



## European Union's FP7 Programme

### DG Connect

Directorate C: Excellence in Science

Unit C1: e-Infrastructure



## Deliverable D4.3

# Virtual course for technical staff training and eduroam pilot deployment



A project of the Seventh Framework Programme  
(FP7)



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## Periodical Progress Report

*ELCIRA Deliverable: D4.3 – Virtual course for technical staff training and eduroam pilot deployment*

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**Abstract:** This document describes and shows how the online course was developed to train NREN technical teams and allow them to replicate the action in their NRENs and with their customers. This course will provide technical training to at least 2 people from NREN's that will join the project. This course will be on line using the virtual training platform "RedCLARA Aprende".



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## DELIVERABLE ROUTE

	Name	Member/Activity	Date	Responsible
<b>From</b>	Leandro Guimarães	WP4	April, 2013	RNP
<b>Revised by</b>	Antônio Carlos Fernandes Nunes	WP4	April, 2013	RNP
<b>Approved by</b>	Florencio Utreras	CLARA/WP1	April, 2013	CLARA



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## 1.- TRAINING STRUCTURE

The training was published in virtual training platform "RedCLARA Aprende" at:

- <http://cursos.redclara.net/course/view.php?id=25>

The image shows two screenshots of the RedCLARA Aprende platform. The top screenshot displays the course page for 'Curso técnico de federación de identidad para la educación y la investigación'. It includes a navigation menu, a calendar, and a list of available courses. A blue arrow points to the 'Acceso' button in the user profile area. The bottom screenshot shows the course content page for 'Curso de federación de identidad para la educación y la investigación'. It features a banner with the ELCIRA logo and a description of the course. A red box highlights the course content, and a blue arrow points to the 'Programa' section.



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## 2.- TRAINING TOPICS

### Module 1: Basic concepts

- What is eduroam?
- How eduroam works?
- Eduroam infrastructure

### Module 2: Actual scenario of eduroam in Latin America

- Proposal of a system to monitor eduroam in Latin America
- Proposal of a unified database to storage events from eduroam in Latin America
- Actual scenario of eduroam in Latin America
- Eduroam coverage

### Module 3: Local RADIUS Server

- Installing a RADIUS server
- Configuring a RADIUS server

### Module 4: Federation Server

- Installing a Federation server
- Configuring a Federation server

### Module 5: RADIUS Client

- Configuring a RADIUS client
- Configuring with EAP protocol
- Configuring eduroam clients

### Module 6: RadSec Proxy

- Installing a RadSec Proxy server
- Configuring a RadSec Proxy server



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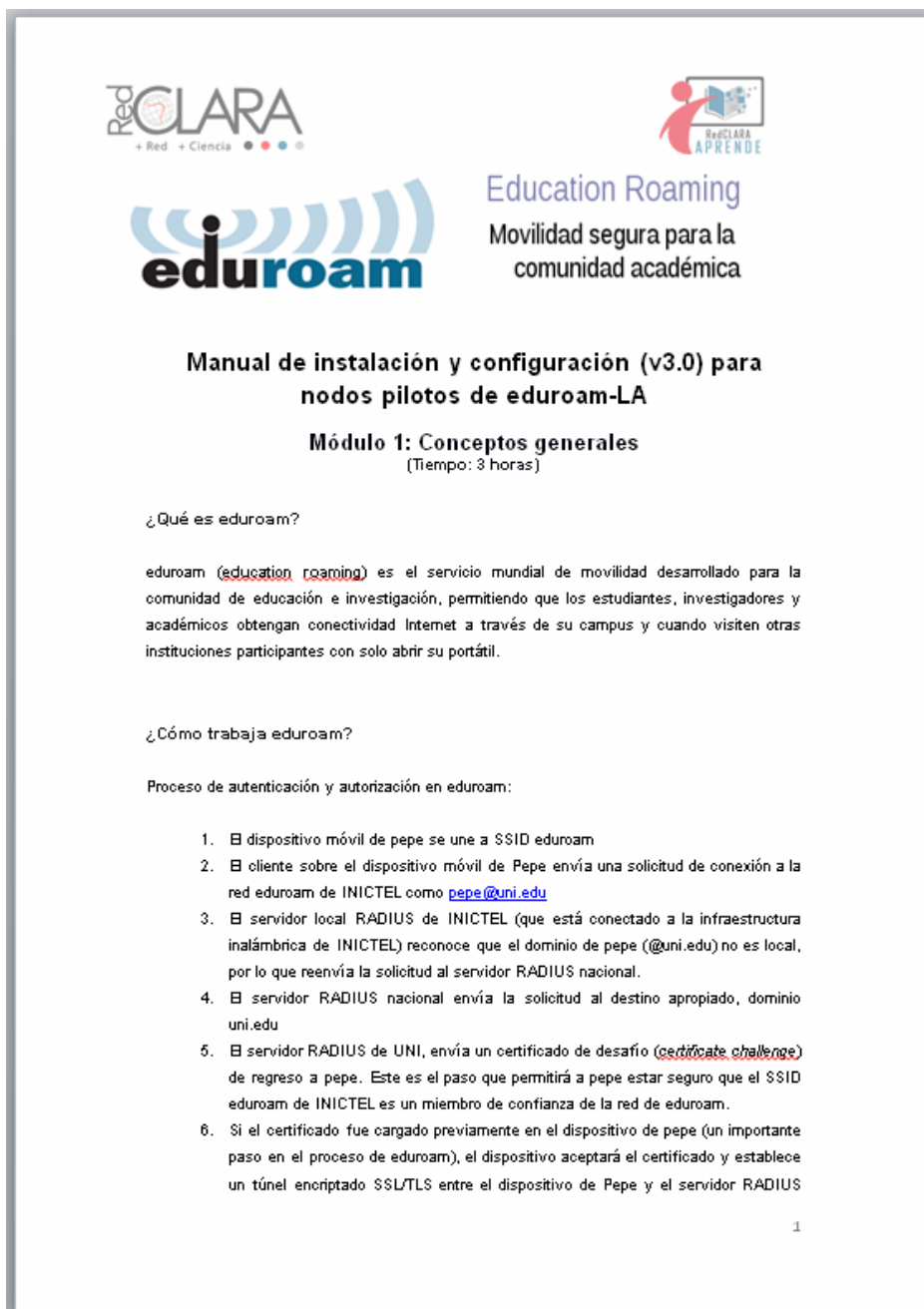


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## 2.1 MODULE 1:



The image shows the cover of a manual titled "Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA". At the top left is the RedCLARA logo with the tagline "+ Red + Ciencia". At the top right is a logo for "RedCLARA APRENDE" featuring a stylized figure reading a book. The main title "eduroam" is in large blue letters with a signal icon above it. To the right, the text "Education Roaming" and "Movilidad segura para la comunidad académica" is displayed. The subtitle "Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA" is centered, followed by "Módulo 1: Conceptos generales" and "(Tiempo: 3 horas)". The content includes sections for "¿Qué es eduroam?", "eduroam (education roaming) es el servicio mundial de movilidad desarrollado para la comunidad de educación e investigación...", "¿Cómo trabaja eduroam?", and "Proceso de autenticación y autorización en eduroam:" followed by a numbered list of 6 steps describing the authentication process. A page number "1" is at the bottom right.



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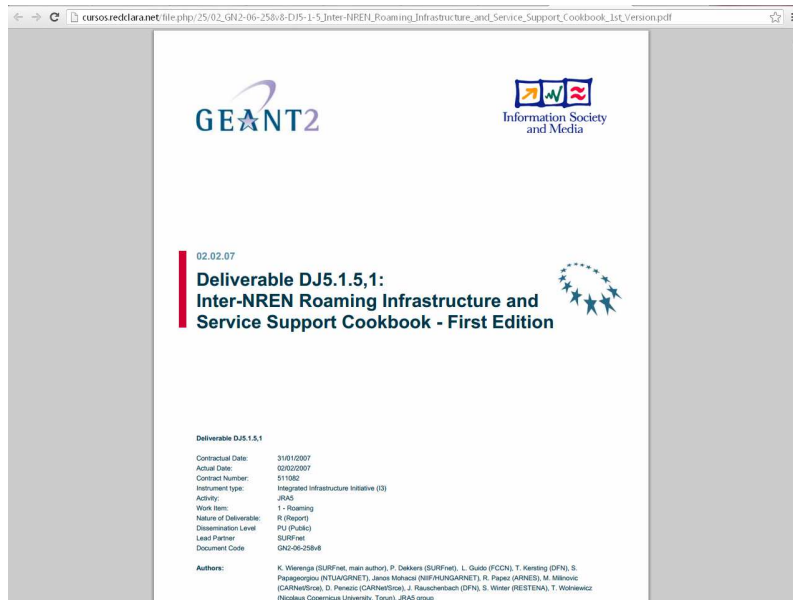
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## 2.2 LECTURE 1



## 2.3 LECTURE 2



## 2.4 LECTURE 3



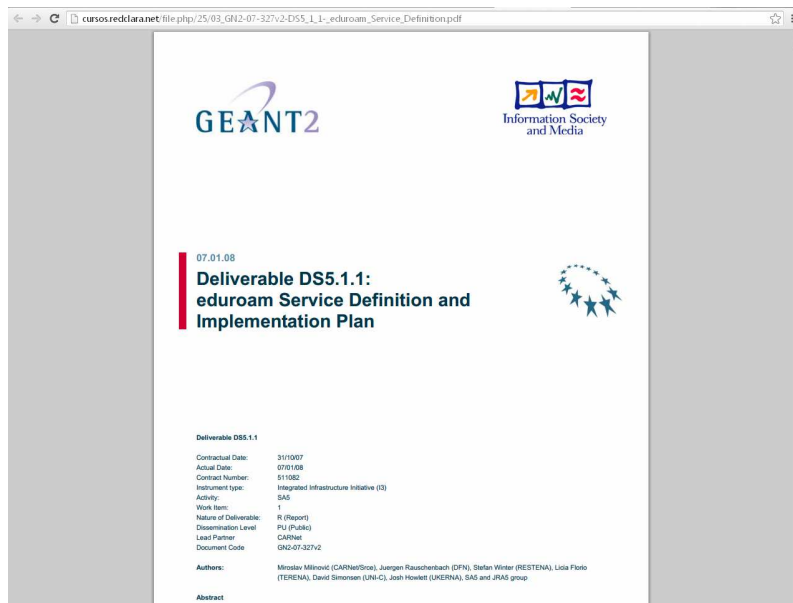
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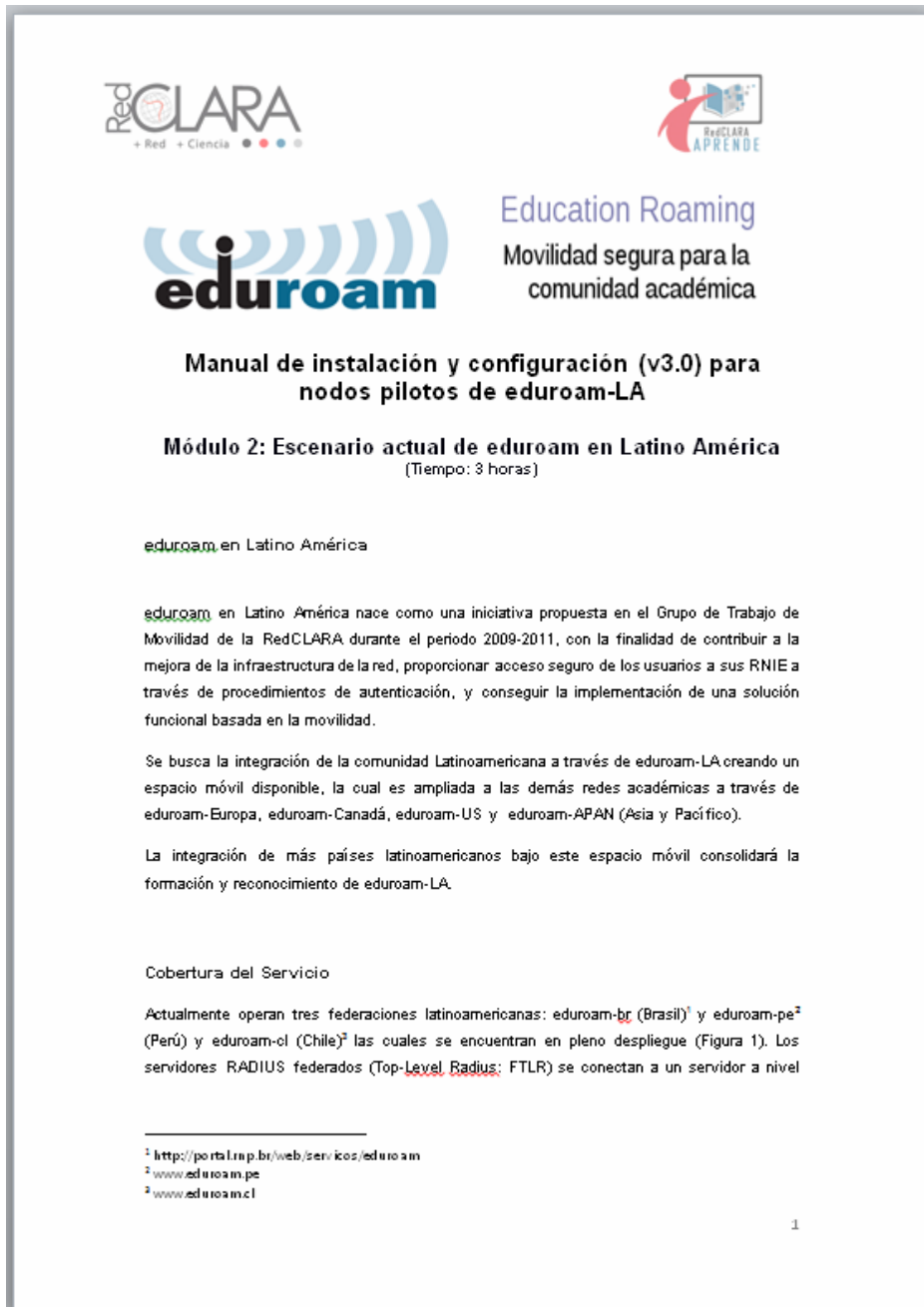


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## 2.5 MODULE 2:



The image shows the cover of a manual titled "Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA". At the top left is the RedCLARA logo with the tagline "+ Red + Ciencia". At the top right is the RedCLARA APRENDE logo. The main title "eduroam" is in large blue letters with a signal icon above it. To the right, it says "Education Roaming" and "Movilidad segura para la comunidad académica". Below this is the subtitle "Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA" and "Módulo 2: Escenario actual de eduroam en Latino América (Tiempo: 3 horas)". The text describes the eduroam service in Latin America, its goals, and current federations in Brazil, Peru, and Chile. It includes footnotes for URLs and a page number "1".



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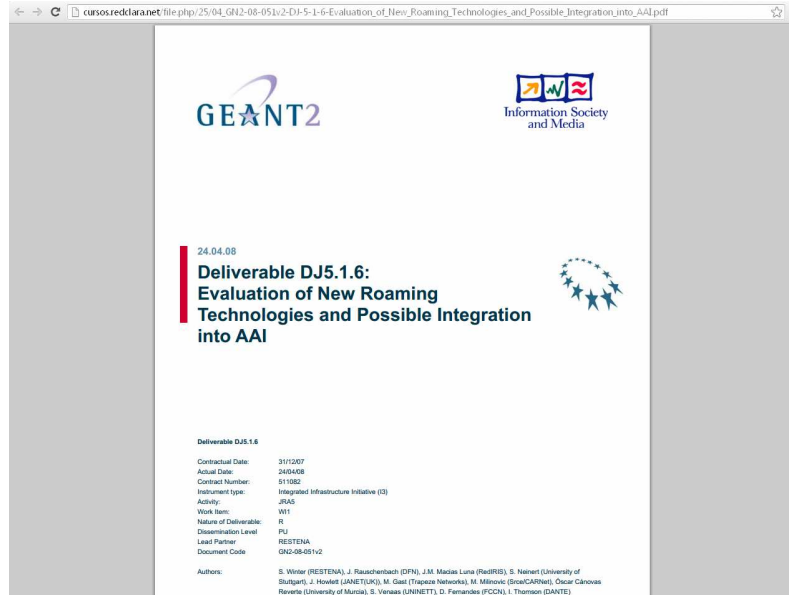


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## 2.6 LECTURE 1



## 2.7 LECTURE 2



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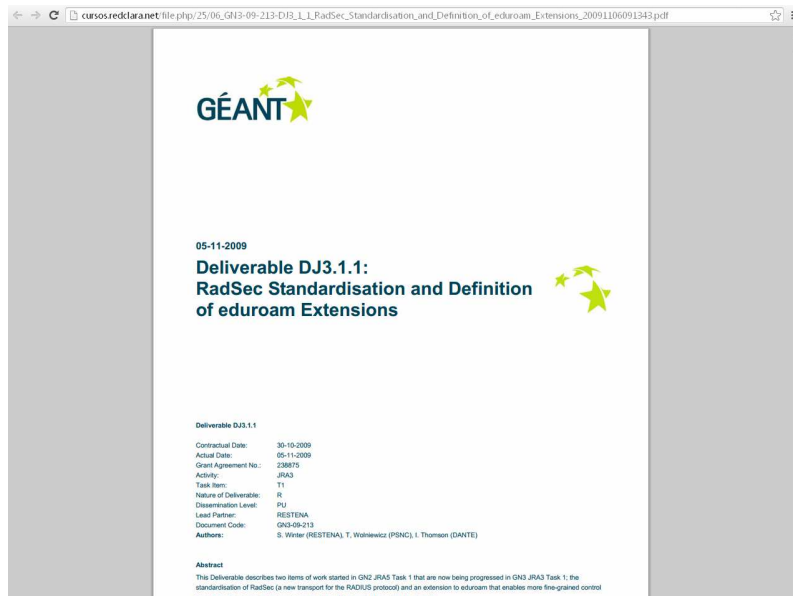


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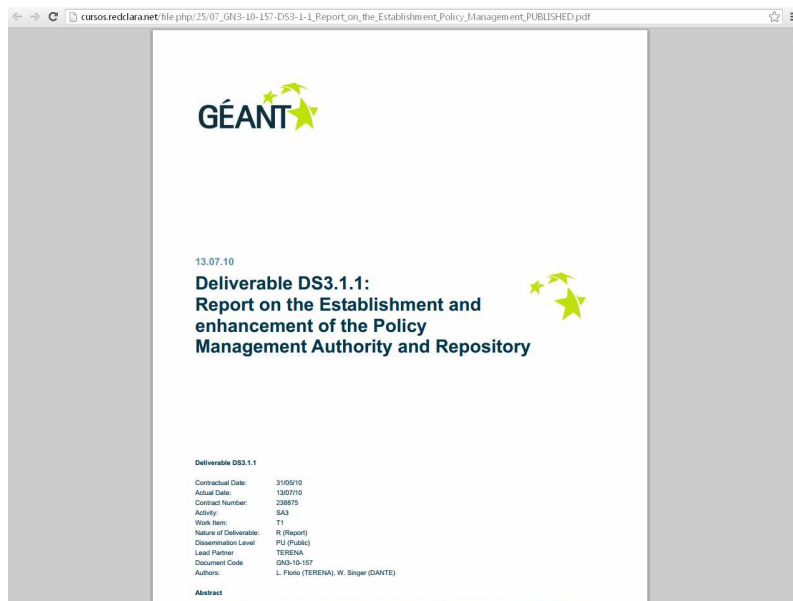


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## 2.8 LECTURE 3



## 2.9 LECTURE 4



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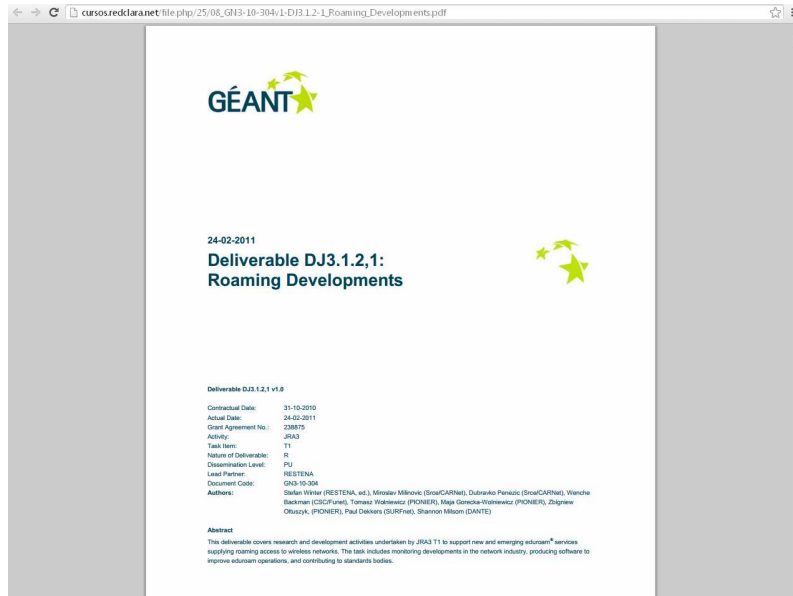


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## 2.10 LECTURE 5



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## 2.11 MODULE 3



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### Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA

#### Módulo 3: Servidor RADIUS Local

(Tiempo: 13 ½ horas)

**Pasos previos:**

- Instalar un servidor `[jnuX Debian]`, de preferencia la última versión `Debian "Squeeze"`.
- Editar el archivo `/etc/apt/sources.list`, considere que en el archivo `"sources.list"`, donde se enlistan las fuentes o repositorios de `Debian` debe contener como mínimo lo siguiente:

```
deb http://ftp.es.debian.org/debian/ squeeze main
deb-src http://ftp.es.debian.org/debian/ squeeze main
deb http://security.debian.org/ squeeze/updates main
deb-src http://security.debian.org/ squeeze/updates main
deb http://ftp.es.debian.org/debian/ squeeze-updates main
deb-src http://ftp.es.debian.org/debian/ squeeze-updates main
```

- Para realizar las tareas, es necesario el uso de dos (02) IPs públicas, o en su defecto dos (02) IPs natadas con permisos para los puertos UDP: 1812, 1813, 1814, 1830 y puerto TCP 2083.


La Figura 1 muestra el escenario de pruebas de servidores `Radius` con `radsecproxy`, que consiste en: Un (01) servidor RPS-LA (`Radius Proxy Server de Latino América`), dos (02) servidores Federados y cuatro (04) servidores Locales

Para efectos de este curso, cada NREN (país) tendrá un Servidor Federado-XX (donde XX = TLD de su país) y de ser posible dos (02) servidores Locales (INSTITUCIÓN 1,2).

Servidor RADIUS	Realm	Hostname	Número IP	Clave compartida
INSTITUCIÓN 1	inst1.edu.xx	radius.inst1.edu.xx	192.168.1.2	Instituto1
INSTITUCIÓN 2	inst2.edu.xx	radius.inst2.edu.xx	192.168.1.3	Instituto2
FEDERADO-XX	inst2.edu.xx	filr-xx-<nren>.edu.xx	192.168.1.4	Federado-xx



Tabla 1.1 Asignación de valores `radsecproxy` para servidores `Radius`


Cada usuario configurará su propio servidor `Radius` Local con `radsecproxy`, y un servidor `Radius` Federado-XX, según lo indicado en la Tabla 1.1. En este caso por ejemplo, considerando al servidor Federado (.pe), se ha reemplazado `inst1.edu.xx` por el `real(m) Inictel-unl.edu.pe`, `inst2.edu.xx` por el `real(m) unl.edu.pe`





## 2.12 MODULE 4

  
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### Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA

#### Módulo 4: Servidor Federado

(Tiempo: 2 ¼ Horas)

Pasos previos:

- Instalar un servidor linux **Debian**, de preferencia la última versión **Debian "Squeeze"**.
- Editar el archivo `/etc/apt/sources.list`, considere que en el archivo "sources.list", donde se enlistan las fuentes o repositorios de **Debian**, debe contener como mínimo lo siguiente:

```
deb http://ftp.es.debian.org/debian/ squeeze main  
deb-src http://ftp.es.debian.org/debian/ squeeze main  
deb http://security.debian.org/ squeeze/updates main  
deb-src http://security.debian.org/ squeeze/updates main  
deb http://ftp.es.debian.org/debian/ squeeze-updates main  
deb-src http://ftp.es.debian.org/debian/ squeeze-updates main
```

- Para realizar las tareas, es necesario el uso de dos (02) IPs públicas, o en su defecto dos (02) IPs natadas con permisos para los puertos UDP: 1812, 1813, 1814, 1830 y puerto TCP 2083

1. Instalar y configurar un servidor proxy **Radius Federado** (2h)

Lo haremos de la manera más simple, en otro servidor **Debian** 6.x instalamos el paquete **freeradius** desde las fuentes de repositorios:

```
apt-get install freeradius freeradius-utils vim nmap radsecproxy
```

2. Copiar los certificados creados para el servidor Federado en el módulo 3 al directorio `/etc/freeradius/certs/`.
3. Configurar los clientes del servidor **Radius Local** (`/etc/freeradius/clients.conf`) y el dominio local (`/etc/freeradius/proxy.conf`).

La directiva de configuración del cliente es:

```
client localhost {  
    ipaddr = 127.0.1.1  
    Secret <secret-localhost>  
    Shortname = Local Server  
    Nastype = other  
}  
client <nombre_descriptivo_ftlr> {  
    ipaddr = <IP_FTLR_LOCAL>
```

## 2.13 MODULE 5





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### Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA

#### Módulo 5: Cliente Radius

(Tiempo: 6 Horas)

1. Configuración de un cliente RADIUS (NAS) (1h)

Para la configuración de los clientes NAS (Network Access Server), se usará un *Access Point*. Verifique en la hoja informativa del equipo que se incluye el soporte de IEEE 802.1X.

Ahora, en el servidor *Radius Federado XX* de su NREN, configure los parámetros necesarios para su conexión con el NAS. Para esto edite el archivo *clients.conf* de su servidor *Radius* Institución [1,2].

```
client <p_nas> {
secret = <secreto>
shortname = AP-<nombre_institución>
nastype = cisco
}
```

Para la configuración de un *Access Point*, se tomará como ejemplo al modelo Cisco *aironet 1240AG*. Ver la Figura 1.




Figura 1: Configuración del Access Point como NAS para eduroam

## 2.14 MODULE 6






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## Manual de instalación y configuración (v3.0) para nodos pilotos de eduroam-LA

### Módulo 6: RADSECPROXY (Tiempo: 6 Horas)

1. Configuración del `radsecproxy` para el `Radius` Local

En el servidor `Radius` Local editamos el archivo `/etc/radsecproxy.conf` según se muestra, en donde se ha agregado algunos comentarios.

```
# Escuchar sobre todas sus interfaces de red
ListenTLS *:2083
ListenUDP *:1830

LogLevel 5
LogDestination file:///var/log/radsecproxy.log
LoopPrevention on

tls default {
  CACertificateFile /etc/freeradius/certs/ca.crt
  CACertificatePath /etc/freeradius/certs
  CertificateFile /etc/freeradius/certs/radius.inst1.edu.xx.crt
  CertificateKeyFile /etc/freeradius/certs/radius.key
}

rewrite defaultclient {
  removeAttribute 64
  removeAttribute 65
  removeAttribute 81
}

client FTLR-XX {
  host <IP Federado RADIUS>
  type tls
  secret <clave-secreta>
  certificateNameCheck off
}

server 127.0.0.1 {
  host radius.inst1.edu.xx
  type udp
  secret <clave-secreta>
  port 1812
}

client 127.0.0.1 {
  host 127.0.0.1
  type udp
  secret <clave-secreta>
  certificateNameCheck off
}
```

Bloque en donde se aloja los certificados digitales firmados para la institución con `realm "inst1.edu.xx"`

Configure un bloque `rewrite` si se quiere añadir, borrar o modificar atributos. En el ejemplo se excluye los tags pertenecientes a `USANs`.

Recibe las conexiones TLS del `radsecproxy` de la Federación.

Envía las consultas que recibe al servidor `Radius` Local

Recibe las consultas realizadas al servidor `RADIUS` Local



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