Preview: ISTM5110 : Strategic Management of Network Technology

Syllabus

Course Overview

This course presents an overview of a diverse set of network management skills required to plan the deployment of leading-edge network technologies to create strategic business advantages. This course will provide you with the tools, theories, and knowledge to perform a high-level analysis of an enterprise's network management functions. You will be capable of assessing the current state of network configuration, faults, accounting, performance, and security and to determine current and future network requirements to support the core mission of an enterprise. You will also explore the latest network management trends with an emphasis on the analysis of emerging networking technologies.

To support your analysis of a diverse set of network management skills, you will conduct an interview with a networking professional and complete a loosely coupled project that builds upon data collected during the interview. You will also develop a series of additional unit assignments and activities that will help you to explore primary network management roles and responsibilities. Throughout the course, you will be asked to do some research on your own. In addition to consulting the resources provided to you by Capella, you should also explore what is available freely in the Capella Library and on commercial and nonprofit Web sites of interest.

This course is primarily focused on network management skills, rather than on network engineering. However, you will find many optional technical resources available to you throughout the course. While these optional resources typically do not directly align with the course topics and competencies, these resources are intended to provide an introduction of technical topics to learners who may be moving towards a new information technology career, and to provide learners who may be seasoned networking professionals with the opportunity to refresh some technical fundamentals. These optional materials are listed in the Course Materials section of the Syllabus.

Course Competencies

(Read Only)

To successfully complete this course, you will be expected to:

1. Evaluate corporate network management issues.
2. Analyze emerging network technologies, standards, and trends.
3. Develop proficiency in sourcing and procuring enterprise network technology.
4. Analyze security management of networked resources.

Course Prerequisites

Prerequisite(s): Completion of or concurrent registration in PM5331.

Syllabus >> Course Materials

Required

The materials listed below are required to complete the learning activities in this course.

Library

The following required readings are provided in the Capella University Library or linked directly in this course. To find specific readings by journal or book title, use Journal and Book Locator. Refer to the Journal and Book Locator library guide to learn how to use this tool.

- Bughin, J., Chui, M., Manyika, J. (2010). Clouds, big data, and smart assets: Ten tech enabled business trends to watch. *McKinsey Quarterly, 4*,1–14.
- Juric, R., Ashfaque, S., & Saunders, B. (2005). Outsourcing network management. *27th International Conference on Information Technology Interfaces*. Washington D.C.: IEEE.
- McAfee, A. (2011). What every CEO needs to know about the cloud. *Harvard Business Review, 89*(11), 124–132.
- Pierce, L. (2001). The ABCs of preparing thorough RFPs. *Network World, 18*(30), 26.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Beach, G. (2007). No more outsourcing: Call it sourcing. Retrieved from http://www.cio.com/article/149301/No_More_Outsourcing_Call_It_Sourcing
- Camden, C. (2010, June 9). Guidelines for formulating an RFP response. Retrieved from http://www.techrepublic.com/blog/project-management/guidelines-for-formulating-an-rfp-response/1851
- Cisco Systems. (2007). How Cisco IT outsourced network management operations. Retrieved from http://www.cisco.com/web/about/ciscoitatwork/downloads/ciscoitatwork/pdf/Cisco_IT_Case_Study_CiscoROS_CS.pdf
- Jansen, W., & Scarfone, K. (2008). *National institute of standards and technology special publication 800-124: Guidelines on cell phone and PDA security.* Retrieved from http://csrc.nist.gov/publications/nistpubs/800-124/SP800-124.pdf
- Kerner, S. (2003, April 25). How to respond to a corporate RFP. Retrieved from http://www.techrepublic.com/article/how-to-respond-to-a-corporate-rfp/5031142
- Sun, C. (2008, February 25). 10 things you should know about creating an effective RFP. Retrieved from http://www.techrepublic.com/blog/10things/10-things-you-should-know-about-creating-an-effective-rfp/314?tag=content;siu-container

Suggested

The following materials are recommended to provide you with a better understanding of the topics in this course. These materials are not required to complete the course, but they are aligned to course activities and assessments and are highly recommended for your use.

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Integrated Materials

Book

Raval, V., & Fichadia, A. (2007). *Risks, controls, and security: Concepts and applications.* Hoboken, NJ: John Wiley & Sons. ISBN: 9780471485797.

Stallings, W., & Brown, L. (2008). *Computer security: Principles and practice.* Upper Saddle River, NJ: Pearson Prentice Hall. ISBN: 9780136004240.

Library

The following optional readings may be available in the Capella University Library. To find specific readings by journal or book title, use Journal and Book Locator. Refer to the Journal and Book Locator library guide to learn how to use this tool. If the full text is not available, you may be able to request a copy through the Interlibrary Loan service.

- Fabian, P., Palmer, J., Richardson, J., Bowman, M., Brett, P., Knauerhase, R., . . . Rungta, S. (2006). Virtualization in the enterprise. *Intel Technology Journal, 10*(3), 227–242.
- Sampson, A. (2017). CompTIA Network+ N10-007: Configure advanced networking devices [Video]. Skillsoft Ireland.
- Shannon, M. (2015). ARCH: Infrastructure device access [Video]. Skillsoft Ireland.
- Shannon, M. (2016). CISA: Management of IS operations [Video]. Skillsoft Ireland.
- Shannon, M. (2016). CISA: Network architectures, services, and standards [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). CompTIA Mobility+ MB0-001: Network infrastructure [Tutorial].
- Skillsoft. (n.d.). CompTIA Network+ N10-006: Network architecture, part 1 [Tutorial].
- Skillsoft. (n.d.). CompTIA Network+ N10-006: Network operations, part 1 [Tutorial].
- Skillsoft. (n.d.). DESGN 3.0: Managing IP addresses and introducing SDN [Tutorial].
- Skillsoft. (n.d.). Establishing effective virtual teams [Tutorial].
- Thibodeau, P. (2008). Environmental impact: IT sees the light on green computing. *Computerworld, 42*(27/28), 10–11.
- Wittgreffe, J., Dames, M., Clark, J., & McDonald, J. (2006). End-to-end service level agreements for complex ICT solutions. *BT Technology Journal, 24*(4), 31–46.
- Young, D. (2016). A+ Essentials: ISDN [Video]. Skillsoft Ireland.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Cisco Systems. (2007). IPv6 addressing at a glance. Retrieved from http://www.cisco.com/en/US/technologies/tk648/tk872/technologies_white_paper0900aecd8026003d.pdf
- Colasoft. (n.d.). Capsa network analyzer. Retrieved from http://www.colasoft.com/capsa/
- Gedda, R. (2008). Desktop to data center: South Australia's green IT revolution. Retrieved from http://www.cio.com/article/432663/Desktop_to_Data_Center_South_Australia_s_Green_IT_Revolution
- Harrington, D., Presuhn, R., & Wijnen, B. (1999). RFC 2571: An architecture for describing SNMP management frameworks. Retrieved from ftp://ftp.rfc-editor.org/in-notes/rfc2571.txt
- HelpSystems. (n.d.). Intermapper network monitoring software. Retrieved from https://www.helpsystems.com/products/network-monitoring-software
- LogicMonitor. (n.d.). Retrieved from https://www.logicmonitor.com/
- Microsoft TechNet. (2013). Network monitor. Retrieved from https://blogs.technet.microsoft.com/netmon/
- Microsoft World Wide Events. null
- Nagios. (n.d.). Retrieved from https://www.nagios.org/
- Paessler. (n.d.). PRTG network monitor. Retrieved from https://www.paessler.com/prtg
- Snort. (n.d.). Retrieved from https://www.snort.org/
- Solar Winds. (n.d.). Network Performance Monitor. Retrieved from https://www.solarwinds.com/network-performance-monitor
- Splunk. (n.d.). Retrieved from https://www.splunk.com/
- Wireshark. (n.d.). Retrieved from https://www.wireshark.org/
- Zenoss. (n.d.). Retrieved from https://zenoss.com

Projects

Project >> Network Trend Analysis and Management

Project Overview

The requirements of this course go beyond participation in the online discussions and unit assignments. To finish the course in the allotted 10 weeks, you should work steadily on the development of your course project. You will put yourself in the position of a network manager and create deliverables to provide information to a chief information officer (CIO) to make strategic network management decisions.

To support your reports, you will research and analyze aspects of networking technology and synthesize concepts in the course. You will complete five assignments related to the project:

- In Unit 2, you will write a robust analysis of a particular emerging network technology.
- In Unit 4, you will develop a set of interview questions about challenges and emerging technology, standards, and trends, conduct an interview with a professional network manager, and report on your findings.
- In Unit 6, you will research and analyze one of the security issues you discussed with the network manager and propose specific solutions to mitigate risk.
- In Unit 8, you will create a professional quality request for proposal (RFP) document to purchase the hardware and software required to deploy a particular emerging network technology in an enterprise environment.

- Finally, in Unit 10, you will create a professional quality written response to another learner's request for proposal (RFP) document.

- **Written communication:** Written communication is free of errors that detract from the overall message.
- **APA formatting:** Resources and citations are formatted according to current APA style and formatting.
- **Font and font size:** Arial, 10 point.

Unit 1 >> Analyzing Emerging Network Trends

Introduction

Networking technology is certainly changing rapidly. After an extensive analysis evaluating standards and choosing the best products for your organization's situation, it may be only a matter of months before your networking hardware and software have lost their cutting edge and are heading towards obsolesce. Keeping up with technological change may be vital to your success as a network manager.

New technological innovations are emerging constantly. It may seem overwhelming to try to keep abreast of them all. Remember to focus on keeping your enterprise's business needs in mind so that you can identify the technology that will solve problems or create opportunities.

Another factor that may affect your enterprise is the quickly changing regulatory situation. Mandates including Sarbanes-Oxley and the Payment Card Industry Data Security Standard require specific standards for processing and storing data. Government regulation, or deregulation, also may play a decisive role in the technology marketplace.

Awareness of emerging trends is critical for network managers. You need to be aware of the business and regulatory issues that are driving your organization's technology goals and what kinds of new technology or new opportunities are on the horizon that may affect your organization's ability to create strategic competitive advantage.

This week we will work to identify emerging network trends. This will help you to cover the bases when it comes to keeping up with the deployment of technological innovation for your enterprise's network infrastructure.

Learning Activities

u01s1 - Studies

Readings

Use the Internet to complete the following:

- Bughin, Chui, and Manyika's August 2010 article, "Clouds, Big Data, and Smart Assets: Ten Tech-Enabled Business Trends to Watch" from *McKinsey Quarterly*, volume 4, pages 1–14.

The following required reading is available full-text in the Capella University Library. Search for the article by clicking the linked title and following the instructions in the Library Guide.

- McAfee's November 2011 article, "What Every CEO Needs to Know About the Cloud" from *Harvard Business Review*, *volume 89*, issue 11, pages 124–132.

Optional Articles

Review the following optional articles to refresh or build your technical knowledge related to network management:

- Cisco Systems 2007 white paper "IPv6 Addressing at a Glance."
- Fabian et al's 2006 article, "Virtualization in the Enterprise" from *Intel Technology Journal*, volume 10, issue 3, pages 227–242.
- Gedda's 2008 article, "Desktop to Data Center: South Australia's Green IT Revolution."
- Thibodeau's 2008 article, "Environmental Impact: IT Sees the Light on Green Computing" from *Computerworld,* volume 42, issue 27/28, pages 10–11.

u01d1 - Project Ideas

Your course project represents a major component of your grade. Read the Network Trend Analysis and Management Project Description and begin thinking about which organization and network manager you will work with for your project. You will need to start working your social networks now to ensure that you have lined up a professional network manager to interview by Unit 4 of the course. Use this discussion to ask any clarifying questions regarding your course project or any other aspect of this course.

Read the Discussion Participation Scoring Guide to learn how the instructor will evaluate your discussion participation throughout this course.

Response Guidelines

Get to know your fellow learners by posting comments or questions based on their professional background or technical skill set.

Course Resources

Graduate Discussion Participation Scoring Guide

u01d2 - Emerging Network Trends

Networking technology is constantly changing. Research and report on 2–3 emerging trends that you think may affect many IT organizations in the next few years. Let us see if we, as a class, can deliberate and achieve consensus on which 3–4 emerging technologies are most likely to impact enterprise network operations. Be sure to cite your sources using the APA format.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources

Graduate Discussion Participation Scoring Guide

APA Style and Format

Unit 2 >> Introduction to Network Management

Introduction

Professional management of an enterprise network results in network systems that have the capacity and features to meet the business goals of the enterprise without squandering resources on overcapacity and frills. Proper management results in secure and reliable systems that enable end users as well as the enterprise to achieve their collective mission. Improper management of an enterprise network typically results in unreliable network systems that are prone to failure when most needed, are open to attack, decrease the productivity of end-user communities, and fail to provide an adequate return on investment.

This week we will introduce basic concepts related to network management and think about the significance of network management and its impact on the enterprises costs, revenues, and productivity. We will also introduce some of the vital players in the network management industry, as well as begin to explore some of the essential challenges of managing an enterprise network.

Learning Activities

u02s1 - Studies

Optional Skillsoft Resources

- Shannon, M. (2016). *CISA: Network architectures, services, and standards* [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). CompTIA Network+ N10-006: Network architecture, part 1 [Tutorial].

u02a1 - Trend Analysis

It is often necessary for network managers to assess the development of new technologies and assess their potential impacts on an enterprise, both now and in the foreseeable future. Imagine this assignment to be a report by you, a network manager, for your organization's chief information officer (CIO). Complete the following:

- Analyze an emerging network technology.
- Make the case that this emerging technological trend will have a significant impact in the networking industry.
- Focus your analysis on providing the information that your CIO may need to make strategic management decisions.

Your final report should use APA formatting and be no more than seven pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources
APA Style and Format

u02d1 - Effective Network Management

Discuss an example of how effective network management enabled an enterprise IT department to save money or increase revenue. What were some of the biggest challenges that the organization needed to overcome to achieve this positive result? Please recount an example from your own professional experience or from cases that you research online.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

u02d2 - Google Versus Skype

Perform an Internet search to compare Google and Skype's IP telephony features, then synthesize and discuss three salient points regarding any of the following themes: global market trends, disruptive innovation, digital convergence, integration, and telecommunication standards.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

Unit 3 >> Network Management Roles and Responsibilities

Introduction

This week we will be thinking about the roles and responsibilities of a network manager. Obviously, there may be a lot of variation from organization to organization, however typical responsibilities may some of include the following: Supervise the network administration and technical teams in compliance with organizational policies; manage local and wide-area voice and data networks by providing reliable access to network resources by maintaining hardware and software and monitoring network performance; manage planning, installation, setup, support and documentation of network systems; evaluate and recommend network hardware and software components and upgrades; manage the installation, upgrade and configuration of client accounts, network printing, directory structures, rights and permissions, and security and software; respond to the needs and questions of end-user communities concerning access to resources on the network; manage backup, business continuity, and disaster recovery measures; maintain current knowledge of software and hardware methods, trends and techniques; assign duties and scrutinize work for accuracy, neatness, and conformance to policies and procedures; provide service to customers by answering questions, providing information, making referrals,

and assuring appropriate follow-up or resolution; and communicate effectively with executives, senior managers, supervisors, and co-workers.

Network managers who can fulfill these responsibilities well are in very high demand, and are often able to command excellent salaries and benefits.

Learning Activities

u03s1 - Studies

Optional Resources

Review the following optional media and self-paced tutorial to refresh or build your technical knowledge related to network management:

- Visit Microsoft World Wide Events and search for: **Build high-availability infrastructures with Windows Server 2008 failover clustering (Level 300).**
- Shannon, M. (2016). *CISA: Management of IS operations* [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). CompTIA Network+ N10-006: Network operations, part 1 [Tutorial].

u03a1 - Network Management Tools Analysis

There's a management adage that says, "If you can't measure it, you can't manage it." This idea is foundational to many modern management methodologies. There are myriad tools available for monitoring and managing network systems. Here is a list of 12 well-known tools. You will find links in the Resources.

- Zenoss.
- Wireshark.
- Splunk.
- Snort.
- Orion Network Performance Monitor.
- Nagios.
- Munin.
- Microsoft Network Monitor.
- LogicMonitor.
- InterMapper.
- Colasoft.
- PRTG Network Monitor.

For this assignment:

- Research, analyze, and report two network monitoring tools—one tool from the list above, and one tool not listed above.
- Describe the salient characteristics of each tool, including its feature set, cost, and ease of use.
- Describe strategies for implementing the tools to address corporate management issues.
- Include any insights that you can share based on your personal professional experience deploying the tool in an enterprise environment.

Your final report should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources
APA Style and Format
Microsoft TechNet: Network Monitor
LogicMonitor
Intermapper Network Monitoring Software
Nagios
Zenoss
Snort
Solar Winds Network Performance Monitor
Splunk
Wireshark
PRTG Network Monitor
Capsa Network Analyzer

u03d1 - The Importance of Soft Skills

While network management may be a highly technical field, a well-developed set of soft skills is often vital to success as a network manager. Here is a set of some soft skills that may characterize an ideal manager:

- Excellent communication skills.
- Outstanding time management skills.
- Exceptional problem-solving skills.
- Strong work ethic.
- Good team member.
- Demonstrated self-confidence.
- Positive attitude.
- Willingness to accept and learn from criticism.
- Ability to work well under pressure.

Based on your professional experience, tell us a story that explicitly demonstrates how a network manager you have worked with deployed one of the soft skills listed above to solve a problem or create an opportunity. Alternatively, you may choose to relate an anecdote about how the failure to deploy an appropriate soft skill damaged the organization. If you have not worked with a network manager before, no worries; just tell us a story about any type of manager. You may also choose to tell a story about yourself as well.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources

Graduate Discussion Participation Scoring Guide

u03d2 - Interview Opportunities and Challenges

Next week's Network Manager Interview assignment requires that you communicate with a professional network manager. Who are you interviewing for your assignment? How did you connect with this particular network manager? What advice do you have for learners who may still be struggling to establish a suitable relationship with, or persuade timely cooperation from, their interviewee? This discussion is your opportunity to ask questions, bounce ideas off each other, and advise and encourage your fellow learners.

Response Guidelines

Post positive and supportive comments or questions to at least two other learners.

Course Resources

Graduate Discussion Participation Scoring Guide

Unit 4 >> Network Management Fundamentals

Introduction

Businesses and organizations depend on networks for mission-critical tasks that require high-performing, reliable, and secure networks. Central to the task of creating high performance is active monitoring of networks to assist with the identification and avoidance of network errors. Many tools, based on the Simple Network Management Protocol (SNMP), are available to aid in performance monitoring of networks. This week we will explore the basics of network management system, focusing particularly on network devices, management networks, management systems, and the management support organization. This week you will also interview a professional network manager to support your analysis of emerging trends and best practices.

Learning Activities

u04s1 - Studies

Optional Resources

Review the following optional article to refresh or build your technical knowledge related to network management:

- Harrington, Presuhn, and Wijnen's 1999 memo, "RFC 2571: An Architecture for Describing SNMP Management Frameworks."

u04a1 - Network Manager Interview

The purpose of this assignment is to provide you with a practical exercise in information gathering from a potential mentor or professional colleague. Consider this a valuable opportunity to establish or build your professional network. Complete the following:

- Identify a person who currently holds a position in network management in a large enterprise.
- Conduct a 20–30 minute interview with this person. Ideally, you will be able to meet your interviewee face to face, although telephone, email, or chat sessions are also acceptable.
- Ask the following questions and prepare additional questions based on your particular interests in the networking field:
    - What is the mission of your organization?
    - What is your job title and main responsibilities?
    - What are your most challenging network management issues?
    - What are your most challenging mobile networking issues?

    - What are your most challenging procurement and sourcing issues?
    - What are your most challenging network security issues?
    - What are the regulatory and/or policy constraints that you face?
    - What future changes do you see in network management?
    - How do you keep up with emerging network technologies, standards, and trends?
- After the interview has occurred, be sure to engage in proper interview etiquette by sending a thank you note to your interviewee.
- Submit a 5–7 page report in which you:
    - Discuss the core mission of the organization, the individual's title and responsibilities, and a list of the questions you prepared for the interview.
    - Present a robust analysis of your lessons learned regarding network management.

Note: Data from your interview will be central to your assignments in Unit 6 and Unit 8, so you may want to look ahead now to make sure that you gather all the information that you will need to complete your course project.

u04d1 - Dedicated Management Systems

Compare the advantages and disadvantages of deploying a dedicated (out-of-band) management system to those of using a shared (in-band) management system. How might a dedicated management system improve network operations center (NOC) operations? Any insights that you can share based on your personal professional experience using a network management system in an enterprise environment are welcome.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

Unit 5 >> Perspectives on Network Management

Introduction

This week we will consider network management challenges from a number of different perspectives and dimensions. Each of these viewpoints will highlight a different set of concerns, for example management interoperability. Looking at the

role of network standards will help us to understand management interoperability issues. We will also learn about various network management lifecycle models, which enable us to understand how networks move from birth to end-of-life. Vigilant lifecycle management may enable a network manager to extend the life of the network and significantly improve the return on investment in network systems.

Learning Activities

u05s1 - Optional Skillsoft Resources

- Sampson, A. (2017). *CompTIA Network+ N10-007: Configure advanced networking devices* [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). CompTIA Network+ N10-006: Network architecture, part 1 [Tutorial].

u05a1 - Standards Analysis

It is often necessary for network managers to assess the development of new networking technical standards and their potential impacts on an enterprise, both now and in the near future. Imagine this assignment to be a report by you, a network manager, to explain the primary purposes and features of the standard your organization's chief information officer (CIO). Complete the following:

- Analyze an emerging networking technical standard.
- Make the case that this emerging technological trend may have a significant impact in the marketplace. Your choice of standard should come from a primary network standards organization such as IEEE, IETF, or ITU-T.
- Analyze the relationship of the standard to the development of proprietary solutions already available in the marketplace.
- Focus your analysis on providing the information that your CIO may need to make strategic management decisions.

Your final report should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources
APA Style and Format

u05d1 - Challenging Traditional IT Organizational Structures

Digital convergence is presenting challenges to some traditional business organizational structures. Here is a rather common scenario within an enterprise: Team 1 is responsible for telephony. Team 2 is responsible for interfacing with end-user communities. Team 3 is responsible for operating the IP networks. What potential problems do you anticipate in both the near and the far term? Any insights that you can share based on your personal professional experience are welcome.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources

Graduate Discussion Participation Scoring Guide

u05d2 - Network Life Cycle Management

Understanding each phase of a network life cycle is essential for an enterprise to use a life cycle approach effectively and derive optimal results from it. Research and explain the different phases of Cisco's PPDIOO model. What happens during each phase? What deliverables are typically due at the end of each phase? What network management challenges may occur at each phase? Please recount an example from your own professional experience or from cases that you research online.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources

Graduate Discussion Participation Scoring Guide

Unit 6 >> Network Management Models

Introduction

In 1997, the International Telecommunications Union – Telecommunications (ITU-T) published its Recommendation M.3400, which detailed the FCAPS network management model. The FCAPS model divides network management

functionality into five key areas—fault, configuration, accounting, performance, and security (FCAPS). You will engage the security management area in this week's assignment. You will also compare the FCAPS model to the operation, administration, maintenance, and provisioning (OAM&P) model.

Fault management focuses on identifying and resolving service-impacting events. Network monitoring to minimize unplanned downtime is a task central to fault management.

Configuration management focuses on the planning, documentation, and deployment of changes to network infrastructure and devices. Configuration management issues involve such things as addressing and naming schemes, routing tables, VLANs, and configuration files on physical devices. Tracking an enterprise's device moves, adds, and changes (MAC) is central to configuration management.

Accounting management focuses on the collection and analysis of data about the use of network resources so that managers may identify inefficiencies, bill end-user communities for services, and generate reports showing trends. Trend analysis is crucial to proactive network management.

Performance management focuses on the collection and analysis of data about network physical equipment and media. Performance management may include the generation of statistics regarding network resource utilization, setting thresholds for traps and alerts, and fine-tuning a network design. Performance management runs a spectrum from basic tasks, like monitoring CPU utilization, to highly complex challenges, like tracking end-to-end application functioning.

Security management analyzes network security functionality. Providing a secure network environment requires active monitoring for compliance to enterprise security policies. Risks mitigation, event logging, and auditing are typical security management tasks.

Learning Activities

u06s1 - Studies

Optional Books

You may find the following books helpful for learning more about the topics in this course:

- Raval, V., & Fichadia, A. (2007). *Risks, controls, and security: Concepts and applications*. Hoboken, NJ: John Wiley & Sons. ISBN: 9780471485797.
- Stallings, W., & Brown, L. (2008). *Computer security: Principles and practice*. Upper Saddle River, NJ: Pearson Prentice Hall. ISBN: 9780136004240.

Optional Skillsoft Resources

- Young, D. (2016). *A+ Essentials: ISDN* [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). DESGN 3.0: Managing IP addresses and introducing SDN [Tutorial].

u06a1 - Security Analysis

During your network manager interview in Unit 4 you communicated with a professional network manager regarding challenging network security issues. For this assignment, complete the following:

- Research and analyze one of the network security issues that emerged during your interview conversation. Include sufficient description and analysis to break down and examine the key characteristics of the issue.
- Propose a solution, or set of solutions, to mitigate the specific security threat. You may create either a technical solution or a nontechnical solution. For example, a technical solution might be a network redesign that implements firewalls, centralized authentication, VLANs, IDS/IPS, and so forth. A nontechnical solution might be the creation of a formal written security policy detailing guidelines about the protection of an enterprise's information assets.

Your final report should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources

APA Style and Format

u06d1 - Network Management Models

Discuss the features of the FCAPS model and explain how it situates various network management functions. Analyze the relationship between the FCAPS model and the Telecommunications Management Network model (TMN). Compare the FCAPS model to the OAM&P model. What are the limitations of each of these models? Be sure to share insights based on your professional experience regarding how these various models inform day-to-day network management practice.

Response Guidelines

Respond to two of your peers' posts from the perspective of a senior network manager within the organizations from the cases they presented.

Compare the FCAPS model to the OAM&P model. What are the limitations of each of these models? Be sure to share insights based on your professional experience regarding how these various models inform day-to-day network management practice.

Response Guidelines

Respond to two of your peers' posts from the perspective of a senior network manager within the organizations from the cases they presented.

Course Resources

Graduate Discussion Participation Scoring Guide

u06d2 - Physical Security

The most robust firewalls in the world cannot secure a network if an attacker is able to access an organization's physical network hardware. For this discussion, discuss a specific case, based on either your own professional experience or your research, where a breach of physical security created a loss of data confidentiality, loss of data integrity, or a denial of service.

Response Guidelines

In your response to two posts, take the role of a security consultant: What procedures would you develop and implement to prevent a recurrence of this type of physical security incident?

Course Resources

Graduate Discussion Participation Scoring Guide

Unit 7 >> Applied Network Management

Introduction

Achieving the effective integration of network management systems may be one of the biggest challenges facing network managers today. Year ago, it was common for network managers to have to use a multitude of command-line interfaces to manage a network. There was typically no integration between the interfaces within the various devices on the network. This lack of integration required large networking teams of different people managing various components of the network. More recently, the management interfaces of hardware components of network systems are typically more tightly integrated. It is ideal to use a single management interface to control the configuration of multiple networked systems.

This week we will explore ideas regarding the integration of network management systems. You will also create a plan to manage mobile devices remotely to ensure secure access to networked resources.

Learning Activities

u07s1 - Studies

Readings

Use the Internet to complete the following:

- In the U.S. Department of Commerce's National Institute of Standards and Technology's 2008 special publication by Jansen and Scarfone, "Guidelines of Cell Phone and PDA Security: Recommendations of the National Institute of Standards and Technology" read the executive summary, Section 3: Security Concerns, and scan the rest of the document to see the main components included.

Optional Skillsoft Resources

- Shannon, M. (2015). *ARCH: Infrastructure device access* [Video]. Skillsoft Ireland.
- Skillsoft. (n.d.). CompTIA Mobility+ MB0-001: Network infrastructure [Tutorial].

u07a1 - Mobility Plan

Mobility is often crucial to the productivity of an enterprise's workforce. Mobile device management (MDM) systems are emerging as a robust component of many enterprise networks. Create a plan to deploy an MDM system in an enterprise network to ensure secure access to networked resources. You may base your plan on the context of your current employer, a past employer, or a fictitious organization. Your plan should include an analysis of the following:

- Business case driving the need for MDM deployment.
- Specifications for hardware and software acquisitions.
- Security mechanisms.
- System maintenance and technical support mechanisms.
- Timeline for deployment.
- Budget summary.

Your final report should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

u07d1 - Integration Challenges

Discuss an example, based on your own professional experience or research of relevant cases, of how management integration as a technical issue mirrored management integration as an organizational issue. What are the most significant challenges to integration in this case? What tactics are available for simplifying the integration and automation of complex network management tasks?

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

Unit 8 >> Service Level Management

Introduction

In this unit, we will learn how service-level management enables enterprise network managers to automatically track the degree to which a service provider meets the terms of their service level agreements (SLAs). An SLA is a formal negotiated contract between two parties, typically between customers and their service provider, or between service providers. It formalizes the common understanding about services, priorities, responsibilities, guarantees, and so forth with the main purpose to agree on the level of service performance. SLAs may also specify penalties in the case of violation of the SLA.

We will also explore the RFP process this week. Many organizations occasionally need to acquire skills, services, expertise, or other resources from outside vendors. An RFP is a document that defines project-specific needs, and requests proposals for solutions from qualified vendors. A well-written RFP enables a network manager to introduce his or her project to prospective vendors, consultants, and other strategic business partners. A poorly written RFP that does not provide enough essential information can turn the procurement process into a disaster that may imperil the success of an IT project.

Learning Activities

u08s1 - Studies

Readings

Use the Capella library to complete the following:

- Read Pierce's 2001 article, "The ABCs of Preparing Through RFPs" from *Network World,* volume 18, issue 30, page 26.

Use the Internet to complete the following:

- Read Sun's 2008 post "10 Things You Should Know About Creating an Effective RFP" from *Tech Republic*.

Optional Resources

Review the following article to refresh or build your technical knowledge related to network management:

- Wittgreffe, Dames, Clark, and McDonald's 2006 article, "End-to-End Service Level Agreements for Complex ICT Solutions," from *BT Technology Journal,* volume 24, issue 4, pages 31–46.

The following Skillsoft tutorial may be helpful for completing the activities in this course.

- Skillsoft. (n.d.). CompTIA Mobility+ MB0-001: Network infrastructure [Tutorial].

u08a1 - Request for Proposal

For this assignment, you need to create an RFP for a hypothetical network project based on your work in u02a1, u04a1, or u06a1 of this course. In other words, imagine a network project that deploys an emerging technology, solves a current network management challenge, redesigns a network to meet a significant regulatory challenge, or mitigates significant risks to information assets by deploying a robust security solution. Some components that your document might include:

- General information about the enterprise, the business problem or opportunity, and the current network environment.
- Schedule of network project milestones, including the due date for the vendor's RFP response.
- Contact information for the person responsible for answering questions regarding the RFP.
- Instructions for formatting the response to the RFP. Uniformity may make your job of evaluating the various response much easier.
- Specifications of required services and/or goods.
- Technical requirements for network systems.
- Other components based on your research regarding effective RFPs.

Your final RFP should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources
APA Style and Format

u08d1 - Bandwidth Requirements Calculation

Provisioning adequate bandwidth is often necessary to provide performance levels that meet the specification of an SLA in support of a core business process. Discuss various options for calculating bandwidth, and calculate the required bandwidth for an application that you use. What formulas did you use for your calculation? What tools did you use to make

the process easier? What degree of accuracy is necessary? Perhaps you have a good story to tell from your professional experience—please share it if so.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

u08d2 - Legal and Ethical Considerations

Discuss the following questions, and research specific cases to provide evidence to support your position. What are the legal ramifications of a network outage that causes loss of critical business to customers? What are the ethical implications of not providing a service when that service is a specific stipulation of a service level agreement?

Response Guidelines

Comment on the posts of two other learners. In each response, provide examples from your experience in IT or current events that might enhance understanding of legal and ethical impacts on enterprise network management.

Course Resources
Graduate Discussion Participation Scoring Guide

Unit 9 >> Network Management by Measurement

Introduction

Let us remember these words of wisdom: "If you cannot measure it, you cannot manage it." This idea is central to many modern management methodologies. This week you reassess the fundamental idea that network management is driven by the business case. You will learn about how to use metrics to gauge that effectiveness of network management and its impact on the enterprise's bottom line. You will also create a plan to support a core business process during a disaster in a way that effectively enables business continuity.

Learning Activities

u09a1 - Disaster Recovery Plan

Create a plan to provide support for a core business process in the event of a disaster. You may choose a network management related business process, for example, maintaining command and control of an enterprise's network infrastructure, or a business process not directly related to network management, such as processing payroll. You may base your plan on the context of your current employer, a past employer, or a fictitious organization. Your plan should include an analysis of the following:

- Business case driving the need for DR deployment.
- Specifications for hardware and software acquisitions.
- Network management metrics to ensure adequate service levels.
- Security mechanisms.
- System maintenance and technical support mechanisms.
- Timeline for deployment.
- Budget summary.

Your final report should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources

APA Style and Format

u09d1 - Management Impact Assessment

Imagine that you need to decide whether to invest in a new service provisioning system. That system will carry a significant price tag—in particular, when taking into account the cost of integrating the new system with the existing operations support infrastructure. What metrics might help you decide whether this is a worthwhile investment, and how would you do the math to arrive at a go or no-go decision?

Response Guidelines

Comment on the posts of two other learners. In each response, provide a critique of the choice of metrics and the calculations supporting the deployment decision.

Course Resources

Graduate Discussion Participation Scoring Guide

u09d2 - Share Your RFP

Please post your Unit 8 RFP assignment to this discussion. You may want to wait until later in the week so that you have an opportunity to revise your RFP based on the instructor's comments and suggestions for improvement. You will need to review your classmates' RFPs so that you can select one to respond to for next week's Unit 10 assignment.

Response Guidelines

Respond to one learner to inform him or her that you will be responding to his or her RFP for assignment u10a1.

Course Resources

Graduate Discussion Participation Scoring Guide

Unit 10 >> Sourcing Enterprise Network Technology

Introduction

Sourcing network hardware, software, and services is typically an important responsibility of a network manager. This week you will finish your project by creating a written response to a classmate's RFP. We will also discuss the outsourcing of enterprise network operations that, in some cases, may be an effective strategy for reducing costs related to the configuration and maintenance of data communications networks. According to Beach (2007), "The most difficult aspect of managing the sourcing relationship is what some of these executives called 'soft metrics': the human side of handling expectations with line-of-business managers and the sourcing firm. The hard metrics—such as cost, quality of work, delivery time—were, at least in contrast, relatively easy to manage and measure. These experts strongly recommended that metrics both hard and soft be reviewed at least quarterly."

Reference

Beach, G. (2007). No more outsourcing: Call it sourcing. Retrieved from http://www.cio.com/article/149301/No_More_Outsourcing_Call_It_Sourcing

Learning Activities

u10s1 - Studies

Readings

Use the Internet to complete the following:

- Camden's 2010 post, "Guidelines for Formulating an RFP Response" from *Tech Republic*.
- Cisco Systems' 2007 case study, "How Cisco IT Outsourced Network Management Operations" from *Cisco Systems*.
- Juric, Ashfaque, and Saunders' 2005 article, "Outsourcing Network Management" in 27th International Conference on Information Technology Interfaces, pages 111–120.
- Kerner's 2003 post, "How to Respond to a Corporate RFP" from *Tech Republic*.

Optional Media

Review the following media to refresh or build your technical knowledge related to network management. Visit Microsoft World Wide Events and search for:

- Microsoft Webcast: Managing a Global Internal Helpdesk with Outsourcing and Call-Avoidance Techniques.
- Microsoft Dynamics Webcast: Expand Your Purchasing Power with Requisitions and Business Portal 3.0 in Microsoft Dynamics SL.

u10a1 - RFP Response

For this assignment, you need to respond to an RFP for a hypothetical network project created by one of your classmates for assignment u08a1 and posted in u09d2. Imagine that you run an IT consultancy [or are working in the networking industry] and are proposing specific solutions for the network project based on products and services in the marketplace. Some components that your document might include:

- Questions requesting clarification regarding the nature of the particular business problem or opportunity, and/or the current network environment.
- Your explicit confirmation of the proposed project milestones.
- Contact information for person responsible for handling this engagement.
- Recommendations for specific services or hardware and software devices that meet the specific business requirements stated in the original RFP.
- Other components based on your research regarding effective RFP responses.

Your final response should use APA formatting and be no more than five pages, not including title page and references. Before you submit your paper, self-assess your achievement of the evaluation criteria to ensure that you have fulfilled all the assignment requirements.

Course Resources

APA Style and Format

u10d1 - Outsourcing Strategies

Discuss a specific case, based either on your own professional experience or on your research, where an enterprise outsourced its network management function. What were the advantages and disadvantages of the outsourcing decision in this case? Do you think the organization has adequately accounted for the risks associated with outsourcing network management?

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

u10d2 - Networking Industry Players

Analyze and discuss three companies: one networking equipment vendor, one third-party application vendor, and one systems integrator. Each analysis needs to include an assessment of the company's market share, sales revenue, reputation, stock price, strengths, weaknesses, opportunities, and threats.

Response Guidelines

Post a comment or question to at least two other learners, comparing their findings and conclusions to yours.

Course Resources
Graduate Discussion Participation Scoring Guide

u10d3 - Course Evaluation

Elaborate on three key learning points from this course experience. This may include how the course content applies to your current or future job, or how the course has affected your personal or professional development. Refer to content you now know that you did not know before taking the course, your ability to contrast various technical solutions to synthesize a unique solution for your professional application, and direct applications of the course content to your world of work or community.

Response Guidelines

Post a comment or question to at least one other learner and let them know specifically how their contributions to the course helped you to learn.

Course Resources
Graduate Discussion Participation Scoring Guide