

11B1WCI836: Network Management

Course Credit: 3

Semester: VIII

Introduction

Network Management is becoming more and more important to Government and commercial organizations to run their IT networks in an efficient and cost effective manner. The emerging Internet based applications, such as Voice Over IP (Internet Telephony) and IP TV (Internet based TV service) and technologies such as wireless communications and so forth make network management all the more important. This course will provide an understanding of the concept, standards, products and practical methods pertaining to network management and will be helpful to students and researchers working in the field of network management.

Network management (NM) refers to all the functions, facilities, tools, communications interfaces, protocols, and human resources necessary to monitor and maintain data and communications networks and plan for their growth and evolution. NM includes investigation of day-to-day operations and administration of the networks. Within this framework, various aspects of managing voice and data networks are covered in this course. The course also covers the concepts and fundamentals of NM standards such as OSI management standards and Simple Network Management Protocol (SNMP), which is a de facto standard.

Course Objectives (Post-conditions)

Knowledge objectives:

The objective of this course is to study network management (NM) from a software developers perspective and to provide an understanding of SNMP and OSI NM standards and technologies. This course covers various aspects of NM, including NM functions, facilities, equipment, communications protocols, processes and methodologies. It also covers products and technologies that are used to manage practical networks.

By the end of this course, students will be able to:

1. Demonstrate an understanding of network management concepts, standards, and protocols including Simple Network Management Protocol (SNMP) and Open Systems Interconnection (OSI) protocols.
2. Show how to apply network management standards to manage practical networks.
3. Discuss issues and challenges pertaining to management of emerging network technologies such as wireless networks and high-speed internets, and learn approaches to manage them.
4. Demonstrate in-depth understanding of various aspects of network management and be able to design and develop an automated NM tool.

Application objectives:

1. Apply appropriate known cryptographic techniques for a given scenario. [Usage]
2. You will be able to analyze the tradeoffs of balancing key security properties.[Usage]
- 3 You will be able to design a security solution and do the cryptanalysis. .[Usage]

Expected Student Background (Preconditions)

Computer Network .

Topics Outline:

S NO	Topics	Hrs
1	Data Communications and Network Management Overview	3
2	Review of Computer Network Technology	4
3	Basic Foundations of Network management, standards, models and languages, ASN.1	3
4	SNMP v1 Organisation and Information models	4
5	SNMP v1 Communication and functional Models	4
6	SNMP v2	4
7	SNMP v3	4
8	SNMP management RMON	4
9	Network Management Tools and systems and Engineering	2
10	Telecommunications Management Networks	2
11	Network Management applications	2
12	Broadband Network Management: WAN ATM Networks	2
13	Broadband Network Management: Access Networks	3
14	Advanced Topics:Web Based Network Management	1
	Total	42

References

1. Mani Subramanian., Pearson Education, Network Management Principles and Practices
2. <https://www.dmoz.org//Computers/Internet/Protocols/SNMP>
3. <http://www.snmp.com/conferences/>
4. <http://tools.ietf.org/html/rfc3411>
5. <http://tools.ietf.org/html/rfc6353>
6. <http://www.artechhouse.com/uploads/public/documents/chapters/pan-ch04.pdf>

Evaluation Scheme:

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

*Internal Marks Breakdown:

Assignments 9 marks (3x3)

Quizzes 12 marks (3x4)

Regularity 4 Marks