HTTP, Telnet, SSH
B3.09.15	VPN Authentication	RADIUS, TACACS, RSA SecurID, LDAP, Active Directory
B3.09.16	Encryption Standards	DES, 3DES, AES, MD5, IKE
B3.09.17	VPN Tunnels	2000
B3.09.18	Width	16.82 in.
B3.09.19	Depth	11.8 in.
B3.09.20	Height	1.72 in.
B3.09.21	Weight	11 lb.
B3.09.22	Warranty	90 Days
B3.09.23	MPN	PIX-515E-UR-BUN

Appendix B4 – CR Offices Equipment (including Headquarters Users)

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.01	**DESKTOP COMPUTERS**	
B4.01.01	Product Description	HP Compaq Business Desktop dc5700 - Core 2 Duo E6300 1.86 GHz
B4.01.02	Type	Personal computer
B4.01.03	Windows Vista Certification	Windows Vista Capable
B4.01.04	Form Factor	Micro tower

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.01.05	Dimensions (WxDxH)	7 in x 16.9 in x 14.8 in
B4.01.06	Weight	23.6 lbs
B4.01.07	Localization	English / United States
B4.01.08	Processor	1 x Intel Core 2 Duo E6300 / 1.86 GHz (Dual-Core)
B4.01.09	Cache Memory	2 MB L2 cache
B4.01.10	Cache Per Processor	2 MB
B4.01.11	RAM	1 GB (installed) / 4 GB (max) - DDR II SDRAM - non-ECC - 667 MHz - PC2-5300
B4.01.12	Storage Controller	Serial ATA (Serial ATA-300) ; IDE
B4.01.13	Hard Drive	1 x 160 GB - standard - Serial ATA-300
B4.01.14	Optical Storage	CD-RW / DVD-ROM combo
B4.01.15	Monitor	None.
B4.01.16	Audio Output	Sound card - stereo
B4.01.17	Networking	Network adapter - Ethernet, Fast Ethernet, Gigabit Ethernet
B4.01.18	Power	AC 120/230 V (50/60 Hz)
B4.01.19	Manufacturer Warranty	3 years warranty
B4.01.20	Windows Vista Certification	Windows Vista Capable
B4.01.21	Product Form Factor	Micro tower
B4.01.22	Built-in Devices	Speaker
B4.01.23	Localization	English / United States
B4.01.24	Processor Type	Intel Core 2 Duo E6300 / 1.86 GHz
B4.01.25	Multi-Core Technology	Dual-Core
B4.01.26	64-bit Computing	Yes
B4.01.27	Cache Memory Type	L2 cache
B4.01.28	Installed Size	2 MB

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.01.29	Cache Per Processor	2 MB
B4.01.30	Data Bus Speed	1066 MHz
B4.01.31	RAM -Installed Size	1 GB / 4 GB (max)
B4.01.32	RAM - Technology	DDR II SDRAM - non-ECC
B4.01.33	Memory Speed	667 MHz
B4.01.34	OS Provided	Microsoft Windows XP Professional
B4.01.36	Storage Controller Type	1 x Serial ATA - integrated
B4.01.37	Controller Interface Type	Serial ATA-300
B4.01.38	Second Storage Controller Type	1 x IDE - integrated
B4.01.39	Hard Drive	1 x 160 GB - standard - Serial ATA-300 - 7200 rpm
B4.01.40	Optical Storage Type	CD-RW / DVD-ROM combo - Serial ATA
B4.01.41	Monitor	None.
B4.01.42	Audio Output Type	Sound card - integrated
B4.01.43	Sound Output Mode	Stereo
B4.01.44	Compliant Standards	High Definition Audio
B4.01.45	Input Device Type	Mouse, keyboard
B4.01.46	Networking	Network adapter - integrated
B4.01.47	Data Link Protocol	Ethernet, Fast Ethernet, Gigabit Ethernet
B4.01.48	Expansion Bays Total (Free)	2 (1) x internal - 3.5" x 1/3H
B4.01.49	Expansion Bays	2 (1) x front accessible - 5.25" x 1/2H
B4.01.50	Expansion Bays	2 (2) x front accessible - 3.5" x 1/3H
B4.01.51	Expansion Slots Total (Free)	1 (0) x processor - LGA775 Socket
B4.01.52	Expansion Slots Total (Free)	4 memory - DIMM 240-pin
B4.01.53	Expansion Slots Total (Free)	2 PCI - full-length

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.01.54	Expansion Slots Total (Free)	1 PCI Express x1
B4.01.55	Expansion Slots Total (Free)	1 SDVO
B4.01.56	Interfaces	1 x parallel - IEEE 1284 (EPP/ECP) - 25 pin D-Sub (DB-25)
B4.01.57	Interfaces	1 x serial - RS-232 - 9 pin D-Sub (DB-9)
B4.01.58	Interfaces	8 x Hi-Speed USB - 4 pin USB Type A (2 in front)
B4.01.59	Interfaces	1 x keyboard - generic - 6 pin mini-DIN (PS/2 style)
B4.01.60	Interfaces	1 x mouse - generic - 6 pin mini-DIN (PS/2 style)
B4.01.61	Interfaces	1 x network - Ethernet 10Base-T/100Base-TX/1000Base-T - RJ-45
B4.01.62	Interfaces	1 x audio - line-in - mini-phone stereo 3.5 mm
B4.01.63	Interfaces	1 x audio - line-out/headphones - mini-phone stereo 3.5 mm
B4.01.64	Interfaces	2 x microphone - input - mini-phone 3.5 mm (1 in front)
B4.01.65	Interfaces	1 x headphones - output - mini-phone stereo 3.5 mm (1 in front)
B4.01.66	Voltage Required	AC 120/230 V (50/60 Hz)
B4.01.67	Power Provided	300 Watt
B4.01.68	OS Provided	Microsoft Windows XP Professional
B4.01.69	Software	Drivers & Utilities
B4.01.70	Manufacturer Warranty Service & Support	3 years warranty
B4.01.71	Manufacturer Warranty Service & Support Details	Limited warranty - parts and labor - 3 years - on-site
B4.01.72	Product Description	HP Server Console Switch KVM switch - 16 ports
B4.02	**FLAT PANEL MONITOR - HP L1706**	
B4.02.01	Display type	Active matrix TFT
B4.02.02	Display size	17 in (43.2 cm)
B4.02.03	Viewable area	17 in (43.2 cm)
B4.02.04	Native resolution	1280 x 1024 @ 60 Hz

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.02.05	Pixel pitch	0.264 mm
B4.02.06	Signal input	One 15-pin miniature D-sub connector
B4.02.07	Viewing angle (horizontal)	140 degrees
B4.02.08	Viewing angle (vertical)	130 degrees
B4.02.09	Cabinet Colors	Carbonite/Silver
B4.02.10	Brightness (typical)	Up to 300 nits
B4.02.11	Contrast ratio (typical)	Up to 500:1
B4.02.12	Pixel pitch	0.264 mm
B4.02.13	Frequency range (horizontal)	30 - 83 kHz
B4.02.14	Frequency range (vertical)	50 - 76 Hz
B4.02.15	Preset resolutions - refresh rate	1280 x 1024 @ 60, 75 Hz
B4.02.16	User programmable modes	10
B4.02.17	Dimensions (w x d x h)	14.8 x 2.5 x 13 in (37.5 x 6.4 x 33 cm)
B4.02.18	Weight	13.4 lb (6.1 kg)
B4.02.19	Warranty - year(s)	Three years parts, labor
B4.03	**UPSS FOR DESKTOP - APC BACK-UPS RS 800VA 230V**	
B4.03.01	Output Power Capacity	540 Watts / 800 VA
B4.03.02	Max Configurable Power	540 Watts / 800 VA
B4.03.03	Nominal Output Voltage	230V
B4.03.04	Output Connections Surge Protection	(2) IEC 320 C13
B4.03.05	Output Connections Battery Backup	(4) IEC 320 C13, (1) IEC Jumpers
B4.03.06	Nominal Input Voltage	230V
B4.03.07	Input Frequency	47 - 63 Hz
B4.03.08	Input Connections	IEC-320 C14

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.03.09	Input voltage range for main operations	175 - 295V
B4.03.10	Input voltage adjustable range for mains operation	160 - 300V
B4.03.11	Battery Type	Maintenance-free sealed Lead-Acid battery
B4.03.12	Included Battery Modules	1
B4.03.13	Typical recharge time	8 hour(s)
B4.03.14	Replacement battery cartridge	RBC32
B4.03.15	RBC™ Quantity	1
B4.03.16	Typical Backup Time at Half Load	17.6 minutes (270 Watts)
B4.03.17	Typical Backup Time at Full Load	5.3 minutes (540 Watts)
B4.03.18	Interface Port(s)	USB
B4.03.19	Control panel	LED status display with: Battery : Replace, and Overload indicators
B4.03.20	Audible Alarm	Alarm when: distinctive low battery alarm
B4.03.21	Surge energy rating	320 Joules
B4.03.22	Maximum Height	9.00 inches (229 mm)
B4.03.23	Maximum Width	4.00 inches (102 mm)
B4.03.24	Maximum depth	12.75 inches (324 mm)
B4.03.25	Net Weight	20.50 lbs. (9.32 kg)
B4.03.26	Color	Beige
B4.03.27	SCC Codes	0073130419246 6
B4.03.28	Operating Environment	32 - 104 °F (0 - 40 °C)
B4.03.29	Operating Relative Humidity	0 - 95%
B4.03.30	Audible noise at 1 meter from surface of unit	45 dBA
B4.03.31	Online Thermal Dissipation	170.00 BTU/hr
B4.03.32	Standard Warranty	2 years repair or replace

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.04	**CR OFFICE SWITCH WS-C2960-24TT-L**	
B4.04.01	Ethernet ports	24 10/100
B4.04.02	Brand	CISCO
B4.04.03	Series	Catalyst 2960
B4.04.04	Model	WS-C2960-24TT-L
B4.04.05	Jumbo Frames	9018 bytes
B4.04.06	Ports	24 Ethernet 10/100 ports and 2 10/100/1000-TX uplinks
B4.04.07	Speed	10/100Mbps Ports + 1000Mbps Uplinks
B4.04.08	MAC Address Table	Up to 8000
B4.04.09	Buffer Memory	64 MB DRAM
B4.04.10	Flash Memory	32 MB flash memory
B4.04.11	LEDs	Per-port status: Link integrity, disabled, activity, speed, full-duplex
B4.04.12	VLAN Support	Yes
B4.04.13	Power	Maximum Power Consumption: 30W
B4.04.14	AC Input Voltage and Current	100-240VAC (autoranging), 1.3-0.8A, 50-60 Hz
B4.04.15	Power Rating	0.05kVA
B4.04.16	DC Input Voltages (RPS Input)	+12V at 5A
B4.04.17	Dimensions	17.5" x 9.3" x 1.7"
B4.04.18	Weight	8.0 lbs.
B4.04.19	Temperature	0 to 45 (32 to 113)
B4.04.20	Humidity	10 to 85% (noncondensing)
B4.04.21	Features	1 RU fixed-configuration, multilayer switch
B4.04.22	Features	LAN Base Image installed
B4.04.23	Features	16 Gbps switching fabric

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.04.24	Features	Forwarding rate based on 64-byte packets: 6.5 Mpps
B4.04.25	Manufacturer Warranty Parts	5 years limited
B4.04.26	Manufacturer Warranty Labor	5 years limited
B4.05	**CISCO 837 SECURE BROADBAND ROUTERS**	
B4.05.01	Processor	Motorola RISC
B4.05.02	Default DRAM* Memory	64 MB
B4.05.03	Maximum DRAM Memory	80 MB
B4.05.04	Default Flash* Memory	12 MB
B4.05.05	Maximum Flash Memory	24 MB
B4.05.06	WAN	10BASE-T Ethernet (Cisco 831 router)
B4.05.07	WAN	ADSL over ISDN-Annex B (Cisco 836 router)
B4.05.08	WAN	ADSL over POTS-Annex A (Cisco 837 router)
B4.05.09	LAN	Four-port 10/100BASE-T with autosensing MDI/MDX for autocrossover
B4.05.10	Console Port	Virtual AUX port supports modem control for dial backup and out-of-band management)
B4.05.11	RJ-45	ISDN BRI S/T port which can be configured for ISDN dial backup
B4.05.12	LEDs	10
B4.05.13	External Power Supply	Universal 100-240 VAC
B4.06	**LOCAL AREA NETWORKS FOR CC-CR OFFICES**	
B4.06.01	Rack	1 9U w/Fan
B4.06.02	Patch Panel	1 x 24 ports
B4.06.03	Sockets	10 x RJ-45
B4.06.04	Patch Cords	10 x 1m + 10 x 3m
B4.07	**COPY MACHINES - XEROX C118**	
B4.07.01	Technology:	Digital Laser

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.07.02	Speed:	Up to 18 Copies Per Minute (CPM)*
B4.07.03	Resolution:	True 600 x 600 DPI / 256 Level Gray Scale
B4.07.04	First Copy Speed:	7.4 Seconds
B4.07.05	Original Copy Size:	Minimum: 3.5" x 3.8" / Maximum: 11.0" x 17.0"
B4.07.06	Reduce/Enlarge:	50% to 200% in 1% Increments via Platen Top or 50 Page ADF
B4.07.07	Multiple Copies:	Up to 99 Copies of Multiple Page Originals with Electronic Collation
B4.07.08	Exposure Controls:	Contrast Control Levels / 256 Exposure Control Levels
B4.07.09	Media Type:	Paper, Envelopes, Transparencies, Labels and Card Stock
B4.07.10	Adjustable Sizes:	3.5" / 11.0"W x 3.8" / 17.0"L
B4.07.11	Paper Weight:	16-60 Lbs. Index (Main Trays) / 16-110 Lbs. Index (Add. Trays & By-Pass Tray)
B4.07.12	Output Paper Capacity:	250 Sheets (Collated Face Down)
B4.07.13	Input Paper Capacity:	One 250 Sheet Paper Tray and 100 Sheet By-Pass Tray
B4.07.14	Optional Paper Trays:	2nd 500 Sheet Paper Tray and 3rd & 4th 500 Sheet Paper Tray Unit
B4.07.15	Copier Features:	50 Account Auditron, Auto. Reduction & Enlargement and Scan Once Print Many
B4.07.16	Copier Features:	Full Duplex Copying (1-2, 2-2, 2-1) and Multiple-Up (1 to 1, 2 to 1 and 4 to 1)
B4.07.17	Copier Features:	Auto Tray Switching, Mixed Original Detection and Electronic Pre-Collation
B4.07.18	Copier Features:	2nd 500 Sheet Paper Tray/Feed Unit
B4.07.19	Options:	3rd & 4th 500 Sheet Paper Tray Unit (Requires: 2nd 500 Sheet Paper Tray)
B4.07.20	Options:	Foreign Device Interface and Stand
B4.07.21	Dimensions (H x W x D):	22.0" x 25.0" x 20.3" (107.8 Lbs.)
B4.08	**FAX MACHINE - PANASONIC KX-FLM551 LASER FAX MACHINE**	
B4.08.01	Functions	Fax, scan, copy, print
B4.08.02	Printer type	Monochrome laser
B4.08.03	Print speed	10 pages per minute

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.08.04	Print resolution	600 x 600 dpi
B4.08.05	Printer emulatoin	Windows GDI
B4.08.06	Paper handling (standard)	150-sheet paper tray, 15-sheet document feed
B4.08.07	Scanner type	Monochrome manual feed
B4.08.08	Scanner maximum resolution	600 x 600
B4.08.09	Gray scale	64 halftones
B4.08.10	Copier type	Monochrome manual feed
B4.08.11	Copy speed	10 copies per minute
B4.08.13	Copy resolution	600 x 600 dpi
B4.08.14	Zoom	50% - 200%
B4.08.15	Copies	99
B4.08.16	Interface	Parallel and USB
B4.08.17	Fax type:	Monochrome laser
B4.08.18	Transmission memory	2 MB (approx. 150 pages)
B4.08.19	Auto doc feeder	15 pages
B4.08.20	Dialing	Selectable pulse/ringer
B4.08.21	Fax forwarding	No
B4.08.22	Fax retrieval	No
B4.08.23	Speed dialing	10 one-touch numbers, 100 speed dials
B4.08.24	Auto fax reduction	No
B4.08.25	Delayed fax send	Yes
B4.08.26	Broadcasting	60 locations
B4.08.27	Modem speed	14.4 Kbps
B4.08.28	Energy Star compliant	Yes

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.08.29	Included software	OCR-Read-Iris 5.5 PRO (full version)
B4.08.30	Width	Width: 19.7 inches
B4.08.31	Height	Height: 13.4 inches
B4.08.32	Depth	Depth: 18.1 inches
B4.08.33	Weight	Weight: 18 pounds
B4.09	**NETWORK PRINTERS - HP LASER JET 1022 SERIES**	
B4.09.01	Print speed	Print speed Up to 19 ppm letter
B4.09.02	First page out	First page out Less than 8 seconds
B4.09.03	Resolution	Resolution 1200 by 1200 dpi
B4.09.04	Processor	Processor 266 MHz
B4.09.05	Memory	Memory 8 MB RAM
B4.09.06	Duty cycle	Duty cycle 8,000 pages per month
B4.09.07	Input	Input 250-sheet input tray, 10-sheet priority input tray for specialty paper
B4.09.08	Output	Output 150-sheet face down bin
B4.09.09	Sizes	Sizes 3 by 5 in to 8.5 by 14 in (76 by 127 mm to 216 by 356 mm)
B4.09.10	Weights	Weights 250-sheet tray: 16 to 28 lb
B4.09.11	Paper Types	Plain, photo, envelopes, transparencies, labels, cardstock, postcards, rough paper, vellum
B4.09.12	USB	Hi-Speed USB 2.0 port
B4.09.13	Ethernet	10/100 Fast Ethernet embedded print server
B4.09.14	Wireless	Embedded print server, 802.11b/g wireless
B4.09.15	Languages and fonts Host-based printing	HP PCL 5e with 26 built-in and scalable fonts available for download at www.hp.com)
B4.09.16	Client operating systems	Microsoft® Windows 98 SE, Me, 2000, XP 32 bit; Mac OS 10.2 and later
B4.09.17	Network operating systems	Microsoft Windows 98, Me, 2000, XP 32 bit; Mac OS 10.2 and later
B4.09.18	Network protocols	Network protocols TCP/IP

CR OFFICES EQUIPMENT (INCLUDING HEADQUARTERS USERS)		
#	**ITEM**	**QTY/VALUE**
B4.09.19	Dimensions (W by D by H) 1	Dimensions (W by D by H) 14.6 by 9.6 by 9.5 in (370 by 245 by 241 mm)
B4.09.20	Weight	12.1 lb (5.5 Kg)
B4.10	**SCANNERS - HP SCANJET 8270 HI-SPEED USB INTERFACE FLATBED SCAN**	
B4.10.01	Brand	HP
B4.10.02	Model	Scanjet 8270
B4.10.03	Scanner Type	Flatbed
B4.10.04	Image Sensor	CCD
B4.10.05	Resolutions, Optical	4800 x 4800dpi
B4.10.06	Resolutions, Hardware	Up to 4800 x 4800 dpi
B4.10.07	Color Depth	48bit
B4.10.08	Max. Document Size	8.5" x 14"
B4.10.09	Automatic Document Feeder (ADF)	Standard, 50 sheets
B4.10.10	Interface	Hi-Speed USB
B4.10.11	Operating Systems Supported	Windows 98, 98 SE, 2000, Me, XP Home, XP Professional
B4.10.12	Dimensions	22.6" x 15.7" x 7.7"
B4.10.13	Weight	19 lbs.
B4.10.14	Manufacturer Warranty Parts	1 year
B4.10.15	Manufacturer Warranty Labor	1 year

Appendix B5 – System Software

SYSTEM SOFTWARE		
#	**ITEM**	**QTY/VALUE**

SYSTEM SOFTWARE		
#	**ITEM**	**QTY/VALUE**
B5.01	**Cisco IOS Firewall - Software**	
B5.01	Feature 1	Application support for Microsoft NetShow
B5.02	Feature 2	IP packet fragmentation attack detection and prevention
B5.03	Feature 3	Configurable audit trail and alert messages for CBAC-inspected protocols
B5.04	Feature 4	Support for the Cisco IOS Intrusion Detection System (IDS)
B5.02	**Backup and Recovery Software**	**Symantec Backup Exec™ 11d**
B5.02.01	Server backup	Symantec Backup Exec™ 11d for Windows Servers
B5.02.02	E-mail backup	Symantec Backup Exec™ 11d Agent for Exchange Server
B5.02.03	Database backup	Symantec Backup Exec™ 11d Agent for SQL Server
B5.03	**Imaging and Deployment Software**	**Acronis True Image 9.1 Enterprise Server**
B5.03.01	Component 1	Acronis Backup Server
B5.03.02	Component 2	Acronis Group Server
B5.03.03	Component 3	Acronis Management Console
B5.03.04	Component 4	Acronis True Image Windows Agent
B5.03.05	Component 5	Acronis True Image Enterprise Server Local Versions
B5.04	**Help Desk Software**	**Track-it! Enterprise 7.0**
B5.04.01	Edition	Enterprise
B5.04.02	Technicians	5
B5.04.01	Users	100
B5.05	**DOCUMENT MANAGEMENT SYSTEM**	
B5.06	**ANTIVIRUS SOFTWARE - SYMANTEC ANTIVIRUS ENTERPRISE EDITION 8.0**	
B5.07	**MICROSOFT SOFTWARE**	
B5.07.01	Microsoft SQL Server 2005 Enterprise Edition	
B5.07.02	Microsoft Windows Server 2003	

SYSTEM SOFTWARE		
#	**ITEM**	**QTY/VALUE**
B5.07.03	Microsoft Firewall Server 2004	
B5.07.04	Microsoft Office Standard Edition 2007	
B5.07.05	Microsoft Visio 2003	
B5.07.06	Microsoft Project 2003	
B5.07.07	Microsoft Exchange Server	
B5.07.08	Microsoft Virtual Server	

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