

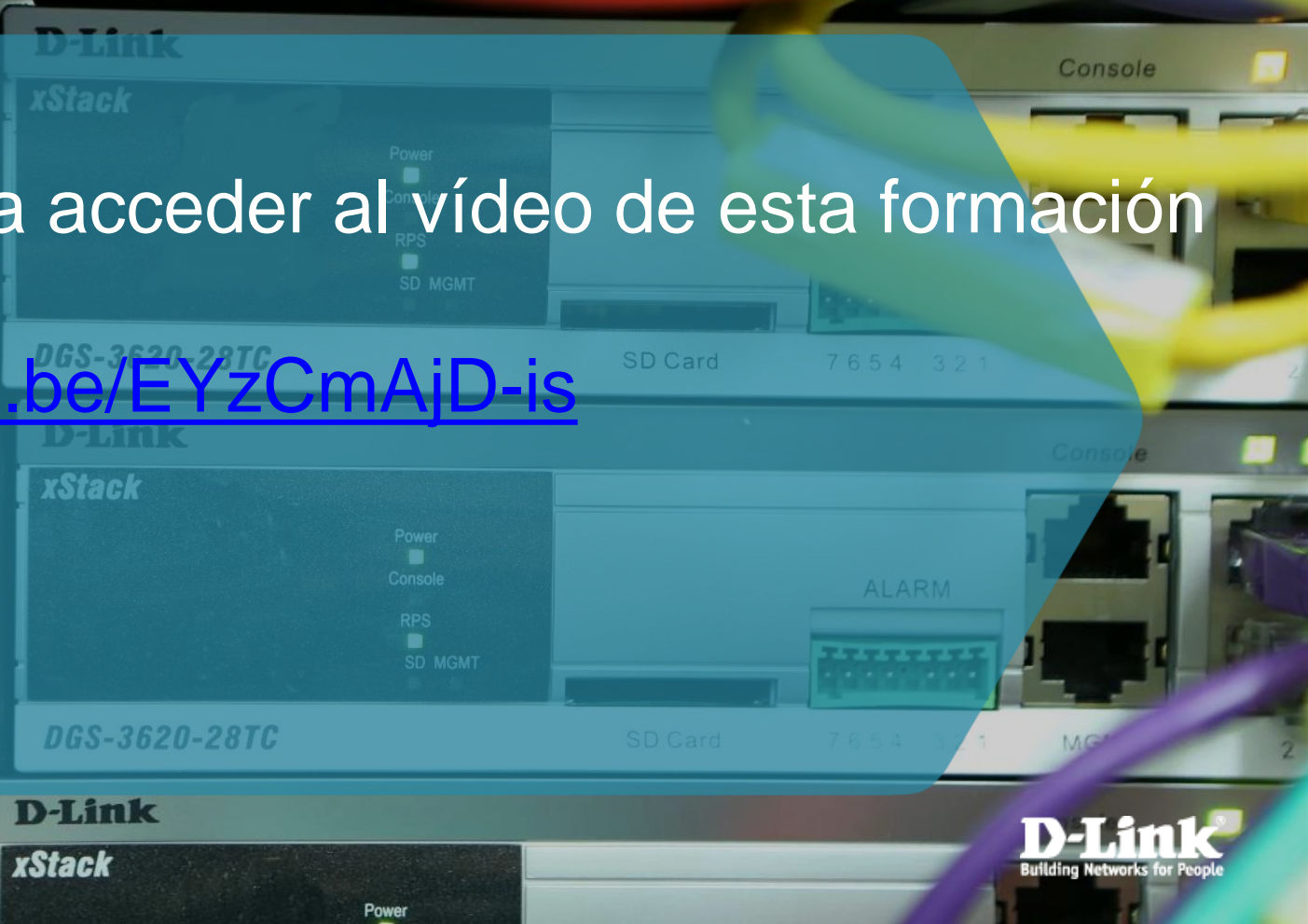


Seguridad de la Red
Casos prácticos aplicados a
Educación:
Guardería, Colegio y Universidad

D-Link
FOR BUSINESS

Haz clic para acceder al vídeo de esta formación

<https://youtu.be/EYzCmAjD-is>



Agenda

Video para seguir la formación

<https://youtu.be/EYzCmAjD-is>

Traffic Segmentation

VLANs

Asymmetric VLAN

Routing

Access Lists

Casos prácticos aplicados en tres escenarios diferentes del sector Educativo:

Guardería, Colegio, Universidad



Caso 1 – Guardería



- Fácil configuración
- Funciones L2
- PoE (cámaras, APs)
- Seguridad

DGS-1210



Gestión L2



Uplink Fibra



Garantía



PoE

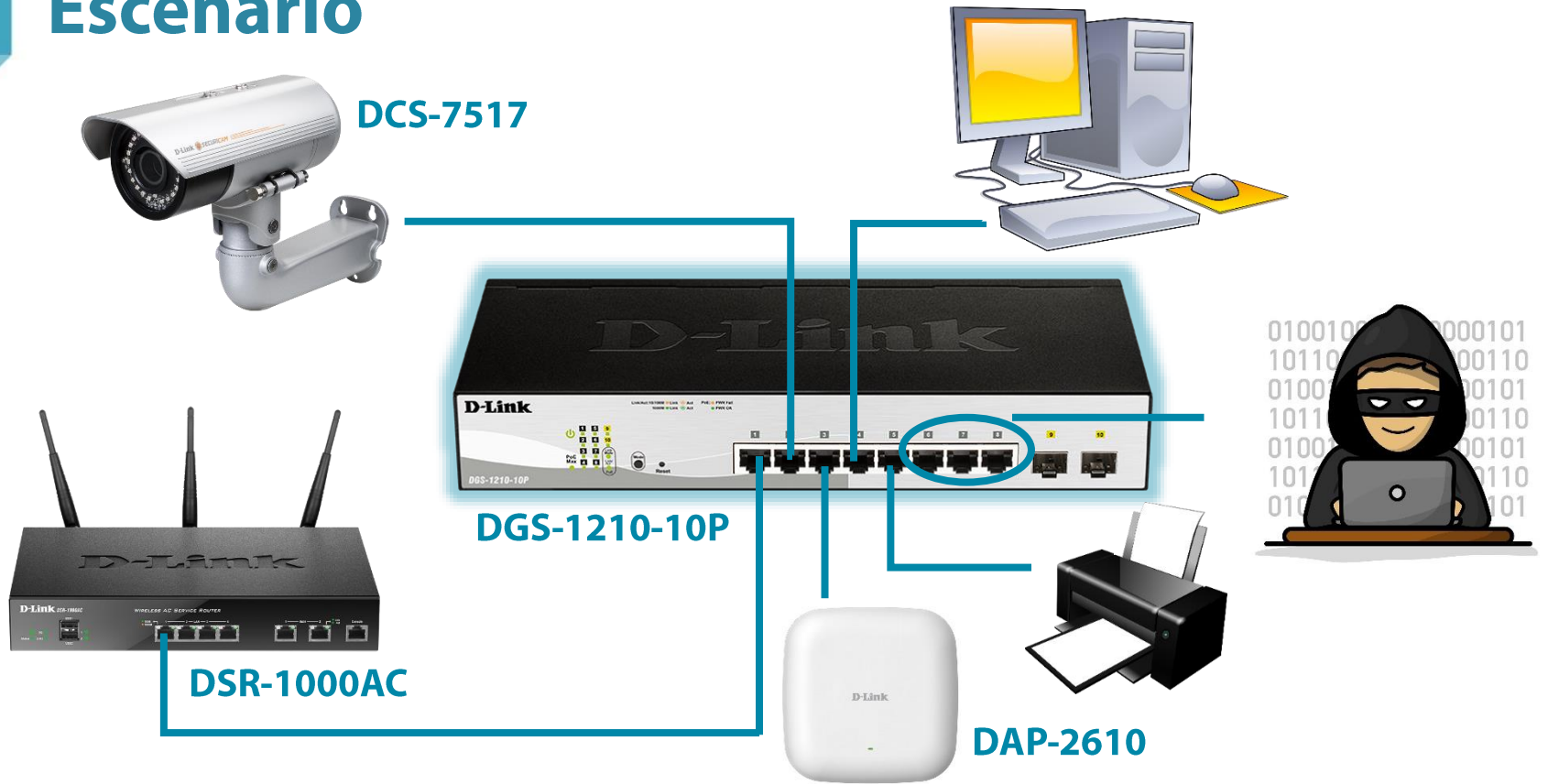


Funciones L3



Eficiencia Energética

Escenario

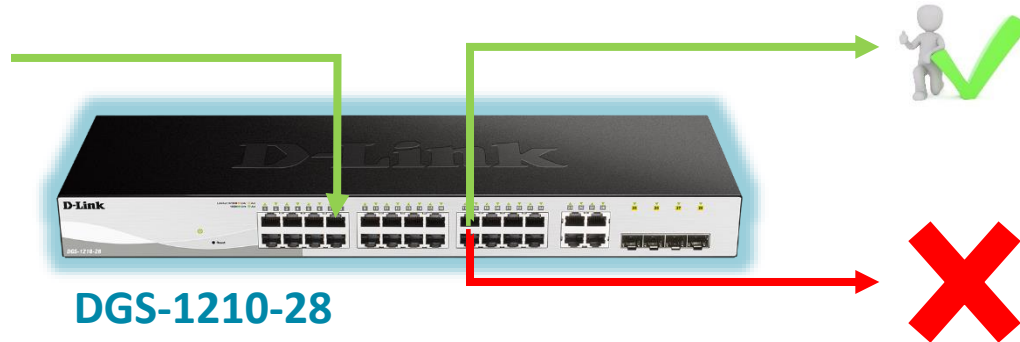
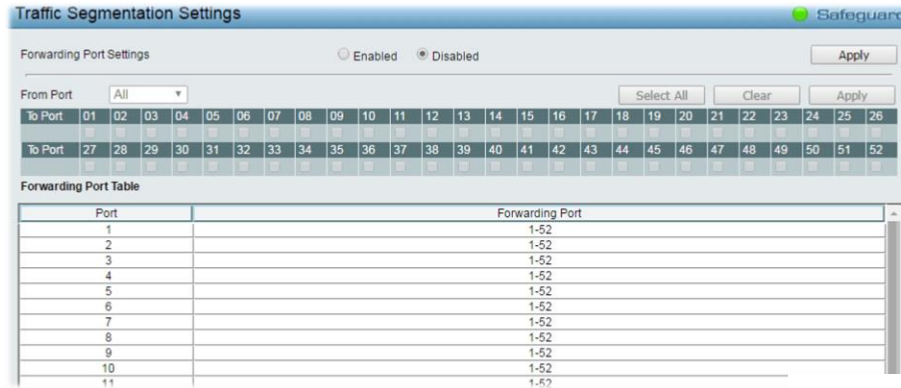


Traffic Segmentation

- Limitar tráfico

- Nivel 2

- Puertos



Traffic Segmentation (Web UI)

1 →

DGS-1210-10P

- System
- VLAN
- L2 Functions
- L3 Functions
- QoS
- Security**
 - Trusted Host
 - Port Security
 - Traffic Segmentation**
 - Safeguard Engine
 - Storm Control

2 →

Traffic Segmentation Settings Safeguard

Forwarding Port Settings Enabled Disabled

From Port All

| | | | | | |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| To Port | 01 | 02 | 03 | 04 | 05 |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To Port | 06 | 07 | 08 | 09 | 10 |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3 →

Traffic Segmentation Settings Safeguard

Forwarding Port Settings Enabled Disabled

From Port 1

| | | | | | |
|---------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| To Port | 01 | 02 | 03 | 04 | 05 |
| | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| To Port | 06 | 07 | 08 | 09 | 10 |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Forwarding Port Table

| Port | Forwarding Port |
|------|-----------------|
| 1 | 1-5 |
| 2 | 1-10 |
| 3 | 1-10 |
| 4 | 1-10 |
| 5 | 1-10 |
| 6 | 1-10 |
| 7 | 1-10 |

Loopback Detection

- Evitar bucles
- Alternativa a STP
- Port-based / Vlan-based



DGS-1210-10P



HUB

¡BUCLE!

Loopback Detection (Web UI)

1

DGS-1210-10P

- System
- VLAN
- L2 Functions
 - Jumbo Frame
 - Port Mirroring
 - Loopback Detection**
 - MAC Address Table
- Spanning Tree
- Link Aggregation

2

Loopback Detection Settings Safeguard

Loopback Detection Enabled Disabled

Mode VLAN List

Interval (1-32767) sec

Recover Time (0 or 60-1000000) sec

Apply

3

From Port To Port State Refresh Apply

| Port | State | Loop Status |
|------|---------|-------------|
| 01 | Enabled | Normal |
| 02 | Enabled | Normal |
| 03 | Enabled | Normal |
| 04 | Enabled | Normal |
| 05 | Enabled | Normal |
| 06 | Enabled | Normal |
| 07 | Enabled | Normal |
| 08 | Enabled | Normal |
| 09 | Enabled | Normal |
| 10 | Enabled | Normal |

D-Link Safeguard Engine

- Protección ante Ataques DoS
- Fijaremos un Umbral de CPU
- Al cesar el Ataque
vuelve al Modo Normal



D-Link Safeguard Engine (Web UI)

1

DGS-1210-10P

- System
- VLAN
- L2 Functions
- L3 Functions
- QoS
- Security**
 - Trusted Host
 - Port Security
 - Traffic Segmentation
 - Safeguard Engine**
 - Storm Control
 - ARP Spoofing Prevention
 - DHCP Server Screening
 - SSL/TLS
 - DoS Prevention Settings

2

Safeguard Engine Settings

Safeguard Engine State: Enabled Disabled Apply

D-Link Safeguard Engine is a robust and innovative technology developed by D-Link, which will automatically throttle the impact of packet flooding into the switch's CPU. It will keep D-Link Switches better protected from being too frequently interrupted by malicious viruses or worm attacks.

D-Link Green

- Ahorro de Consumo Eléctrico
- Power Saving
- IEEE 802.3az



D-Link Green (Web UI)

1

- System
 - System Settings
 - Password
 - Port Settings
 - Port Description
 - DHCP Auto Configuration
 - DHCP Relay
 - DHCP Local Relay Settings
 - DHCPv6 Relay Settings
 - System Log Configuration
 - Time Profile
 - Power Saving**
 - IEEE802.3az EEE settings
- D-Link Discover Protocol
- Firmware Information
- Configuration Information

2

Power Saving Settings Safeguard

Global Settings

Cable Length Detection/Link Status Detection Enabled Disabled

Advanced Power Saving Settings

Type State

Time Profile 1 Time Profile 2

| Port | 01 | 02 | 03 | 04 | 05 |
|------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Port | 6 | 7 | 8 | 9 | 10 |
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3

- System
 - System Settings
 - Password
 - Port Settings
 - Port Description
 - DHCP Auto Configuration
 - DHCP Relay
 - DHCP Local Relay Settings
 - DHCPv6 Relay Settings
 - System Log Configuration
 - Time Profile
 - Power Saving
 - IEEE802.3az EEE settings**
- D-Link Discover Protocol
- Firmware Information
- Configuration Information
- VLAN
- L2 Functions
- L3 Functions

4

IEEE802.3az EEE settings Safeguard

From Port To Port State

IEEE802.3az EEE settings

| Port | State |
|------|----------|
| 1 | Enabled |
| 2 | Enabled |
| 3 | Enabled |
| 4 | Enabled |
| 5 | Enabled |
| 6 | Enabled |
| 7 | Enabled |
| 8 | Enabled |
| 9 | Disabled |
| 10 | Disabled |

Caso 2 – Colegio



- Más Velocidad
- CLI completa
- PoE (cámaras, APs)
- Redundancia

DGS-1250



- Puertos 10 GbE



- Interfaces de Administración



- Gestión Layer 2

- Gestión Layer 3 Lite



- Power over Ethernet



- Seguridad Empresarial



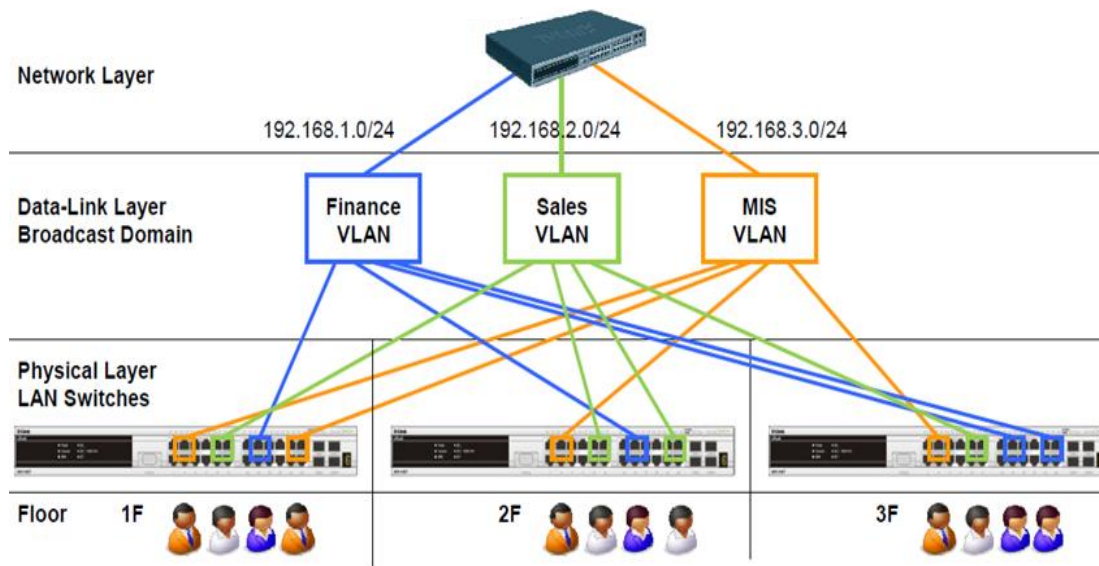
- QoS y modo videovigilancia IP

- Garantía Limitada de por Vida



VLANs

- Divide y Vencerás
- Segmentación Lógica
- Diferentes Perfiles
- Políticas de Seguridad



VLANs (Web UI)

1

2

3

Fuzzy Search

- DGS-1250-28X
 - System
 - Management
 - L2 Features
 - 802.1Q VLAN
 - L3 Features

802.1Q VLAN

802.1Q VLAN

VID List:

Find VLAN

VID (1-4094):

Total Entries: 4

| VID | VLAN Name | Description | Tagged Member Ports | Untagged Member Ports | VLAN Type | | |
|-----|-----------|-------------|---------------------|-----------------------|-----------|-------------------------------------|---------------------------------------|
| 1 | default | | | 1/0/1-1/0/28 | | <input type="button" value="Edit"/> | <input type="button" value="Delete"/> |
| 2 | VLAN0002 | | | | | <input type="button" value="Edit"/> | <input type="button" value="Delete"/> |
| 3 | VLAN0003 | | | | | <input type="button" value="Edit"/> | <input type="button" value="Delete"/> |
| 4 | VLAN0004 | | | | | <input type="button" value="Edit"/> | <input type="button" value="Delete"/> |

1/1 | < < 1 > > | Go

VLANs (Web UI)

1

Fuzzy Search

- DGS-1250-28X
 - System
 - Management
 - L2 Features
 - VLAN**
 - VLAN Configuration Wizard
 - 802.1Q VLAN
 - VLAN Interface**
 - Asymmetric VLAN
 - L2 VLAN Interface Description
 - Auto Surveillance VLAN
 - Voice VLAN
 - STP
 - Loopback Detection
 - Link Aggregation
 - L2 Multicast Control
 - LLDP
 - L3 Features

2

VLAN Interface

VLAN Interface Settings | Port Summary

| Port | VLAN Mode | Ingress Checking | Acceptable Frame Type | Show Detail | Edit |
|-----------|-----------|------------------|-----------------------|-------------|------|
| eth1/0/1 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/2 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/3 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/4 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/5 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/6 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/7 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/8 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/9 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/10 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/11 | Hybrid | Enabled | Admit-All | Show Detail | Edit |
| eth1/0/12 | Hybrid | Enabled | Admit-All | Show Detail | Edit |

VLANs (Web UI)

Configure VLAN Interface

Port: eth1/0/2

VLAN Mode: **Access**

Acceptable Frame: Untagged Only

Ingress Checking: Enabled Disabled

VID (1-4094): 2

Clone

From Port: eth1/0/1

To Port: eth1/0/1

Configure VLAN Interface

Port: eth1/0/7

VLAN Mode: **Trunk**

Acceptable Frame: Admit All

Ingress Checking: Enabled Disabled

Native VLAN: Native VLAN Untagged Tagged

VID (1-4094): 1

Action: None

Allowed VLAN Range: [Empty]

Current Allowed VLAN Range: [Empty]

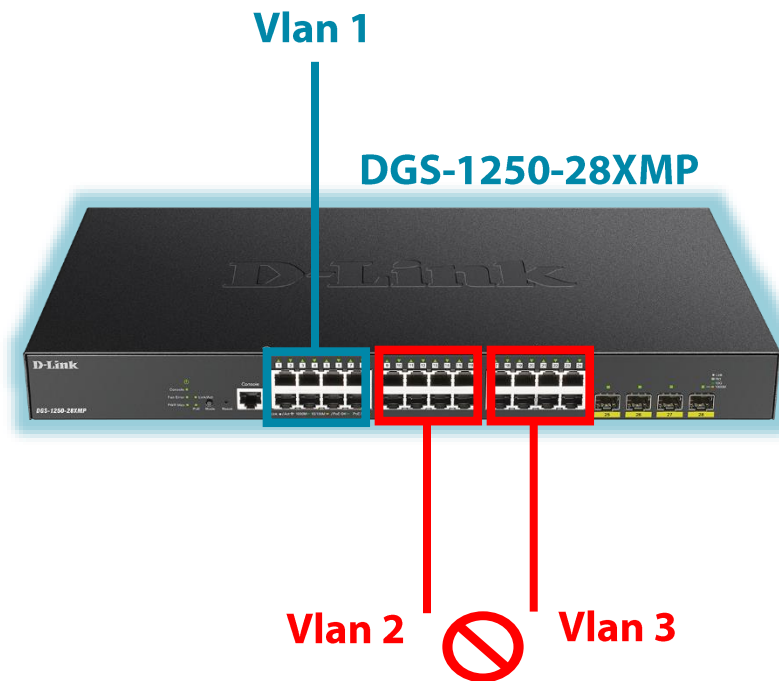
Clone

From Port: eth1/0/7

To Port: eth1/0/10

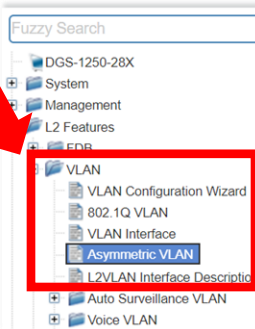
Asymmetric VLAN

- Acceso a Recursos Compartidos
- Tráfico Selectivo entre VLANs
- Sin necesidad de Características L3

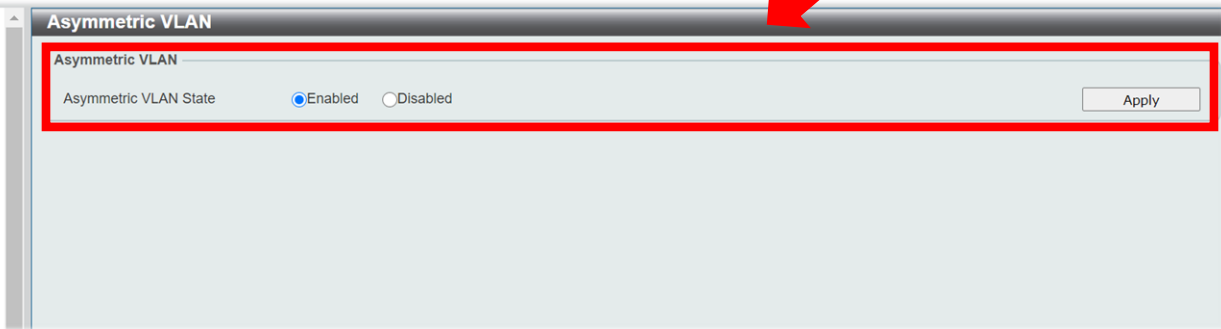


Asymmetric Vlan (Web UI)

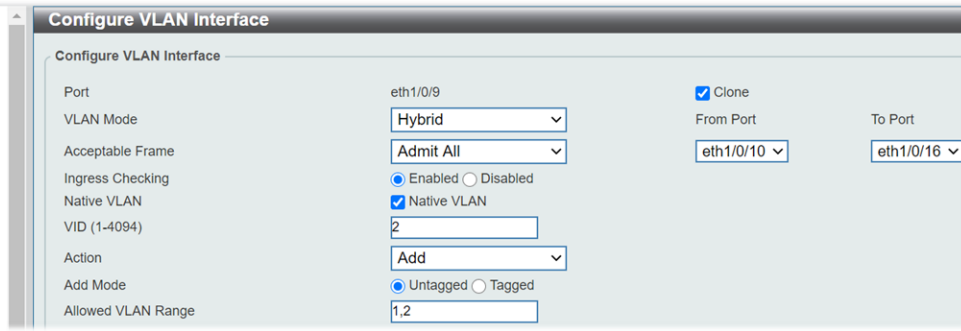
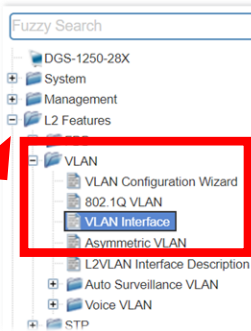
1



2



3

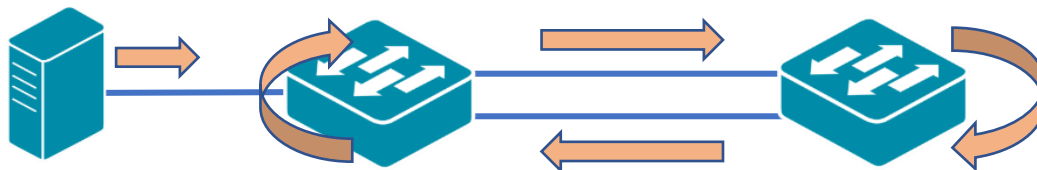


Spanning-Tree

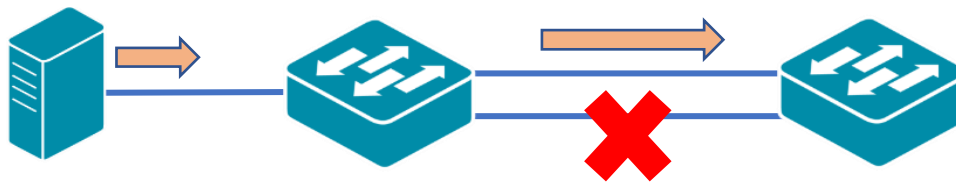
- Añadimos Switches
- Redundancia Física
- Evitar Bucles



Sin STP activo >> **BUCLE**



Con STP activo



Spanning-Tree (Web UI)

1 →

2 →

3 →

STP Port Settings

From Port: eth1/0/7 To Port: eth1/0/8

Cost (1-200000000, 0=Auto): 0 State: Enabled

Link Type: Auto Guard Root: Disabled

BPDU Forward: Disabled Priority: 128 TCN Filter: Disabled

Hello Time (1-2): []

Apply

| Port | State | Cost | Guard Root | Link Type | Port Fast | TCN Filter | BPDU Forward | Priority |
|----------|----------|----------|------------|-----------|---------------|------------|--------------|----------|
| eth1/0/1 | Disabled | 0/200000 | Disabled | Auto/P2P | Auto/Non-Edge | Disabled | Disabled | 128 |

4 →

5 →

STP Global Settings

STP State: Disabled Enabled

Apply

STP Traps

STP New Root Trap: Disabled Enabled

STP Topology Change Trap: Disabled Enabled

Apply

STP Mode

STP Mode: RSTP

Apply

STP Priority

Priority (0-61440): 32768

Apply

Caso 3 – Universidad



- Equipos Versátiles
- Funciones L3
- Seguridad
- Posibilidad de Stacking



DGS-1510



- Puertos SFP+ 10 G



- Stacking Físico



- Full CLI

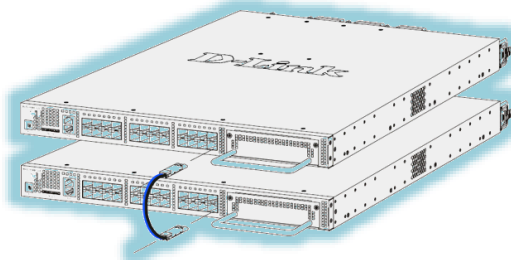


- Static Routing



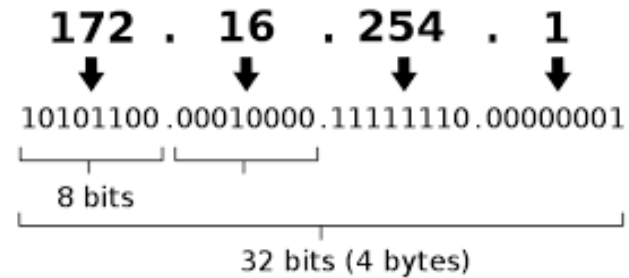
- Garantía Limitada de por Vida

- Smart+/Managed



Interfaces IP

- L2 – Direcciones MAC
- L3 – Direcciones IP
- Privadas / Públicas
- IPv4 / IPv6



Interfaces IP (Web UI)

1 → Fuzzy Search

2 → 802.1Q VLAN configuration

3 → L3 Features

4 → IPv4 Interface configuration

5 → Edit button in IPv4 Interface table

802.1Q VLAN Configuration:

VID List: [Apply] [Delete]

Find VLAN: VID (1-4094) [Find] [View All]

Total Entries: 3

| VID | VLAN Name | Description | Tagged Member Ports | Untagged Member Ports | VLAN Type | | |
|-----|-----------|-------------|---------------------|-----------------------|-----------|--------|----------|
| 1 | default | | | 1/0/1-1/0/20 | | [Edit] | [Delete] |
| 2 | VLAN0002 | | | | | [Edit] | [Delete] |
| 3 | VLAN0003 | | | | | [Edit] | [Delete] |

IPv4 Interface Configuration:

Interface VLAN (1-4094) [Apply] [Find]

Total Entries: 3

| Interface | State | IP Address | Secondary | Link Status | | |
|-----------|---------|----------------------------------|-----------|-------------|--------|----------|
| vian1 | Enabled | 10.90.90.91/255.255.255.0 Manual | No | Up | [Edit] | [Delete] |
| vian2 | Enabled | -/- | No | Down | [Edit] | [Delete] |
| vian3 | Enabled | -/- | No | Down | [Edit] | [Delete] |

Interfaces IP (Web UI)

Fuzzy Search

- DGS-1510-20
- System
- Management
- L2 Features
- L3 Features
 - ARP
 - Gratuitous ARP
 - UDP Helper
 - IPv4 Interface**
 - IPv4 Static/Default Route
 - IPv4 Route Table
 - IPv6 Interface
 - IPv6 Neighbor
 - IPv6 Static/Default Route
 - IPv6 Route Table
- IPMC
- QoS

IPv4 Interface Configure

IPv4 Interface Settings
DHCP Client

Interface: vlan2 Back

Settings

State: Enabled Apply

Description:

Primary IP Settings

Get IP From: Static

IP Address:

Mask: Apply Delete

2

Fuzzy Search

- DGS-1510-20
- System
- Management
- L2 Features
- L3 Features
 - ARP
 - Gratuitous ARP
 - UDP Helper
 - IPv4 Interface
 - IPv4 Static/Default Route
 - IPv4 Route Table**
 - IPv6 Interface
 - IPv6 Neighbor
 - IPv6 Static/Default Route
 - IPv6 Route Table
- IPMC

IPv4 Route Table

IPv4 Route Table

IP Address
 Network Address
 Connected
 Hardware
 Summary
 Find

Total Entries: 3

| IP Address | Mask | Gateway | Interface Name | Cost | Protocol |
|-------------|---------------|--------------------|----------------|------|----------|
| 10.90.90.0 | 255.255.255.0 | Directly Connected | vlan1 | | C |
| 192.168.2.0 | 255.255.255.0 | Directly Connected | vlan2 | | C |
| 192.168.3.0 | 255.255.255.0 | Directly Connected | vlan3 | | C |

1/1 < < 1 > > Go

Note: C - Connected, S - Static, * - Candidate Default

Routing

- Rutas Locales
- Rutas Estáticas
- Rutas por Defecto
- Rutas Dinámicas



Routing (Web UI)

1

Fuzzy Search

- DGS-1510-20
 - System
 - Management
 - L2 Features
 - L3 Features
 - ARP
 - Gratuitous ARP
 - UDP Helper
 - IPv4 Interface
 - IPv4 Static/Default Route**
 - IPv4 Route Table
 - IPv6 Interface

IPv4 Static/Default Route

IPv4 Static/Default Route

IP Address: 192 · 168 · 4 · 0 Mask: 255 · 255 · 255 · 0 Default Route

Gateway: 192 · 168 · 3 · 2

Backup State: Please Select

Apply

Total Entries: 1

| IP Address | Mask | Gateway | Interface Name | |
|-------------|---------------|-------------|----------------|--------|
| 192.168.4.0 | 255.255.255.0 | 192.168.3.2 | | Delete |

1/1 << 1 >> Go

2

3

Fuzzy Search

- DGS-1510-20
 - System
 - Management
 - L2 Features
 - L3 Features
 - ARP
 - Gratuitous ARP
 - UDP Helper
 - IPv4 Interface
 - IPv4 Static/Default Route**
 - IPv4 Route Table
 - IPv6 Interface
 - IPv6 Neighbor
 - IPv6 Static/Default Route

IPv4 Static/Default Route

IPv4 Static/Default Route

IP Address: . . . Mask: . . . Default Route

Gateway: 192 · 168 · 2 · 2

Backup State: Please Select

Apply

Total Entries: 2


| IP Address | Mask | Gateway | Interface Name | |
|-------------|---------------|-------------|----------------|--------|
| 0.0.0.0 | 0.0.0.0 | 192.168.2.2 | | Delete |
| 192.168.4.0 | 255.255.255.0 | 192.168.3.2 | | Delete |

1/1 << 1 >> Go

Routing (Web UI)

Fuzzy Search

- System
- Management
- L2 Features
- L3 Features**
 - ARP
 - Gratuitous ARP
 - UDP Helper
 - IPv4 Interface
 - IPv4 Static/Default Route
 - IPv4 Route Table**
 - IP Static
 - IPv6 Neighbor
 - IPv6 Static/Default Route
 - IPv6 Route Table
- IPMC
- QoS



IPv4 Route Table

IPv4 Route Table

IP Address
 Network Address
 Connected Hardware Summary

Find

Total Entries: 5

| IP Address | Mask | Gateway | Interface Name | Cost | Protocol |
|-------------|---------------|--------------------|----------------|------|----------|
| 0.0.0.0 | 0.0.0.0 | 192.168.3.2 | vlan3 | 1/1 | S* |
| 192.168.4.0 | 255.255.255.0 | 192.168.2.2 | vlan2 | 60/1 | S |
| 10.90.90.0 | 255.255.255.0 | Directly Connected | vlan1 | | C |
| 192.168.2.0 | 255.255.255.0 | Directly Connected | vlan2 | | C |
| 192.168.3.0 | 255.255.255.0 | Directly Connected | vlan3 | | C |

1/1 < < 1 > > Go

Access Lists

- Reglas para dejar
Entrar / Salir
- Ejecución Secuencial
de Reglas
- ACL por Puerto



Access Lists (Web UI)

ACL Access List

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 |
|---|----------|----------|--------------------|---------|---------------|--------|
| <input type="button" value="Clear All Counter"/> <input type="button" value="Clear Counter"/> <input type="button" value="Add Rule"/> | | | | | | |
| Sequence No. | Action | Rule | Time Range | Counter | | |

Add ACL Access List

Add ACL Access List

ACL Type:

ID (1-1999):

ACL Name:

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

Access Lists (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
 - Security
 - OAM

1

ACL Access List

ACL Access List

ACL Type: All | ID (1-14999) | ACL Name: 32 chars | Find

Total Entries: 1 | Add ACL

| ACL ID | ACL Name | ACL Type | Start Sequence No. | Step | Counter State | Remark | |
|--------|----------|-----------------|--------------------|------|---------------|--------|-------------|
| 1 | FILTRO1 | Standard IP ACL | 10 | 10 | Disabled | | Edit Delete |

1/1 | Clear All Counter | Clear Counter | **Add Rule**

2

FILTRO1 (ID: 1) Rule

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

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
 - Security
 - OAM
 - Monitoring
 - Green

Add ACL Rule

Add ACL Rule

ID: 1 | ACL Name: FILTRO1

Sequence No. (1-65535): 10 (If it isn't specified, the system automatically assigns.)

Action: Permit Deny

Match IP Address:

Source: Any Host IP

Destination: Any Host IP

Source IP: 192.168.2.0 | Wildcard: 255.255.255.0

Destination IP: 192.168.3.0 | Wildcard: 255.255.255.0

Time Range: 32 chars

Back | Apply

3

Access Lists (Web UI)

1

2

Fuzzy Search

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

ACL Interface Access Group

ACL Interface Access Group

| From Port | To Port | Direction | Action | Type | ACL Name | |
|-----------|----------|-----------|--------|--------|----------|---------------|
| eth1/0/2 | eth1/0/2 | In | Add | IP ACL | FILTRO1 | Please Select |

Apply

| Port | In | | | |
|----------|-----------------|----------|---------|------------|
| | IP ACL | IPv6 ACL | MAC ACL | Expert ACL |
| eth1/0/1 | | | | |
| eth1/0/2 | FILTRO1 (ID: 1) | | | |
| eth1/0/3 | | | | |



**¡Muchas Gracias!
Muito Obrigado!**

D-Link[®]
ACADEMY