

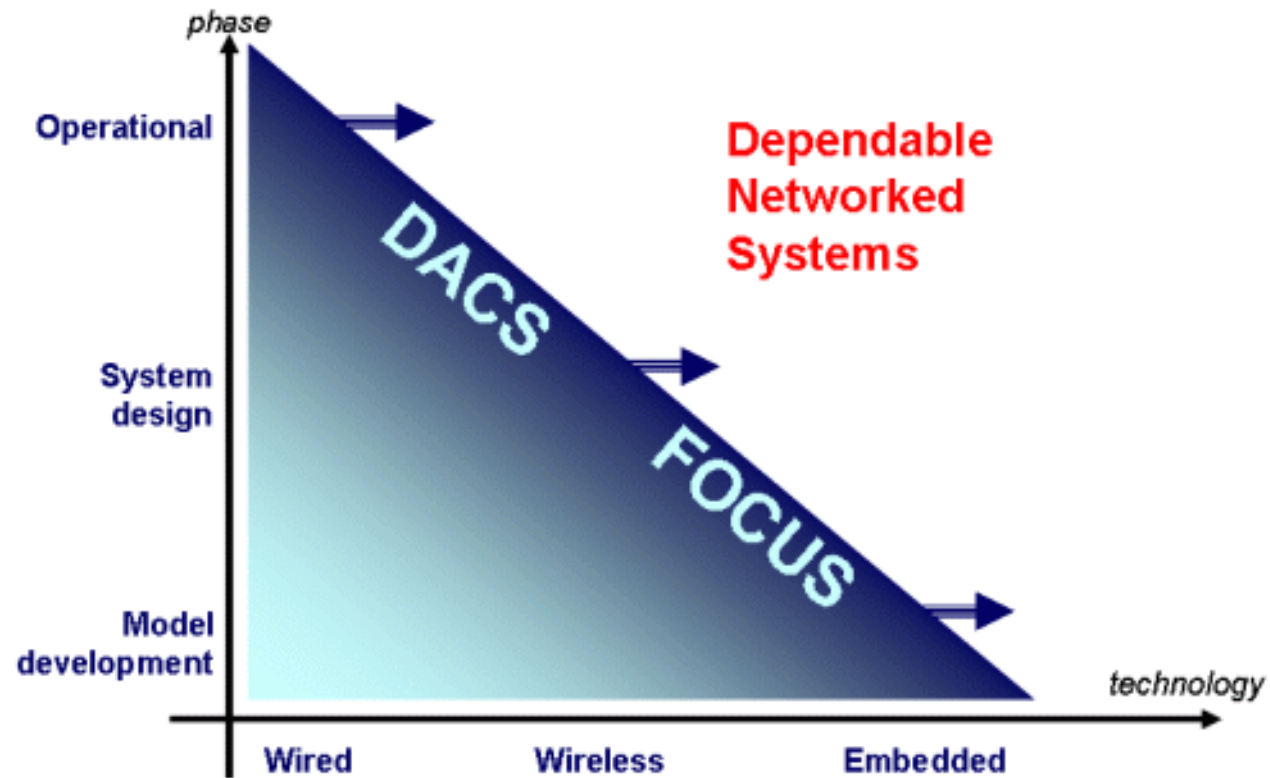
# INTERNET MANAGEMENT AND MEASUREMENT

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# ABOUT DACS



# PURPOSE OF THIS COURSE

## THE PURPOSE OF THIS COURSE IS TO GET AN UNDERSTANDING OF:

- WHICH MANAGEMENT INFORMATION EXISTS WITHIN THE INTERNET
  - WHO DEFINES THIS INFORMATION
- THE SYNTAX IN WHICH THIS INFORMATION IS DESCRIBED
  - THE PROTOCOLS THAT ALLOW THIS INFORMATION TO BE MONITORED / MODIFIED
- HOW TO MEASURE THE FLOW OF INTERNET DATA

# MATERIAL

## BOOK

William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2;  
Addison Wesley, ISBN 0-201-48534-6

- REAL MEDIA PRESENTATIONS

<http://www.simpleweb.org/tutorials/video/>

- Podcasts??

<http://www.simpleweb.org/...>

- SLIDES

<http://www.simpleweb.org/tutorials/slides.html>

- EXERCISES

<http://www.simpleweb.org/tutorials/exercises.html>

- TELETOP WEBSITE

# COURSE ORGANIZATION

## COURSE CONSISTS OF THREE ELEMENTS:

- FIVE LECTURES IN CLASS ROOM
- TWO LECTURES AS SELF STUDY
- EXERCISES

## **CLASS ROOM LECTURES**

DATE	LOCATION	TOPIC
17 APRIL	WA-204	INTRODUCTION
24 April	WA-204	SIMPLE NETWORK MANAGEMENT PROTOCOL
8 MAY	WA-204	SNMPv3, NEW DEVELOPMENTS
15 MAY	WA-204	DISTRIBUTED MANAGEMENT & MONITORING
5 JUNE	WA-204	INTERNET MEASUREMENTS

**NOTE: NO LECTURE ON 1 MAY, 22 & 29 MAY, 12 JUNE**

# SELF STUDY LECTURES

TOPIC
STRUCTURE OF MANAGEMENT INFORMATION
MANAGEMENT INFORMATION BASES

## MATERIAL:

- REAL MEDIA PRESENTATIONS

<http://www.simpleweb.org/tutorials/video/>

- BOOK OF STALLINGS

William Stallings: SNMP, SNMPv2, SNMPv3, RMON 1 & 2;

Addison Wesley, ISBN 0-201-48534-6

## **EXERCISES:**

EXERCISE	READY	TOPIC	WEIGHT
1	24 APRIL	STRUCTURE OF MANAGEMENT INFORMATION	10%
2	8 MAY	MANAGEMENT INFORMATION BASES	10%
3	15 MAY	SNMP: COMPARISON VERSION 1, 2 AND 3	10%
4	22 MAY	ASN.1 DECODING OF A SNMP PACKET	10%
5	29 MAY	INSTALLING AN SNMP AGENT	15%
6	11/15 JUNE	RUN A MANAGEMENT APPLICATION	15%
7	22 JUNE	WRITE A SHORT PAPER	30%

- EXERCISE 1..4: TO BE PERFORMED AS INDIVIDUALS
- EXERCISE 5, 6 & 7: TO BE PERFORMED IN GROUPS OF TWO STUDENTS
  - FIRST FIVE EXERCISES: SAME FOR ALL
  - LAST TWO EXERCISES: DIFFERENT FOR ALL GROUPS
- SUBMISSION OF RESULTS VIA TELETOP



# DETAILED OVERVIEW

# CLASS ROOM LECTURE 1

ON APRIL 17, 2007

- STALLINGS CHAPTERS 1, 2 & 4
- REAL MEDIA PRESENTATIONS: MANAGEMENT STANDARDS + INTRODUCTION TO SNMP

## EXAMPLES OF MANAGEMENT INFORMATION

## DIFFERENT APPROACHES TO MANAGEMENT

- AD-HOC APPROACHES
- STANDARD APPROACHES

## SNMP

- BASIC OPERATION
  - HISTORY
  - STANDARDS
    - GOALS

# SELF STUDY LECTURE 1

DONE BEFORE APRIL 24, 2007

- STALLINGS CHAPTERS 5 & 11
- REAL MEDIA PRESENTATION: SMI

## STRUCTURE OF MANAGEMENT INFORMATION

- SCALARS
- TABLES
- ROW CREATION
- TEXTUAL CONVENTIONS

# EXERCISE 1

DONE BEFORE APRIL 24, 2007

SMI

USE SMIV2 TO  
DEFINE AND VALIDATE A SIMPLE MIB MODULE

# CLASS ROOM LECTURE 2

ON APRIL 24, 2007

- STALLINGS CHAPTERS 7, 11 & 12

## SIMPLE NETWORK MANAGEMENT PROTOCOL

- SNMPV1
- PROXIES
- MESSAGE ENCODING
- SNMPV2

# **SELF STUDY LECTURE 2**

DONE BEFORE MAY 8, 2007

- STALLINGS CHAPTERS 6 & 13
- REAL MEDIA PRESENTATIONS: INTRODUCTION TO MIBs, MIB-II

## MANAGEMENT INFORMATION BASES

### MIBS

### MIB-II

- SNMPv2 MIB
  - IF MIB
  - IP MIB

## **EXERCISE 2**

DONE BEFORE MAY 8, 2007

MIBs

RETRIEVE SPECIFIC MIB VALUES

# CLASS ROOM LECTURE 3

ON MAY 8, 2007

- STALLINGS CHAPTERS 15, 16 & 17

## SNMPv3

- DESIGN DECISIONS
  - ARCHITECTURE
- SNMP MESSAGE STRUCTURE
  - SECURE COMMUNICATION
    - ACCESS CONTROL
    - RFCS

## NEW DEVELOPMENTS

- WEB SERVICES BASED MANAGEMENT



## **EXERCISE 3**

DONE BEFORE MAY 15, 2007

SIMPLE NETWORK MANAGEMENT PROTOCOL

PERFORM SNMP OPERATIONS ON A DEMO MIB

COMPARE THE RESULTS FOR:

- SNMPv1
- SNMPv2
- SNMPv3

# CLASS ROOM LECTURE 4

ON MAY 15, 2007

- STALLINGS CHAPTERS 8, 9 & 10

## DISTRIBUTED MANAGEMENT AND MONITORING

- DISMAN
- RMON

## **EXERCISE 4**

DONE BEFORE MAY 22, 2007

ASN.1

DECODE A SNMP MESSAGE

## EXERCISE 5

DONE BEFORE MAY 29, 2007

### INSTALL AN SNMP AGENT

OTHER STUDENTS SHOULD BE INFORMED ABOUT AGENT DETAILS:

- IP NUMBER
- PORT NUMBER
- COMMUNITY STRING
- SECURITY NAME
- SECURITY KEYS

AGENTS SHOULD CONTINUE RUNNING UNTIL JUNE 15

- AGENTS WILL BE USED IN EXERCISE 6
- YOUR AGENT WILL BE USED BY ALL OTHER STUDENTS

# CLASS ROOM LECTURE 5

ON JUNE 5, 2007

- STUDY MATERIAL: SLIDES

## INTERNET MEASUREMENTS

- ACTIVE VERSUS PASSIVE MEASUREMENTS
  - MEASUREMENT LOCATION
    - MEASUREMENT TOOLS
- MEASUREMENT RESULTS: EXAMPLES

## **EXERCISE - 6**

PREPARE BEFORE JUNE 11, 2007

RUN BETWEEN JUNE 11 - 15, 2007

### **MANAGEMENT AND MEASUREMENT**

MONITOR HOW YOUR SNMP AGENT IS USED  
MONITOR OTHER SNMP AGENTS  
(USING TOOLS LIKE MRTG/CACTI)

## **EXERCISE - 7**

DONE BEFORE JUNE 22, 2007

MANAGEMENT AND MEASUREMENT

WRITE A SHORT PAPER ON A SPECIFIC TOPIC