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

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D-Link®
Building Networks for People

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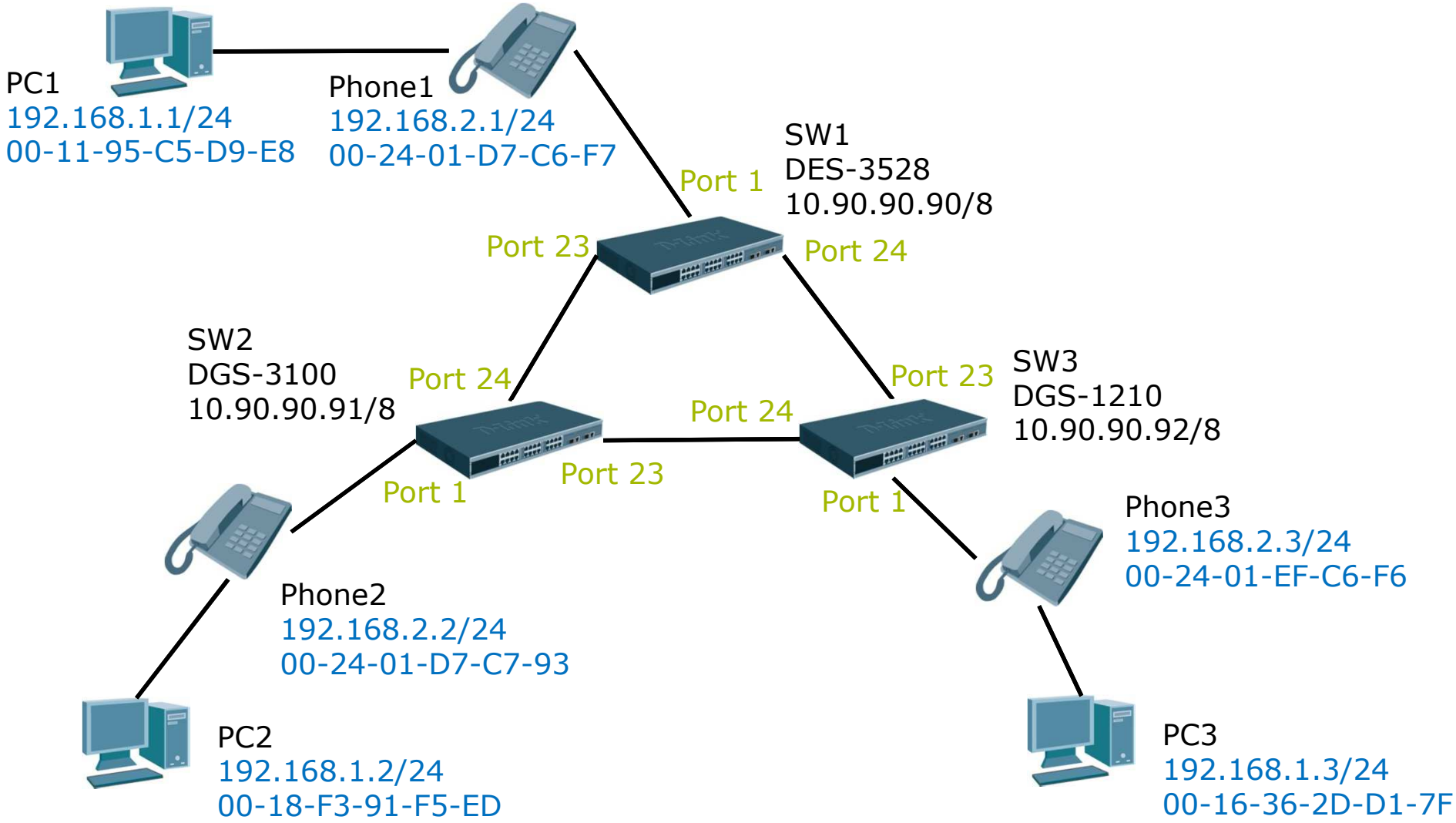
Abstract

- 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


PC1
192.168.1.1/24
00-11-95-C5-D9-E8
Phone1
192.168.2.1/24
00-24-01-D7-C6-F7
SW1
DES-3528
10.90.90.90/8
Port 1
Port 23
Port 24
SW2
DGS-3100
10.90.90.91/8
Port 24
Port 1
Port 23
Port 24
Port 23
Port 1
SW3
DGS-1210
10.90.90.92/8
Phone2
192.168.2.2/24
00-24-01-D7-C7-93
Phone3
192.168.2.3/24
00-24-01-EF-C6-F6
PC2
192.168.1.2/24
00-18-F3-91-F5-ED
PC3
192.168.1.3/24
00-16-36-2D-D1-7F

Configuration using CLI

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

2. SW2 DGS-3100

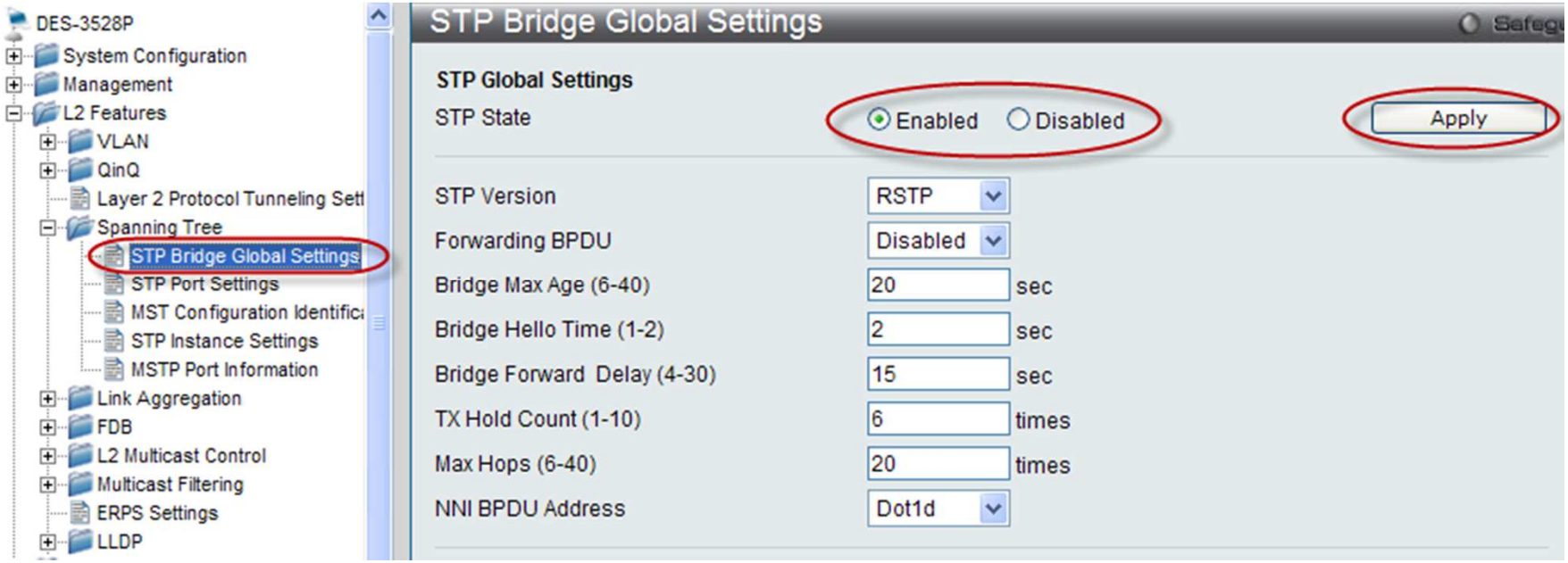
```
# VLAN
config vlan default delete 1
create vlan Data tag 10
create vlan Voice tag 20
config vlan Data add tagged 24
config vlan Data add untagged 1
config vlan Voice add tagged 24

# 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
```

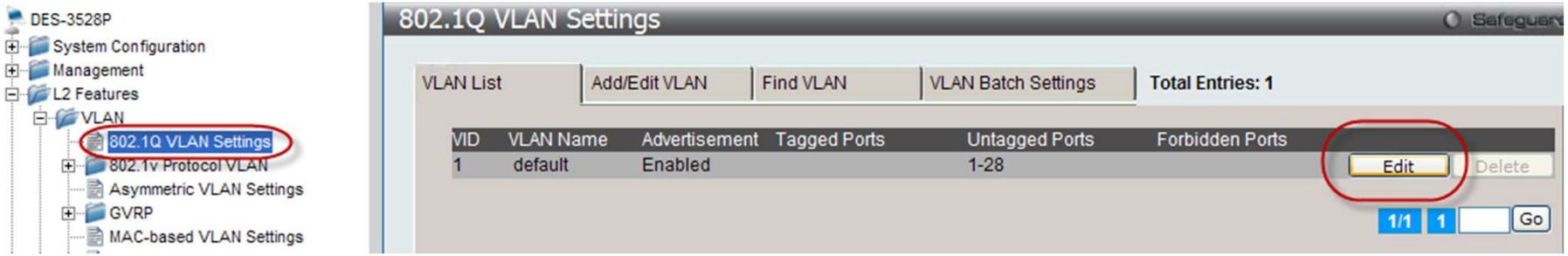
Configuration using WebUI

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".

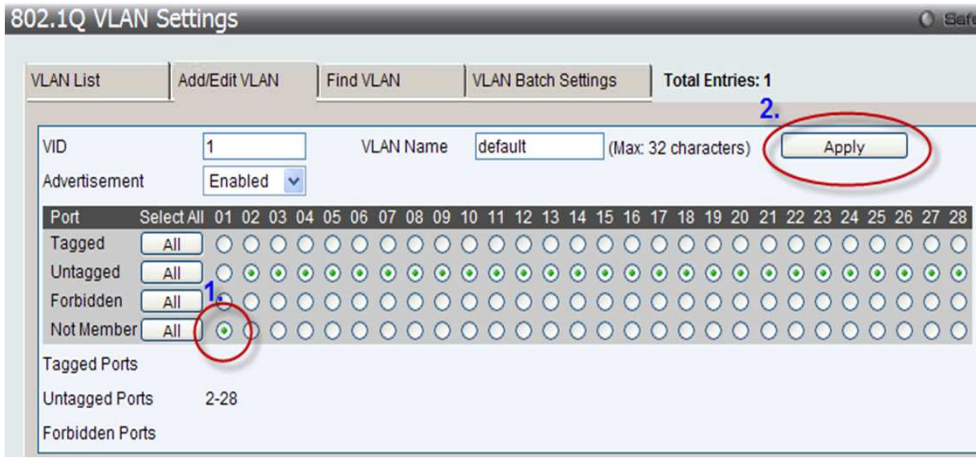


Configuration using WebUI

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

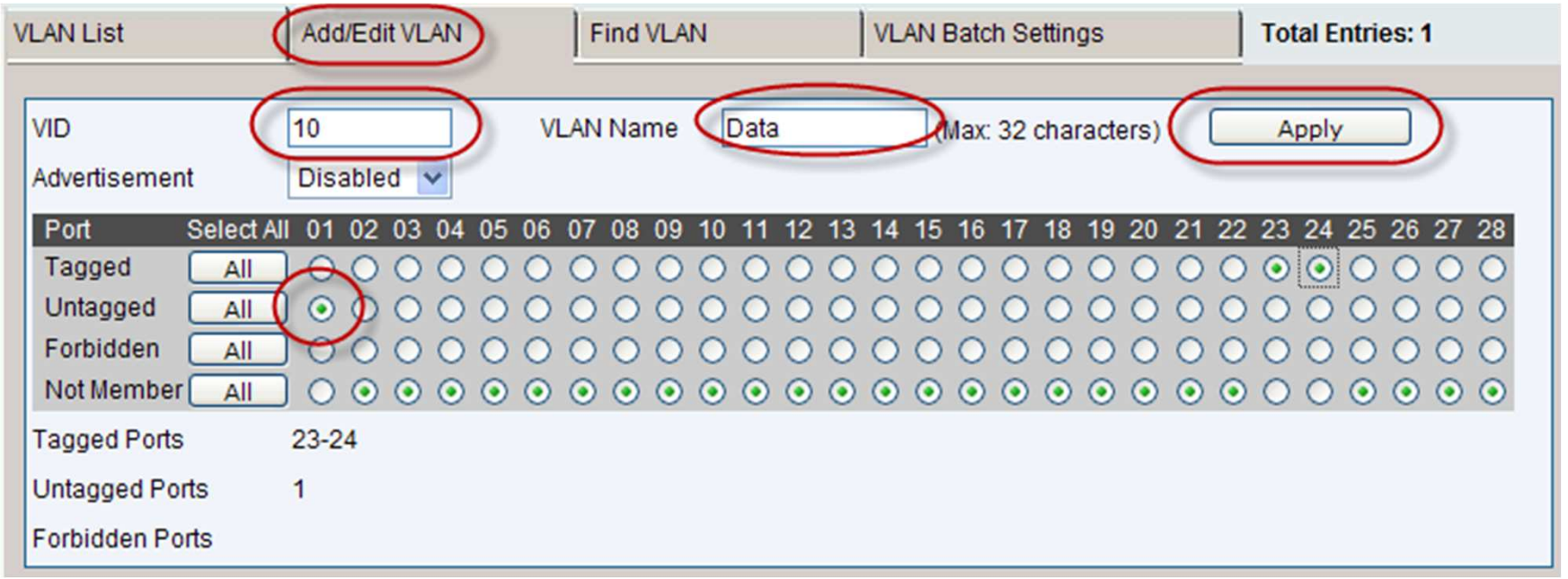


4) Check "Not Member" on port 1 and click "Apply".



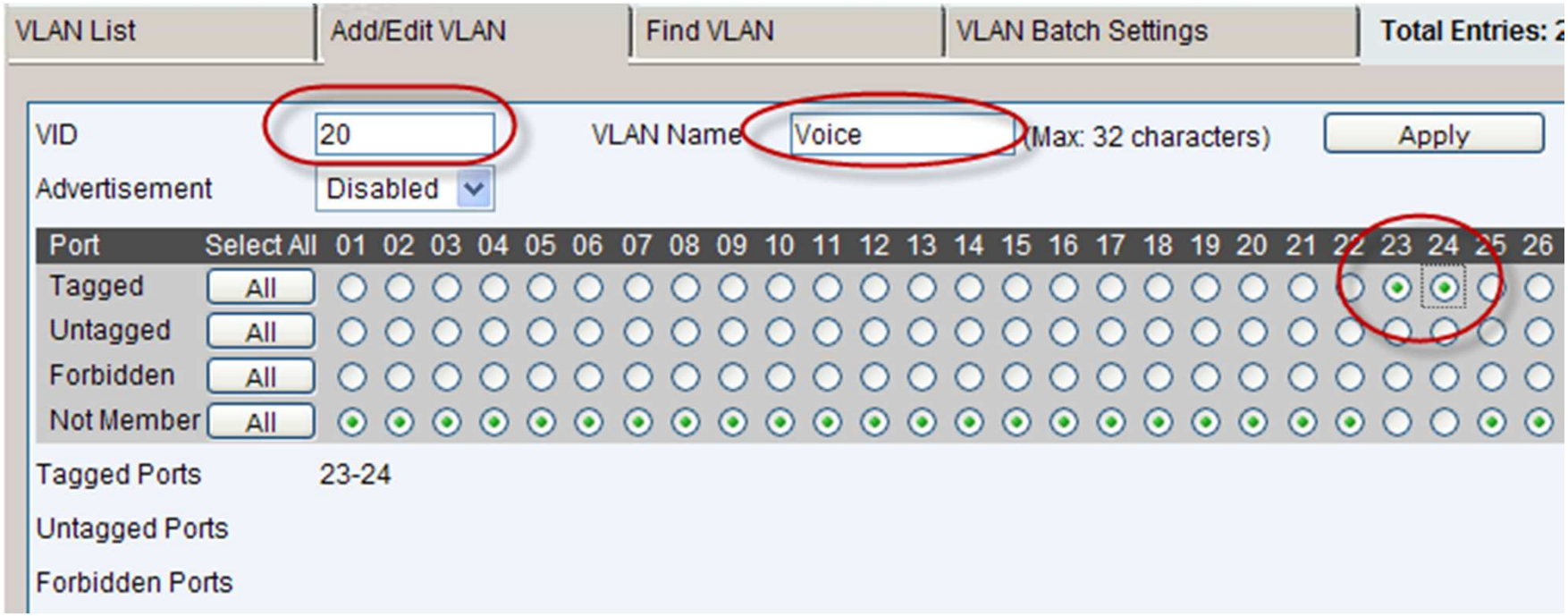
Configuration using WebUI

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



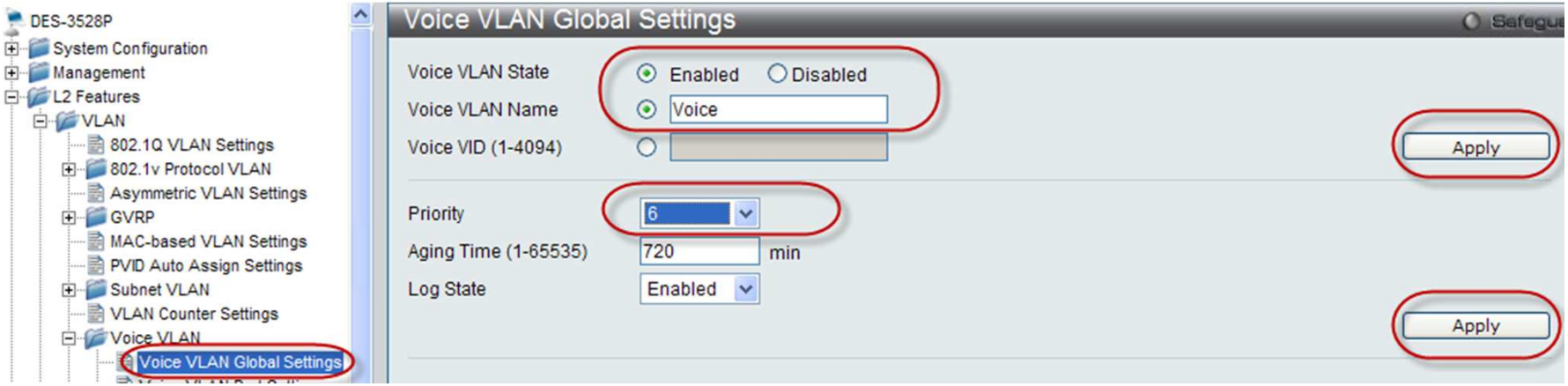
Configuration using WebUI

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



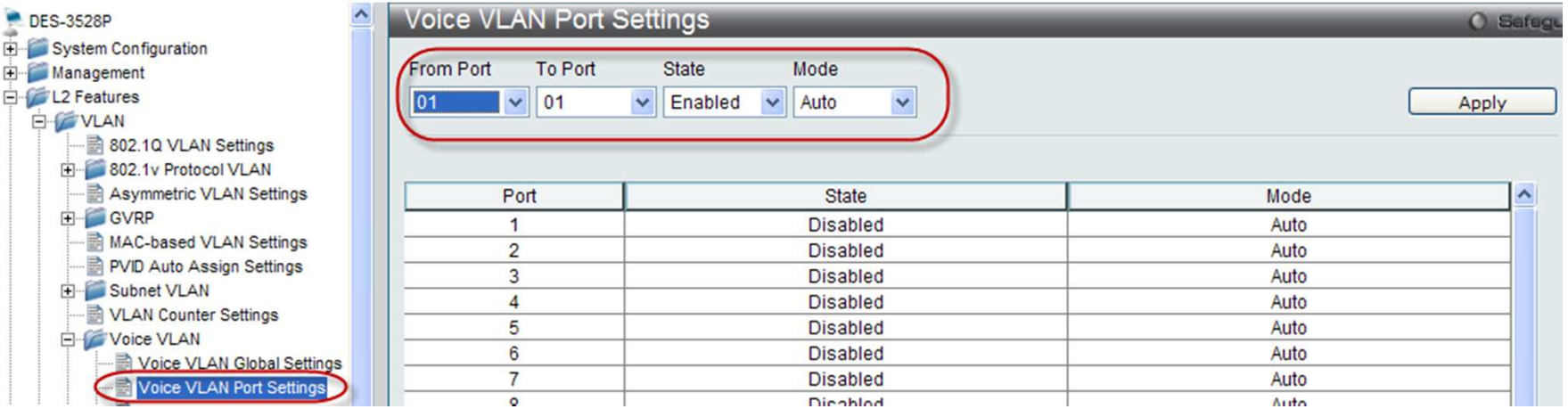
Configuration using WebUI

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.



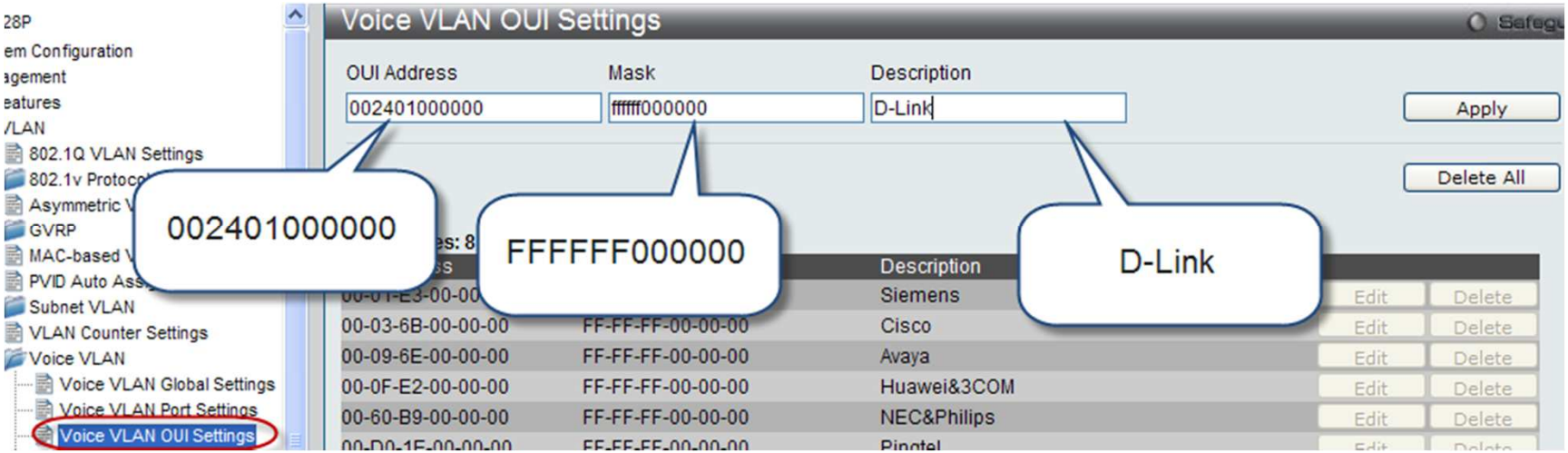
Configuration using WebUI

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



Configuration using WebUI

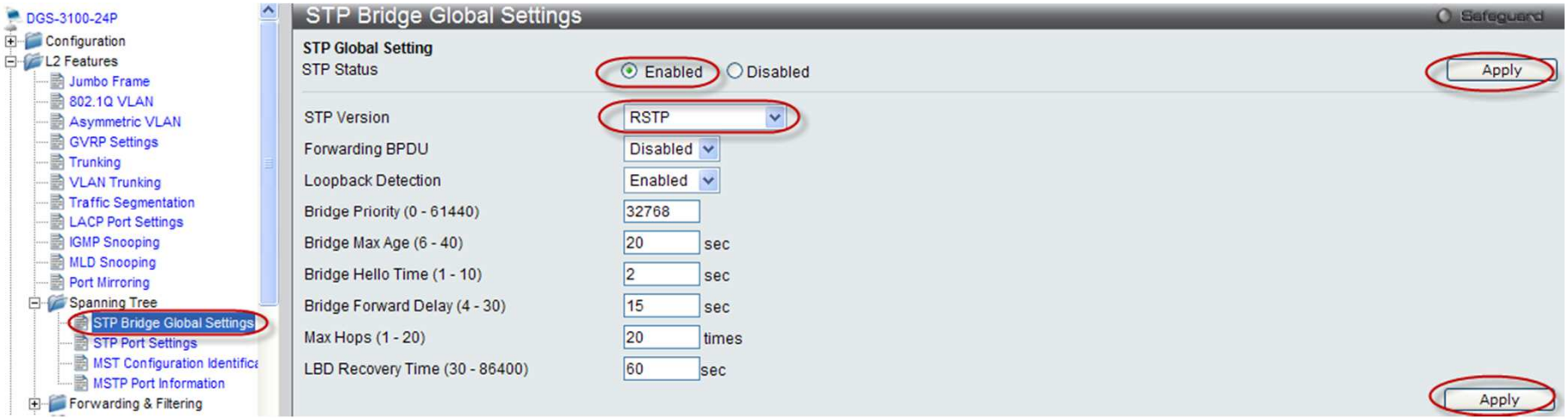
9) Go to "Voice VLAN OUI Settings" and configure as below. Click "Apply".



Configuration using WebUI

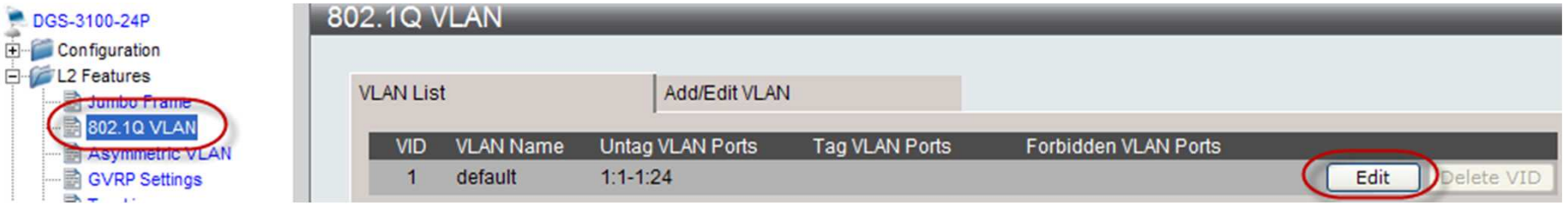
2. SW2 DGS-3100

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.

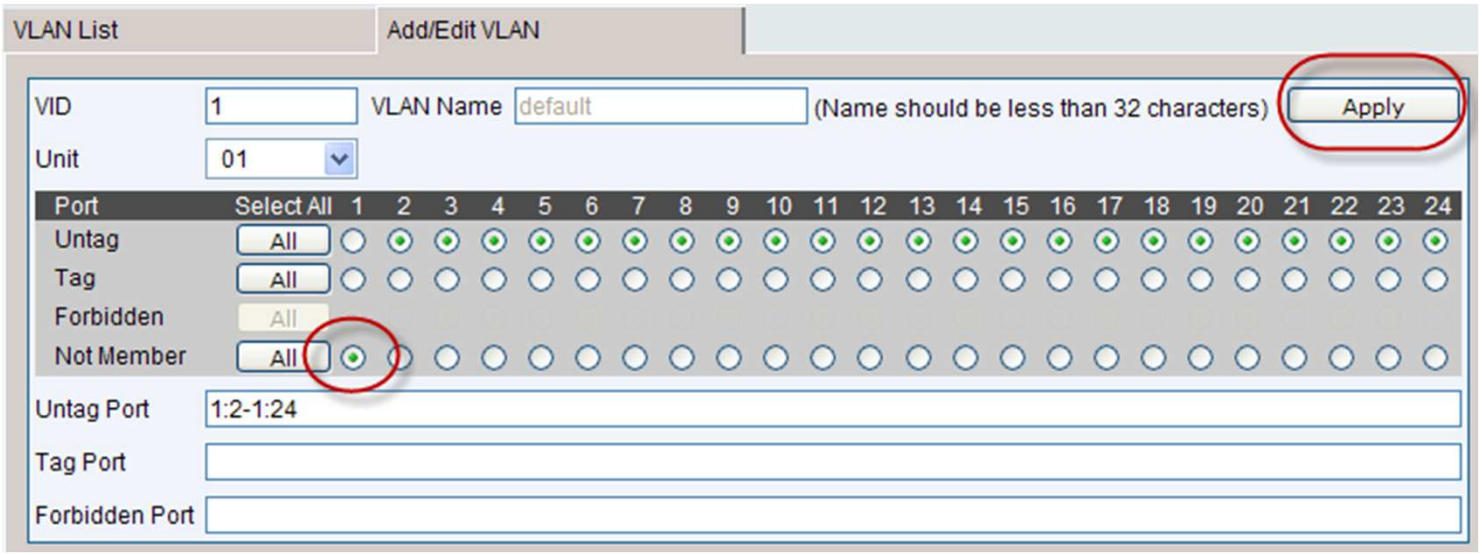


Configuration using WebUI

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

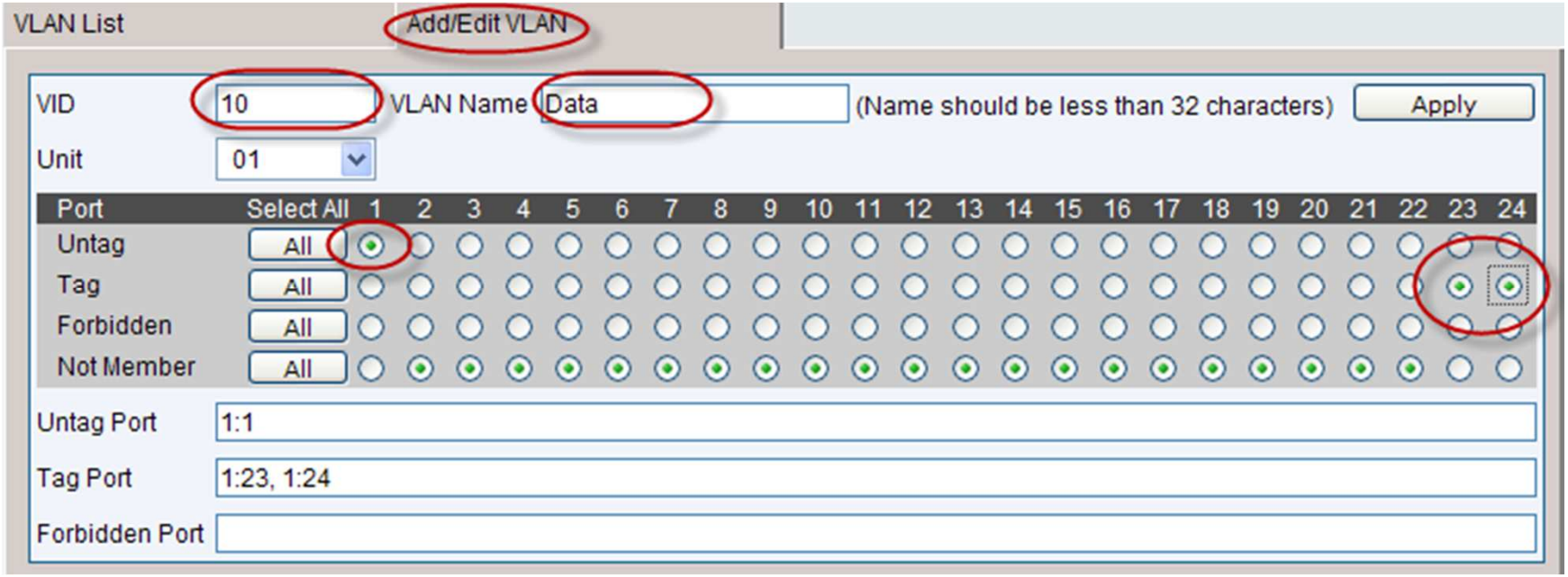


4) Check "Not Member" on port 1 and click "Apply".



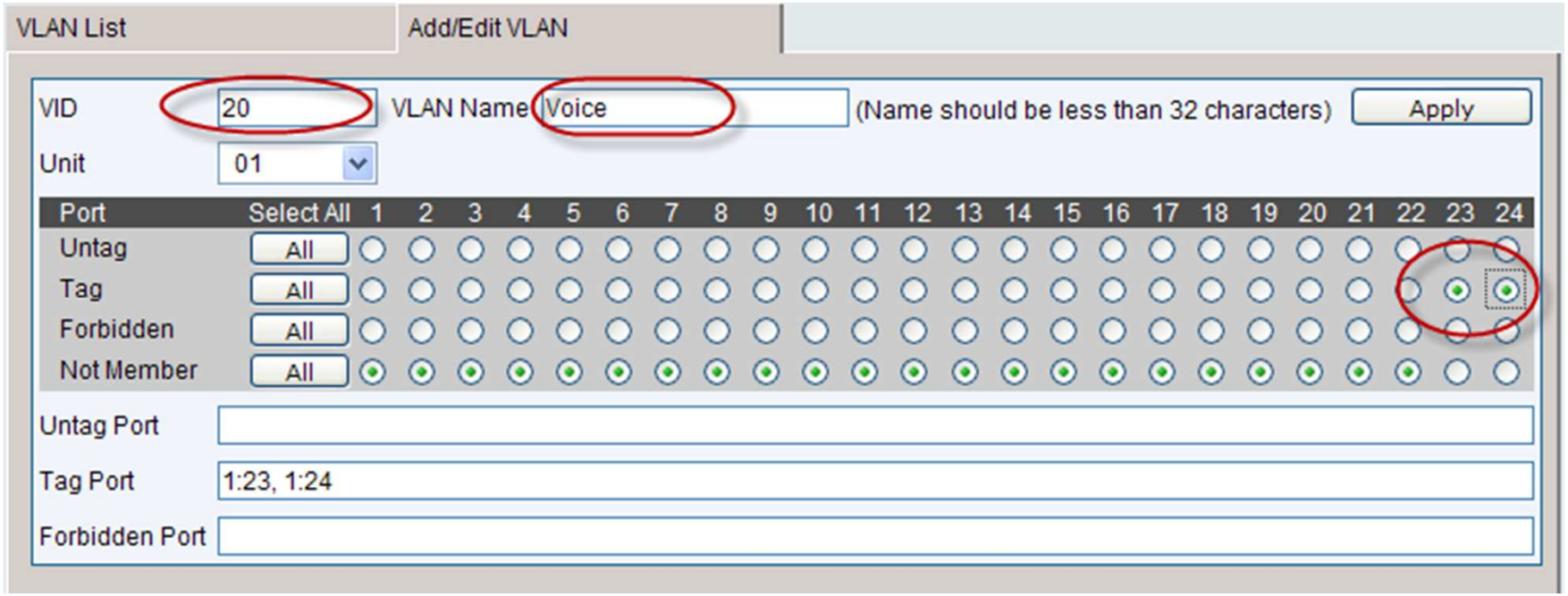
Configuration using WebUI

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



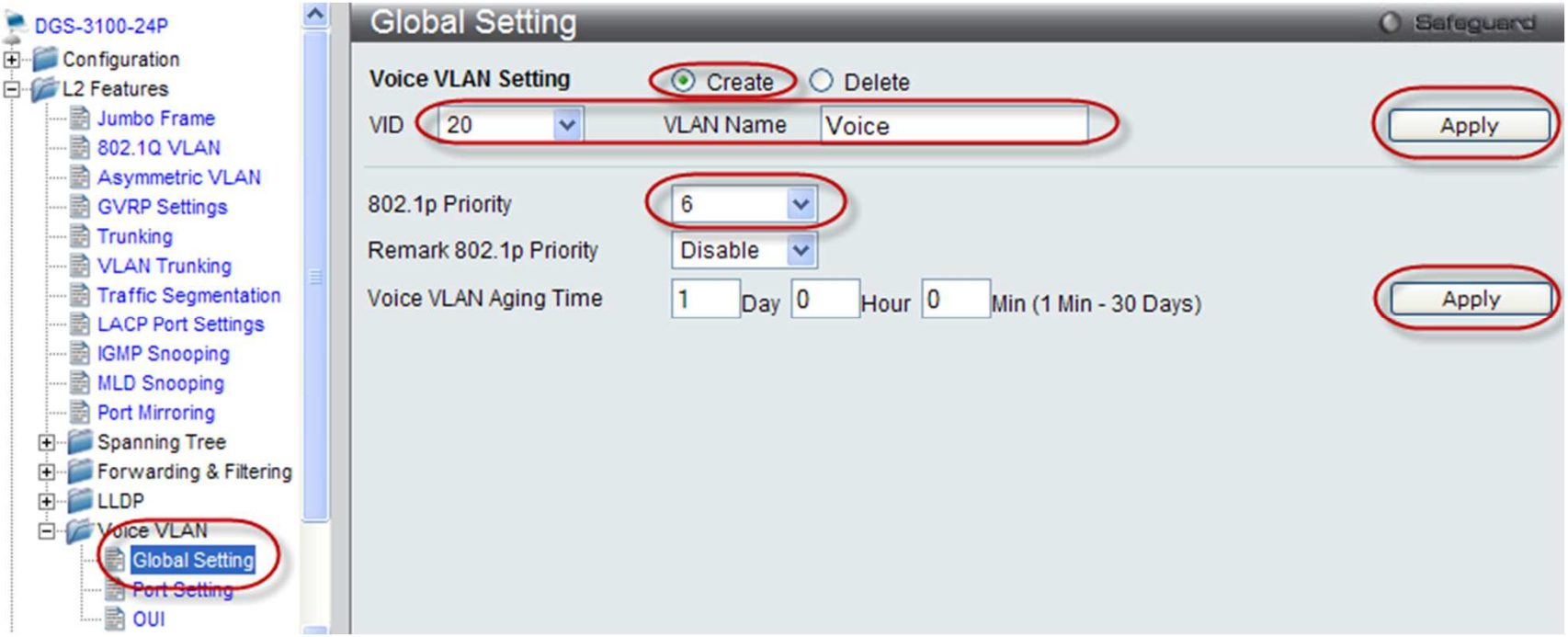
Configuration using WebUI

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



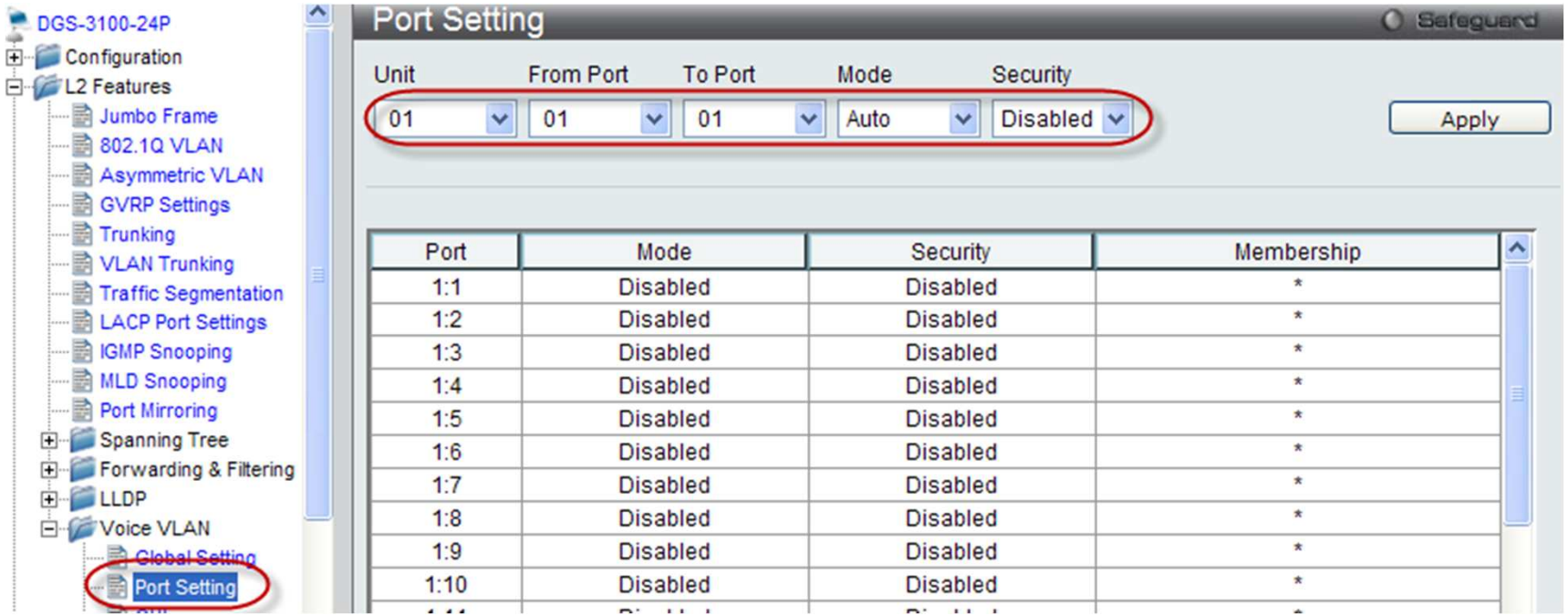
Configuration using WebUI

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



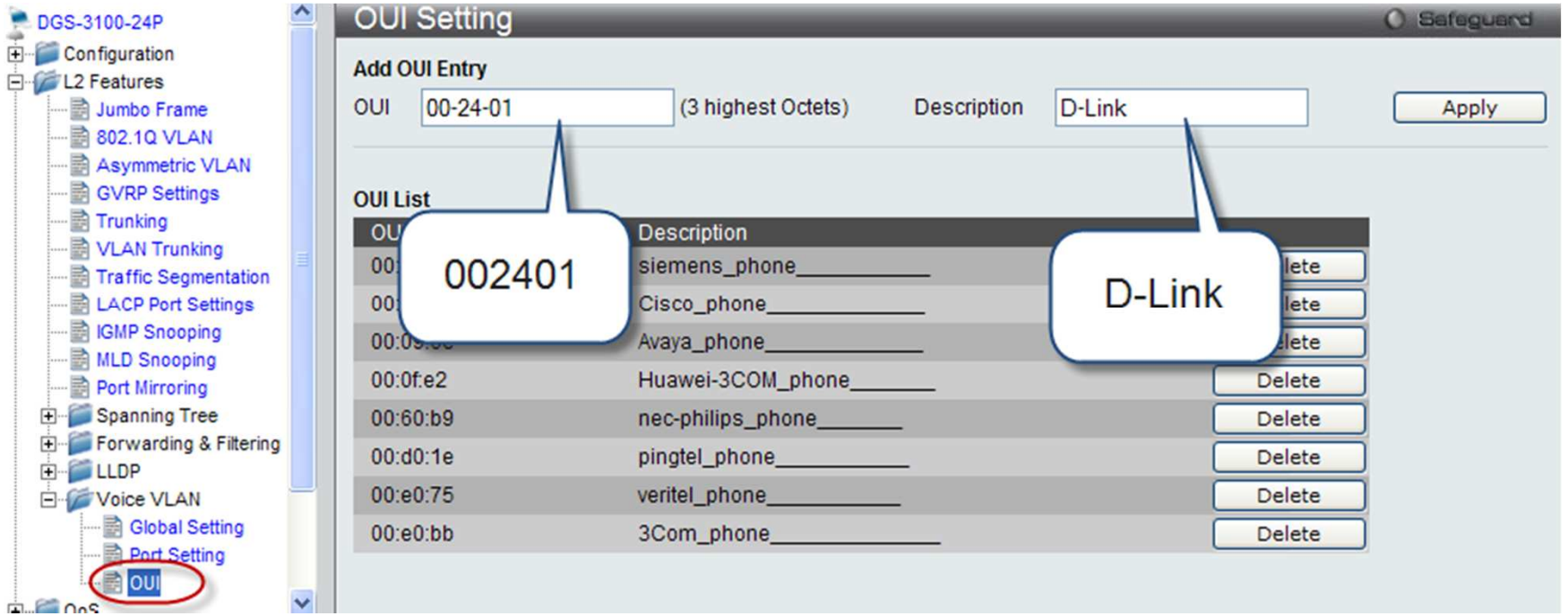
Configuration using WebUI

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



Configuration using WebUI

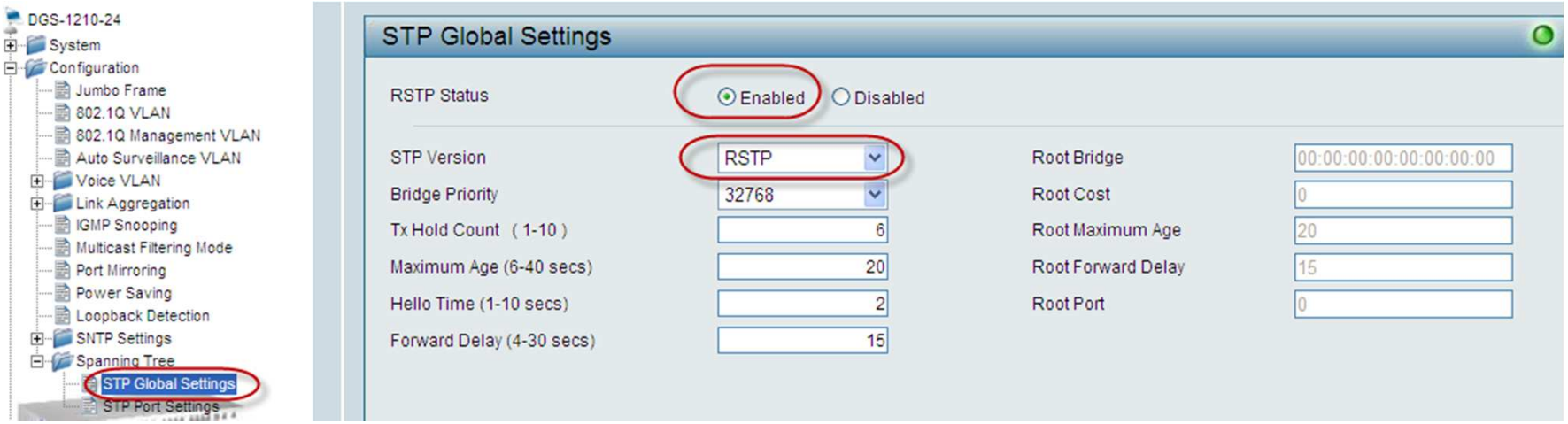
9) Go to "OUI" and configure as below. Click "Apply".



Configuration using WebUI

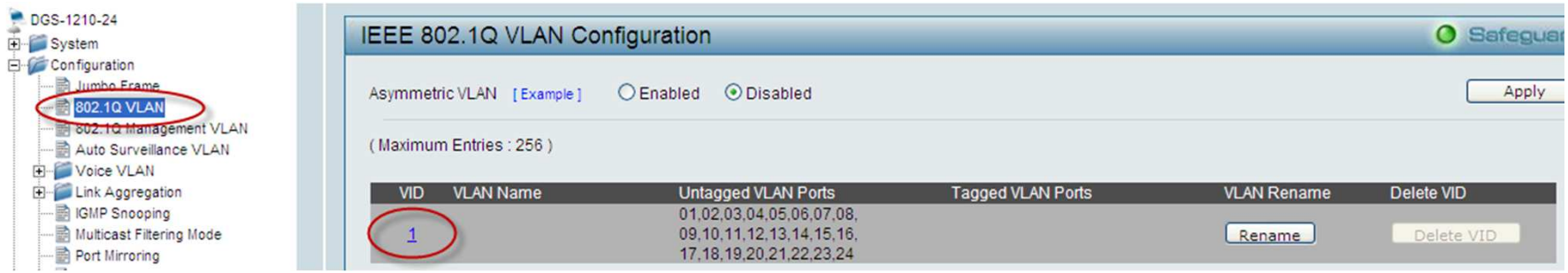
3. SW3 DGS-1210

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.

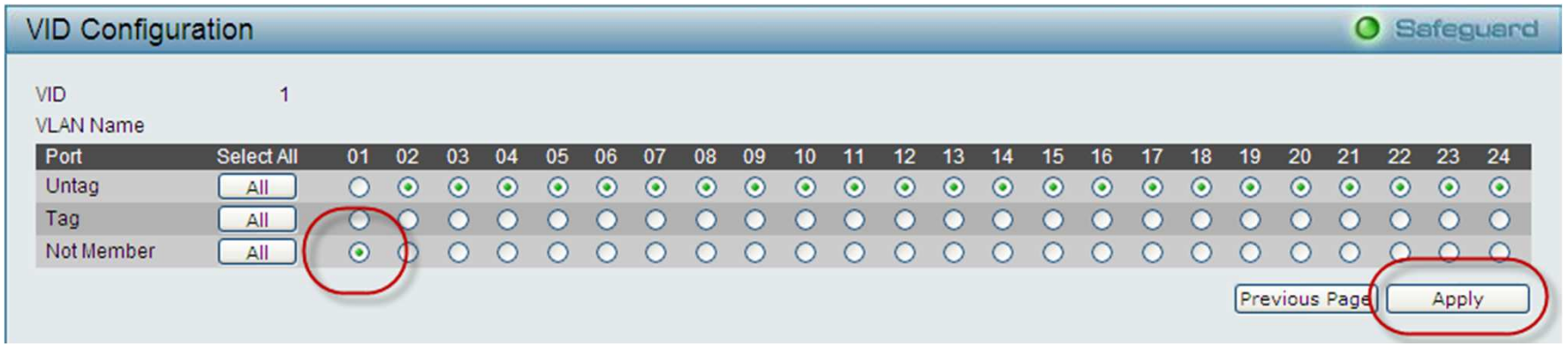


Configuration using WebUI

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

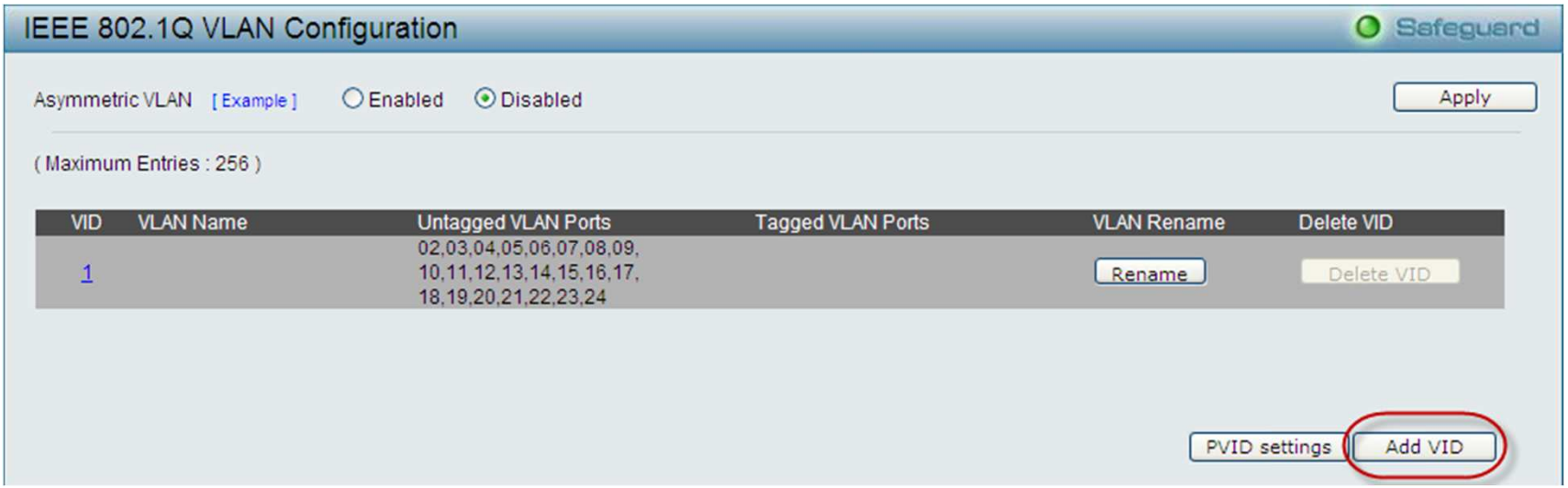


4) Check "Not Member" on port 1 and click "Apply".

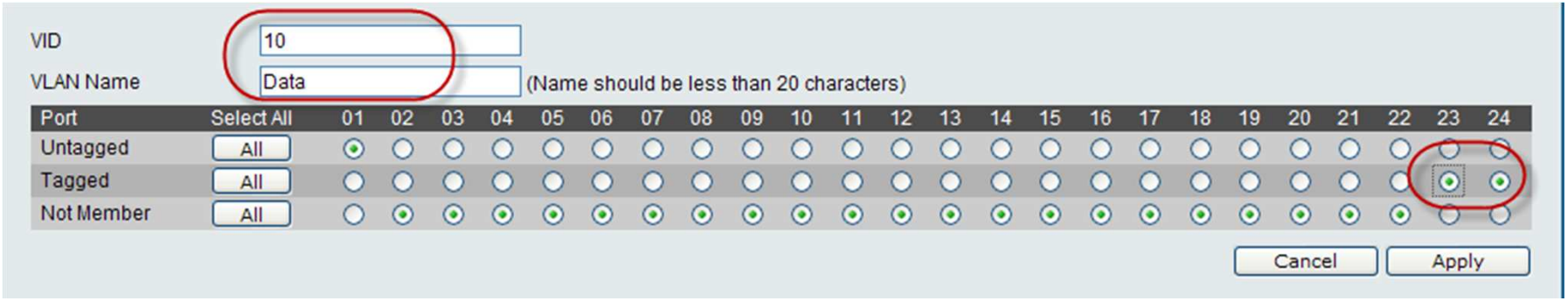


Configuration using WebUI

5) Click “Add VID” below.

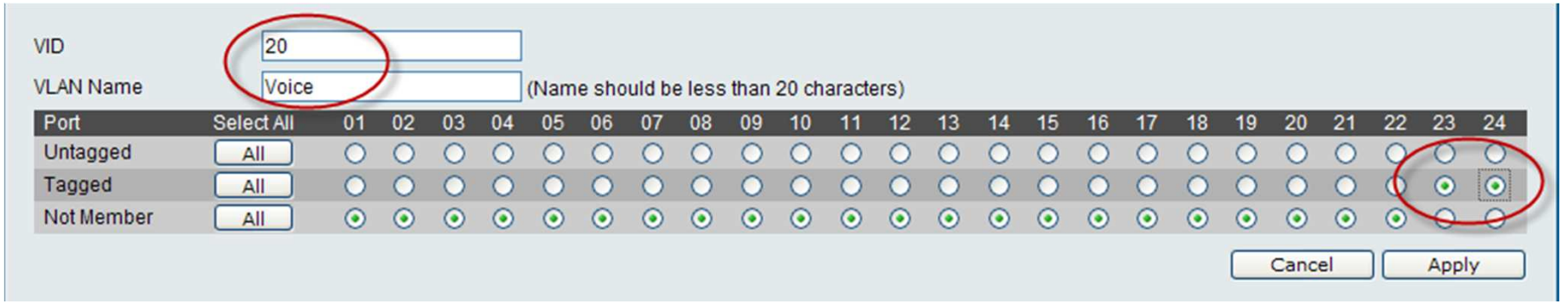


6) Configure as below and click “Apply”.



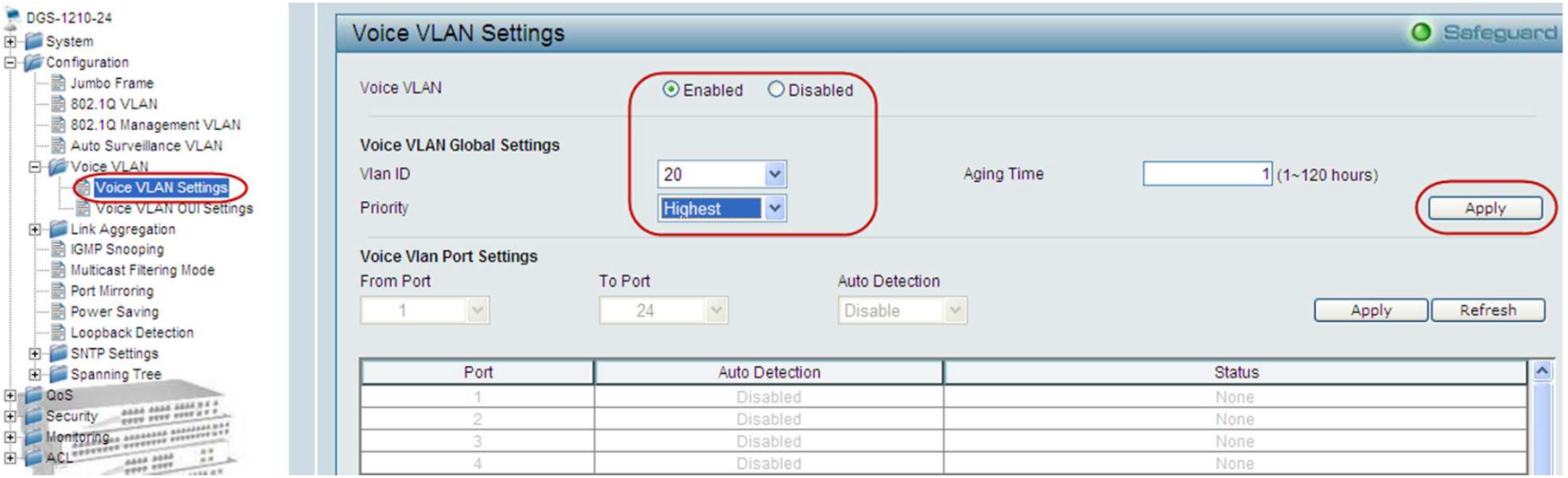
Configuration using WebUI

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.



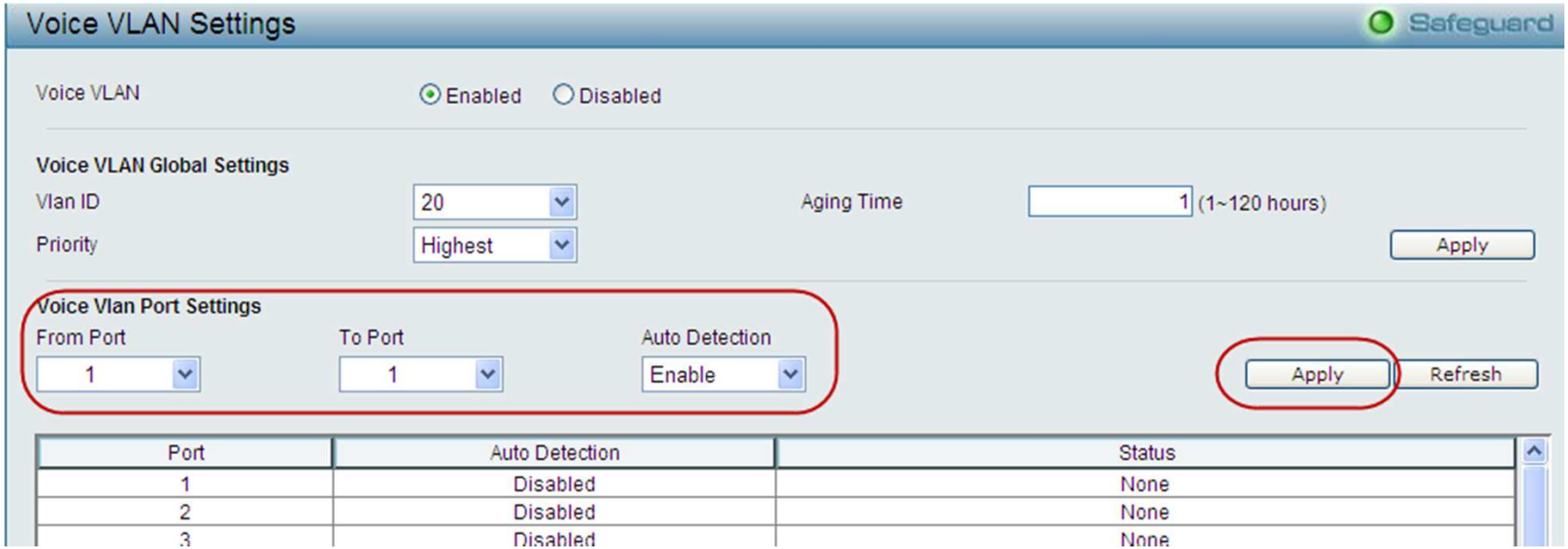
Configuration using WebUI

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".



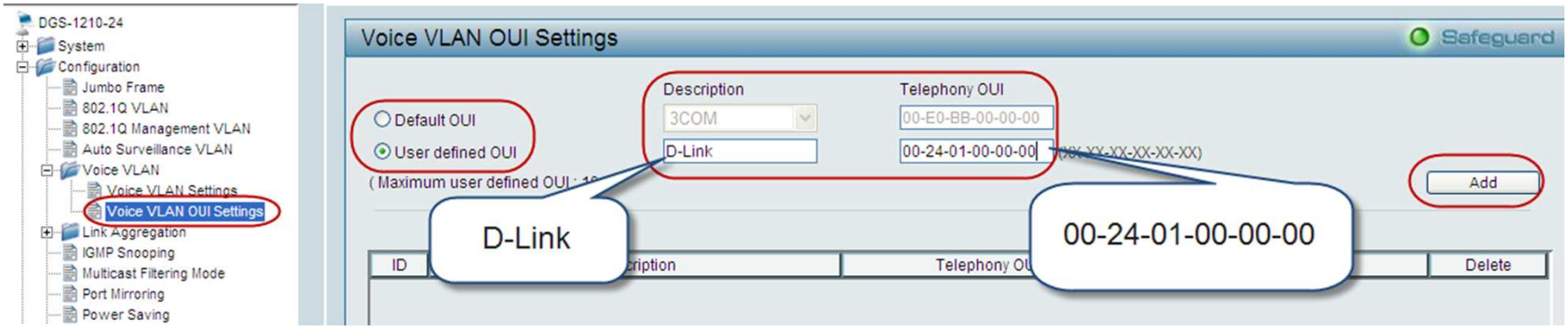
Configuration using WebUI

9) Continue to configure as below and Click “Apply”.



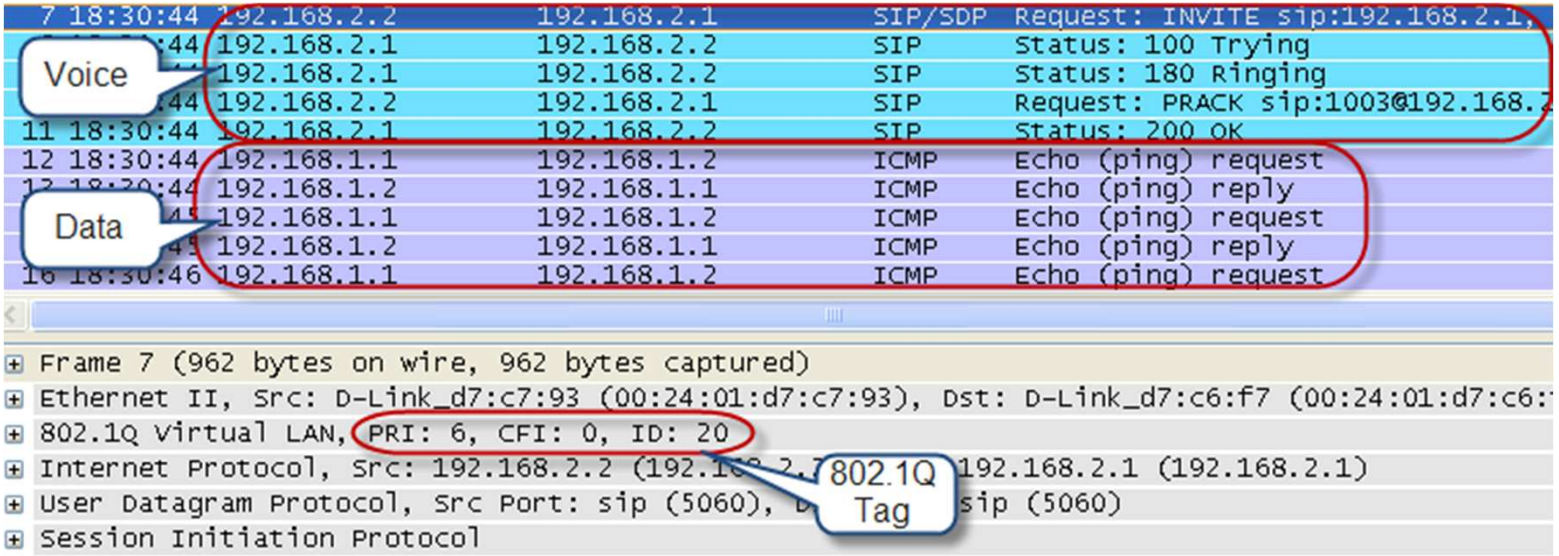
Configuration using WebUI

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



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.



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-AF-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
```