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Petrochemical Additives Company (PACO)

Request For Proposal (RFP)

For PACO Project On

**“A Structured Data Network
Design for PACO”**

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1 Introduction

PACO is petrochemical company that specializes in producing and exporting state of the art petrochemical products. It has 5 sites in Saudi Arabia with headquarter in *Al-Jubail*. PACO employs 598 people. It has customers all over the world.

PACO is constantly increasing its services to support its customers, and increase its profit. It plans to design a data network as part of its infrastructure to provide better support to its employees, customers, and suppliers.

2 Background Information

There is one building for PACO headquarter in *Al-Jubail*. In addition, the company has 4 branches in *Riyadh, Yanbu, Dhahran, and Jeddah*.

The PACO headquarter is a building with 6 floors and 205 employees. In the ground floor, there are 20 IT employees. In the first floor, there are 9 finance employees, 17 sales employees, 20 marketing employees, and 5 Human Resources (HR) employees. In the second floor, there are 45 petrochemical personnel, including 15 petroleum engineers, 25 chemical engineers, and 5 petrochemical lab technicians. In the third floor, there are another 35 chemical engineers. In the fourth floor, there are 25 petrochemical lab technicians, and 5 documents writers. In the fifth floor, there are 13 petroleum engineers, another 10 petrochemical lab technicians. There is also a large space that can be used for the new network, if needed, on the ground floor. There is also a testing lab located in the fourth floor. The Director of PACO is located in the fifth floor. The manager of every department is located in the same area as his department employees (Managers have been already counted in the numbers provided).

In *Riyadh*, the PACO branch is a building with 3 floors and 95 employees. In each of the ground and first floors, there are 13 sales employees, and 28 marketing employees. In the second floor, there are 7 IT employees, and 5 sales employees, and 1 documents writer. There is also some space that can be used for the new network, if needed, on this floor.

In *Yanbu*, the PACO branch is a building with 3 floors and 120 employees. In each of the ground and first floors, there are 38 petrochemical personnel, including 17 chemical engineer, 7 petroleum engineers, and 14 petrochemical lab technicians. In the second floor, there are 13 IT employees, 18 sales employees, 11 marketing employees, and 2 documents writers. There is also some space that can be used for the new network, if needed, on this floor.

In *Dhahran*, the PACO branch is a building with 4 floors and 127 employees. In each of the ground and first floors, there are 40 petrochemical personnel, including 15 chemical engineers, 17 petroleum engineers, and 8 petrochemical lab technicians. In the second floor, there are 14 sales employees, 20 marketing employees, and 3 documents writers. In the third floor, there are 10 IT employees. There is also some space that can be used for the new network, if needed, on this floor.

In *Jeddah*, the PACO branch is a building with 2 floors and 51 employees. In the ground floor, there are 40 petrochemical personnel, including 20 sales employees, 17 marketing employees, and 3 documents writers. In the first floor, there are 6 IT employees, 3 chemical engineers, and 2 petroleum engineers. There is also some space that can be used for the new network, if needed, on this floor.

3 Project Goals and Scope

Currently, there is no data network in any of the PACO buildings. The company's goal is to design a data network to support its applications. This will provide connectivity and access to different services (e.g., Internet, e-mail) to all employees in PACO.

3.1 Business Goals

- Increase profits and administrative efficiency by implementing a network that supports information sharing and easy access between PACO's employees.
- Securely store all documents (employees' personal information, technical reports, petrochemical products manufacturing processes, sales and marketing strategies, etc.) as they are the main asset of the company.
- Provide an infrastructure that supports all employees.
- Provide a network that will let employees share ideas, communicate, and interact more easily to further improve efficiency within the respective PACO groups.
- Provide a network that delivers high capacity, high availability, good performance, scalability, security, and compatibility.
- Provide scalability that encompasses new applications and services, as well as the requirements for new buildings.
- Allow salespeople and marketing employees to securely access PACO sales information stored in an Oracle database from anywhere using their laptops.
- Provide access to remote branches.
- Minimize the costs associated with maintenance, operations, and upgrades.

3.2 Technical Goals

- All users must have access to the Internet.
- Maintain continuous communications between all the buildings in different locations.

- ☒ Any network user, in any building, must be able to communicate with any other user via e-mail.
- ☒ Network-related services needed include: file sharing, printing, email, Internet access, calendaring, database access, and video and audio conferencing.
- ☒ Centralize all services and servers to make the network easier to manage and more cost-effective.
- ☒ Logical isolation between departments of the same building is needed.
- ☒ Each department within each building needs to have the flexibility of moving their staff from any location to any other location within the same building.
- ☒ Provide a network that supports the usage of multimedia applications, including a video-conferencing system.
- ☒ Support of Voice over IP (VoIP) on the same network.
- ☒ For each building, provide a wireless access that operates within the building's walls.
- ☒ Salespeople and marketing employees using their laptops must first be authenticated before getting access to the network. They should be able to access all the PACO data network services and resources from anywhere using their laptops.
- ☒ Provide security to protect the Internet connection and internal network from intruders. Higher security is required for information on the internal network.
- ☒ Some level of reliability is required for the whole network. More reliability is needed in the backbone.
- ☒ Provide secure access for customers to electronically make orders and check on their status at any time.
- ☒ Design a network that uses currently available technologies from the WAN service providers in the region.
- ☒ Design a network that will scale up as new high-bandwidth applications are added in the future.
- ☒ Internet connection must support new applications and the expanded use of current applications.
- ☒ Implement storage and disaster recovery solutions. Storage can be implemented using a public Cloud Computing facility.
- ☒ Improve the manageability of the network.

3.3 Project Scope

This document is a Request For Proposal (RFP) for the data network design, and for the procurement of equipment and works that are required to achieve the company's goals. PACO invites the vendors to study and submit a network design solution that fully addresses the network requirements described in this document.

4 Existing Network and Applications

There is no existing network in the PACO buildings. The company's goal is to design this network to support the applications needed by its employees.

All PACO buildings are already wired according to ANSI/TIA/EIA-568-A standard, and are equipped with cat-5 cabling.

There is no network connectivity from PACO branches to the PACO headquarter network.

5 New Network Requirements

The following are the applications required for each group of employees:

For all employees:

- Windows PC applications: e-mail, calendaring, web browsing, file sharing, and printing.
- Oracle database access.
- Videoconferencing.
- VoIP.

Chemical engineers:

- Requirement analysis tools.
- Chemical analysis tools.
- Chemical simulation tools.
- Statistica
- Engineers have two computers on their desks: a Windows PC for office work and a Linux workstation for analysis and simulation tools.

Petroleum engineers:

- Requirement analysis tools.
- Seismic analysis tools.
- Seismic simulation tools.
- Statistica
- Engineers have two computers on their desks: a Windows PC for office work and a Linux workstation for analysis and simulation tools.

Petrochemical lab technicians:

- Requirement analysis tools.
- Chemical analysis tools.
- Statistica

Documentation writers:

- Documents sharing.

Sales & Marketing employees:

- Laptop connection from anywhere and secure access.
- The sales order-entry and tracking system runs on a cluster of two redundant servers. Sales and marketing personnel use their PCs to access this system.

IT:

- Network management tools, including configuration, fault, performance, and security management.
- IP address assignment should include laptops.
- Names or IP addresses can be used interchangeably to access any machine.
- Help desk information system in Oracle DB.

Finance:

- Financial modeling system uses an Oracle DB on UNIX machines in *Al-Jubail*. Financial analysts use applications on their PCs to access this system.

HR:

- Access to all employee information in Oracle DB.

Customers:

- Access to products and orders information in Oracle DB.

Other requirements for this design include:

- You may propose features, tools and programs to be added to the proposed requirements that will provide employees with better support in doing their work. All assumptions made have to be clearly stated in the RFP response document.
- Protocols recommended must be open (nonproprietary) standards.
- Structured cabling and cabinets - necessary information is required for:
 - Wall Mounted Cabinets. A cabinet shall house the following equipment.
 - Patch Panels (for UTP and Fiber Optic)
 - Socket Power Strip.
 - Network Equipment.
 - Rack Servers

- Scope of the electrical works:
 - o It is the responsibility of the contractor to connect all power strips to PACO power panels. All works should follow NEMA standards. Please note that voltage rating in PACO is 110V AC, and all power plugs should be American Standard type. All the equipment, including the racks should be properly grounded.

6 Network Design Document: RFP Response.

The RFP response should be in the form of a network design document that includes the following:

- Executive Summary
- Project Goal
- Project Scope
- Design Requirements Analysis (including traffic analysis)
- Logical Design
 - o Design alternatives and recommendations
 - o A network topology for the proposed design
 - o Recommendation for:
 - IP addressing of the network.
 - Routing protocols required.
 - Server placement.
 - Network Management strategies.
 - Other features listed in the requirements.
- Physical Design
 - o Market Survey
 - o Evaluation Criteria
 - o Information and prices of devices and services
- Feasibility of Implementation
- Project Budget
- Updated task assignment (who did what?)
- Assessment and Evaluation
- Appendix
- Summary