Wireless Services Update

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Computing Services

Overview

Oxford Wireless LAN — OWL

Available here

http://www.oucs.ox.ac.uk/network/wireless/

- Introduction
- Infrastructure review
- OWL today
- Looking to the future
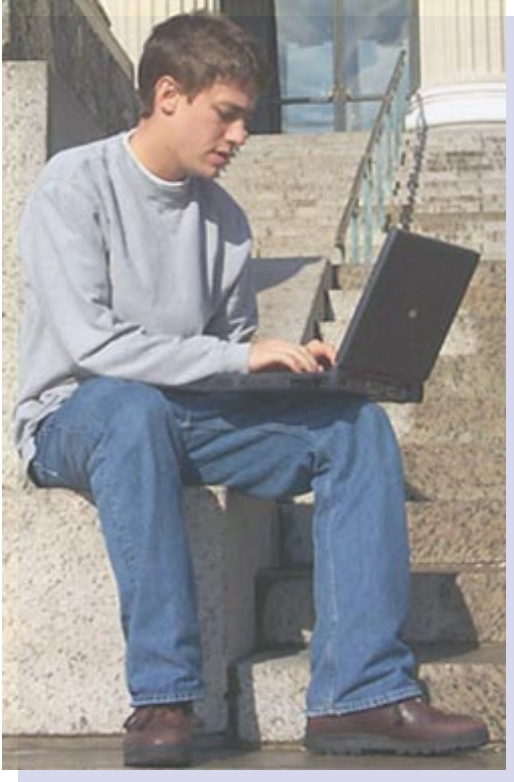- OWL's New Model

Introduction

The story so far…

- 2001-2003
  - ☐ Not widely understood
  - ☐ so mostly, Insecure

- OUCS Review
  - ☐ Pilot study
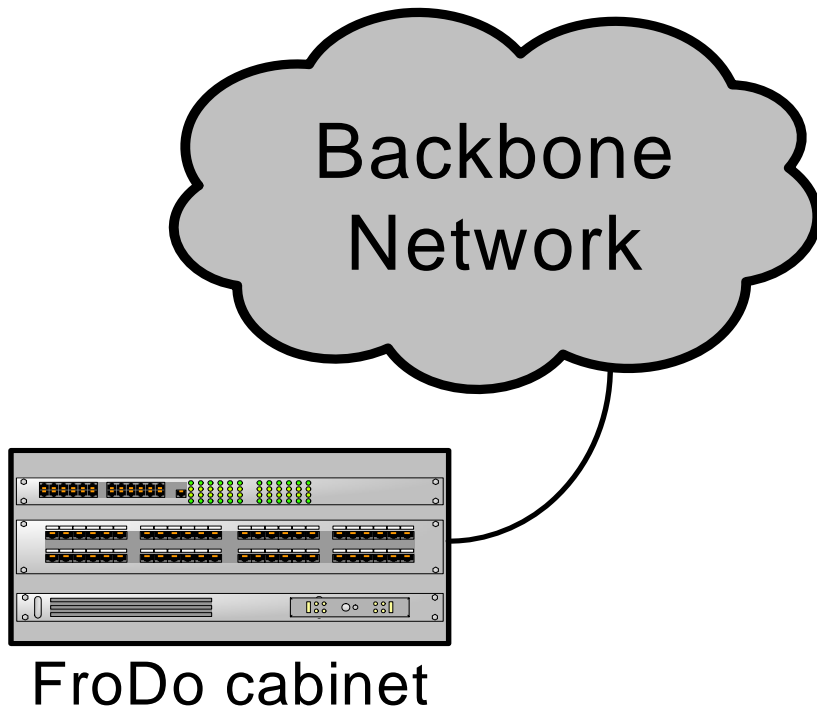
- 2006, our 3rd ITSSC !

Ubiquitous service

…what does that mean?

- Lots of Access Points
- User experience
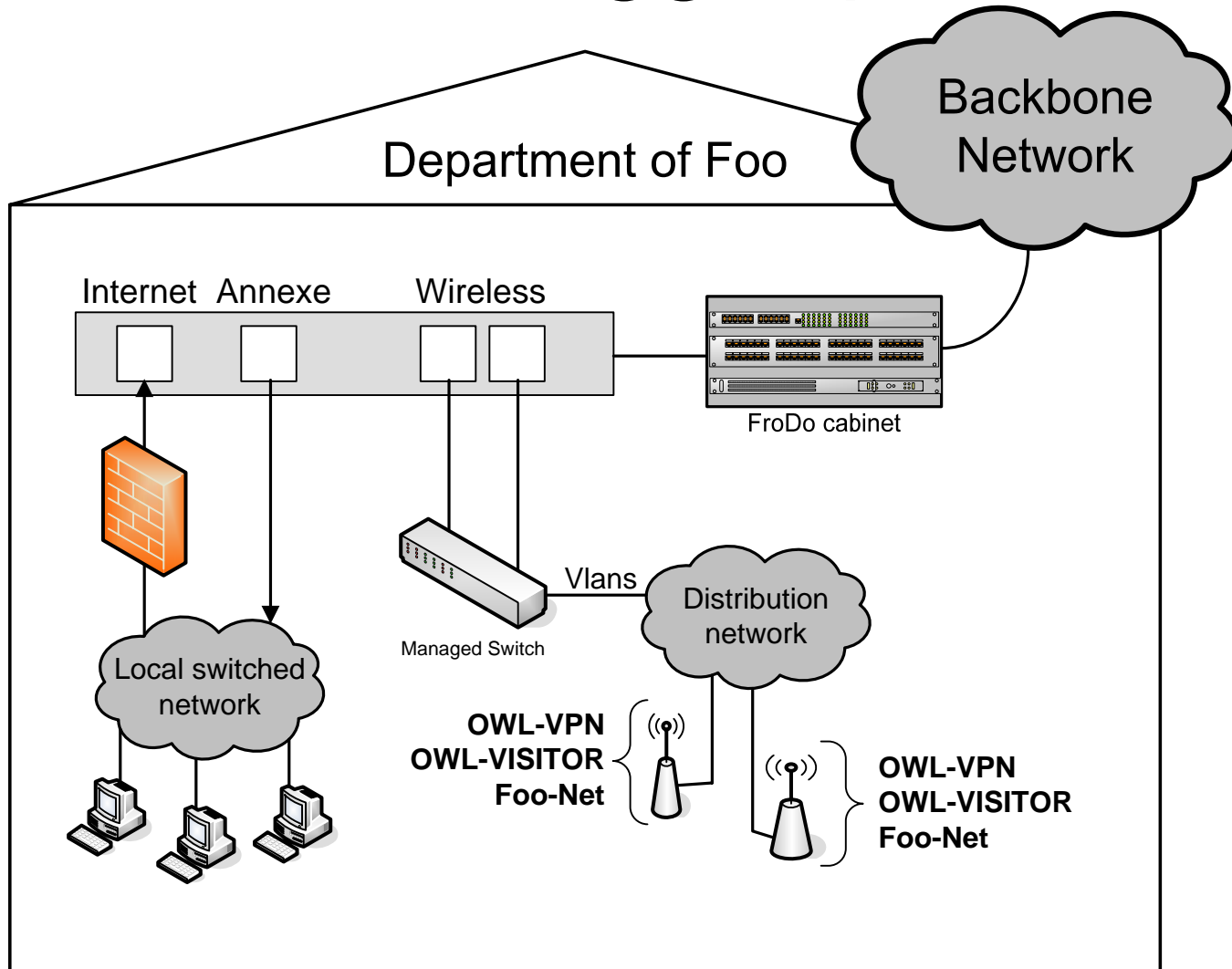- Account management
- Members, Guests…
- Telephony, etc.

Infrastructure review

Knowing your FroDo

Backbone Network

FroDo cabinet

- **Presentation is Copper Ethernet tails**
  - ☐ No media converter
  - ☐ Standard IP service
  - ☐ Improved monitoring

- **24 ports for…**
  - ☐ Main connection
  - ☐ Annexe or site-to-site
  - ☐ Wireless services

FroDo - a bigger picture

Backbone Network

Department of Foo

Internet Annexe Wireless

FroDo cabinet

Vlans

Distribution network

Managed Switch

Local switched network

OWL-VPN
OWL-VISITOR
Foo-Net
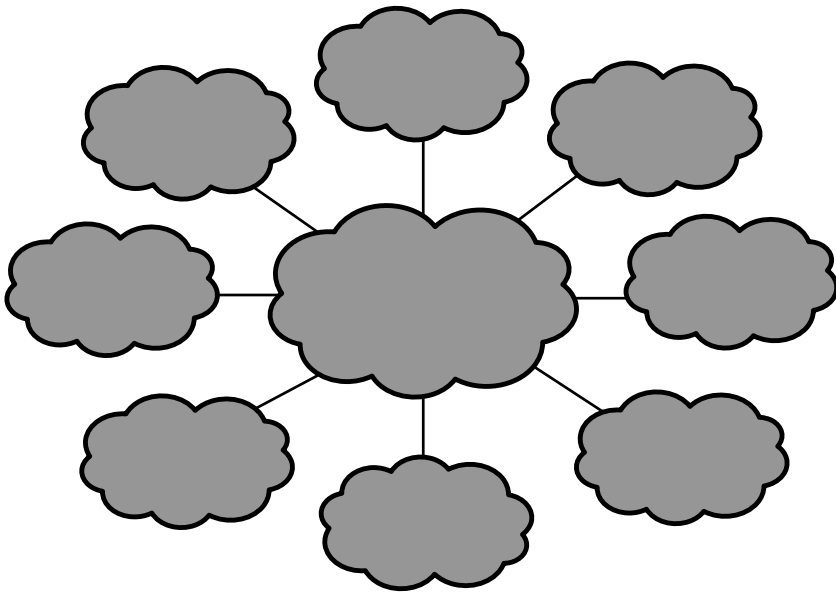
OWL-VPN
OWL-VISITOR
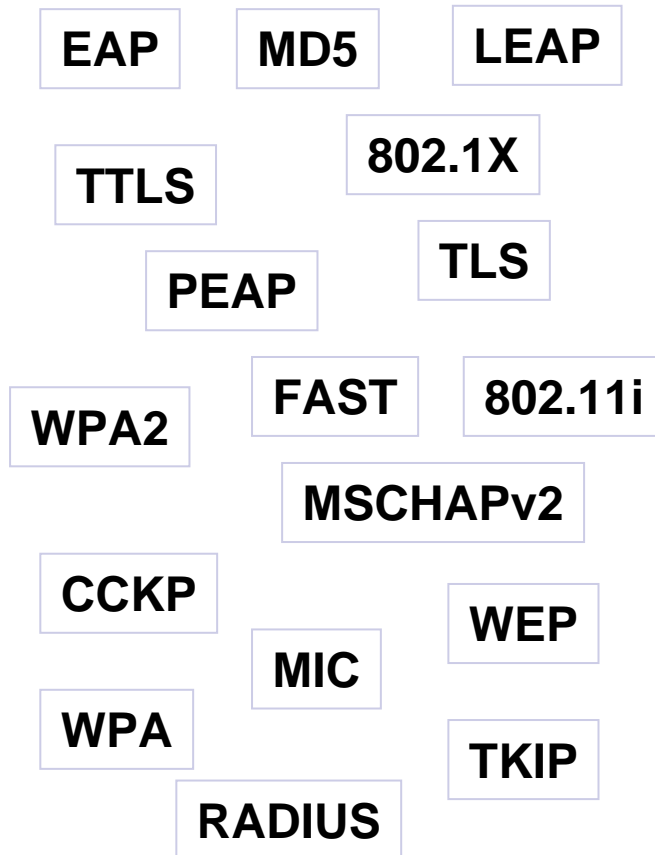Foo-Net

Oxford Wireless LAN

Network Visibility

- Units are opaque to the backbone, and each other

- But advanced technologies demand infrastructure

IT Support Staff

- Skills
  - Desire to learn ?
  - Time constraints

- Infrastructure
  - Funding problems

Standards

EAP   MD5   LEAP

TTLS   802.1X

PEAP   TLS

FAST   802.11i

WPA2

MSCHAPv2

CCKP

WEP

MIC

WPA

TKIP

RADIUS

"The nice thing about standards is that there are so many of them to choose from."

Andy Tanenbaum

- One nut to crack, many hammers
- Some are better than others

Vendors

CISCO SYSTEMS

3COM

bluesocket
The leader in secure mobility® solutions

Trapeze
NETWORKS

ARUBA™
The **Mobile Edge** Company

- Oriented to corporate
  - Single IT domain
  - Managed systems
- We're too diverse
  - Laptops, PDA, etc
- We're too big
  - Not enough collective funding

Client Platform

- **Operating systems**
  - Many vendors
  - Many versions !
  - Few supported standards in common
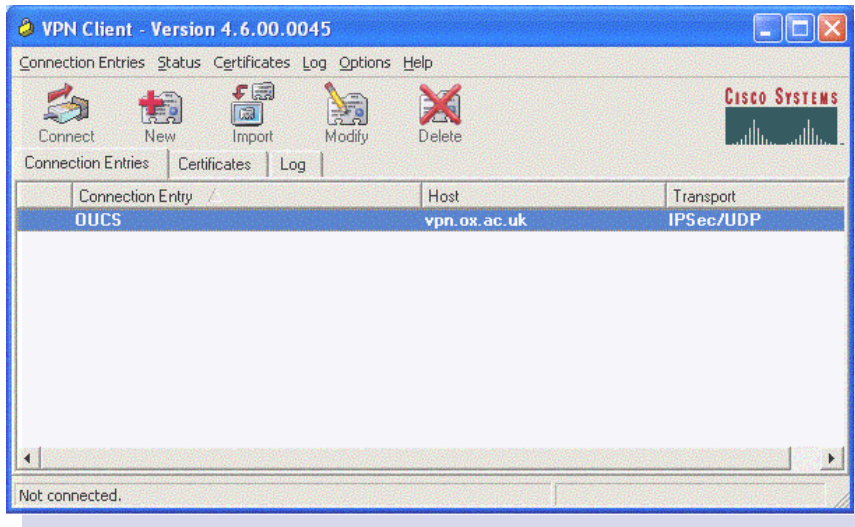- **Not much is secure**
- **Not much is free**

Access Method

Oxford Wireless LAN

OWL

Available here

http://www.oucs.ox.ac.uk/network/wireless/

- ■ Leverage a VPN
  - ☐ OS or 3rd party
- ■ Captive Portal
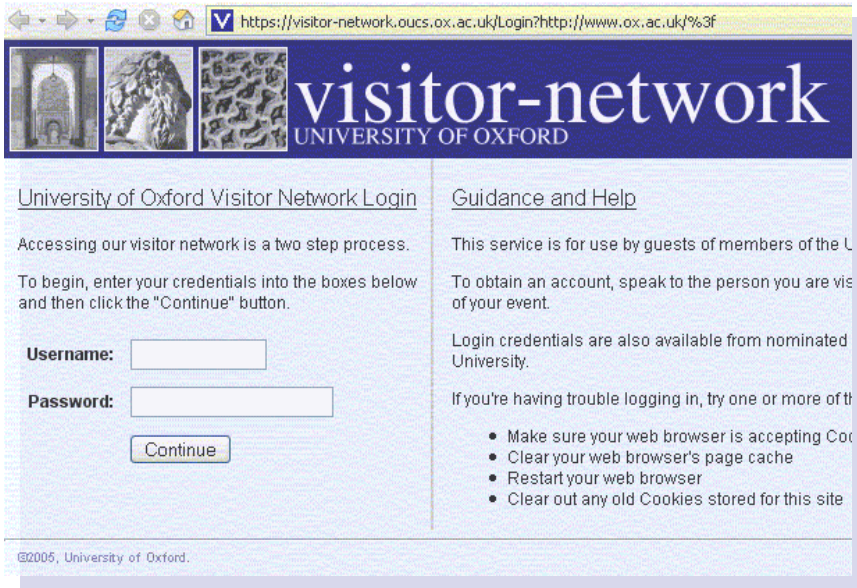 - ☐ Web based log-in
- ■ WPA
  - ☐ OS or 3rd party

VPN

- Familiar service
- Widely used solution
- Little support cost
- Simple configuration

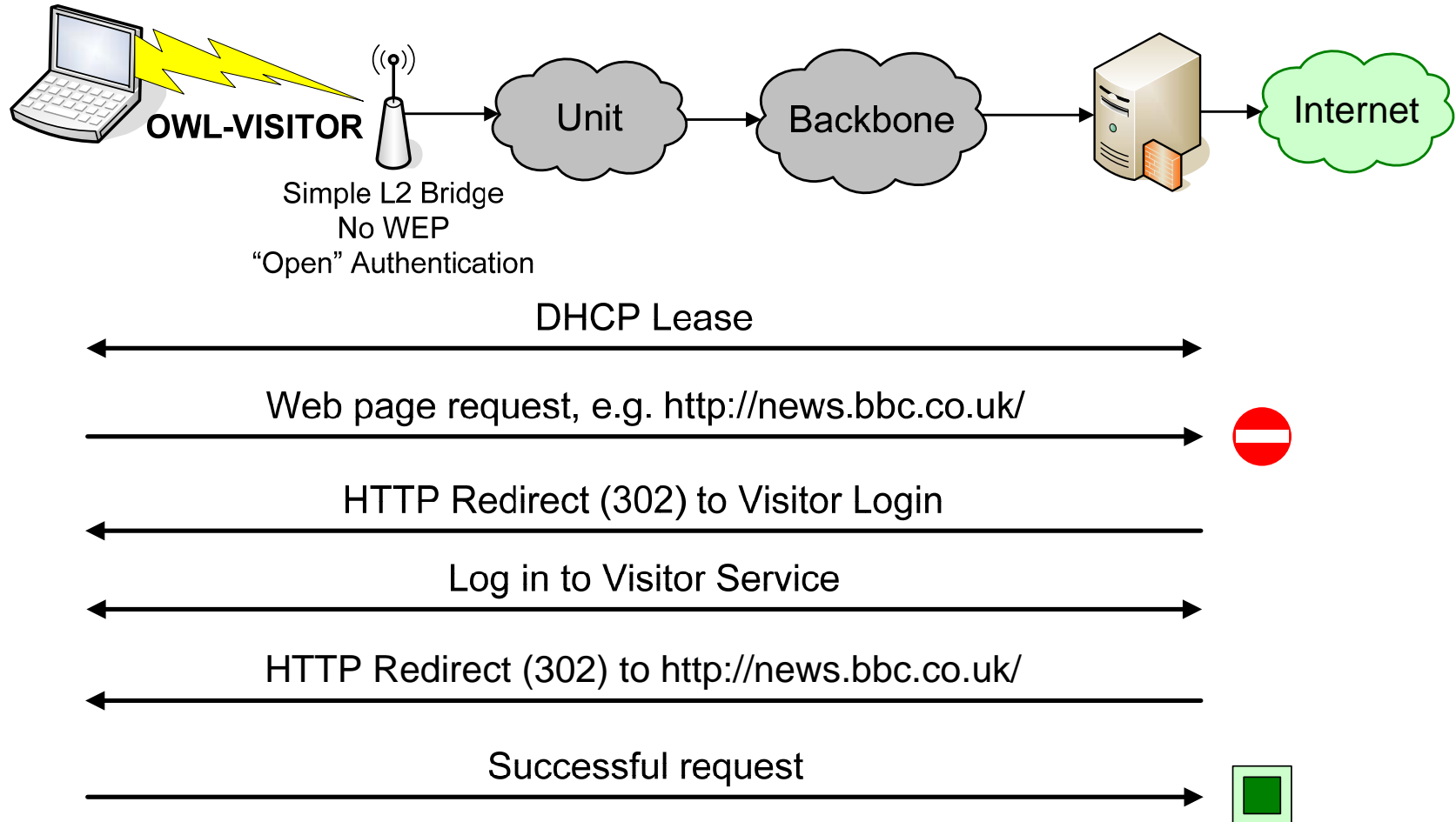- Software bugs
- Few platforms

VPN schematic

Wireless

FroDo

Backbone
Network

Managed Switch

Unit VPN Service

OWL-VPN

Simple L2 Bridge
No WEP
"Open" Authentication

University VPN Service

Captive Portal

- Web interception
- Time-limited accounts
- 'Outside' our network
- Many platforms
- Works on wires too!

- Low security

Visitor Network flowchart

OWL-VISITOR

Simple L2 Bridge
No WEP
"Open" Authentication

DHCP Lease

Web page request, e.g. http://news.bbc.co.uk/

HTTP Redirect (302) to Visitor Login

Log in to Visitor Service

HTTP Redirect (302) to http://news.bbc.co.uk/

Successful request
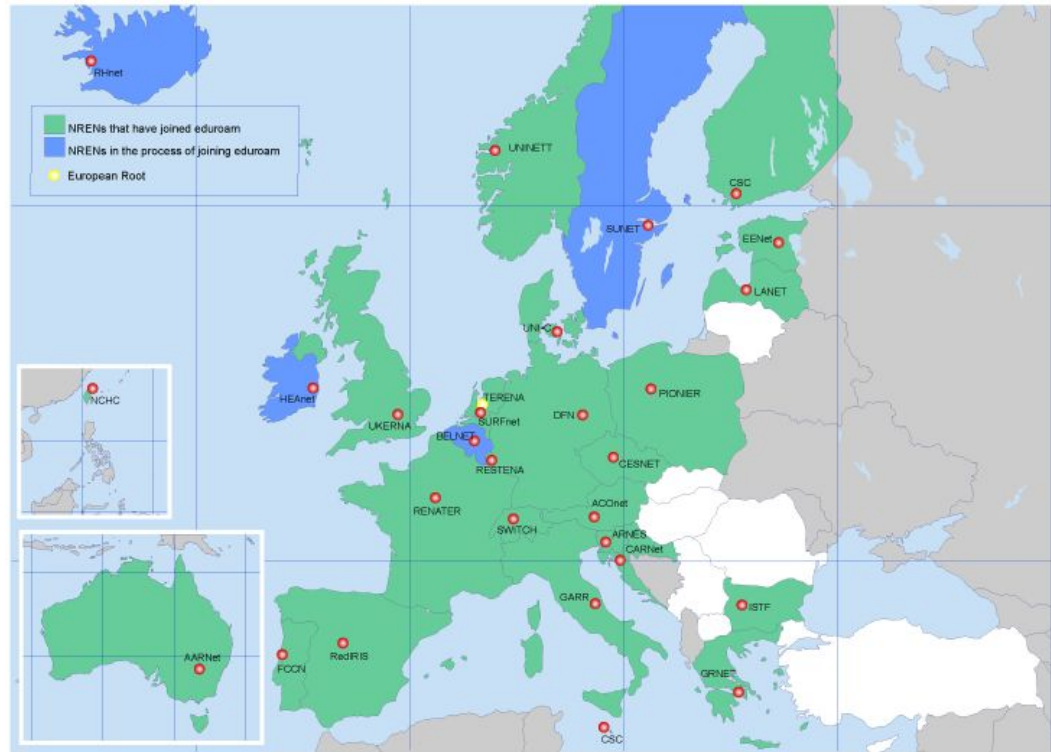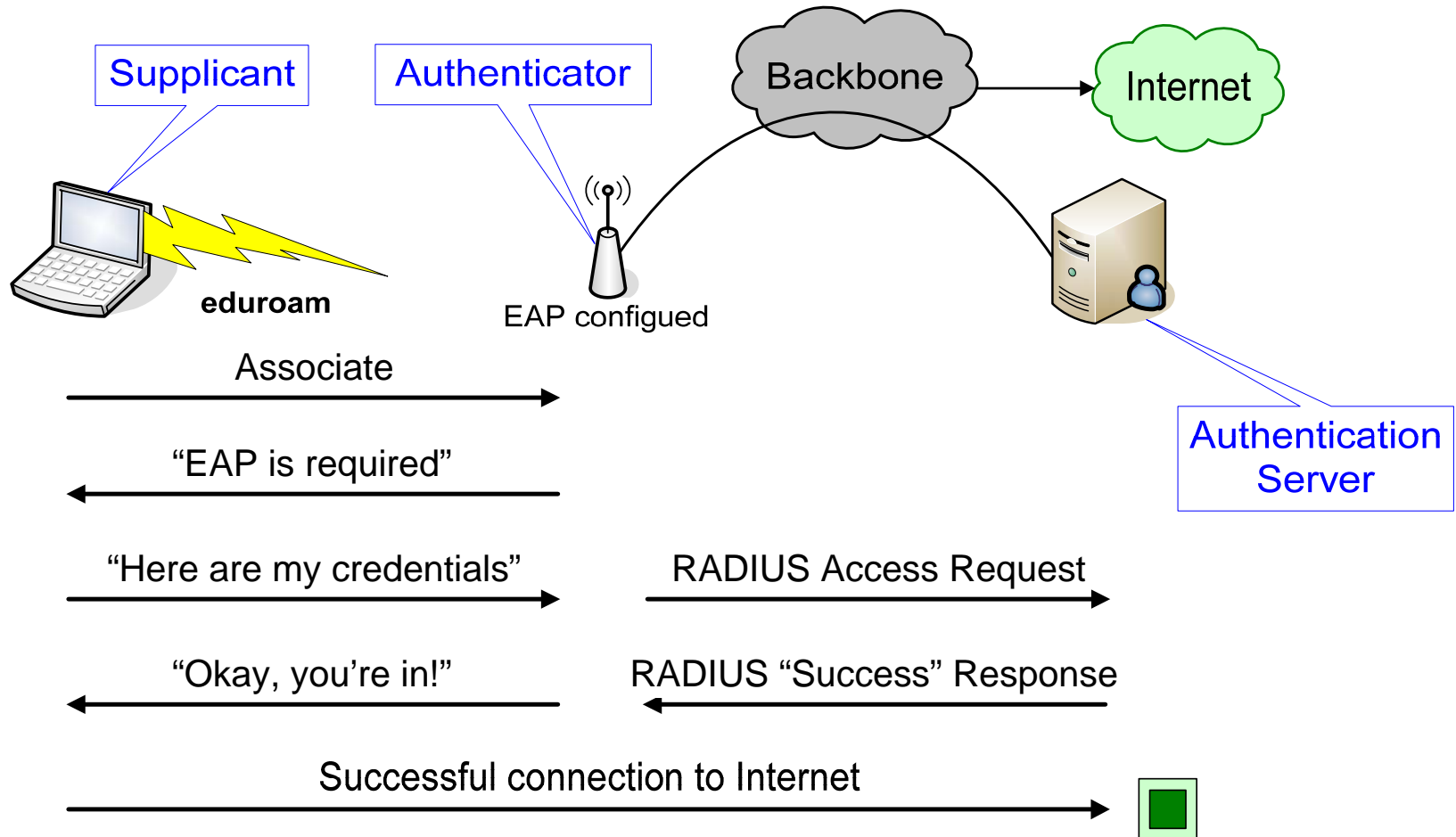
Looking to the future

JANET Roaming Service

WPA, 802.1X and EAP

- Built into OS
- Less invasive
- Secure and reliable
- Smooth roaming

- Clients are confusing
- More work for ITSS

802.1X flowchart

Supplicant

eduroam

Authenticator

EAP configued

Backbone

Internet

Authentication Server

Associate

"EAP is required"

"Here are my credentials"

RADIUS Access Request

"Okay, you're in!"

RADIUS "Success" Response

Successful connection to Internet

Eduroam in action
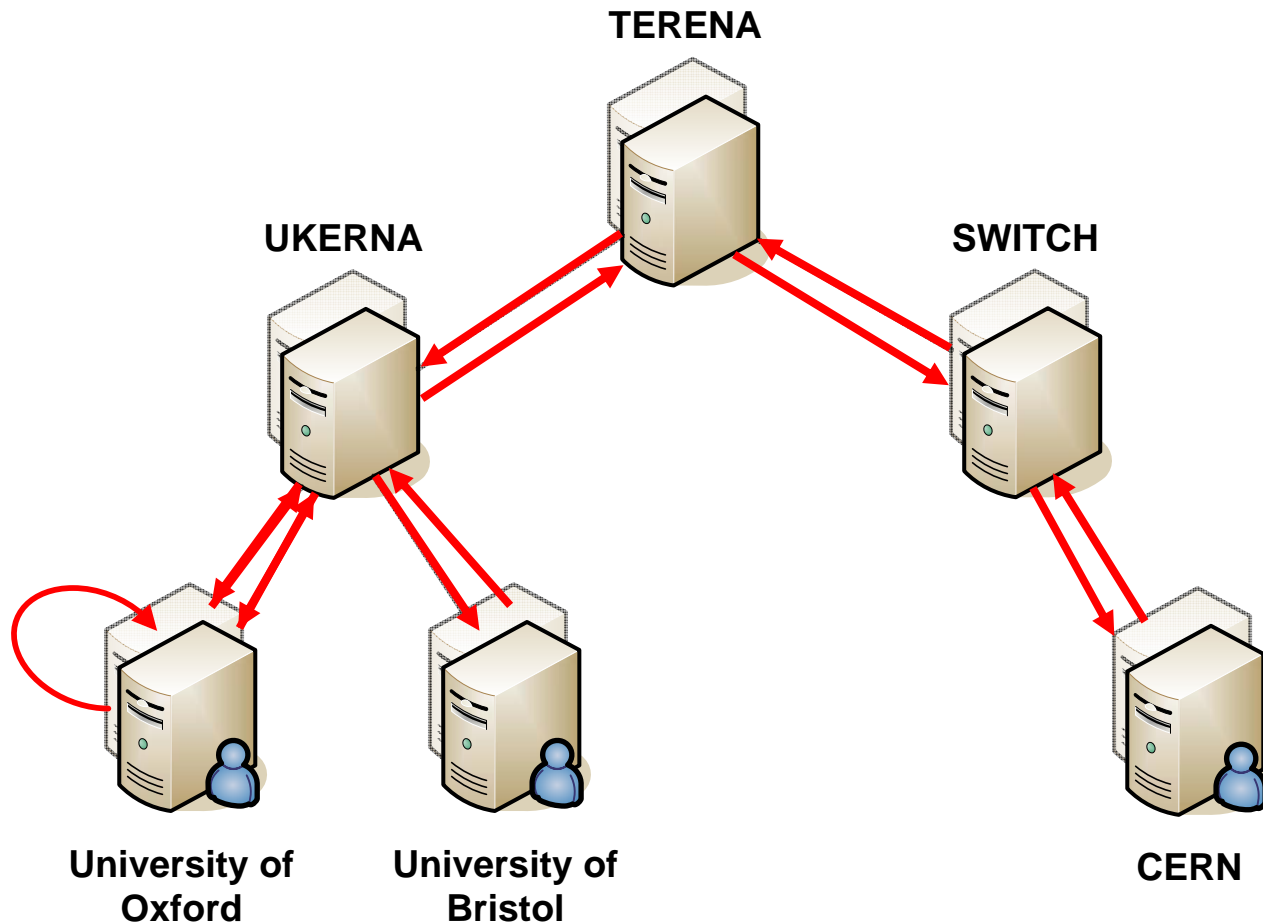
OWL's New Model

(DRAFT !)

Plans for VPN and 'VISITOR'

Oxford Wireless LAN
OWL

Available here

http://www.oucs.ox.ac.uk/network/wireless/
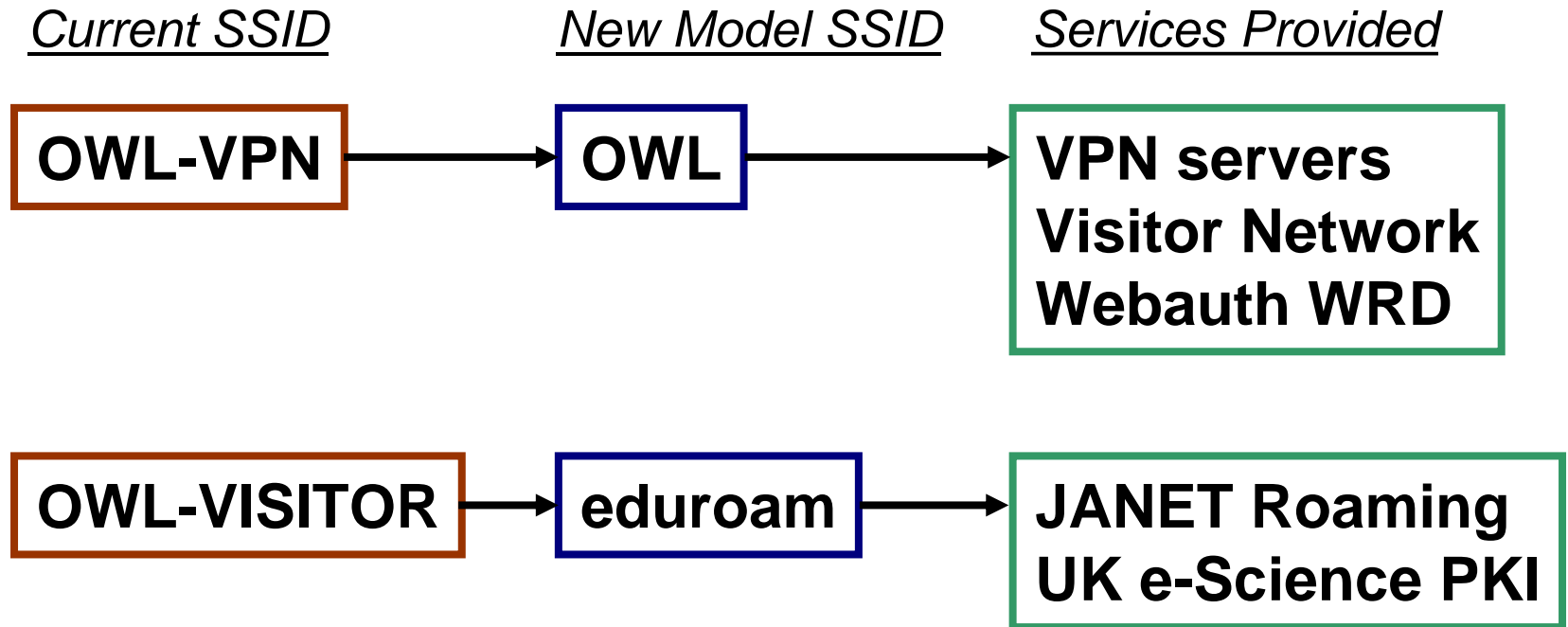
- Registration of unit-level VPN servers

- Webauth Web-Redirect service
  - Targeted at PDAs
  - Restricted ports
  - Renamed SSID

Migrating to the New Model

Current SSID	*New Model SSID*	*Services Provided*
OWL-VPN →	**OWL** →	**VPN servers Visitor Network Webauth WRD**
OWL-VISITOR →	**eduroam** →	**JANET Roaming UK e-Science PKI**

Eduroam checklist

1. Register your APs with OUCS
2. Reconfigure for EAP
   a) Install NAS secrets
   b) Change SSID
3. Coordinate FroDo port switchover

Managing user expectations

- Hotspots everywhere
- Laptops are common
- Lots to manage
- ITSS learning curve
- What about VoIP?

Questions