Lab 5.1.2.4 Identifying Design Strategies for Scalability

Objective

- Use the identified constraints and trade-offs to create design strategies for scalability.

Expected Results and Success Criteria

Before starting this lab, read through the tasks that you are expected to perform. What do you expect the result of performing these tasks will be?

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Why is identifying a design strategy that applies to a project an important part of the network design?

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How can developing multiple design strategies assist in the completion of the project?

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Background / Preparation

FilmCompany is an expanding advertising company moving into interactive advertising media, including video presentations. This company has just been awarded a large big video support contract by the StadiumCompany. With this new contract, FilmCompany expects to see their business grow approximately 70 percent.

To facilitate this growth, the FilmCompany has decided to significantly upgrade its data network. You have the role of network design consultant. Your job is to develop network design and project documents for the FilmCompany that will meet the requirements of this upgrade.

This lab is one of a series of labs that explore the FilmCompany existing network and its upgrade requirements.

A comprehensive network project plan has to include details of constraints that apply to the project as well as potential trade-offs that need to be made. In this lab, you use the identified organizational constraints from the FilmCompany case study and adjust your design according to the trade-offs identified. These constraints will be used in the decision-making process for the proposed design and allow the creation of design strategies that facilitate network scalability.

Step 1: Identify the areas that will be used for designing a strategy that facilitates scalability

a. Use word processing software to create a new document called “Design Strategies.”

b. Use the identified constraints that set limits or boundaries on the network upgrade project and the potential trade-offs to assist in the discussion with other students.

The strategy should cover the following areas:

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- Access Layer modules that can be added
- Expandable, modular equipment or clustered devices that can be easily upgraded
- Choosing routers or multilayer switches to limit broadcasts and filter traffic
- Planned redundancy
- An IP address strategy that is hierarchal and that supports summarization
- Identification of VLANs needed

Step 2: Create an Access Layer module design

Using the list developed from the group discussion, create an Access Layer module (design only).

a. Create your design using the existing equipment.

The FilmCompany network equipment includes:

2 x 1841 Routers (FC-CPE-1, FC-CPE-2)

3 x 2960 Switches (FC-ASW-1, FC-ASW-2, ProductionSW)

Several servers

1 x Linksys WRT300N Wireless Router (FC-AP)

1 x ADSL Modem for Internet Access

b. Using the list of equipment, identify modules that can be added to the existing equipment to support new features and devices without requiring major equipment upgrades.

c. Save your Design Strategies documentation.

Step 3: Select Distribution Layer devices

a. Use word processing software to create an addition to the Design Strategies document.

b. Use the identified Access Layer module diagram to create the Distribution Layer design. Equipment selected must include existing equipment. Use Layer 3 devices at the Distribution Layer to filter and reduce traffic to the network core.

c. With a modular Layer 3 Distribution Layer design, new Access Layer modules can be connected without requiring major reconfiguration. Using your documentation, identify what modules can be added to increase bandwidth.

d. Save your Design Strategies document.

Step 4: Reflection

The constraints and trade-offs identified for the FilmCompany pose many challenges for the designer. What were a few of the more difficult challenges you encountered?

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Consider and discuss the identified strategies. Do all of the strategies designed accomplish the task the same way?

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Would one be less expensive or less time-consuming than the other?

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