

NW255 Internetworking II

Midterm Project Handout

The Acme Corporation has 300 staff members in the marketing, engineering, documentation, and human resources departments. Acme offices are in Cincinnati (100 employees), San Diego (100 employees), Tokyo (60 employees), London (20 employees), Milwaukee (10 employees), and Chicago (10 employees). The documentation and engineering departments are primarily located in Cincinnati and San Diego, although there are a few writers and engineers in each of the overseas locations. The marketing and human resource departments are in all locations, but their central offices are in Cincinnati.

Prepare a detailed network plan for the Acme Corporation, a proposal to be presented to the Acme management team. Your network plan will consist of the following:

- a written document of sufficient length to fully cover your material and support your design decisions
- a Visio diagram illustrating the specific connectivity you've designed and depicting the DNS strategy
- a 3-4 paragraph Executive Summary of your report providing an overview of your design as well as a top-level explanation of why you made your choices

Your plan will be presented to the class.

Each of the sites has one physical connection to the public Internet, and each physical connection is given a fixed IP address by the network service provider. Each site deploys a Windows machine at this fixed IP address. These machines, in turn, connect to their local area networks, thereby facilitating Internet connectivity so that all Acme machines can communicate with each other. There is private/leased line connectivity between major sites.

Explain how you would build an IP network for the Acme Corporation, describing the connectivity each department and location is using. Explain how you would implement Internet Connection Firewall (ICF); Internet Connection Sharing (ICS); and Network Address Translation (NAT) for specific Acme locations. Be sure to include all three technologies in your design and be sure to explain why you have implemented a specific technology for a particular location.

You should assume that all Acme inter-office traffic is sensitive, and, therefore, should be secured via IPSec as it transits over the public Internet. You do not need to secure traffic between machines on the same LAN.

Acme's business requirements specify the following data be transferred:

- Human resources data goes from Cincinnati to the other offices via email. Because this data must be strongly authenticated as coming from a particular person, the VP of HR will send the traffic over secure email. This email should use

public key cryptography for its security and obtain certificates from a Certificate Server.

The engineering department needs to transmit large files every day from the offices in Cincinnati and San Diego. Don't worry about how the files are transferred, e.g., via FTP, SSH, HTTP, etc. The important point is that firewall configuration should enable traffic between these sites and restrict potentially malicious non-Acme traffic originating from the public Internet.

The Tokyo and London offices have fewer employees than the offices in the U.S. and do not need to transmit large files to other offices.

In your report:

Explain how your design decisions are influenced by the kind of data that comes across per department and location.

Explain how you would plan a DNS strategy for the Acme Corporation and how you would optimize DNS performance. You'll only be using one domain for Acme Corporation; describe your namespace strategy as well as your use of DNS zones, and explain your choices.

Finally, explain how you would install, authorize, and configure a DHCP server to automatically deliver IP addressing information to client computers at Acme Corporation.