CCNA Discovery 4.0 Designing and Supporting Computer Networks

Preparing the Proposal– Chapter 9

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Mind Wide Open™

Objectives

- Create a Bill of Material for a proposed network upgrade.
- Plan the implementation schedule for a phased network upgrade project.
- Determine the software and hardware support contract options that meet customer requirements.
- Create and present a network upgrade proposal, including implementation schedule and cost summary.

Organizing the Existing Information

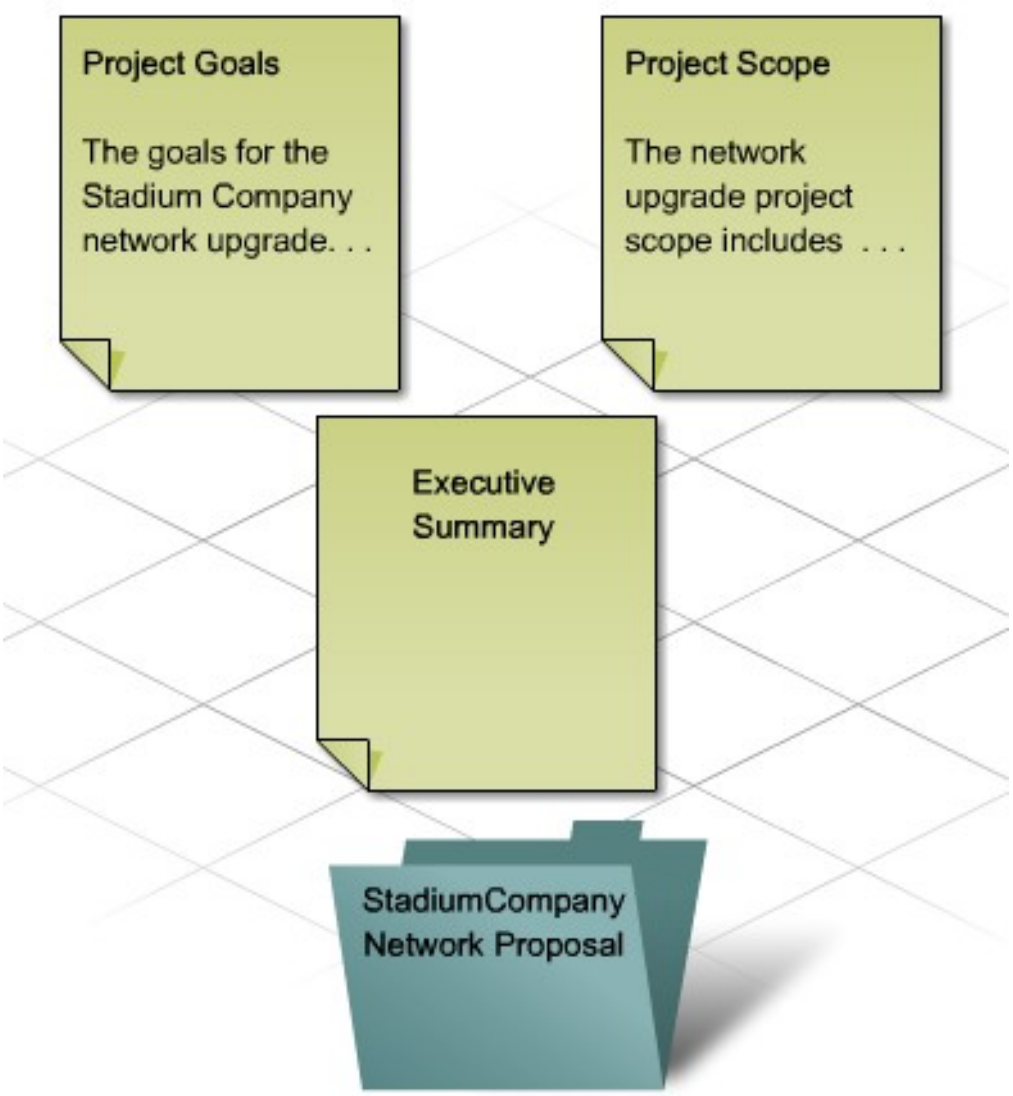
Network Upgrade

Table of Contents

Organizing the Existing Information

Implementation Plan	List of the technical requirements for the design.
Network Requirements	The itemized steps needed for each task to install the network.
Logical Network Design	A chart showing the proposed IP addressing and routing information.
Current Network Environment	A list of the strengths and weaknesses of the existing stadium network.
Cost Proposal	Maintenance contract quotation for each piece of new equipment needed.
Executive Summary	Narrative that describes how the new network enables the stadium management company to meet their business goals.
Physical Network Design	Diagrams of the proposed network design, showing the locations of the networking equipment and the connectivity between them.

Organizing the Existing Information



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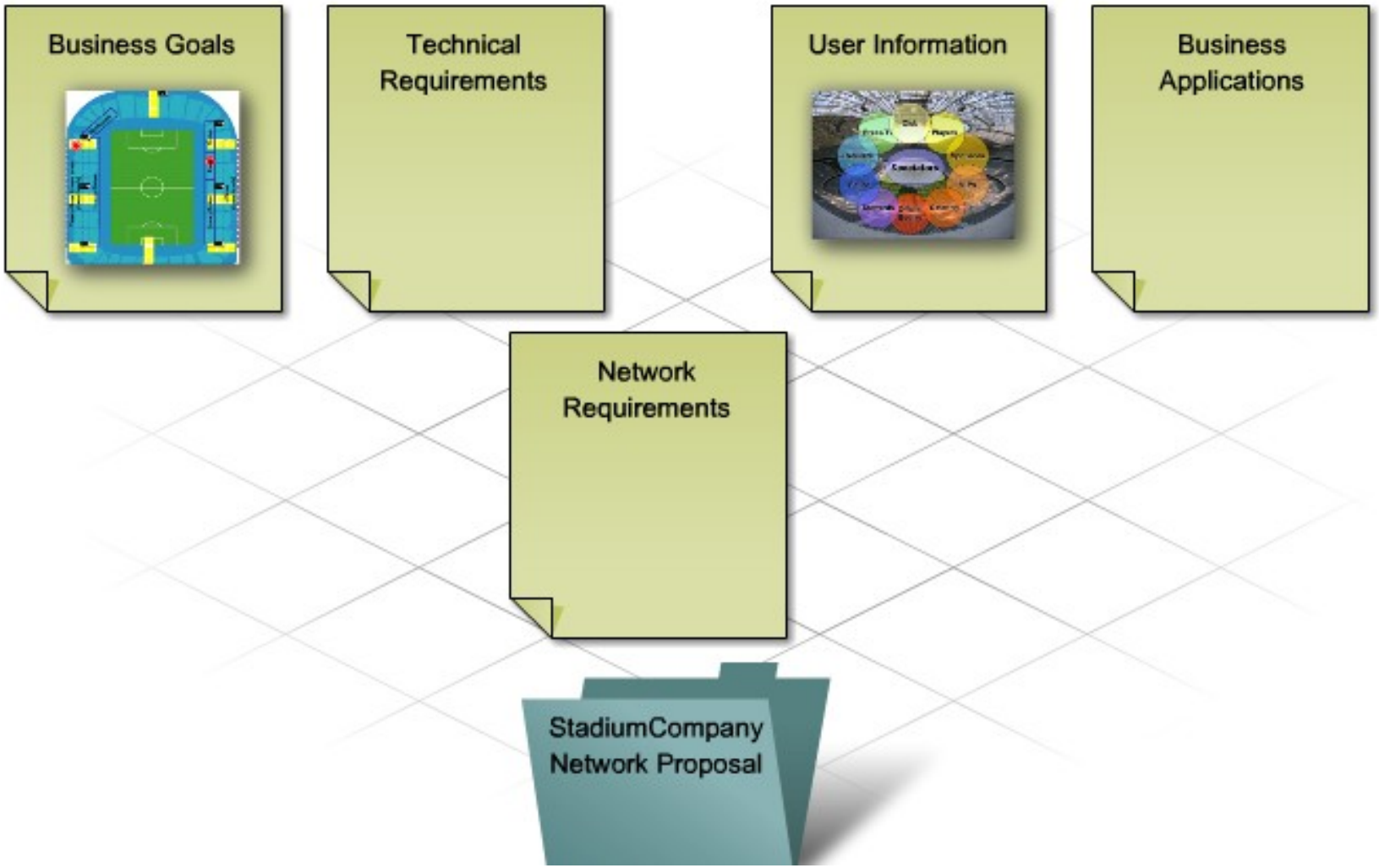

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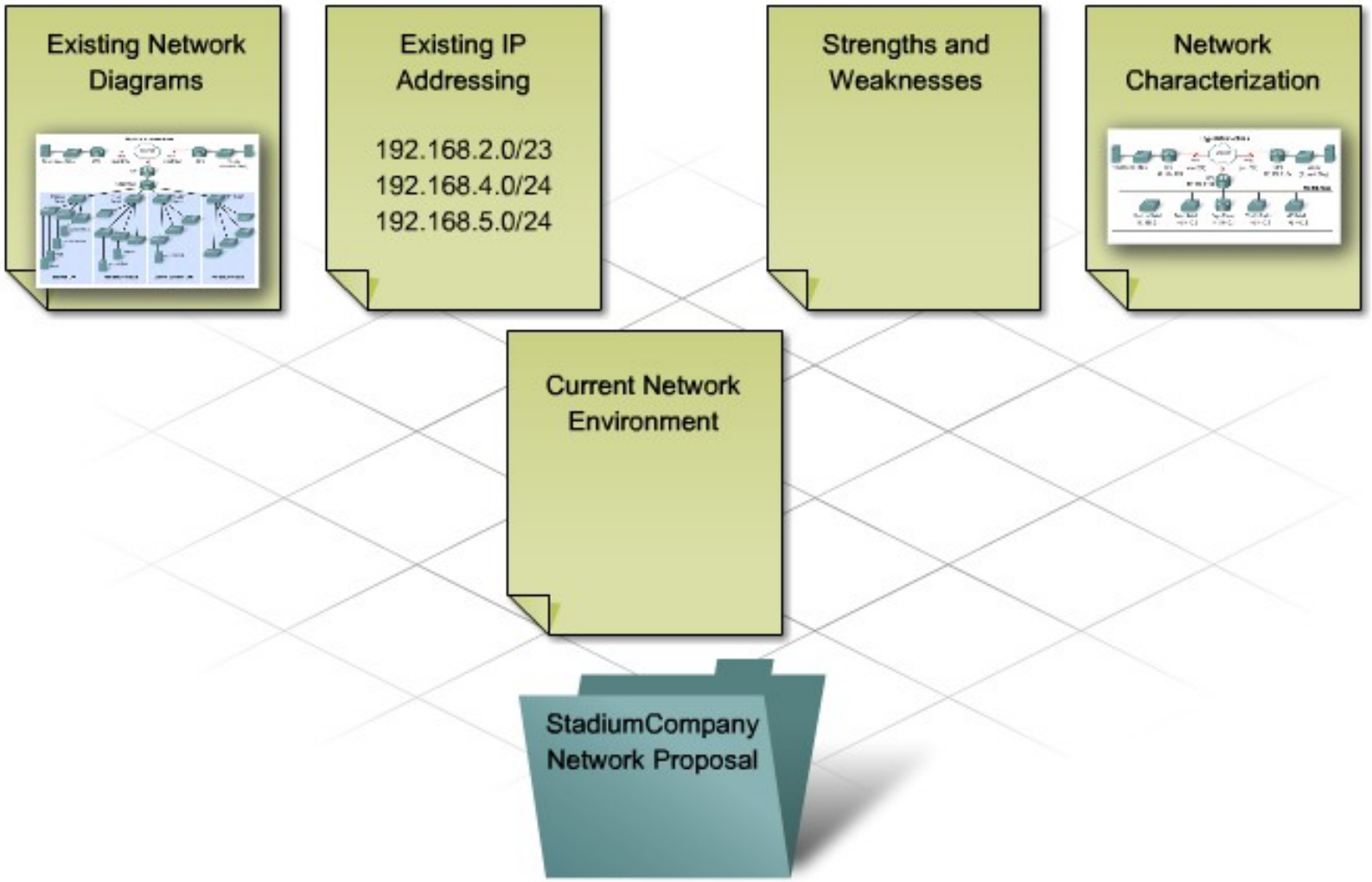

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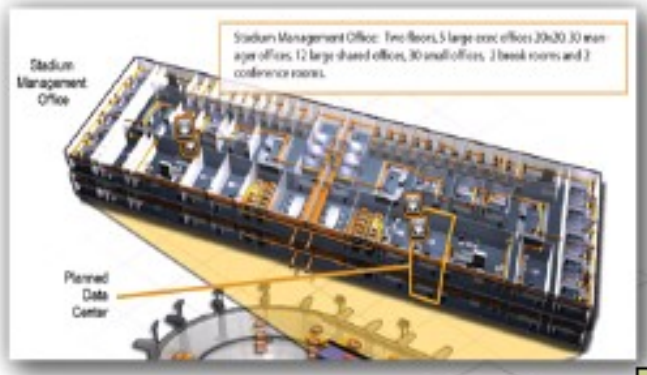
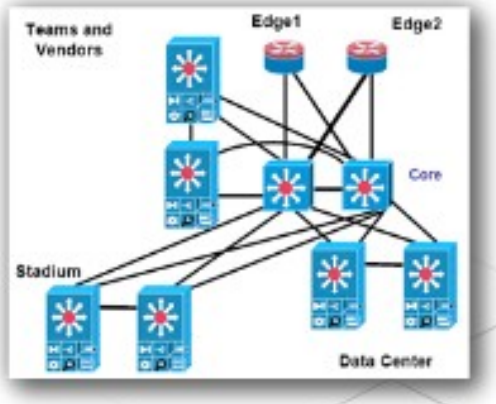


Proposed Physical Design

StadiumCompany Network Proposal

Organizing the Existing Information



Test Results

The LAN test shows

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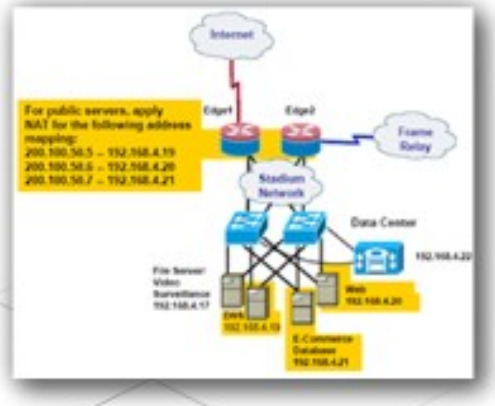


Proposed Logical Design

StadiumCompany Network Proposal

The implementation Plan

- Implementing the Network Design
- Implementing a network design includes installing hardware, configuring systems, testing the network, and launching the network into production. Each task consists of several steps. Each task also requires the following documentation:
- A description of the task
- References to design documents
- Detailed implementation guidelines
- Detailed rollback guidelines in case of failure
- The estimated time required for implementation

The implementation Plan

Summary Implementation Plan

	Date, Time	Description	Implementation Details	Complete
. . .				
Task 3	04/02/2008	Install campus hardware	Section 6.2.3	Yes
Step 1		Connect switches	Section 6.2.3.1	Yes
Step 2		Install routers	Section 6.2.3.2	Yes
Step 3		Complete cabling	Section 6.2.3.3	Yes
Step 4		Verify data link layer	Section 6.2.3.4	Yes
Task 4	04/03/2008	Configure campus hardware	Section 6.2.4	No
Step 1		Configure VLANs	Section 6.2.4.1	No
Step 2		Configure IP addressing	Section 6.2.4.2	No
Step 3		Configure routing	Section 6.2.4.3	No
Step 4		Verify connectivity	Section 6.2.4.4	No
Task 5	04/05/2008	Launch campus updates into production	Section 6.2.5	No
Step 1		Complete connections to existing network	Section 6.2.5.1	No
. . .				

The implementation Plan

Detailed Implementation Plan

. . .

Section 6.2.7.3,"Configure routing protocols in the WAN network module":

- Number of routers involved is 6.
- Use template from section 4.3.1,"EIGRP details."
- Per router configuration:
  - Use passive-interface command on all nonbackbone LANs.
  (See section 4.2.3, "EIGRP details.")
  - Use summarization according to the design.
  (See section 4.2.3, "EIGRP details." and section 4.2.2, "Addressing details.")
- Estimated time is 30 minutes per router.
- If needed, use roll-back procedure defined in section 6.2.7.4.

. . .

The implementation Plan

- Customer Approval
- The stadium implementation plan details the work required to accomplish the project goals. The plan includes the customer expectations and the success criteria, for customer approval and project sign-off.
- As soon as customer approval of the implementation plan is obtained, the installation can begin.

Determining the best installation method

- There are three installation methods that may be used for the implementation:
- New installation- commonly referred to as a green field installation
- Phased installation-install components into an existing, functioning network
- Complete replacement-commonly referred to as a fork-lift upgrade

Determining the best installation method

- New Installation
- In a new installation, there are no current users or currently running applications. This scenario offers many advantages:
- All of the equipment and services can be installed and tested at the same time.
- The implementation plan for a new network is not as complex as for the other two types of installations.
- Schedules are more flexible than when an existing network is in place.
- There is minimal disruption to the company.

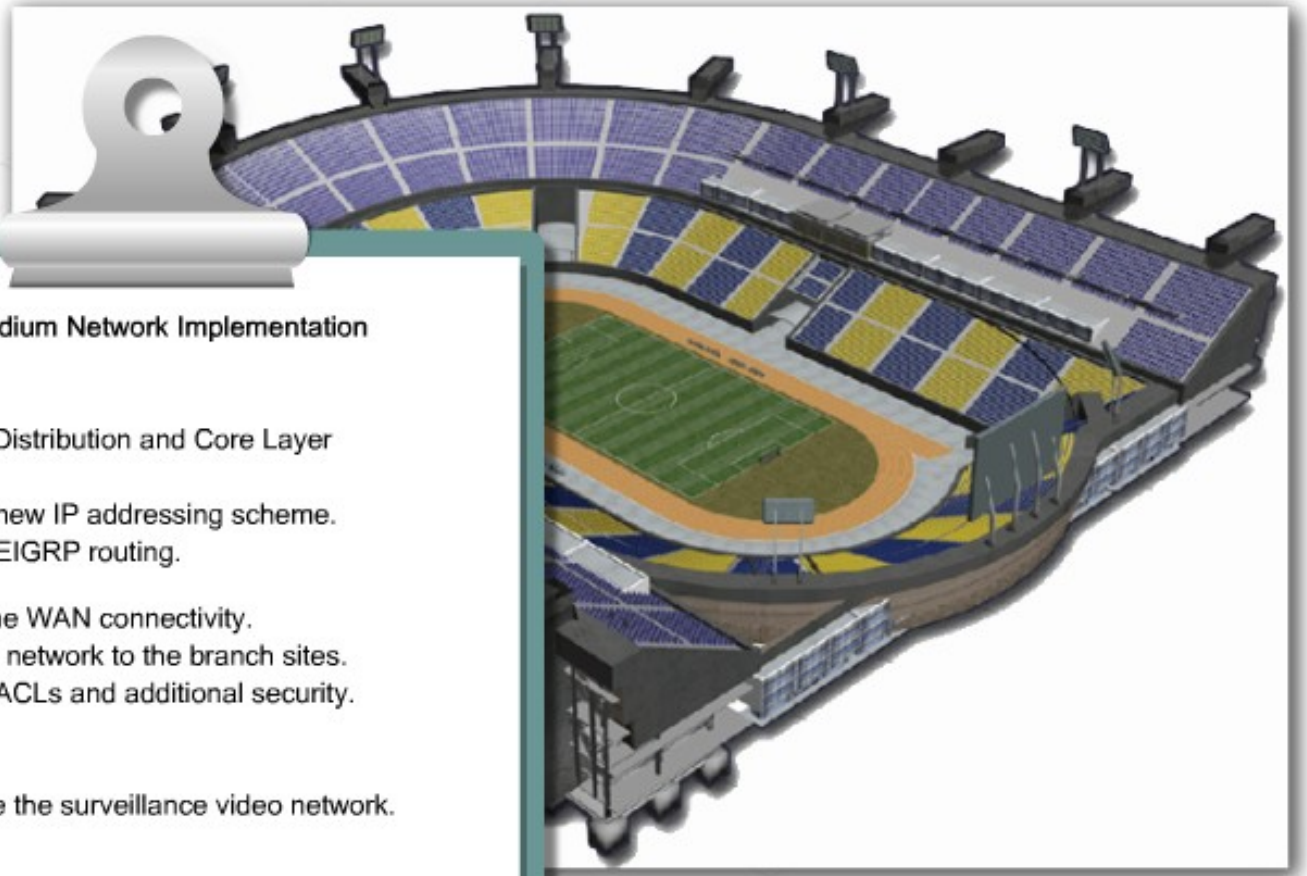
Determining the best installation method

- Phased Installation into Existing Network
- In a phased installation, portions of the network upgrade are implemented in isolation from other, currently running portions.
- Great care must be taken not to disrupt services unnecessarily.
- Requires more detailed planning with the customer.
- The network upgrade is divided into smaller pieces that can be installed and tested quickly.
- Installing the upgrade in smaller phases causes the least amount of downtime.

Determining the best installation method

- Complete Network Replacement
- Sometimes it is necessary to completely replace an existing network. Complete network replacement usually occurs when the network is outdated and cannot be upgraded. In this scenario, the new network is often built alongside the existing network. When the new network is functional, there may be a period of time during which it is tested in parallel with the old network. A date is set to switch over to the new network, and the old network is then dismantled

Determining the best installation method



Stadium Network Implementation

Phase 1:
- Install the Distribution and Core Layer equipment.
- Configure new IP addressing scheme.
- Configure EIGRP routing.

Phase 2:
- Upgrade the WAN connectivity.
- Extend the network to the branch sites.
- Configure ACLs and additional security.

Phase 3:
- Incorporate the surveillance video network.

Phase 4:
- Install wireless network.

Estimating timeline and resources

- The project duration is part of the contractual agreement. To meet the deadlines of the customer the network designer creates a project timeline. The availability of materials, the schedule of the contractor, and the schedule of the customer all affect the start date and the completion date.

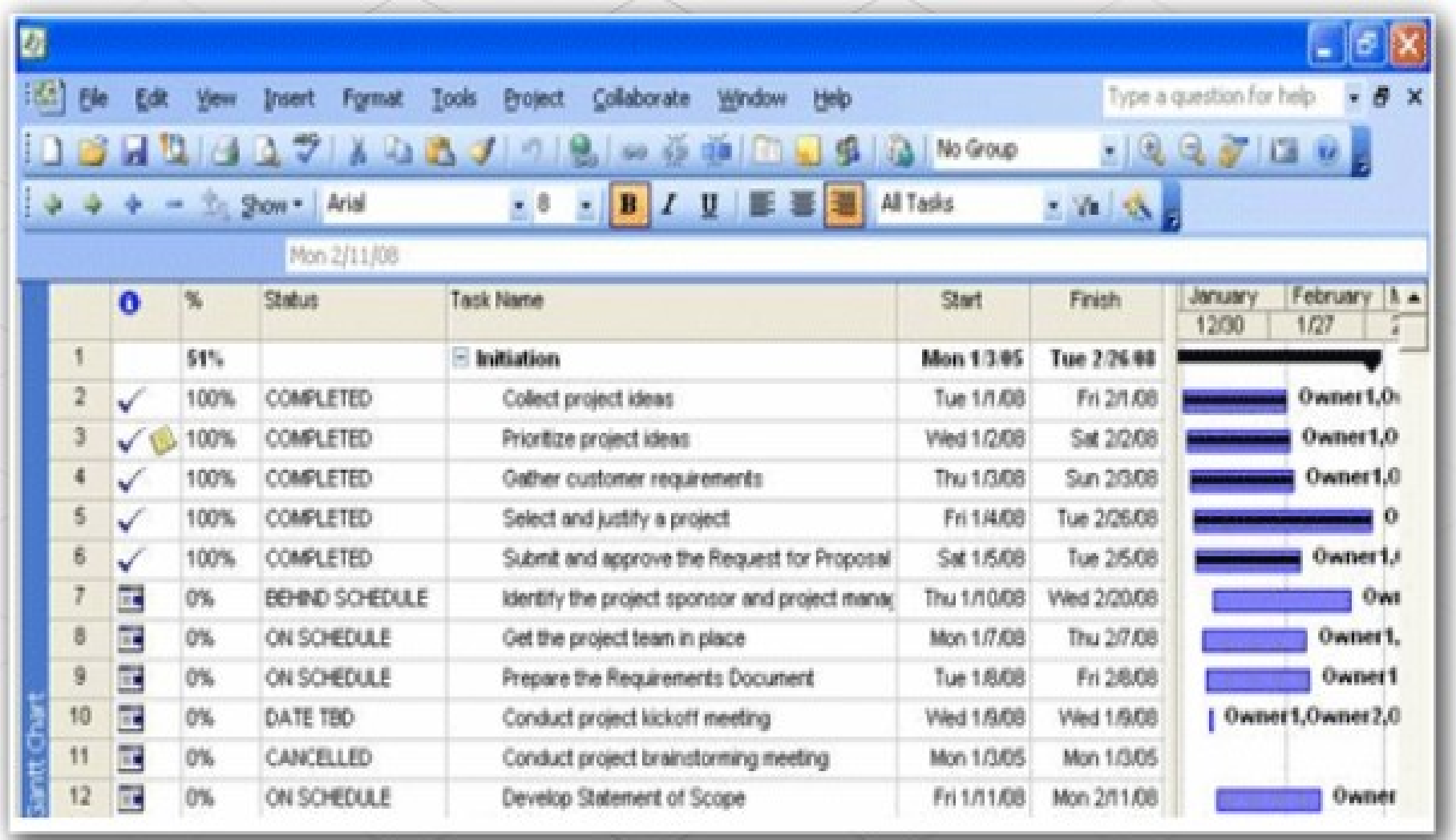
Estimating timeline and resources

- When creating a project timeline, the network designer must consider the possibility that the project might not begin on the proposed start date.
- The stadium RFP states that the project must be completed during the off-season for the two teams. This requirement gives the project a timeline of four months.

Estimating timeline and resources

- NetworkingCompany Resources
- Given the required sets of tasks, the designer estimates what resources are needed to implement the network. To meet the 4-month deadline, the NetworkingCompany may have to increase the number of technicians assigned to the project. It may also be necessary to adjust the sequence of tasks to accommodate the delivery of specific pieces of equipment or the availability of TSP services.

Estimating timeline and resources



Estimating timeline and resources

- Estimated Timeline
- The network designer considers several factors when developing a project timeline:
- Equipment order and delivery
- Service installation, such as WAN links
- Customer schedule, including available maintenance and downtime windows
- Availability of appropriate technical personnel

Estimating timeline and resources

- Customer-caused Delays
- Customers often make changes to the requirements during the installation of a project. When changes occur, the vendor uses the timeline to make adjustments to personnel and other available resources.
- The network designer can also use the timeline documentation to show a customer how delays affect the project completion date.

Estimating timeline and resources

- Project Management Software
- Project management tools can be used to create a project timeline.
- Using a software program can prove valuable for:
- Tracking the progress of the project
- Keeping the project on schedule
- Identifying milestones
- Tracking labor assignments and costs
- Alerting the designer if the project is falling behind schedule.

Estimating timeline and resources

Maintenance Windows and downtime planning

Creating the Bill of Material

- One of the most important sections of the proposal to the stadium management is the cost estimate.
- To prepare the cost estimate, the network designer creates a Bill Of Material (BOM). A BOM is a document that details all of the required hardware and components necessary to implement the proposed upgrade. It consists of an itemized list of hardware, software, and other items that must be ordered and installed. The designer uses this list to obtain quotations and to create the equipment orders.

Creating the Bill of Material

- Ordering Parts
- The designer uses the BOM to order new equipment as well as replacement parts for existing equipment. Therefore, every required item must be included in this list. For example, some routers and switches do not come with mounting brackets. These brackets must be purchased separately. If this information is not included in the BOM, the mounting brackets may be left off the order, which delays the device installation.

Creating the Bill of Material

Part No.	Item Description	Qty	Cost	Total Cost	Vendor	Notes
Cisco1841-T1SEC/K9	Cisco 1841 T1 Security Bundle with IOS Advanced Security, WIC-1DSU-T1-V2, 64 MB Flash/256 MB DRAM	3	$2,095.00	$6,285.00	Cisco Vendor XYZ	Verify RAM amount sufficient for IOS version needed before placing order.
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 CSU/DSU WIC	3	$595.00	$1,785.00	Cisco Vendor XYZ	
T110C	T1 cables for connection from Telco port to CSU interface on router	3	$25.00	$75.00	Local cable company	Need 2 week lead time to order:Cable for Team site 10Cable for Souvenir site 7Cable for Stadium site 5
CON-SNTP-	Cisco SMARTnet	3	$439.00	$1,317.00	Cisco	Needs to be purchased same

Creating the Bill of Material

- To create the BOM, the network designer looks at each section of the network to determine what pieces of networking equipment are required and what capabilities are needed in each device. There are 21 separate locations within the stadium where networking equipment is to be installed or upgraded:
- 16 wiring closets
- 4 WAN locations
- 1 new data center

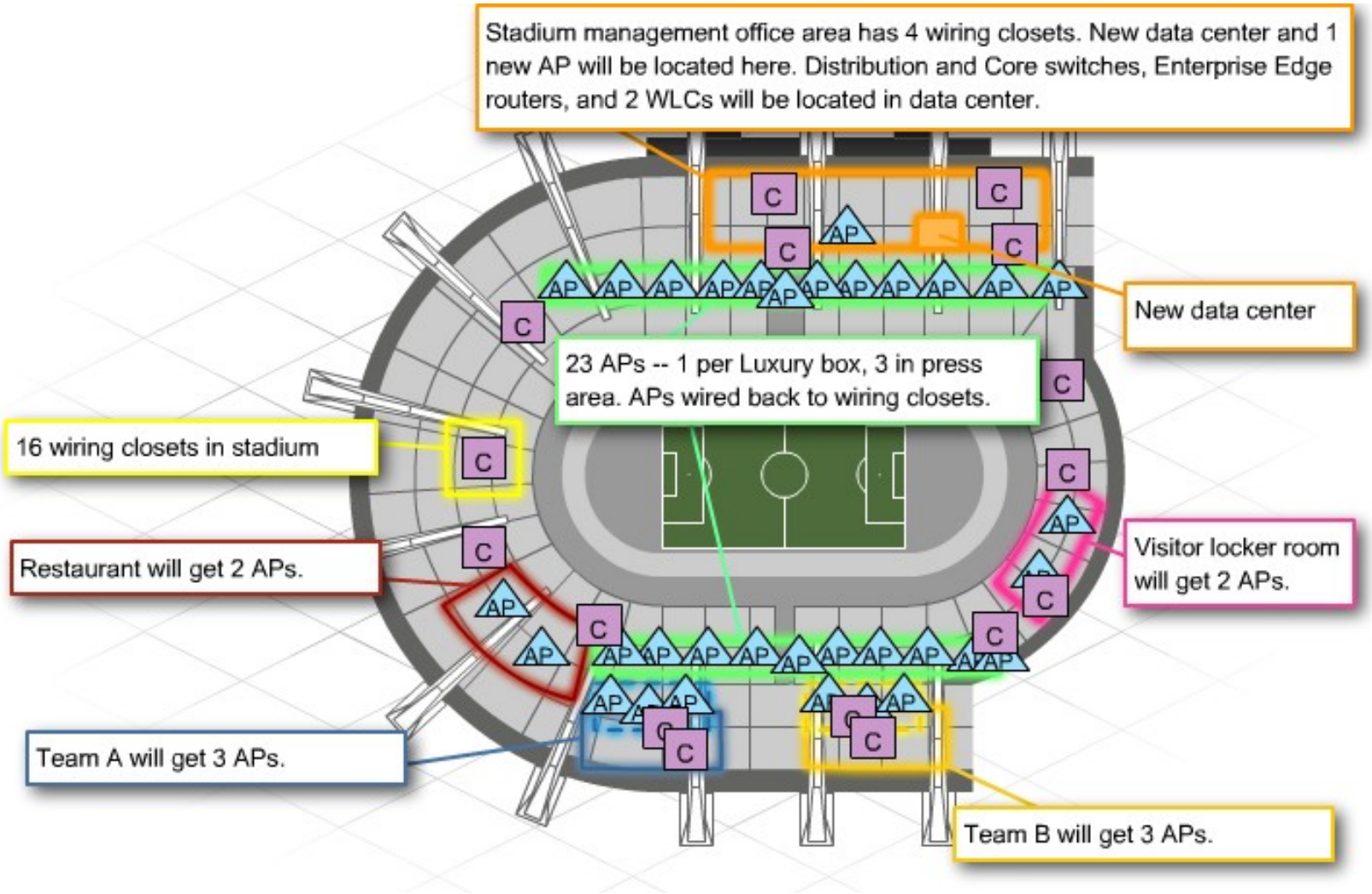
Creating the Bill of Material

- Identifying Additional Devices
- By looking at each area of the network separately, the designer can easily identify any additional devices that are necessary. The list of required new equipment includes:
- 6 Distribution Layer switches
- 2 Core switches
- 1 router for WAN connectivity
- 4 routers for WAN sites
- 2 wireless LAN controllers
- 33 lightweight APs

Creating the Bill of Material

- Upgrades to Existing Devices
- Existing Cisco Catalyst 2960 switches are incorporated into the proposed design. Each of the 16 wiring closets contains one of these switches. The 2960 switches require redundant fiber connectivity to the Distribution Layer devices. Adding the redundant connections requires purchasing an additional fiber transceiver for each switch. These 16 additional transceivers must be listed on the BOM and included in the proposal.

Creating the Bill of Material



Creating the Bill of Material

- Software Requirements
- During the early stages of the stadium design phase, the customer gave the network designer a list of applications that were currently installed. From this information and the network audit, the designer can identify all existing applications.

Type of Applications	Existing	New
Network	DNS, Web Server, database, e-Commerce, printing, file sharing, scanning and recognition software	Network Management Software
Specialized	Accounting, payroll, event scheduling, lease and rental management, marketing and Customer Relationship Management (CRM) software	Ticket printing, IP security cameras and viewing stations, e-commerce site for ticket purchasing and souvenir sales

Creating the Bill of Material

- Existing Applications
- The list of current applications includes:
- Network applications - Microsoft file sharing, printing, DNS, Web Server, scanning and recognition software
- Specialized applications - Ticket scanning and recognition software
- Business applications - Accounting, payroll, event scheduling, lease and rental management, marketing and Customer Relationship Management (CRM) software

Creating the Bill of Material

- New Applications
- The new applications include:
- Network applications - Network management software
- Specialized applications - Ticket printing, IP security cameras and viewing stations, e-commerce site for ticket purchasing and souvenir sales
- The new applications, installation costs, and required training are added to the BOM with the identified hardware.

Recommending SMARTnet Services

- Warranties
- All new equipment automatically comes with a warranty that covers the device. A standard warranty provides the following benefits:
- Hardware-Guarantees that the hardware is free of defects in material and workmanship under normal use
- Software-Guarantees that the physical media is free of defects and the software performs to the published specifications.

Recommending SMARTnet Services

- Additional Service Contracts
- The proposed stadium network includes a mix of both new and older networking equipment. The warranties on some of the older equipment may have expired. To protect the StadiumCompany investment, and to extend the life of the existing equipment, the NetworkingCompany account manager recommends that the stadium management purchase additional maintenance and support contracts.

Recommending SMARTnet Services

- SMARTnet Agreements
- The SMARTnet program is part of a suite of services that Cisco Technical Support Services provides. The SMARTnet program offers the customer service enhancements and maintenance support resources during the term of the contract.

Recommending SMARTnet Services

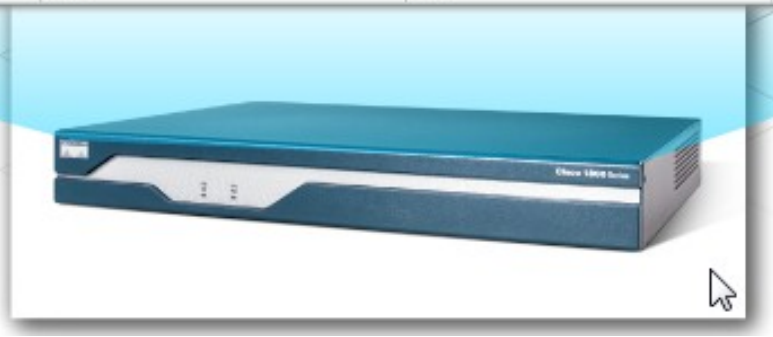
- A SMARTnet agreement includes:
- Software support on the licensed operating system software
- Access to the Cisco Technical Assistance Center (TAC) 24 hours a day, 7 days a week
- Registered access to Cisco.com for easy access to online technical information and service request management
- Advanced replacement of hardware parts

Recommending SMARTnet Services

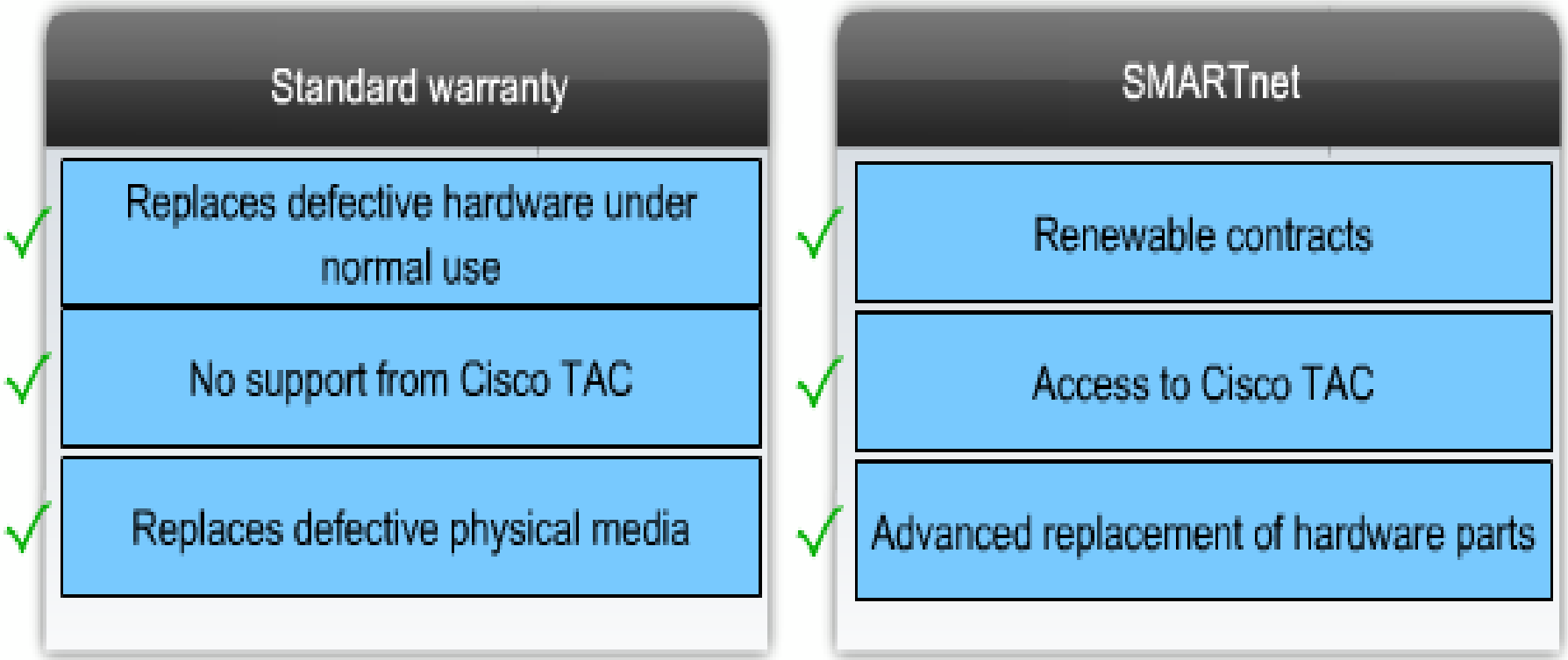
- Hardware Replacement Times
- Under the SMARTnet agreement, hardware replacement times can vary depending on the urgency of the customer need and the coverage selected. For example, with a 24x7x2 agreement, replacement parts are delivered within two hours of determining that a part replacement is required. This 2-hour replacement agreement applies any day or time in the week.

Recommending SMARTnet Services

	SMARTnet	90-Day/1-Year Limited Hardware	Limited Lifetime Hardware
Hardware coverage duration	No	90 days/1 year	No
Technical support from TAC	Yes	No	No
Maintenance releases for OS	Yes	90 days	90 days
Minor and major releases for OS	Yes	No	No
Software application maintenance and minor releases	No	No	No
Software application major releases	No	No	No
Signature file updates	No	No	No
Registered access to Cisco.com for knowledge and online tools	Yes	No	No
Parts replacement	Standard: Next-business-day delivery options: 2-hr, 4-hr onsite	RTF (10 days)	RTF (10 days)
Equipment covered	All	All	All



Recommending SMARTnet Services



Cisco Technical Services and Support

Cisco Focused Technical Support
Cisco High-Touch Operations Management Service Level 1: Augment the customer's staff with a dedicated operations manager 8 hours a day, 5 days a week to expedite issue resolution, identify measures to help prevent issues from recurring, and manage service requests to closure.
Cisco High-Touch Technical Support Service Level 2: Access a designated team of specialized Cisco engineers to respond to customer needs 24 hours a day, 7 days a week for rapid issue resolution and recommendations to improve network operations.
Cisco High-Touch Engineering Service Level 3: Receive custom network diagnostics from an assigned Cisco network engineer whose expertise is aligned with customer needs and is available 8 hours a day, 5 days a week. The customer receives in-depth network analysis to isolate the root cause of problems, software version referral in response to events on the network, recommendations for corrective and preventive actions, and on-site visits.

Software IOS services and support

- One of the business goals of the stadium management company is to simplify the day-to-day management of the stadium network. To accomplish this goal, the NetworkingCompany staff recommends that network management software be installed.

Software IOS services and support

- Software Application Support Services
- Implementing a CiscoWorks Network Management application or a Cisco IP Telephony solution requires Cisco software products in addition to the networking hardware. Cisco offers Software Application Support Services (SAS) to support the application software.

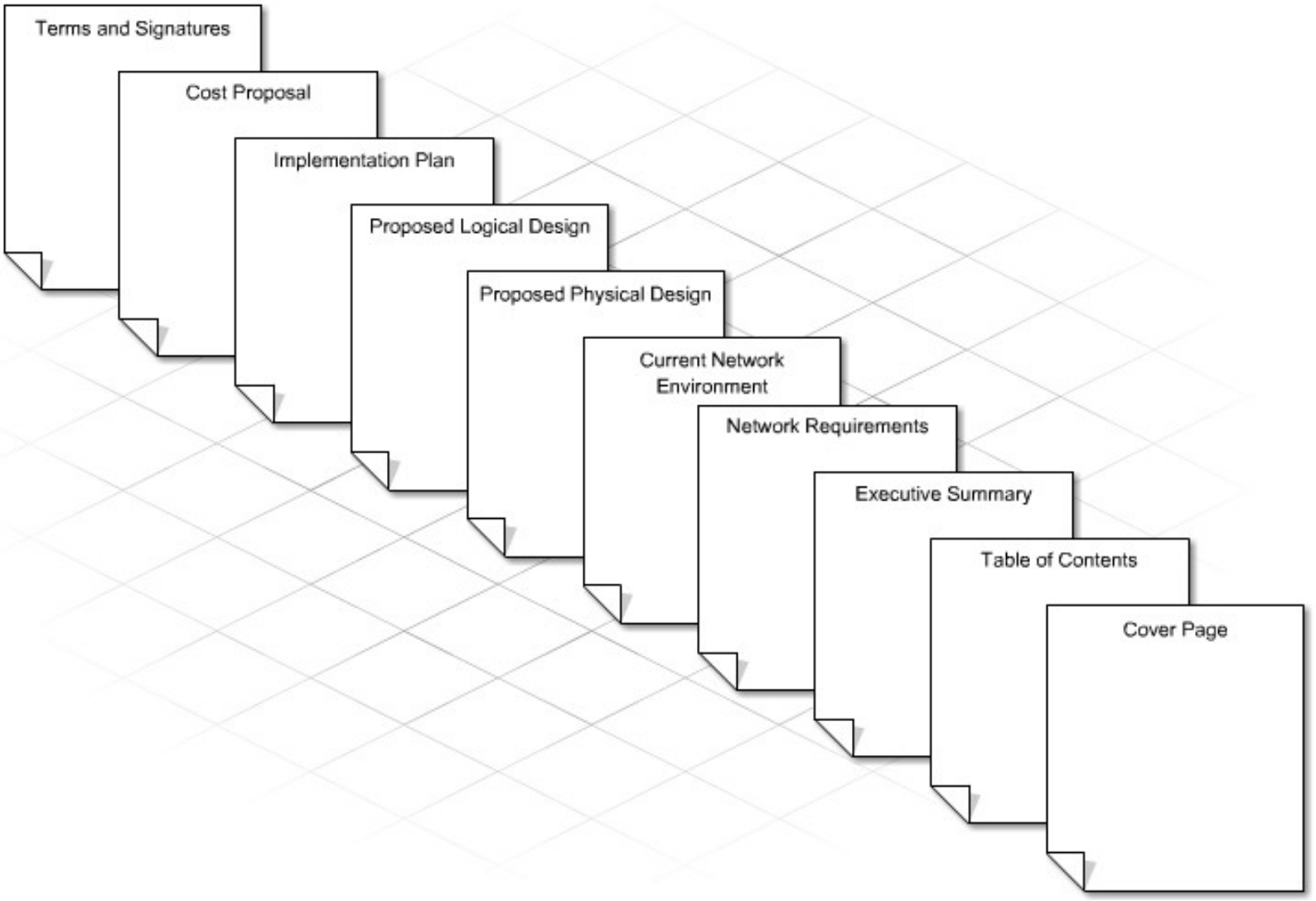
Software IOS services and support

- SAS services include around-the-clock access to technical support, application software updates, and a wealth of technical information on Cisco.com. SAS services are designed specifically for Cisco software applications and provide services in addition to the operating system software support.

Finalizing the Proposal

- Important clauses in the terms and conditions include:
- Details about the proposal expiration date
- Obligations of the customer to obtain permission or other consents within their organization
- Obligations of the vendor to provide services and equipment with care and skill
- Dates when completed milestone deliverables are payable
- Interest charged on outstanding payments
- The amount of notice the customer must give to cancel any equipment and service orders
- Details about guarantees (if any) provided by the vendor
- Details about escalating and resolving complaints or issues

Finalizing the Proposal



Presenting the Prosal

- Presentation tips:
- Every slide should contain a title that summarizes the information presented on the slide.
- Computer presentations should not contain full paragraphs of text. Use a bulleted list or outline format and elaborate on the points during the delivery.
- All type should be legible. Use large fonts, because small fonts are often hard to read.

Presenting the Proposal

- Use contrasting colors - either a dark background with light text or a light background with dark text.
- Avoid backgrounds that make the text hard to read. Keep the background simple.
- Do not use ALL CAPS! Their use is unprofessional and they can be difficult to read.
- Include a combination of words, pictures, and graphics. Variety keeps the presentation interesting.

Presenting the Proposal