

# Voice VLAN Configuration Guide for environment with DES-3528/52 DGS-3100 DGS-1210

2010/12/03



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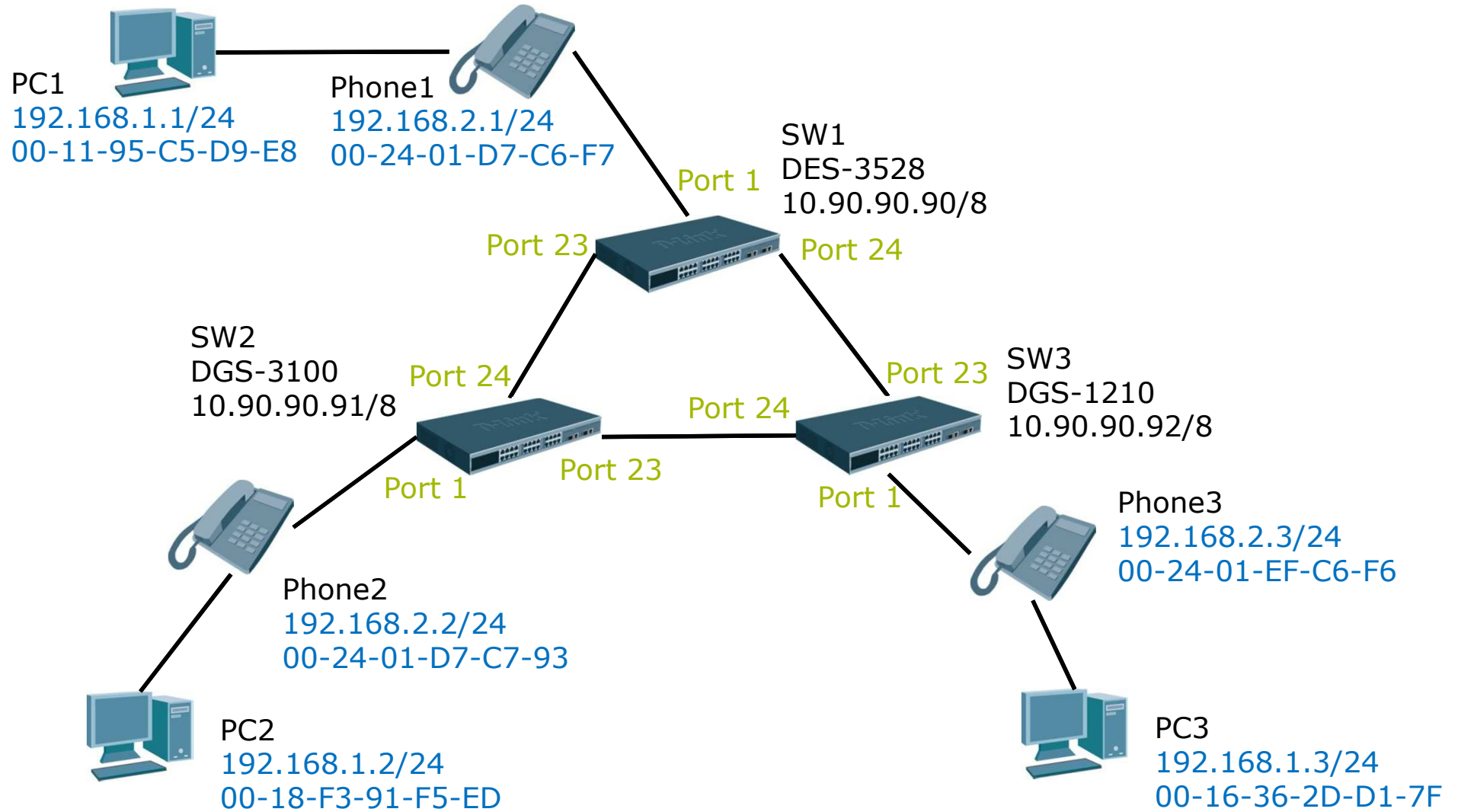
1. Abstract
2. Topology
3. Configuration using CLI
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5. Result

# Abstract

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- › Data and voice run in separate VLANs.
- › To use Voice VLAN, we need to create a regular VLAN first, and assign it as the Voice VLAN.
- › A user can choose either CLI or WebUI to make configurations and achieve the same goal on DES-3528 (sw1) and DGS-3100 (sw2).
- › A user can only use WebUI to make configurations on DGS-1210 (sw3).
- › In this guide, the VLAN for data is named **Data** and with tag **10**; the VLAN for voice is named **Voice** and with tag **20**.
- › Phone1 has to be configured **without** VLAN tag, whereas Phone2 and Phone3 have to be configured **with** VLAN tag **20**.
- › In the example topology, STP has to be enabled to prevent loop.

# Topology



# Configuration using CLI

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## 1. SW1 DES-3528

# VLAN

config vlan default delete 1

create vlan Data tag 10

create vlan Voice tag 20

config vlan Data add tagged 24

config vlan Data add untagged 1

config vlan Voice add tagged 24

# STP

enable stp

# VOICEVLAN

enable voice\_vlan Voice

config voice\_vlan ports 1 state enable

config voice\_vlan oui add 00-24-01-00-00-00 FF-FF-FF-00-00-00 description  
D-Link

config voice\_vlan priority 6

# Configuration using CLI

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## 2. SW2 DGS-3100

# VLAN

```
config vlan default delete 1
create vlan Data tag 10
create vlan Voice tag 20
config vlan Data add tagged 24
config vlan Data add untagged 1
config vlan Voice add tagged 24
```

# STP

```
enable stp
```

# VOICEVLAN

```
enable voice_vlan Voice
config voice_vlan ports 1 state enable
config voice_vlan oui add 00-24-01-00-00-00 FF-FF-FF-00-00-00 description
    D-Link
config voice_vlan priority 6
```

# Configuration using WebUI

## 1. SW1

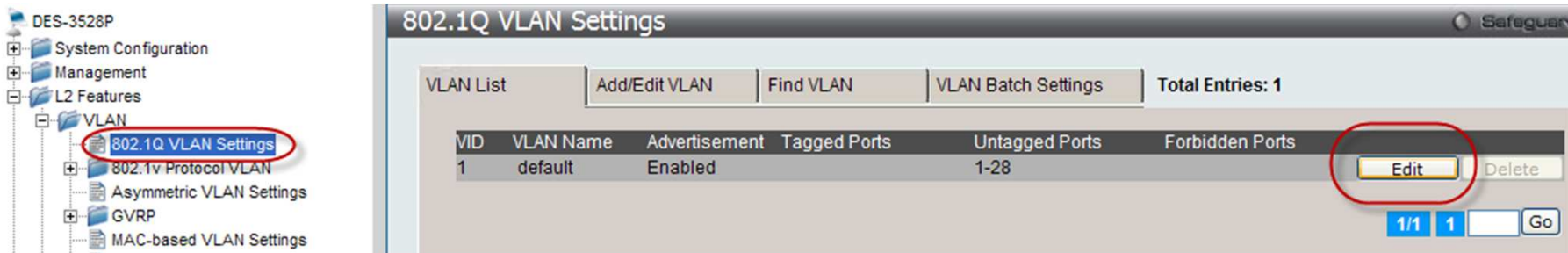
- 1) Use a PC that is **NOT** plugged in port 1 to browse <http://10.90.90.90/>.
- 2) From the left panel, click "L2 Features -> Spanning Tree -> STP Bridge Global Settings". Check "Enabled" and click "Apply".

The screenshot displays the D-Link WebUI configuration interface for a switch (DES-3528P). The left sidebar shows a tree view of configuration categories, with 'Spanning Tree' expanded and 'STP Bridge Global Settings' selected. The main panel shows the 'STP Bridge Global Settings' configuration page. The 'STP State' is set to 'Enabled' (radio button selected), and the 'Apply' button is highlighted. Other settings include STP Version (RSTP), Forwarding BPDU (Disabled), Bridge Max Age (20 sec), Bridge Hello Time (2 sec), Bridge Forward Delay (15 sec), TX Hold Count (6 times), Max Hops (20 times), and NNI BPDU Address (Dot1d).

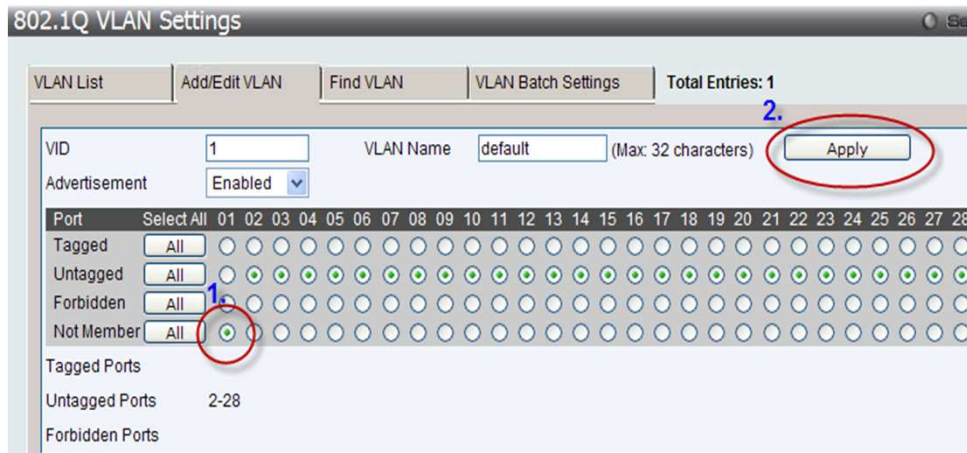
| Setting                     | Value    |
|-----------------------------|----------|
| STP State                   | Enabled  |
| STP Version                 | RSTP     |
| Forwarding BPDU             | Disabled |
| Bridge Max Age (6-40)       | 20 sec   |
| Bridge Hello Time (1-2)     | 2 sec    |
| Bridge Forward Delay (4-30) | 15 sec   |
| TX Hold Count (1-10)        | 6 times  |
| Max Hops (6-40)             | 20 times |
| NNI BPDU Address            | Dot1d    |

# Configuration using WebUI

- 3) From the left panel, click "L2 Features -> VLAN -> 802.1Q VLAN Settings", then click "Edit" in the main panel.



- 4) Check "Not Member" on port 1 and click "Apply".





# Configuration using WebUI

5) Click tab "Add/Edit VLAN", configure as below, and click "Apply".

VLAN List | **Add/Edit VLAN** | Find VLAN | VLAN Batch Settings | Total Entries: 1

VID:  VLAN Name:  (Max: 32 characters)

Advertisement:

| Port       | Select All                         | 01                               | 02                               | 03                               | 04                               | 05                               | 06                               | 07                               | 08                               | 09                               | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24                               | 25                               | 26                               | 27                               | 28 |
|------------|------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----|
| Tagged     | <input type="button" value="All"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Untagged   | <input type="button" value="All"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Forbidden  | <input type="button" value="All"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Not Member | <input type="button" value="All"/> | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |    |

Tagged Ports: 23-24  
Untagged Ports: 1  
Forbidden Ports:

# Configuration using WebUI

- 6) Repeat 4), but with the following configuration. Note this VLAN, named "Voice", will be assigned as the voice VLAN in the next step.

The screenshot shows the 'Add/Edit VLAN' configuration page in the D-Link WebUI. The 'VID' field is set to 20, and the 'VLAN Name' field is set to 'Voice'. The 'Advertisement' dropdown is set to 'Disabled'. The 'Port' configuration table shows ports 23 and 24 selected for tagging. The 'Tagged Ports' summary shows '23-24'.

| Port       | Select All | 01                               | 02                               | 03                               | 04                               | 05                               | 06                               | 07                               | 08                               | 09                               | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24                               | 25                               | 26 |
|------------|------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----|
| Tagged     | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            |    |
| Untagged   | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Forbidden  | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Not Member | All        | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |    |

Tagged Ports: 23-24

Untagged Ports:

Forbidden Ports:

# Configuration using WebUI

- 7) From Left Panel, go to "L2 Features -> VLAN -> Voice VLAN -> Voice VLAN Global Settings". In the main panel, configure as below and press "Apply" respectively.

DES-3528P

- System Configuration
- Management
- L2 Features
  - VLAN
    - 802.1Q VLAN Settings
    - 802.1v Protocol VLAN
    - Asymmetric VLAN Settings
    - GVRP
    - MAC-based VLAN Settings
    - PVID Auto Assign Settings
    - Subnet VLAN
    - VLAN Counter Settings
    - Voice VLAN
      - Voice VLAN Global Settings**

**Voice VLAN Global Settings**

Voice VLAN State:  Enabled  Disabled

Voice VLAN Name:

Voice VID (1-4094):

Priority:

Aging Time (1-65535):  min

Log State:

Apply

Apply

# Configuration using WebUI

8) Go to "Voice VLAN Port Settings" and configure as below. Click "Apply".

The screenshot displays the 'Voice VLAN Port Settings' configuration page in the D-Link WebUI. On the left, a navigation tree shows the path: L2 Features > VLAN > Voice VLAN > Voice VLAN Port Settings. The main configuration area has four dropdown menus: 'From Port' (01), 'To Port' (01), 'State' (Enabled), and 'Mode' (Auto). An 'Apply' button is located to the right of these settings. Below the configuration fields is a table with three columns: 'Port', 'State', and 'Mode'. The table lists ports 1 through 8, all of which are currently 'Disabled' with an 'Auto' mode.

| Port | State    | Mode |
|------|----------|------|
| 1    | Disabled | Auto |
| 2    | Disabled | Auto |
| 3    | Disabled | Auto |
| 4    | Disabled | Auto |
| 5    | Disabled | Auto |
| 6    | Disabled | Auto |
| 7    | Disabled | Auto |
| 8    | Disabled | Auto |

# Configuration using WebUI

9) Go to "Voice VLAN OUI Settings" and configure as below. Click "Apply".

The screenshot displays the "Voice VLAN OUI Settings" configuration page. The left sidebar shows a tree view with "Voice VLAN OUI Settings" selected. The main content area features a table with the following data:

| OUI Address       | Mask              | Description |      |        |
|-------------------|-------------------|-------------|------|--------|
| 002401000000      | ffffff000000      | D-Link      |      |        |
| 00-01-E3-00-00-00 |                   |             |      |        |
| 00-03-6B-00-00-00 | FF-FF-FF-00-00-00 | Siemens     | Edit | Delete |
| 00-09-6E-00-00-00 | FF-FF-FF-00-00-00 | Cisco       | Edit | Delete |
| 00-0F-E2-00-00-00 | FF-FF-FF-00-00-00 | Avaya       | Edit | Delete |
| 00-60-B9-00-00-00 | FF-FF-FF-00-00-00 | Huawei&3COM | Edit | Delete |
| 00-60-B9-00-00-00 | FF-FF-FF-00-00-00 | NEC&Philips | Edit | Delete |
| 00-D0-1F-00-00-00 | FF-FF-FF-00-00-00 | Pingtel     | Edit | Delete |

Callout boxes highlight the configuration for the first row: OUI Address is 002401000000, Mask is FFFFFFFF000000, and Description is D-Link. The "Apply" button is located to the right of the first row.

# Configuration using WebUI

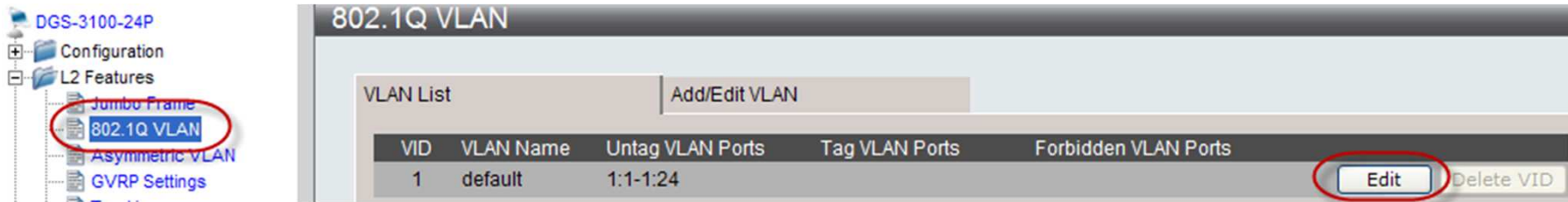
## 2. SW2 DGS-3100

- 1) Use a PC that is **NOT** plugged in port 1 to browse <http://10.90.90.91/>.
- 2) From the left panel, click "L2 Features -> Spanning Tree -> STP Bridge Global Settings". Check "Enabled" and "RSTP". Click "Apply" respectively.

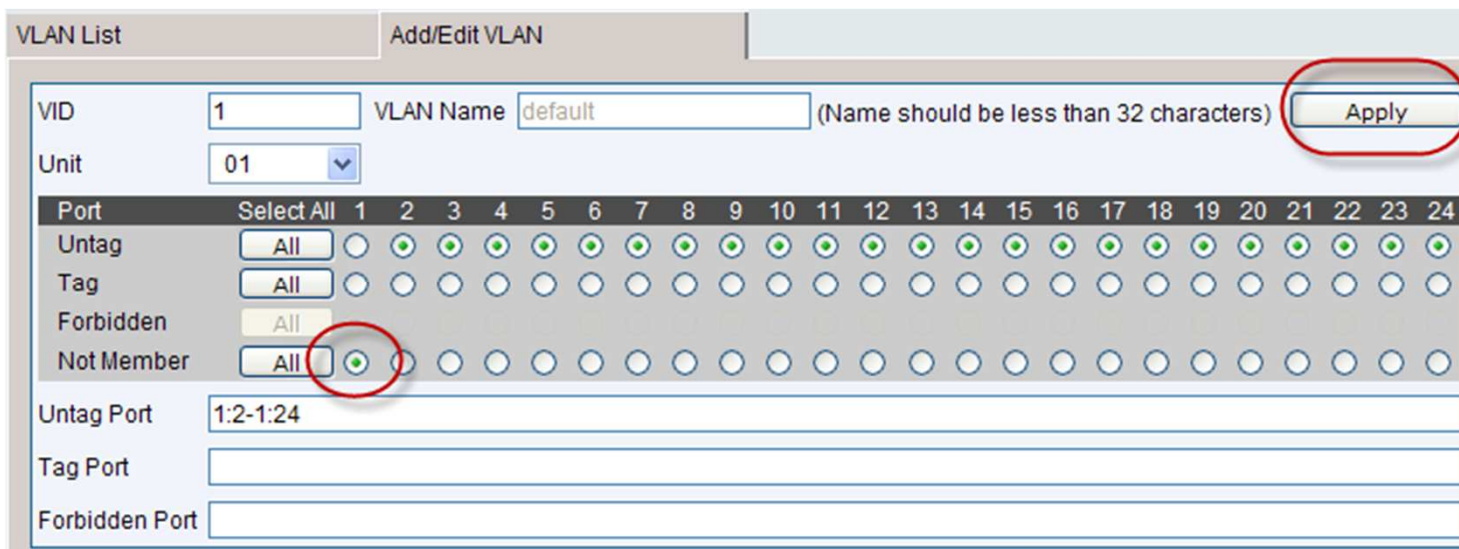


# Configuration using WebUI

- 3) From the left panel, click "L2 Features -> 802.1Q VLAN Settings", then click "Edit" in the main panel.



- 4) Check "Not Member" on port 1 and click "Apply".



# Configuration using WebUI

5) Click tab "Add/Edit VLAN", configure as below, and click "Apply".

VLAN List **Add/Edit VLAN**

VID:  VLAN Name:  (Name should be less than 32 characters)

Unit:

| Port       | Select All                         | 1                                | 2                                | 3                                | 4                                | 5                                | 6                                | 7                                | 8                                | 9                                | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24                    |
|------------|------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| Untag      | <input type="button" value="All"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/> |
| Tag        | <input type="button" value="All"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Forbidden  | <input type="button" value="All"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/> |
| Not Member | <input type="button" value="All"/> | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> |

Untag Port:

Tag Port:

Forbidden Port:



# Configuration using WebUI

- 6) Repeat 4), but with the following configuration. Note this VLAN, named "Voice", will be assigned as the voice VLAN in the next step.

VLAN List Add/Edit VLAN

VID: 20 VLAN Name: Voice (Name should be less than 32 characters) Apply

Unit: 01

| Port       | Select All | 1                                | 2                                | 3                                | 4                                | 5                                | 6                                | 7                                | 8                                | 9                                | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24                    |
|------------|------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| Untag      | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/> |
| Tag        | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |
| Forbidden  | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/> |
| Not Member | All        | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/> |

Untag Port:

Tag Port: 1:23, 1:24

Forbidden Port:

# Configuration using WebUI

- 7) From Left Panel, go to "L2 Features -> Voice VLAN -> Global Settings". In the main panel, configure as below and press "Apply" respectively.

The screenshot shows the D-Link WebUI configuration interface for a DGS-3100-24P switch. The left sidebar shows the navigation tree with 'Voice VLAN' expanded and 'Global Setting' selected. The main panel displays the 'Global Setting' configuration page. The 'Voice VLAN Setting' section has 'Create' selected. The 'VID' is set to 20 and the 'VLAN Name' is 'Voice'. The '802.1p Priority' is set to 6, and 'Remark 802.1p Priority' is set to 'Disable'. The 'Voice VLAN Aging Time' is set to 1 Day, 0 Hour, and 0 Min. Two 'Apply' buttons are visible, one for the 'Voice VLAN Setting' and one for the 'Voice VLAN Aging Time'.

| Field                  | Value                                |
|------------------------|--------------------------------------|
| VID                    | 20                                   |
| VLAN Name              | Voice                                |
| 802.1p Priority        | 6                                    |
| Remark 802.1p Priority | Disable                              |
| Voice VLAN Aging Time  | 1 Day 0 Hour 0 Min (1 Min - 30 Days) |

# Configuration using WebUI

8) Go to "Port Setting" and configure as below. Click "Apply".

The screenshot shows the 'Port Setting' configuration page in the D-Link WebUI. The left sidebar contains a tree view with 'Port Setting' highlighted. The main area shows configuration fields for Unit (01), From Port (01), To Port (01), Mode (Auto), and Security (Disabled), all circled in red. Below is a table of port settings.

| Port | Mode     | Security | Membership |
|------|----------|----------|------------|
| 1:1  | Disabled | Disabled | *          |
| 1:2  | Disabled | Disabled | *          |
| 1:3  | Disabled | Disabled | *          |
| 1:4  | Disabled | Disabled | *          |
| 1:5  | Disabled | Disabled | *          |
| 1:6  | Disabled | Disabled | *          |
| 1:7  | Disabled | Disabled | *          |
| 1:8  | Disabled | Disabled | *          |
| 1:9  | Disabled | Disabled | *          |
| 1:10 | Disabled | Disabled | *          |

# Configuration using WebUI

9) Go to "OUI" and configure as below. Click "Apply".

The screenshot displays the 'OUI Setting' configuration page in the D-Link WebUI. On the left, a navigation tree shows 'OUI' selected under 'Port Setting'. The main content area includes an 'Add OUI Entry' form where the OUI is set to '00-24-01' (3 highest Octets) and the Description is 'D-Link'. Below this is a table of existing OUI entries. Callouts highlight the OUI '002401' and the description 'D-Link' in the table.

| OUI      | Description            | Action |
|----------|------------------------|--------|
| 002401   | siemens_phone_____     | Delete |
| 002401   | Cisco_phone_____       | Delete |
| 00:08:00 | Avaya_phone_____       | Delete |
| 00:0f:e2 | Huawei-3COM_phone_____ | Delete |
| 00:60:b9 | nec-philips_phone_____ | Delete |
| 00:d0:1e | pingtel_phone_____     | Delete |
| 00:e0:75 | veritel_phone_____     | Delete |
| 00:e0:bb | 3Com_phone_____        | Delete |

# Configuration using WebUI

## 3. SW3 DGS-1210

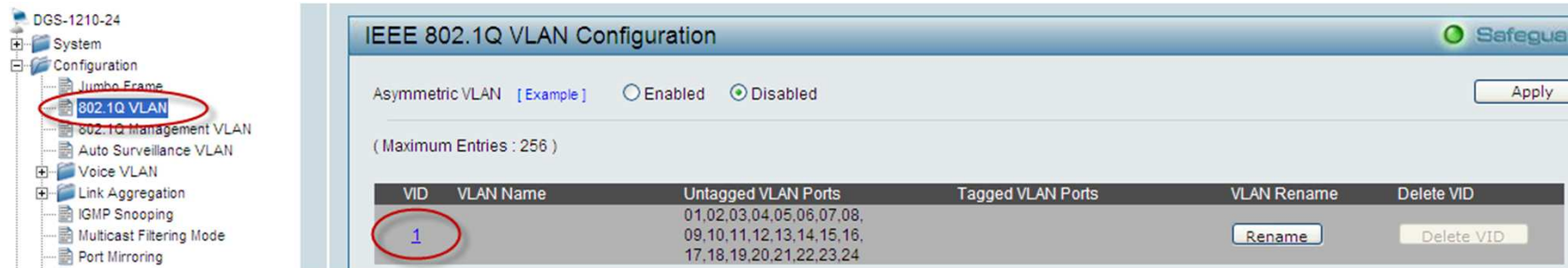
- 1) Use a PC that is **NOT** plugged in port 1 to browse <http://10.90.90.92/>.
- 2) From the left panel, click "Configuration -> Spanning Tree -> STP Global Settings". Check "Enabled" and "RSTP". Click "Apply" respectively.

The screenshot displays the WebUI configuration page for STP Global Settings on a DGS-1210-24 switch. The left sidebar shows the navigation tree with 'STP Global Settings' highlighted. The main panel shows the configuration for STP Global Settings, with 'RSTP Status' set to 'Enabled' and 'STP Version' set to 'RSTP'.

| Parameter                 | Value   | Parameter          | Value                |
|---------------------------|---------|--------------------|----------------------|
| RSTP Status               | Enabled | Root Bridge        | 00:00:00:00:00:00:00 |
| STP Version               | RSTP    | Root Cost          | 0                    |
| Bridge Priority           | 32768   | Root Maximum Age   | 20                   |
| Tx Hold Count (1-10)      | 6       | Root Forward Delay | 15                   |
| Maximum Age (6-40 secs)   | 20      | Root Port          | 0                    |
| Hello Time (1-10 secs)    | 2       |                    |                      |
| Forward Delay (4-30 secs) | 15      |                    |                      |

# Configuration using WebUI

- 3) From the left panel, click "Configuration -> 802.1Q VLAN", then click "1" under VID in the main panel.



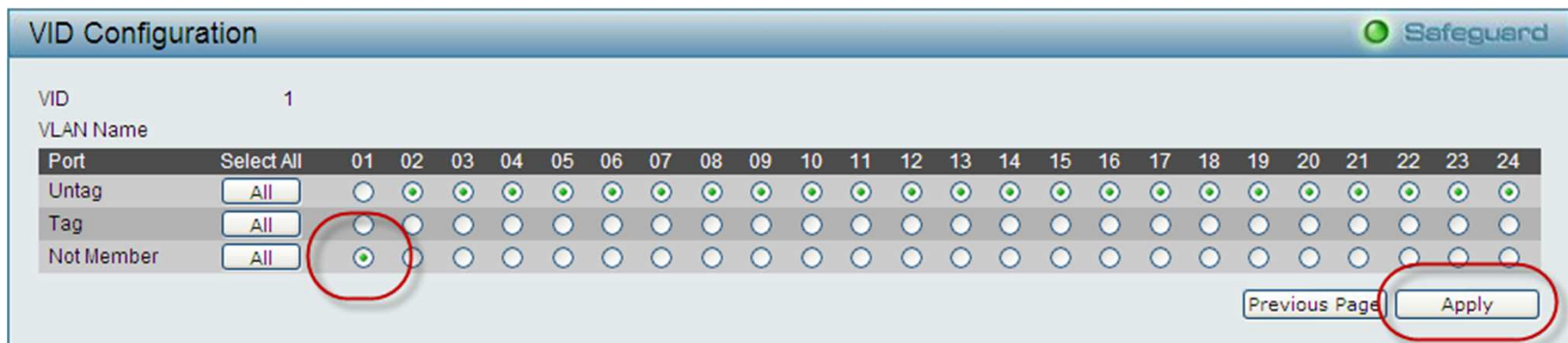
IEEE 802.1Q VLAN Configuration

Asymmetric VLAN [Example]  Enabled  Disabled Apply

(Maximum Entries : 256)

| VID | VLAN Name | Untagged VLAN Ports   | Tagged VLAN Ports | VLAN Rename         | Delete VID              |
|-----|-----------|---|-------------------|---------------------|-------------------------|
| 1   |           | 01,02,03,04,05,06,07,08,<br>09,10,11,12,13,14,15,16,<br>17,18,19,20,21,22,23,24 |                   | <span>Rename</span> | <span>Delete VID</span> |

- 4) Check "Not Member" on port 1 and click "Apply".



VID Configuration

VID 1

VLAN Name

| Port       | Select All       | 01                               | 02                               | 03                               | 04                               | 05                               | 06                               | 07                               | 08                               | 09                               | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24 |
|------------|------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----|
| Untag      | <span>All</span> | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |    |
| Tag        | <span>All</span> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |
| Not Member | <span>All</span> | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            |    |

Previous Page Apply

# Configuration using WebUI

5) Click "Add VID" below.

IEEE 802.1Q VLAN Configuration Safeguard

Asymmetric VLAN [Example]  Enabled  Disabled Apply

( Maximum Entries : 256 )

| VID | VLAN Name | Untagged VLAN Ports  | Tagged VLAN Ports | VLAN Rename                           | Delete VID                                |
|-----|-----------|--|-------------------|---------------------------------------|---|
| 1   |           | 02,03,04,05,06,07,08,09,<br>10,11,12,13,14,15,16,17,<br>18,19,20,21,22,23,24 |                   | <input type="button" value="Rename"/> | <input type="button" value="Delete VID"/> |

6) Configure as below and click "Apply".

VID

VLAN Name  (Name should be less than 20 characters)

| Port       | Select All                         | 01                                  | 02                                  | 03                                  | 04                                  | 05                                  | 06                                  | 07                                  | 08                                  | 09                                  | 10                                  | 11                                  | 12                                  | 13                                  | 14                                  | 15                                  | 16                                  | 17                                  | 18                                  | 19                                  | 20                                  | 21                                  | 22                                  | 23                                  | 24                       |
|------------|------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Untagged   | <input type="button" value="All"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> |
| Tagged     | <input type="button" value="All"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                          |
| Not Member | <input type="button" value="All"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                          |

# Configuration using WebUI

7) Repeat 4) and 5), but with the following configuration. Note this VLAN, named "Voice", will be assigned as the voice VLAN in the next step.

VID: 20

VLAN Name: Voice (Name should be less than 20 characters)

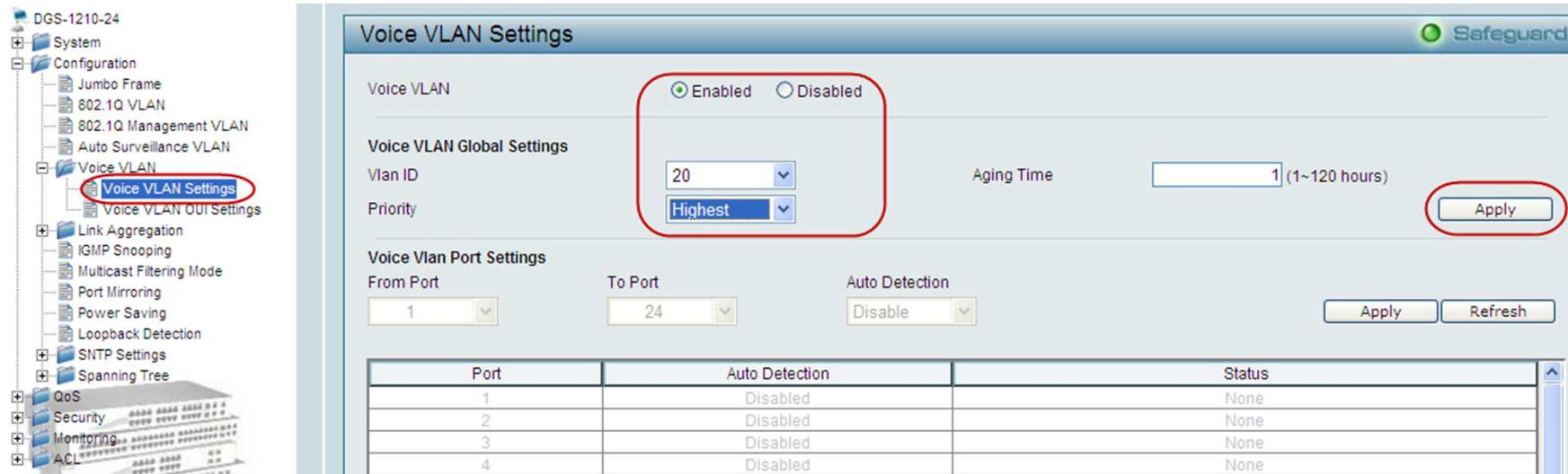
| Port       | Select All | 01                               | 02                               | 03                               | 04                               | 05                               | 06                               | 07                               | 08                               | 09                               | 10                               | 11                               | 12                               | 13                               | 14                               | 15                               | 16                               | 17                               | 18                               | 19                               | 20                               | 21                               | 22                               | 23                               | 24                    |
|------------|------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| Untagged   | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/> |
| Tagged     | All        | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                       |
| Not Member | All        | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                       |

Buttons: Cancel, Apply



# Configuration using WebUI

- 8) From Left Panel, go to "Configuration -> Voice VLAN -> Voice VLAN Settings". In the main panel, configure as below and press "Apply" respectively. Note that Priority set to "Highest" will configure CoS to "6".



The screenshot displays the 'Voice VLAN Settings' page in the D-Link WebUI. The left sidebar shows the navigation tree with 'Voice VLAN Settings' highlighted. The main panel shows the configuration for Voice VLAN, including global settings and port settings. A table at the bottom shows the status of ports 1 through 4.

**Voice VLAN Settings**

Voice VLAN:  Enabled  Disabled

Voice VLAN Global Settings

Vlan ID: 20 Aging Time: 1 (1~120 hours)

Priority: Highest

Voice Vlan Port Settings

From Port: 1 To Port: 24 Auto Detection: Disable

| Port | Auto Detection | Status |
|------|----------------|--------|
| 1    | Disable        | None   |
| 2    | Disable        | None   |
| 3    | Disable        | None   |
| 4    | Disable        | None   |

# Configuration using WebUI

9) Continue to configure as below and Click "Apply".

**Voice VLAN Settings** Safeguard

Voice VLAN  Enabled  Disabled

---

**Voice VLAN Global Settings**

Vlan ID: 20 Aging Time: 1 (1~120 hours)  
Priority: Highest Apply

---

**Voice Vlan Port Settings**

From Port: 1 To Port: 1 Auto Detection: Enable Apply Refresh

| Port | Auto Detection | Status |
|------|----------------|--------|
| 1    | Disabled       | None   |
| 2    | Disabled       | None   |
| 3    | Disabled       | None   |

# Configuration using WebUI

10) Go to "Voice VLAN OUI Settings" and configure as below. Click "Add".

The screenshot displays the 'Voice VLAN OUI Settings' page in the D-Link WebUI. The left sidebar shows the navigation tree with 'Voice VLAN OUI Settings' selected. The main content area has two radio buttons: 'Default OUI' (unselected) and 'User defined OUI' (selected). Under 'User defined OUI', there are two input fields: 'Description' (set to 'D-Link') and 'Telephony OUI' (set to '00-24-01-00-00-00'). Below these fields is a table with columns for 'ID', 'Description', 'Telephony OUI', and 'Delete'. The table contains one entry with 'D-Link' in the Description column and '00-24-01-00-00-00' in the Telephony OUI column. An 'Add' button is located to the right of the table.

| ID | Description | Telephony OUI     | Delete |
|----|-------------|-------------------|--------|
|    | D-Link      | 00-24-01-00-00-00 |        |

# Result

- › From Phone1, a user can make a phone call by dialling Phone2's or Phone3's IPs, and vice versa.
- › Meanwhile, PC1, PC2 and PC3 can ping each other.
- › In the captured packets, we can see the packets have 802.1q tags and CoS as expected.

The image shows a network traffic capture with two main sections. The top section is a list of captured packets, and the bottom section is a detailed view of a specific packet.

| No. | Time     | Source      | Destination | Protocol | Details                             |
|-----|----------|-------------|-------------|----------|-------------------------------------|
| 7   | 18:30:44 | 192.168.2.2 | 192.168.2.1 | SIP/SDP  | Request: INVITE sip:192.168.2.1     |
| 8   | 18:30:44 | 192.168.2.1 | 192.168.2.2 | SIP      | Status: 100 Trying                  |
| 9   | 18:30:44 | 192.168.2.1 | 192.168.2.2 | SIP      | Status: 180 Ringing                 |
| 10  | 18:30:44 | 192.168.2.2 | 192.168.2.1 | SIP      | Request: PRACK sip:1003@192.168.2.1 |
| 11  | 18:30:44 | 192.168.2.1 | 192.168.2.2 | SIP      | Status: 200 OK                      |
| 12  | 18:30:44 | 192.168.1.1 | 192.168.1.2 | ICMP     | Echo (ping) request                 |
| 13  | 18:30:44 | 192.168.1.2 | 192.168.1.1 | ICMP     | Echo (ping) reply                   |
| 14  | 18:30:44 | 192.168.1.1 | 192.168.1.2 | ICMP     | Echo (ping) request                 |
| 15  | 18:30:44 | 192.168.1.2 | 192.168.1.1 | ICMP     | Echo (ping) reply                   |
| 16  | 18:30:46 | 192.168.1.1 | 192.168.1.2 | ICMP     | Echo (ping) request                 |

|   |
|---|
| ⊕ Frame 7 (962 bytes on wire, 962 bytes captured)   |
| ⊕ Ethernet II, Src: D-Link_d7:c7:93 (00:24:01:d7:c7:93), Dst: D-Link_d7:c6:f7 (00:24:01:d7:c6:f7) |
| ⊕ 802.1Q Virtual LAN, PRI: 6, CFI: 0, ID: 20  |
| ⊕ Internet Protocol, Src: 192.168.2.2 (192.168.2.2), Dst: 192.168.2.1 (192.168.2.1)               |
| ⊕ User Datagram Protocol, Src Port: sip (5060), Dst Port: sip (5060)                              |
| ⊕ Session Initiation Protocol   |

Annotations: A blue callout box labeled "Voice" points to the SIP packets (7-11). A blue callout box labeled "Data" points to the ICMP packets (12-16). A blue callout box labeled "802.1Q Tag" points to the "802.1Q Virtual LAN, PRI: 6, CFI: 0, ID: 20" entry in the packet details.

# Result

---

- › Although we only added port 24 as a tagged member into VLAN **Voice**, the switch will automatically add **port 1** as an **untagged** member because it is where the phone is connected.

```
DES-3528P:admin#show vlan voice
Command: show vlan voice
```

```
VID                : 20                VLAN Name         : voice
VLAN Type          : voice VLAN        Advertisement    : Disabled
Member Ports      : 1, 23-24
Static Ports      : 23-24
Current Tagged Ports : 23-24
Current Untagged Ports : 1
Static Tagged Ports : 23-24
Static Untagged Ports :
Forbidden Ports    :
```

```
Total Entries: 1
```

# Result

- › The two PCs fall in VLAN **Data**, and the two phones fall in VLAN **Voice**.

```
DES-3528P:admin#show fdb  
Command: show fdb
```

```
Unicast MAC Address Aging Time = 300
```

| VID | VLAN Name | MAC Address       | Port | Type    | Status  |
|-----|-----------|-------------------|------|---------|---------|
| 1   | default   | 00-11-22-33-44-6C | 23   | Dynamic | Forward |
| 1   | default   | 00-80-C8-AE-12-80 | CPU  | Self    | Forward |
| 10  | Data      | 00-11-95-C5-D9-E8 | 1    | Dynamic | Forward |
| 10  | Data      | 00-16-36-2D-D1-7F | 23   | Dynamic | Forward |
| 10  | Data      | 00-18-F3-91-F5-ED | 23   | Dynamic | Forward |
| 20  | Voice     | 00-24-01-D7-C6-F7 | 1    | Dynamic | Forward |
| 20  | Voice     | 00-24-01-D7-C7-93 | 23   | Dynamic | Forward |
| 20  | Voice     | 00-24-01-EF-C6-F6 | 23   | Dynamic | Forward |

```
Total Entries: 8
```