

# Seguridad LAN Filtrado por MAC

Smart & Managed  
D-Link Switches



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**D-Link**<sup>®</sup>  
ACADEMY  
> WEBINARS

# Agenda

## Diferentes formas de filtrar por MAC



✓ FDB (Forwarding Database)

✓ Port Security

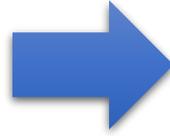
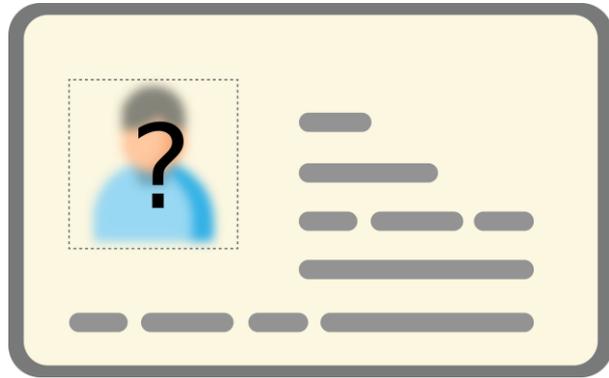
✓ MAC ACL

✓ AAA



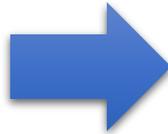
# Qué es la dirección MAC

Media Access Control



# Qué es la dirección MAC

Media Access Control



```
C:\ Símbolo del sistema  
C:\>ipconfig /all
```



```
Dirección física. . . . . : 98-FA-9B-5E-CC-8E
```

# Qué es la dirección MAC

## Media Access Control

### Device Information

#### Device Information

Device Type	DGS-1510-20 Gigabit Ethernet Sma...	MAC Address	80-26-89-B7-12-D8
System Name	DGS-1510-20	IP Address	10.90.90.90
System Location		Mask	255.255.255.0
System Contact		Gateway	0.0.0.0
Boot PROM Version	Build 1.00.016	System Time	28/11/2022 07:29:04
Firmware Version	Build 1.70.B024	Serial Number	RZC02H4000035
Hardware Version	A1		

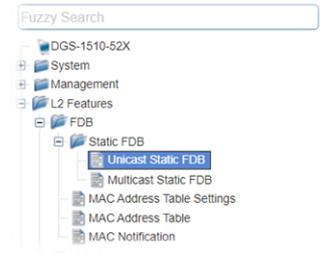
11 : AA : 22 : BB : 33 : CC

$2^{48} = 281 \times 10^{12}$  (o 281 474 976 710 656)

# Método I – Forwarding Database

El método más sencillo y manual

- ✓ Asignamos una MAC de manera estática por puerto
- ✓ Dicha MAC no podrá configurarse en otro puerto
- ✓ No tenemos control frente a MACs desconocidas



**Unicast Static FDB**

Unicast Static FDB

Port  VID (1-4094)

Total Entries: 2

VID	MAC Address
1	60-63-4C-E0-CB-35
1	60-63-4C-E0-CB-36

# Método I – Forwarding Database

## WEB UI

```
C:\>ipconfig /all | findstr /e 35  
Dirección física. . . . . : 60-63-4C-E0-CB-35
```

**Device Information**

Device Information			
Device Type	DGS-1510-52X Gigabit Ethernet Sm...	MAC Address	E8-CC-18-36-10-D8
System Name	Switch	IP Address	10.30.0.80
System Location		Mask	255.0.0.0
System Contact		Gateway	0.0.0.0
Boot PROM Version	Build 1.00.016	System Time	24/11/2022 16:56:58
Firmware Version	Build 1.70.B024	Serial Number	RZGR1F1000002
Hardware Version	A1		

Fuzzy Search

- DGS-1510-52X
  - System
  - Management
  - L2 Features
    - FDB
      - Static FDB
      - MAC Address Table Settings
      - MAC Address Table**
      - MAC Notification
    - VLAN
    - STP
    - ERPS (G.8032)
    - Loopback Detection
    - Link Aggregation

**MAC Address Table**

MAC Address Table

Port: eth1/0/1

VID (1-4094):

MAC Address: 00-84-57-00-00-00

Clear Dynamic by Port Find

Clear Dynamic by VLAN Find

Clear Dynamic by MAC Find

Total Entries: 2

VID	MAC Address	Type	Port
1	60-63-4C-E0-CB-35	Dynamic	eth1/0/13
1	E8-CC-18-36-10-D8	Static	CPU

1/1 < < 1 > > Go

# Método I – Forwarding Database

## WEB UI

```
C:\>ipconfig | findstr "Dirección IPv4"
Dirección IPv4. . . . . : 10.90.90.100
```

Fuzzy Search

- DGS-1510-52X
  - System
    - Management
    - L2 Features
    - L3 Features
      - ARP
        - ARP Aging Time
        - Static ARP
        - Proxy ARP
        - ARP Table
        - Gratuitous ARP
      - UDP Helper
      - IPv4 Interface

### ARP Table

ARP Search

Interface VLAN (1-4094)   IP Address  Mask

Hardware Address   Type

Total Entries: 2

Interface Name	IP Address	Hardware Address	Aging Time (min)	Type	
vlan1	10.90.90.90	E8-CC-18-36-10-D8	Forever		<input type="button" value="Clear"/>
vlan1	10.90.90.100	60-63-4C-E0-CB-35	240		<input type="button" value="Clear"/>

1/1 < < 1 > > Go

# Método I – Forwarding Database

## WEB UI

The screenshot shows the 'Unicast Static FDB' configuration page in the D-Link web interface. On the left is a navigation tree with 'Unicast Static FDB' selected. The main area contains configuration fields for 'Port' (eth1/0/13), 'VID (1-4094)' (1), and 'MAC Address' (60-63-4C-E0-CB-35). Below these fields is a table with one entry. At the bottom right, there are 'Apply', 'Delete All', and 'Delete' buttons, along with a pagination control showing '1/1'.

VID	MAC Address	Port	
1	60-63-4C-E0-CB-35	eth1/0/13	Delete

- Dicha MAC no podrá vincularse estáticamente a otro puerto

# Método I – Forwarding Database

## WEB UI

- Sí podremos vincular otras MACs al mismo puerto que, aunque no estén los dispositivos conectados, quedarán en la tabla MAC de forma estática

The screenshot displays two panels from the D-Link Web UI. The top panel, titled "Unicast Static FDB", shows a configuration interface for static MAC entries. It includes a "Fuzzy Search" field, a tree view on the left, and a main configuration area with fields for "Port" (eth1/0/1), "VID (1-4094)" (1), and "MAC Address" (60-63-4C-E0-CB-36). Below these fields is a table with 2 entries. The bottom panel, titled "MAC Address Table", shows a configuration interface for the MAC address table. It includes a "Fuzzy Search" field, a tree view on the left, and a main configuration area with fields for "Port" (eth1/0/13), "VID (1-4094)", and "MAC Address" (00-84-57-00-00-00). Below these fields is a table with 2 entries.

**Unicast Static FDB**

Unicast Static FDB

Port: eth1/0/1, VID (1-4094): 1, MAC Address: 60-63-4C-E0-CB-36

Total Entries: 2

VID	MAC Address	Port	
1	60-63-4C-E0-CB-35	eth1/0/13	Delete
1	60-63-4C-E0-CB-36	eth1/0/13	Delete

**MAC Address Table**

MAC Address Table

Port: eth1/0/13, VID (1-4094): , MAC Address: 00-84-57-00-00-00

Total Entries: 2

VID	MAC Address	Type	Port
1	60-63-4C-E0-CB-35	Static	eth1/0/13
1	60-63-4C-E0-CB-36	Static	eth1/0/13

# Método I – Forwarding Database

## WEB UI

- En cualquier otro puerto que nos conectemos: no responderá el switch

```
Switch#show interface status | i full
```

```
eth1/0/15    connected    1          a-full    a-1000    1000BASE-T
```

```
C:\>ping 10.90.90.90
```

```
Haciendo ping a 10.90.90.90 con 32 bytes de datos:
```

```
Tiempo de espera agotado para esta solicitud.
```

```
Tiempo de espera agotado para esta solicitud.
```

```
Tiempo de espera agotado para esta solicitud.
```

```
Tiempo de espera agotado para esta solicitud.
```

```
Estadísticas de ping para 10.90.90.90:
```

```
Paquetes: enviados = 4, recibidos = 0, perdidos = 4  
(100% perdidos),
```

# Tamaño de la FDB (Entradas estáticas)

D-Link Switches

DMS-1100



64 direcciones

DGS-1100



32/64 direcciones

DGS-2000



DGS-1250



DGS-1210



256 direcciones

# Tamaño de la FDB (Entradas estáticas)

## D-Link Switches

DGS-3130



512 direcciones

DGS-3630



1024 direcciones

DXS-1210



DGS-1510



DGS-1520



DXS-3400



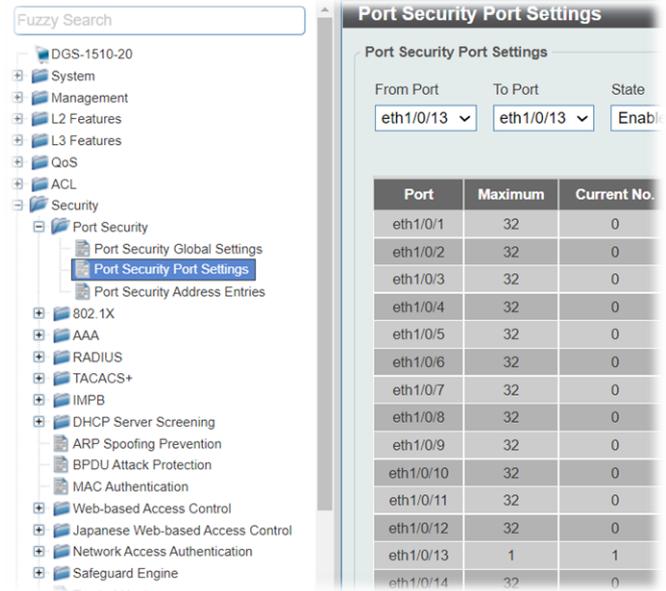
DXS-3610



# Método II – Port Security

Nos dará más información

- ✓ Podemos limitar el número de MACs por puerto
- ✓ Algunas MACs se pueden aprender dinámicamente
- ✓ Información en los logs de lo ocurrido
- ✓ Configurar el recovery time



The screenshot displays the configuration page for Port Security Port Settings on a D-Link device. The left sidebar shows a tree view of the configuration menu, with 'Port Security Port Settings' selected. The main content area shows the configuration for a specific port, eth1/0/13.

**Port Security Port Settings**

From Port: eth1/0/13 To Port: eth1/0/13 State: Enabled

Port	Maximum	Current No.
eth1/0/1	32	0
eth1/0/2	32	0
eth1/0/3	32	0
eth1/0/4	32	0
eth1/0/5	32	0
eth1/0/6	32	0
eth1/0/7	32	0
eth1/0/8	32	0
eth1/0/9	32	0
eth1/0/10	32	0
eth1/0/11	32	0
eth1/0/12	32	0
eth1/0/13	1	1
eth1/0/14	32	0

# Método II – Port Security

## WEB UI

The screenshot displays the D-Link web management interface for a DGS-1510-20 switch. The top navigation bar includes the D-Link logo, a physical switch image, and a refresh interval set to 10 seconds. The left sidebar shows a tree view of configuration options, with 'Port Security Address Entries' selected under the 'Security' > 'Port Security' menu. The main content area is titled 'Port Security Address Entries' and contains a form for adding new entries. The form fields are: Port (eth1/0/1), MAC Address (60-63-4C-E0-C9-61), and VID (1-4094). There is an unchecked 'Permanent' checkbox. Below the form are buttons for 'Add', 'Delete', 'Clear by Port', and 'Clear by MAC'. A summary section shows 'Total Entries: 1' and a 'Clear All' button. A table lists the existing entry:

Port	VID	MAC Address	Address Type	Remaining Time (mins)
eth1/0/13	1	60-63-4C-E0-C9-61	Permanent	-

At the bottom of the table, there is a pagination control showing '1/1' entries and a 'Go' button.

# Método II – Port Security

## WEB UI

**Port Security Port Settings**

From Port: eth1/0/13 | To Port: eth1/0/13 | State: Enabled | Maximum (0-6656): 1 | Violation Action: Shutdown | Security Mode: Delete-on-Timeou | Aging Time (0-1440): | Aging Type: Absolute

Port	Maximum	Current No.	Violation Action	Violation Count	Security Mode	Admin State	Current State	Aging Time	Aging Type
eth1/0/1	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/2	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/3	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/4	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/5	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/6	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/7	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/8	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/9	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/10	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/11	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/12	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute
eth1/0/13	1	1	Shutdown	-	Delete-on-Timeout	Enabled	Forwarding	0	Absolute
eth1/0/14	32	0	Protect	-	Delete-on-Timeout	Disabled	-	0	Absolute

# Método II – Port Security

## WEB UI

Fuzzy Search

- DGS-1510-20
  - System
  - Management
  - L2 Features
    - FDB
      - Static FDB
        - MAC Address Table Settings
          - MAC Address Table**
          - MAC Notification
        - VLAN
        - STP
        - ERPS (G.8032)
        - Loopback Detection
        - Link Aggregation

### MAC Address Table

#### MAC Address Table

Port: eth1/0/1  
VID (1-4094):  
MAC Address: 00-84-57-00-00-00

Clear Dynamic by Port Find  
Clear Dynamic by VLAN Find  
Clear Dynamic by MAC Find

Total Entries: 2

Clear All View All

VID	MAC Address	Type	Port
1	60-63-4C-E0-C9-61	Static	eth1/0/13
1	80-26-89-B7-12-D8	Static	CPU

1/1 < < 1 > > Go

# Método II – Port Security

## WEB UI

Fuzzy Search

- DGS-1510-20
  - System
    - System Information Settings
    - Peripheral Settings
  - Port Configuration
    - Port Settings
    - Port Status
    - Port GBIC
    - Port Auto Negotiation
    - Error Disable Settings**
    - Jumbo Frame
  - Interface Description
  - System Log
  - Time and SNTP
  - Time Range

### Error Disable Settings

**Error Disable Trap Settings**

Asserted

Cleared

Notification Rate (0-1000)

**Error Disable Recovery Settings**

ErrDisable Cause  State  Interval (5-86400)  sec

ErrDisable Cause	State	Interval (sec)
Port Security	Enabled	300
Storm Control	Disabled	300

# Máximo número de direcciones por puerto

D-Link Switches

DGS-1210



DGS-1250



DGS-1520



DGS-2000



DGS-3130



DXS-1210-28T/S



DGS-1510



64 direcciones/puerto

128

# Máximo número de direcciones por puerto

## D-Link Switches

DXS-1210-10TS

DXS-1210-12TC

DXS-1210-12SC

DXS-1210-16TC



6.656

Direcciones  
por puerto

DXS-3400



DGS-3630



DXS-3610



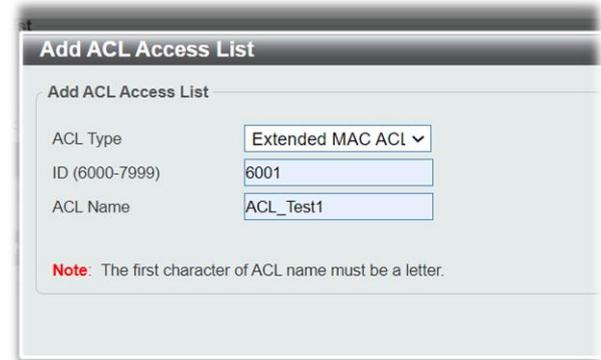
12.288

Direcciones  
por puerto

# Método III – MAC ACL

Mayor flexibilidad en su configuración

- ✓ Podemos crear tanto whitelist...
- ✓ ... como blacklist
- ✓ Una MAC puede pertenecer a más de un puerto



The screenshot shows a web interface window titled "Add ACL Access List". Inside the window, there is a sub-header "Add ACL Access List" and three input fields:

- ACL Type: A dropdown menu with "Extended MAC ACL" selected.
- ID (6000-7999): A text input field containing "6001".
- ACL Name: A text input field containing "ACL\_Test1".

Below the input fields, there is a red "Note" that reads: "The first character of ACL name must be a letter."

# Método III – MAC ACL

## WEB UI

Fuzzy Search

- DGS-1510-20
  - System
  - Management
  - L2 Features
  - L3 Features
  - QoS
  - ACL
    - ACL Configuration Wizard
    - ACL Access List
    - ACL Interface Access Group
    - ACL VLAN Access Map
    - ACL VLAN Filter

### ACL Access List

ACL Type:   ID (1-14999)   ACL Name

Total Entries: 0

ID	ACL Name	ACL Type	Start Sequence No.	Step	Counter State	Remark
----	----------	----------	--------------------	------	---------------	--------

Sequence No.	Action	Rule	Time Range	Counter
--------------	--------	------	------------	---------

### Add ACL Access List

Add ACL Access List

ACL Type:

ID (6000-7999):

ACL Name:

**Note:** The first character of ACL name must be a letter.

# Método III – MAC ACL

## WEB UI

Total Entries: 1 Add ACL

ID	ACL Name	ACL Type	Start Sequence No.	Step	Counter State	Remark	
6001	ACL_Test1	Extended MAC ACL	10	10	Disabled		<span>Edit</span> <span>Delete</span>

1/1 < < **1** > >  Go

ACL\_Test1 (ID: 6001) Rule Clear All Counter Clear Counter Add Rule

Sequence No.	Action	Rule	Time Range	Counter
--------------	--------	------	------------	---------

### Add ACL Rule

Add ACL Rule

ID: 6001  
ACL Name: ACL\_Test1  
ACL Type: Extended MAC ACL

Sequence No. (1-65535):  (If it isn't specified, the system automatically assigns.)

Action:  Permit  Deny

Match MAC Address

Source:  Any  Host  MAC  Wildcard

Destination:  Any  Host  MAC  Wildcard

Source MAC:

Destination MAC:

# Método III – MAC ACL

## WEB UI

### Add ACL Rule

#### Add ACL Rule

ID 6001  
ACL Name ACL\_Test1  
ACL Type Extended MAC ACL  
Sequence No. (1-65535)  (If it isn't specified, the system automatically assigns.)  
Action  Permit  Deny

#### Match MAC Address

Source  Any  
 Host   
 MAC   
Wildcard

Destination  Any  
 Host   
 MAC   
Wildcard

#### ACL\_Test1 (ID: 6001) Rule

[Clear All Counter](#)[Clear Counter](#)[Add Rule](#)

Sequence No.	Action	Rule	Time Range	Counter	
10	Permit	host 60-63-4C-E0-C9-61 an...			<a href="#">Delete</a>
20	Deny	any any			<a href="#">Delete</a>

1/1 [|<](#) [<](#) **1** [>](#) [|>](#)  [Go](#)

# Método III – MAC ACL

## WEB UI

**ACL Interface Access Group**

ACL Interface Access Group

From Port: eth1/0/13 | To Port: eth1/0/13 | Direction: In | Action: Add | Type: MAC ACL | ACL Name: ACL\_Test1 | Please Select |

Port	In			
	IP ACL	IPv6 ACL	MAC ACL	Expert ACL
eth1/0/1				
eth1/0/2				
eth1/0/3				
eth1/0/4				
eth1/0/5				
eth1/0/6				
eth1/0/7				
eth1/0/8				
eth1/0/9				
eth1/0/10				
eth1/0/11				
eth1/0/12				
eth1/0/13			ACL_Test1 (ID: 6001)...	
eth1/0/14				

# Máximo número de entradas/reglas

## D-Link Switches

DGS-2000



200

DGS-1210



DGS-1250



DGS-1510



DXS-1210-10TS

DXS-1210-12TC

DXS-1210-12SC

DXS-1210-16TC



256

768

# Máximo número de entradas/reglas

## D-Link Switches

DGS-1520



DXS-1210-28T/S



1536

DGS-3130



DXS-3400



1792

DXS-3610



2304

DGS-3630



4096

# Método IV – AAA

## Authentication Authorization Accounting

- ✓ Permitimos las MACs que queramos
- ✓ Información en los logs
- ✓ Podemos sincronizar las MACs  
con un servidor Radius externo



# Método IV – AAA

## WEB UI

The screenshot shows the 'AAA Global Settings' page. On the left is a navigation tree with 'Security' expanded, and 'AAA' > 'AAA Global Settings' selected. The main content area is titled 'AAA Global Settings' and contains 'AAA State Settings' with a radio button for 'Enabled' selected. An 'Apply' button is in the top right corner.

The screenshot shows the 'Authentication Settings' page. On the left is a navigation tree with 'Security' > 'Authentication Settings' selected. The main content area is titled 'Authentication Settings' and has two tabs: 'AAA Authentication Network' (active) and 'AAA Authentication Exec'. It contains three sections: 'AAA Authentication 802.1X' (Status: Disabled), 'AAA Authentication JWAC' (Status: Disabled), and 'AAA Authentication MAC-Auth' (Status: Enabled). Each section has four 'Method' dropdown menus and an 'Apply' button.

# Método IV – AAA

## WEB UI

The screenshot displays the 'Network Access Authentication Global Settings' page in the D-Link Web UI. On the left is a navigation tree with 'Network Access Authentication Global' selected. The main content area is divided into three sections: MAC Format Settings, General Settings, and User Information.

**Network Access Authentication Global Settings**

**Network Access Authentication MAC Format Settings**

Case	Uppercase	▼
Delimiter	Hyphen	▼
Delimiter Number	5	▼

Apply

**General Settings**

Max Users (1-1000)	1000	
Deny MAC-Move	Disabled	▼
Authorization State	Enabled	▼

Apply

**User Information**

User Name	32 chars	VID (1-4094)	
Password Type	Plain Text	Password	32 chars

Apply

**Total Entries: 0**

User Name	Password	Password Type	VID
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# Método IV – AAA

## WEB UI

Network Access Authentication

- Guest VLAN
- Network Access Authentication Global**
- Network Access Authentication Port S
- Network Access Authentication Sessio

Safeguard Engine

- Trusted Host
- Traffic Segmentation Settings
- Storm Control Settings
- DoS Attack Prevention Settings

SSH

SSL

Network Protocol Port Protection Settings

Authorization State: Enabled

Apply

**User Information**

User Name: 60-63-4C-E0-C9-61

VID (1-4094): 1

Password Type: Plain Text

Password: [Redacted]

Apply

**Total Entries: 2**

User Name	Password	Password Type	VID	
60-63-4C-E0-C9-...	*****	Plaintext	1	Delete
60-63-4C-E0-CB-...	*****	Plaintext	1	Delete

# Método IV – AAA

## WEB UI

**MAC Authentication**

**MAC Authentication Global Settings**

MAC Authentication State  Enabled  Disabled  
MAC Authentication Trap State  Enabled  Disabled Apply

**MAC Authentication User Name and Password Settings**

User Name   Default Password   Encrypt  Default Apply

**MAC Authentication Port Settings**

From Port  To Port  State  Apply

Port	State
eth1/0/1	Disabled
eth1/0/2	Disabled

# Método IV – AAA

## WEB UI

The screenshot displays the 'MAC Authentication Port Settings' page in the D-Link Web UI. On the left, a sidebar lists various security features, with 'MAC Authentication' highlighted. The main configuration area contains three dropdown menus: 'From Port' (set to eth1/0/13), 'To Port' (set to eth1/0/13), and 'State' (set to Enabled). An 'Apply' button is located to the right of these settings. Below the configuration area is a table with two columns: 'Port' and 'State'.

Port	State
eth1/0/1	Disabled
eth1/0/2	Disabled
eth1/0/3	Disabled
eth1/0/4	Disabled
eth1/0/5	Disabled
eth1/0/6	Disabled
eth1/0/7	Disabled
eth1/0/8	Disabled
eth1/0/9	Disabled
eth1/0/10	Disabled
eth1/0/11	Disabled
eth1/0/12	Disabled
eth1/0/13	Enabled

# Método IV – AAA

## WEB UI

The screenshot displays the D-Link Web UI interface for configuring and monitoring Network Access Authentication Sessions. On the left is a navigation tree with categories like Management, L2/L3 Features, Security, and OAM. The main content area is titled "Network Access Authentication Sessions Information" and includes search filters for Port (eth1/0/1), MAC Address (00-84-57-00-00-00), and Protocol (MAC). Below the filters is a summary table for "Authentication Sessions Total" and a detailed table for "Authentication Sessions Information" showing one active session with details like MAC Address, VLAN, and state.

**Network Access Authentication Sessions Information**

Network Access Authentication Sessions Information

Port: eth1/0/1  
MAC Address: 00-84-57-00-00-00  
Protocol: MAC

Clear by Port Find  
Clear by MAC Find  
Clear by Protocol Find  
Clear All View All

**Authentication Sessions Total**

Total Authenticating Hosts	0
Total Authenticated Hosts	1
Total Blocked Hosts	0

**Authentication Sessions Information**

**Total Entries: 1**

Port	eth1/0/13
MAC Address	60-63-4C-E0-C9-61
Authentication VLAN	1
Authentication State	Success
Accounting Session ID	00010D1F9200
Assigned VLAN	1
Aging Time	3600 sec

**Methods State**

MAC-based Access Control	Success, Selected
--------------------------	-------------------

1/1 < < 1 > > Go

# MAC-based Access Control (AAA)

## D-Link Switches (Authentication Authorization Accounting)

DGS-1510



DGS-1520



DXS-1210-10TS

DXS-1210-12TC

DXS-1210-12SC

DXS-1210-16TC



DGS-3130



DGS-3630



DXS-3400



DXS-3610



# Programa de Canal VIP+

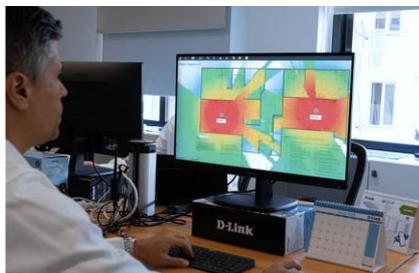


## ¿Aún no eres VIP+?

Nuestro Programa de Canal VIP+ es gratuito y aporta múltiples ventajas a resellers e instaladores profesionales:

- Equipo técnico y comercial local para asesoramiento desde D-Link
- Rebates, incentivos por ventas
- Formación y certificación online bajo demanda (D-Link Academy)
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