

NSS Enriching Knowledge for Information and Communication Technology (ICT)  
Curriculum Series - (3) Data Communications and Networking:  
Orientation Seminar (re-run)

**Programme**

**Date:** 3 April 2008 (Thursday)

**Time:** 2:45 p.m. – 5:15 p.m.

**Venue:** College Theatre, 1/F, HKU SPACE Kowloon East Campus,  
28 Wang Hoi Road, Kowloon Bay, Kowloon

**Events**

- 2:30 p.m.      **Registration**
- 2:50 p.m.      **Welcoming and Overview**  
Speaker:      Mr Atkin LUI  
                         Curriculum Development Officer (Technology Education), Education Bureau
- 3:00 p.m.      **Cisco's Vision in Education Sector**  
Speaker:      Ms Barbara CHIU  
                         General Manager (HK and Macau), Cisco Systems (HK) Limited
- 3:15 p.m.      **Overview of Networking Workshop**  
Speaker:      Mr Albert WONG  
                         Chairman, Association of I.T. Leaders in Education (AiTLE)  
  
                         Mr Martin LAM (HKU SPACE Community College)  
                         Member, Cisco Networking Academy Council (Hong Kong & Macau)
- 4:00 p.m.      **Break**
- 4:10 p.m.      **Post-workshop Support from CNAP and Experience Sharing**  
Speaker:      Mr Eric LEUNG (HKU Cyber.i)  
                         Member, Cisco Networking Academy Council (Hong Kong & Macau)  
  
                         Mr MA Hoi-hung  
                         Council Member, Hong Kong Association for Computer Education (HKACE)
- 4:35 p.m.      **Demo: Use of Network Simulation Software in Learning and Teaching of "Data Communications and Networking"**  
Speaker:      Mr Patrick NG (Pui Ching Education Centre)  
                         Member, Cisco Networking Academy Council (Hong Kong & Macau)
- 5:00 p.m.      **Q&A Session**

新高中資訊及通訊科技課程知識增益系列一(三)數據通訊及建網：簡介會(重辦)

## 程序表

**日期：** 2008年4月3日 (星期四)

**時間：** 下午2時45分至5時15分

**地點：** 九龍九龍灣宏開道28號  
香港大學專業進修學院九龍東分校一樓演講廳

### 程序

- 下午 2:30      **簽到**
- 下午 2:50      **歡迎及概覽**  
講者：      教育局課程發展主任 (科技教育)  
                 雷思銘先生
- 下午 3:00      **思科在教育界的願景**  
講者：      思科系統 (香港) 有限公司香港及澳門區總經理  
                 招卓敏女士
- 下午 3:15      **網絡工作坊概覽**  
講者：      資訊科技教育領袖協會主席  
                 黃健威先生  
                 思科網絡學院港澳區學會評議會會員  
                 林建新先生 (香港大學專業進修附屬學院)
- 下午 4:00      **小休**
- 下午 4:10      **網絡工作坊後續支援及經驗分享**  
講者：      思科網絡學院港澳區學會評議會會員  
                 梁嘉豪先生 (香港大學數碼港學院)  
                 香港電腦教育學會理事  
                 馬凱雄先生
- 下午 4:35      **示範：應用網絡模擬軟件於「數據通訊及建網」之學與教**  
講者：      思科網絡學院港澳區學會評議會會員  
                 伍仲昕先生 (培正教育中心)
- 下午 5:00      **答問時間**

新高中資訊及通訊科技課程  
知識增益系列  
(三)數據通訊及建網：簡介會  
(重辦)

教育局  
思科網絡學院  
香港電腦教育學會  
資訊科技教育領袖協會  
聯合舉辦

2008年4月3日  
香港大學專業進修學院九龍東分校演講廳

NSS Enriching Knowledge for  
ICT Curriculum Series - (3)  
Data Communications and Networking:  
Orientation Seminar (re-run)

Jointly Organised by:  
Education Bureau  
Cisco Networking Academy Program  
HK Association for Computer Education  
Association of I.T. Leaders in Education

3 April 2008  
College Theatre, HKU SPACE Kowloon East Campus

研討會－內容

- 提供與「互聯網」及「數據通訊及建網」相關部份之概覽，以及為有關課題提供之學與教資源
- 示範如何應用網絡模擬軟件於「數據通訊及建網」課題之學與教
- 提供由「思科網絡學院」提供之工作坊以及相關資源之詳情

Orientation Seminar - Contents

- Overview of resources in supporting learning and teaching of topics related to 'Internet' and 'Data Communications and Networking'
- Using network simulation software in learning and teaching of 'Data Communications and Networking'
- Details of the workshops and related resources to be provided by CNAP

研討會－程序

- 歡迎及概覽
  - 為何要學習數據通訊及建網？
  - 與業界伙伴合作支持資訊及通訊科技課程學與教
  - 新高中資訊及通訊科技課程中與「數據通訊及建網」有關課題
  - 教育局提供與網絡有關之學與教資源
- 思科在教育界的願景
- 網絡工作坊詳情
- 小休
- 由思科網絡學院提供之後續支援
- 示範：應用網絡模擬軟件於「數據通訊及建網」課題之學與教
- 答問時間

Orientation Seminar - Rundown

- Welcoming and Overview
  - Why Study Data Communications and Networking?
  - Collaboration with industry partners in supporting L&T of ICT
  - Overview of NSS ICT curriculum related to DC&N
  - L&T resources on networking provided by EDB
- Cisco's Vision in Education Sector
- Details of Networking Workshop
- Break
- Post-workshop support from CNAP
- Demo: Network Simulation software in L&T of DC&N
- Q&A Session

## 要點

- 為何要學習數據通訊及建網？
- 新高中資訊及通訊科技課程中與「數據通訊及建網」有關課題
- 教育局提供與網絡有關之學與教資源
- 與業界伙伴合作支持資訊及通訊科技課程學與教
  - 與香港電腦教育學會、資訊科技教育領袖協會、思科網絡學院之合作

## Agenda

- Why Study Data Communications and Networking?
- Overview of NSS ICT curriculum related to DC&N
- L&T resources on networking provided by EDB
- Collaboration with industry partners in supporting L&T of ICT
  - Our collaboration with HKACE, AiTLE and Cisco Networking Academy Program (CNAP)

## 為何要學習數據通訊及建網？

近日熱門話題 :-

- 香港政府 Wi-Fi 通
- 數碼電視廣播



這些日常生活的課題與**數據通訊及建網**有何關係？

## Why Study Data Communications and Networking?

Recent Talk Points :-

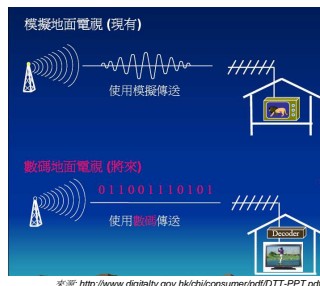
- Gov Wi-Fi
- Digital Terrestrial TV



Any relation between these daily life issues to **Data Communications and Networking**?

## 數碼地面電視之數據通訊及建網元素

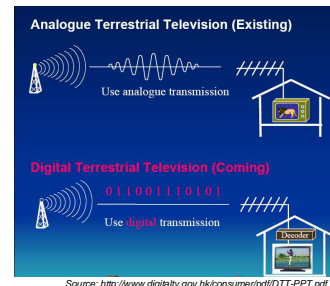
- 數碼地面電視與下列電視傳送方式有何不同？
  - 模擬地面電視
  - 寬頻電視
  - 衛星電視
- 傳輸媒體？
- 信號？
- 數據？
- 設備？
- 傳輸模式？



來源: <http://www.digitaltv.gov.hk/chic/consumer/pdf/DTT-PPT.pdf>

## Data Communications and Networking in Digital Terrestrial TV

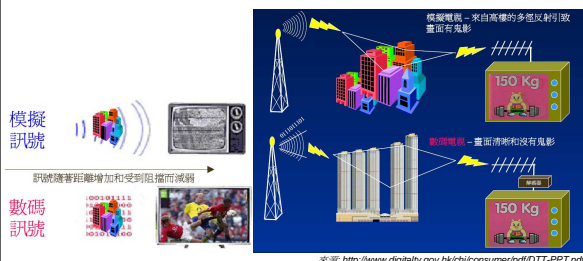
- How is Digital Terrestrial TV different from
  - Analogue Terrestrial TV?
  - Broadband TV?
  - Satellite TV?
- Medium?
- Signal?
- Data?
- Device?
- Mode of Transmission?



Source: <http://www.digitaltv.gov.hk/consumer/pdf/DTT-PPT.pdf>

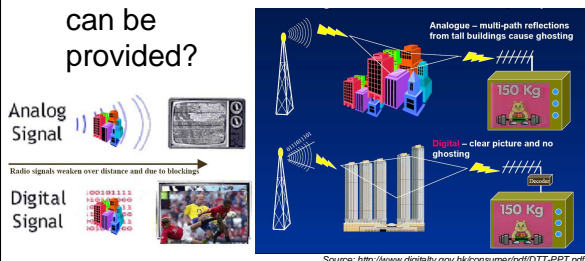
## 數碼地面電視之 數據通訊及建網元素

- 為何沒有「鬼影」和「雪花」？
- 為何可提供「高清晰度電視廣播」？



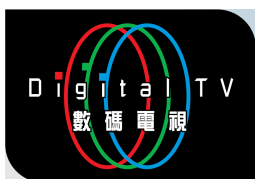
## Data Communications and Networking in *Digital Terrestrial TV*

- Why “snow-free” and “ghost-free”?
- Why High Definition TV broadcasts can be provided?



## 數碼地面電視之 數據通訊及建網元素

- 簡單的通訊模型
  - 輸入／輸出設備、發射器、接收器、傳輸媒介
- 不同的數據傳輸媒體
- 單向通訊模式
- 數據編碼
- 錯誤偵測方法
- 多路傳輸
- 以數據包方式傳輸



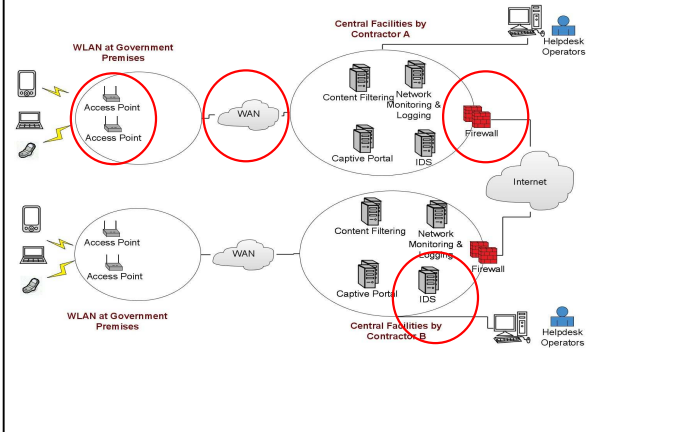
## Data Communications and Networking in *Digital Terrestrial TV*

- Simple model of communications
  - I/O device, transmitter, receiver, medium
- Different data transmission media
- Simplex mode of communication
- Data encoding
- Error detection methods
- Multiplexing
- Packet-based transmission

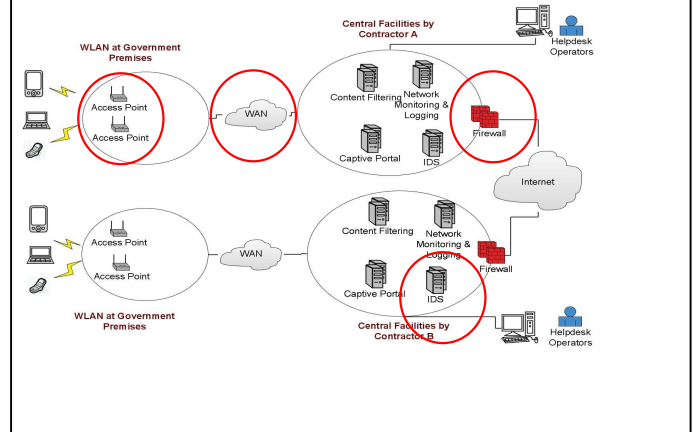
## 香港政府Wi-Fi通之 數據通訊及建網元素

## Data Communications and Networking in *Gov WiFi*

## 香港政府Wi-Fi通之 數據通訊及建網元素



## Data Communications and Networking in Gov WiFi



## 香港政府Wi-Fi通之 數據通訊及建網元素

- 網絡種類
- 網絡布局
- 無線電腦網絡
- 網絡設計及實施
- 網絡保安



## Data Communications and Networking in Gov WiFi

- Types of network
- Network topology
- Wireless computer network
- Network design and implementation
- Network security



## 學習數據通訊及建網

- 網絡知識已成為日常生活知識:
  - 上線
  - 電郵
  - 萬維網
  - 串流傳輸
  - 寬頻
  - 無線電腦網絡, ...

## The Need to Learn DC&N

- Networking becomes daily-life knowledge:
  - Online
  - e-mail
  - Web
  - Streaming
  - Broadband
  - wireless computer network, ...

## 學習數據通訊及建網

- 深入認識數據通訊及建網有助我們
  - 成為網絡服務的明智用戶／消費者
  - 意識常見的網絡保安威脅，以及改善網絡保安的措施 → 保障私隱
  - 面對將來以互聯網為本的營商環境及經濟所帶來的挑戰和需求

## The Need to Learn DC&N

- Knowing DC&N in depth help us to
  - be intelligent users / consumers of networking services
  - be aware of potential security threats and measures to improve network security → Privacy protection
  - meet the challenging demands of the future Internet-based business environment and economy

## 學習數據通訊及建網

- 學習數據通訊及建網
  - 不僅是技能培訓
  - 設計及管理的知識同樣著重

## The Need to Learn DC&N

- Learning DC&N
  - Not just a skill-wise training
  - Knowledge at design and management level is equally emphasized

## 新高中資訊及通訊科技課程中 與「數據通訊及建網」有關課題

- 必修部份
  - 目的
    - 提供基本資料
    - 引起學生興趣
  - 課題
    - C. 互聯網及其應用
      - a. 建網及互聯網基本知識 (9 小時)
      - b. 互聯網服務及應用 (7 小時)
    - (E. 資訊及通訊科技對社會的影響
      - d. 網上威脅及保安 (15 小時)

## Overview of NSS ICT curriculum related to DC&N

- Compulsory Part
  - Aim
    - Provide basic information
    - Arouse students' interests
  - Topic
    - C. Internet and its Applications
      - a. The Networking and Internet Basics (9 hrs)
      - b. Internet Services and Applications (7 hrs)
    - (E. Social Implications
      - d. Threats and Security on the Internet (15 hrs)

### 新高中資訊及通訊科技課程中 與「數據通訊及建網」有關課題

- 選修選項 B:
  - 數據通訊及建網
  - 目標:
    - 在**理論**知識與**實用**技能取得平衡
  - 課題
    - 數據通訊及建網基礎 (38 小時)
    - 網絡設計及實施 (26 小時)
    - 網絡管理及保安 (11 小時)

### DC&N related topics in NSS ICT Curriculum

- Elective Option B:
  - Data Communications and Networking
  - Target:
    - Provide good balance between **theoretical** knowledge and **practical** skills
  - Topic
    - Data Communications and Networking Basics (38 hrs)
    - Network Design and Implementation (26 hrs)
    - Network Management and Security (11 hrs)

### 新高中資訊及通訊科技課程中 與「數據通訊及建網」有關課題

- 學習重點
  - 數據通訊及建網的基本概念及所需技術；
  - 電腦網絡涉及的部件及其功能；
  - 電腦網絡的功能及應用；
  - 設計及實施簡單的電腦網絡；
  - 如何監控電腦網絡的表現  
並採取相應的改善措施；
  - 電腦網絡保安的重要性，  
並提出相關的改善措施；及
  - **網絡科技的最新發展及未來趨勢。**

### DC&N related topics in NSS ICT Curriculum

- Learning Objectives
  - the basic concepts and technologies behind data communications and networking;
  - the components involved in computer networks and their functions;
  - the uses and applications of a computer network;
  - the design and implementation of a simple computer network;
  - the performance monitoring of a computer network and the measures to improve it;
  - the importance of computer network security and the measures to improve it; and
  - **the latest developments and future trends in networking technology.**

### 新高中資訊及通訊科技課程中 與「數據通訊及建網」有關課題

- 教節安排的變動
  - 中四、五 電腦與資訊科技
    - 核心單元 – 電腦系統及建網
    - 核心單元 – 互聯網及其應用
    - 選修單元 (C) – 30 小時
  - 高級補充程度電腦應用 / 高級程度電腦
    - 互聯網應用 – 11 小時
    - SOHO 電腦建網 – 32 小時
  - **新高中 資訊及通訊科技**
    - 必修部份 – 16-31 小時
    - **選修選項 B – 75 小時**

### DC&N related topics in NSS ICT Curriculum

- Change in Time Allocation
  - S4-5 Computer and Information Technology
    - Core Module – Computer Systems and Networking
    - Core Module – Internet and its Applications
    - Elective Module (C) – 30 hrs
  - AS Computer Applications / AL Computer Studies
    - Internet Applications – 11 hrs
    - SOHO Networking – 32 hrs
  - **NSS Information and Communication Technology**
    - **Compulsory Part – 16-31 hrs**
    - **Elective Option B – 75 hrs**

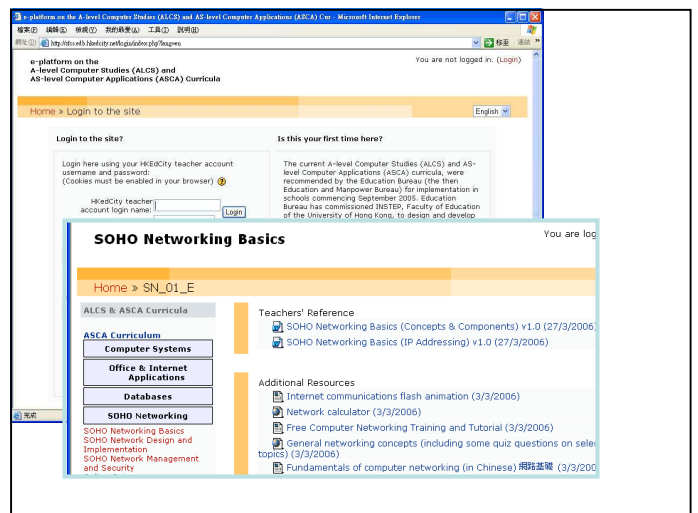
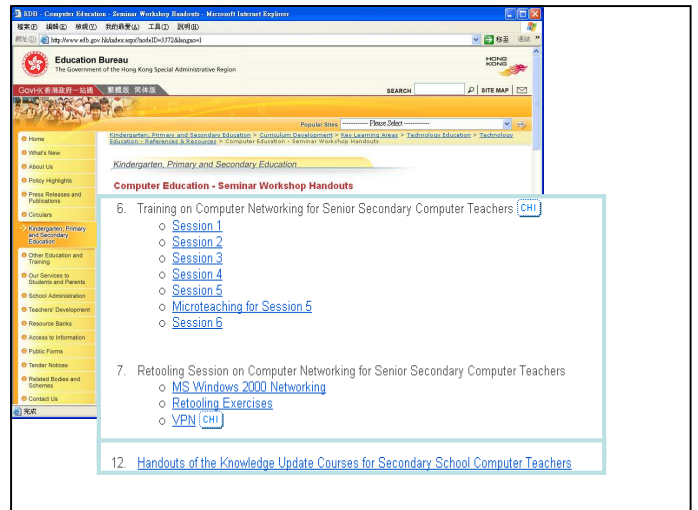
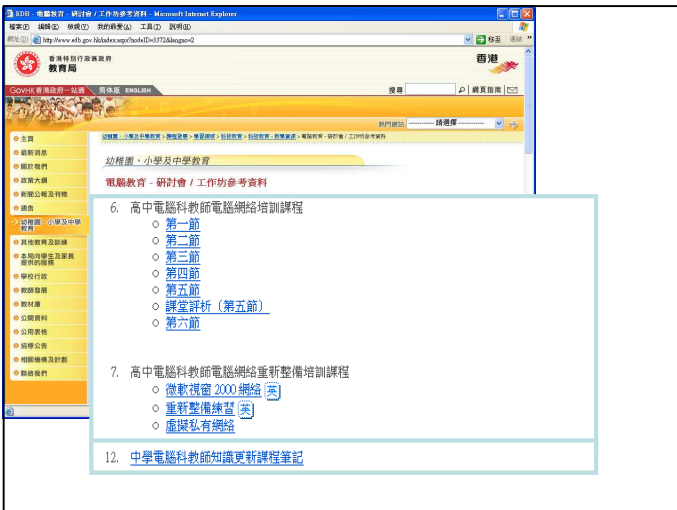


## 數據通訊及建網學與教資源

- 研討會 / 工作坊參考資料  
[www.edb.gov.hk/index.aspx?nodeID=3372](http://www.edb.gov.hk/index.aspx?nodeID=3372)
  - 知識更新課程 (2003)
  - 電腦網絡培訓課程 (2005-06)
  - 電腦網絡重新整備培訓課程 (2006)
- 「電子平台」之教師參考 (2005-)  
[sfcs.edb.hkedcity.net](http://sfcs.edb.hkedcity.net)

## L&T Resources for DC&N

- Seminars / Workshops Handouts  
[www.edb.gov.hk/index.aspx?nodeID=3372](http://www.edb.gov.hk/index.aspx?nodeID=3372)
  - Knowledge Update Courses (2003)
  - Training on Computer Networking (2005-06)
  - Retooling Session on Computer Networking (2006)
- Teacher References on e-platform (2005-)  
[sfcs.edb.hkedcity.net](http://sfcs.edb.hkedcity.net)



### 與業界伙伴合作支持 資訊及通訊科技課程學與教

- 社區各團體之間需要建立合作伙伴關係，為幫助學生有效學習作出不同的貢獻。
- 教育局將繼續與各有關學科的專家建立伙伴關係，利用社區資源以協助本科的推行，使教師、學生以及學校均能受惠。

### Collaboration with industry partners in supporting L&T of ICT

- A spirit of partnership is necessary among the many parties in the community who can contribute in different ways to helping our students learn effectively
- The EDB will continue to establish close partnerships with experts in relevant disciplines, so that community resources can be used to assist the delivery of the NSS ICT curriculum for the benefit of teachers, students and schools.

### 與思科網絡學院的合作

- 思科系統——專於網絡技術之領導機構
- 思科網絡學院——專業、具廣泛認受性
- 免費提供之教師培訓能增進教師在數據通訊與建網的知識
  - 包涵最新網絡技術之高質素資源
  - 理論知識與實用技能兼備
  - 可為有意獲取進一步相關專業認證之教師作預備

### Partnership with CNAP

- Cisco System - leading firm specialized in networking technologies
- Cisco Networking Academy Program (CNAP) - a professional program that is widely recognised
- Free training provided can enrich teachers' knowledge on DC&N
  - Resource of superb quality covering latest networking technologies
  - Emphasizing both theoretical knowledge and practical skills
  - May prepare teachers for further accreditation if they wish

### Thank You! 謝謝

- Please return the completed evaluation form to us before you leave
- 請於離開前交回已填寫之意見調查表

### 查詢 Enquiries

- 課程註冊 Course Registration:
  - atkinlui@edb.gov.hk
- 其他查詢 Other Enquiries:
  - ciscotraining@aitle.org.hk
- 討論、經驗分享  
Discussion / Sharing of Good Practices
  - sfcs.edb.hkedcity.net
  - www.aitle.org.hk