

MSTP

(Multiple Spanning Tree Protocol)

Ethernet Switch

ZyNOS 4.0

Support Notes

Version 4.0

July 2011



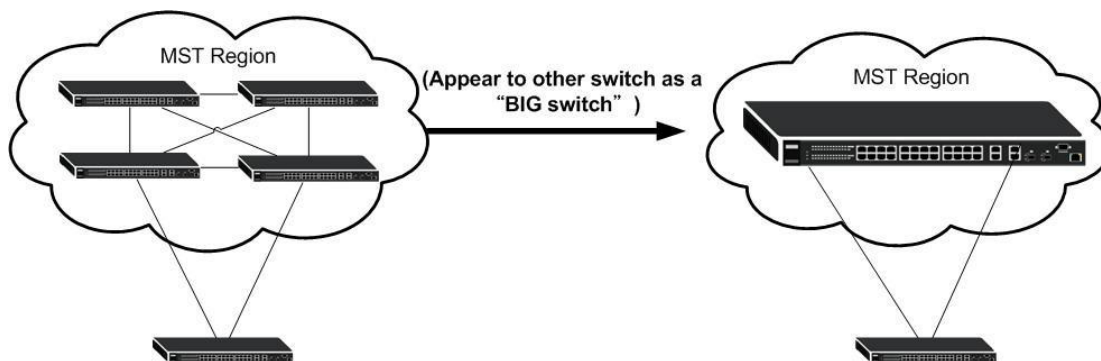
Overview of MSTP

Multiple Spanning Tree Protocol (IEEE 802.1s) is backward compatible with STP/RSTP and addresses the limitations of existing spanning tree protocols (STP and RSTP) in networks to include the following features:

- One Common and Internal Spanning Tree (CIST) that represents the entire network's connectivity.
- Grouping of multiple bridges (or switching devices) into regions that appear as one single bridge on the network.
- A VLAN can be mapped to a specific Multiple Spanning Tree Instance (MSTI). MSTI allows multiple VLANs to use the same spanning tree.
- Load-balancing is possible as traffic from different VLANs can use distinct paths in a region.

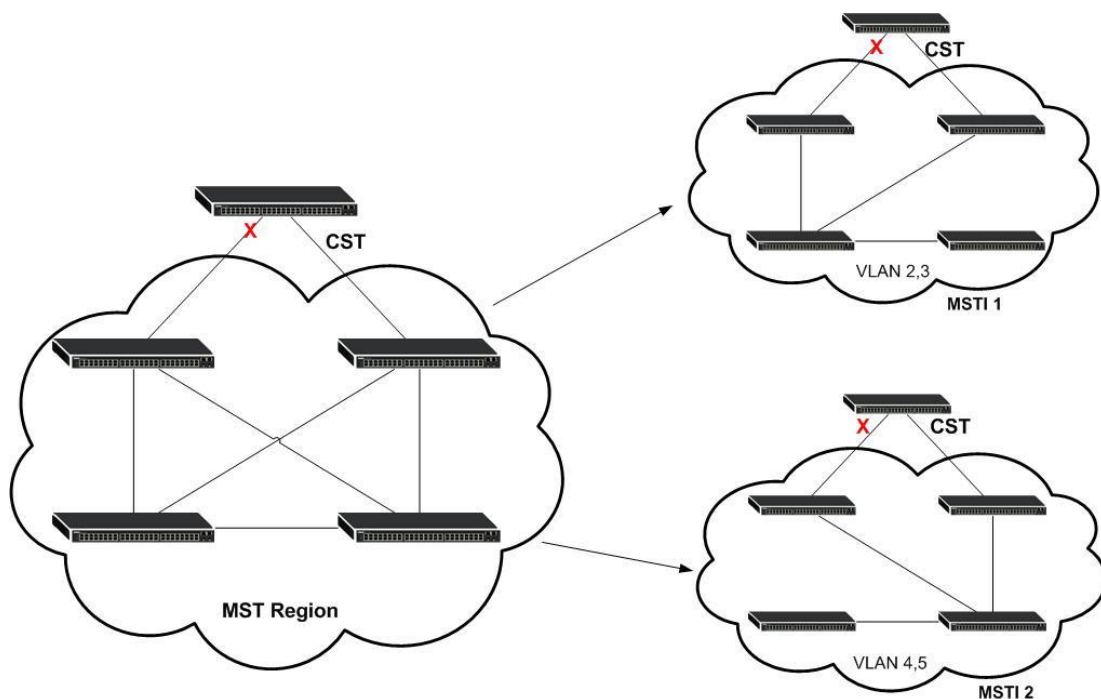
MST Region:

An MST region is a logical grouping of multiple network devices that appears as a single device to the rest of the network. Each MSTP-enabled device can only belong to one MST region.



MST Instance:

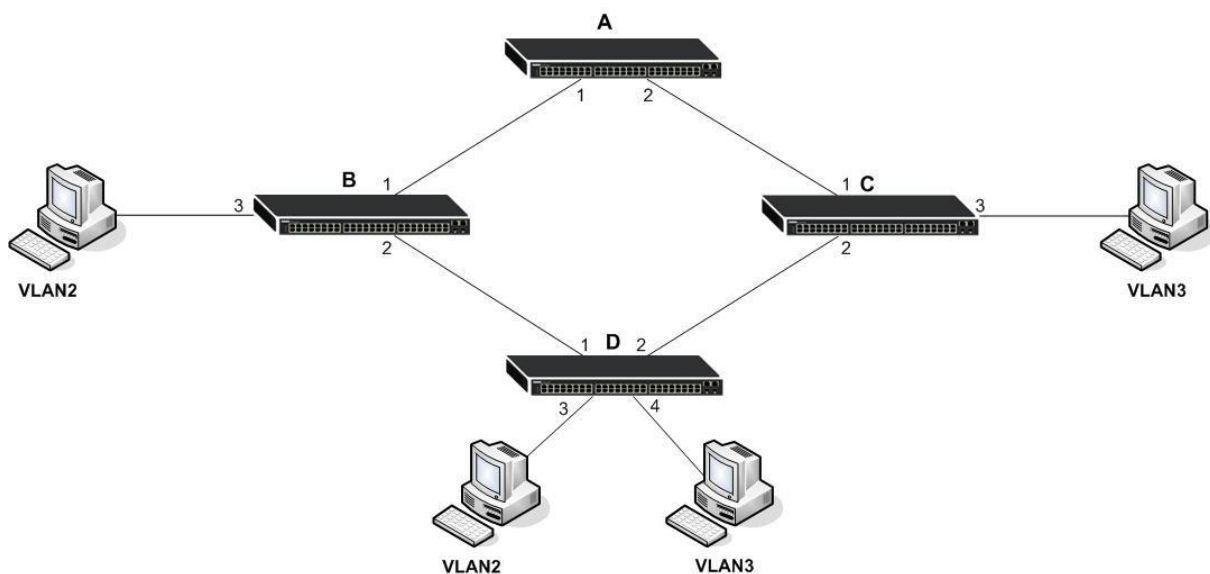
An MST Instance (MSTI) is a spanning tree instance. VLANs can be configured to run on a specific MSTI. Each created MSTI is identified by a unique number (known as an MST ID) known internally to a region. Thus an MSTI does not span across MST regions.



This MST Region can be decompose into two MSTIs. One for vlan 2,3 , and another for vlan 4,5. Different MSTIs have different topologies.

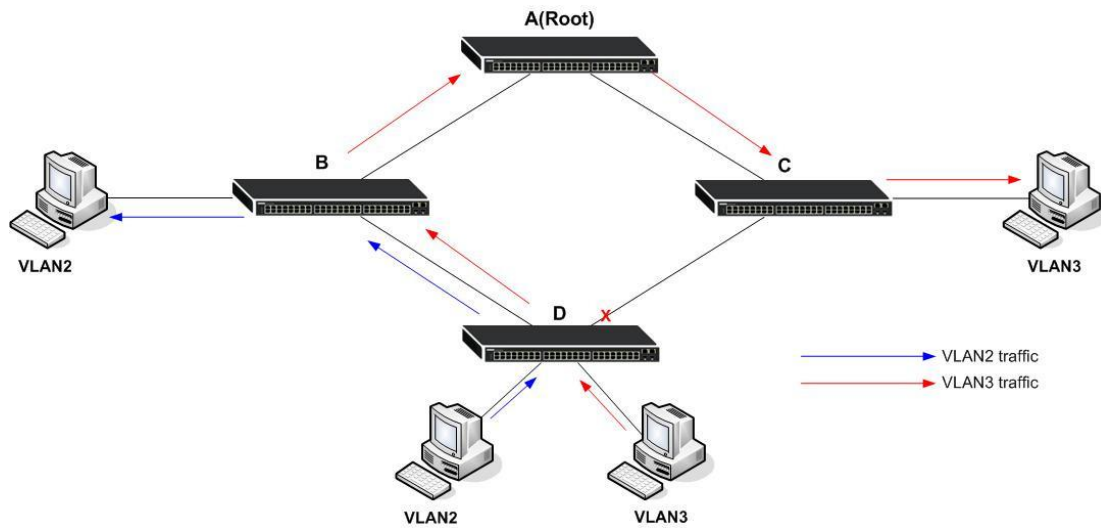
Scenario&Benefits

Consider the following topology:

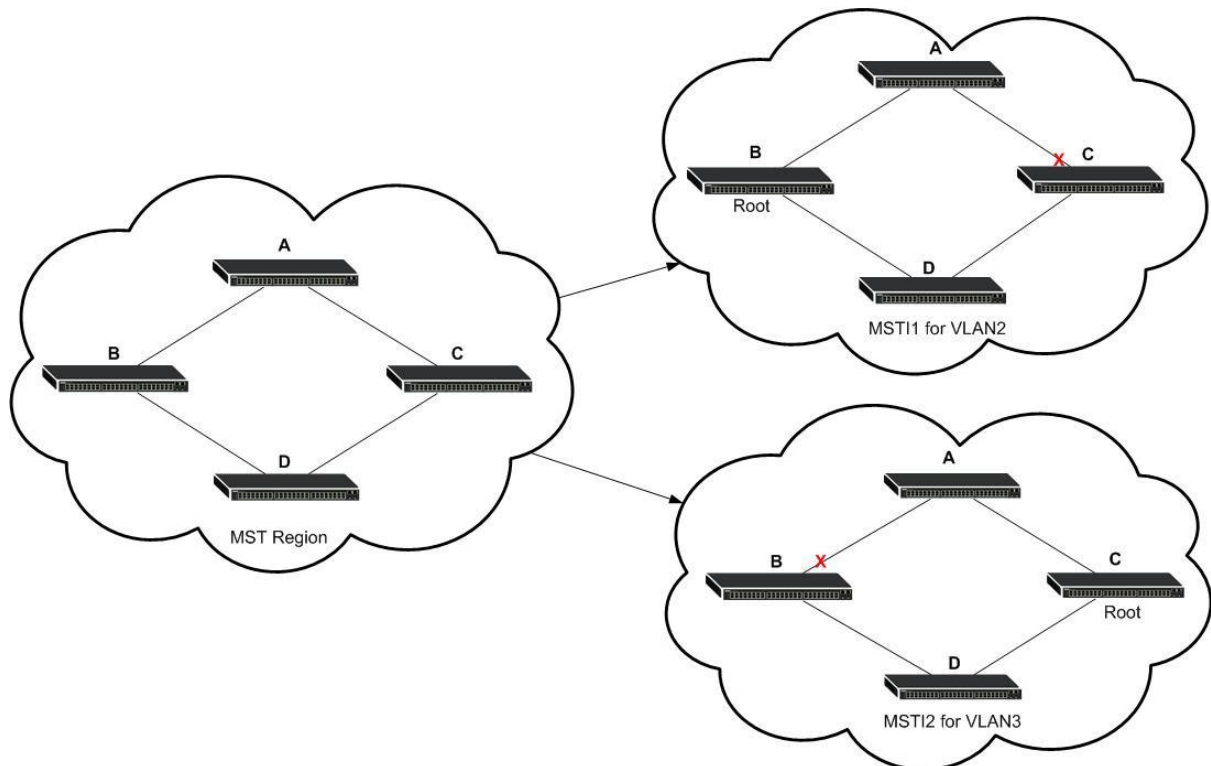


If we use STP/RSTP in this topology. All traffics from D to hosts connect to other switches will go through the root port.

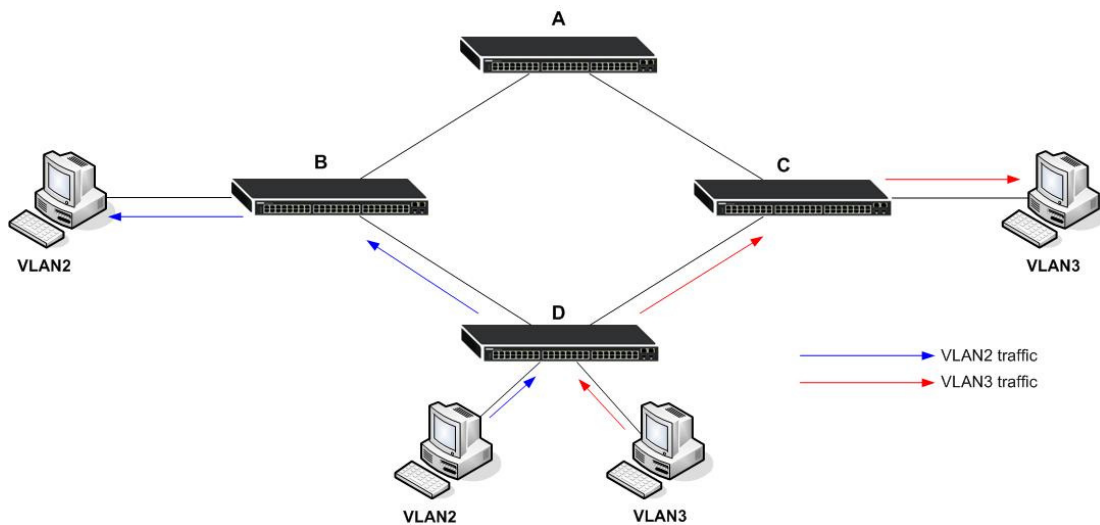
Traffic on STP/RSTP enabled topology.



Now what if we applied MSTP in the same topology?



When there're traffics belong to VLAN2 and VLAN3. Each of them can go through different uplinks.



With multiple uplink ports be enabled. The traffic loading will be balanced between two uplink ports, which also increase the network throughput and usage.

Configuration using the Web GUI – Switch A

1. Connect MGMT port with a PC or Notebook via the RJ45 Cable.
2. By default, the MGMT IP of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter <http://192.168.0.1> in the URL field.
5. By default, the username for the administrator is “admin” and the corresponding password is “1234”.
6. After successful login you will see a screen similar to the one on the screenshot below.

ZyXEL

Save Status Logout Help

MENU

Basic Setting

Advanced Application

IP Application

Management

System Info

General Setup

Switch Setup

IP Setup

Port Setup

Port Status

Port	Name	Link	State	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	100M/F	FORWARDING	Disabled	345	674	0	0.0	0.64	0.0	0:03:52
2	100M/F	FORWARDING	Disabled	168	0	0	0.64	0.0	0:01:33	
3	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
4	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
5	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
6	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
7	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
8	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
9	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
10	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
11	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
12	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
13	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
14	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
15	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
16	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
17	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
18	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
19	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
20	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	

Any

Port

10

Clear Counter

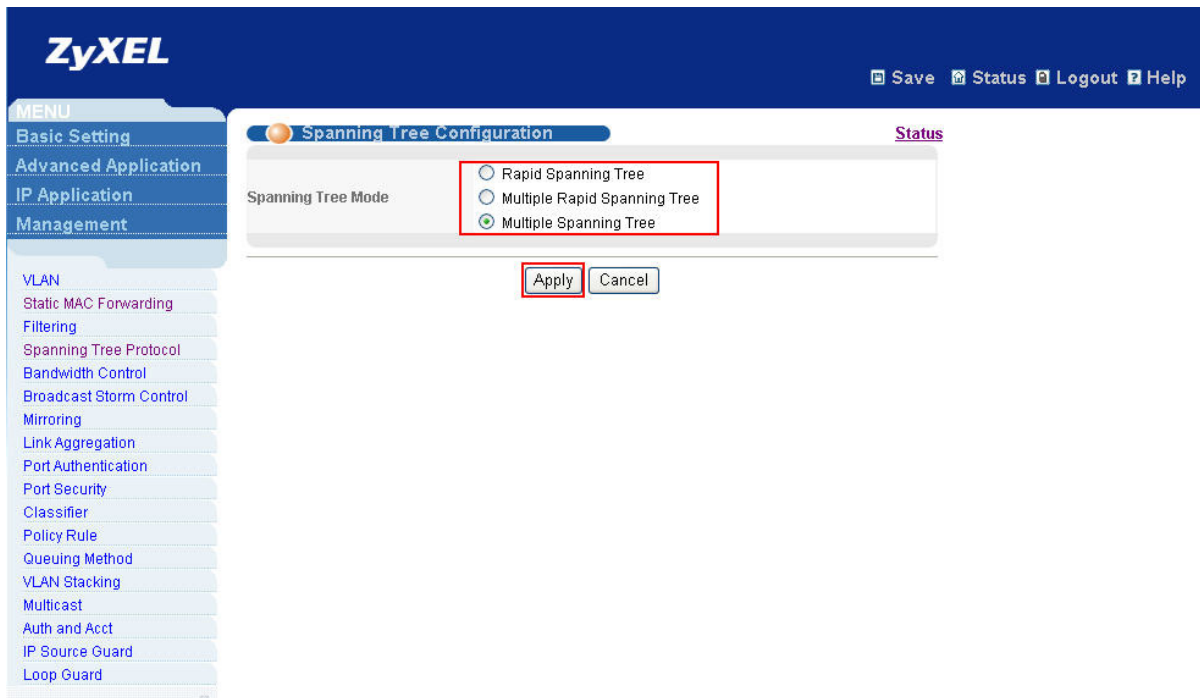
7. First of all, you need to enable the switch's MSTP function. To do so, click items depicted below. **Advanced Application -> Spanning Tree Protocol -> Configuration**

The screenshot shows the ZyXEL web interface with the 'Spanning Tree Protocol Status' page. The page has tabs for 'Configuration', 'RSTP', 'MRSTP', and 'MSTP'. The 'Configuration' tab is selected, showing a table with parameters for the bridge, root, and our bridge.

Bridge	Root	Our Bridge
Bridge ID	0000-000000000000	0000-000000000000
Hello Time (second)	0	0
Max Age (second)	0	0
Forwarding Delay (second)	0	0
Cost to Bridge	0	0
Port ID	0X0000	
Topology Changed Times	0	
Time Since Last Change	0:00:00	

Red arrows indicate the navigation path: 1. 'Advanced Application' in the menu, 2. 'Spanning Tree Protocol' in the sub-menu, and 3. 'Configuration' in the tabs.

8. After step 7. It will direct you to a "Spanning Tree Configuration" page, choose "Multiple Spanning Tree" then click the "Apply" button.



9. Click **“Spanning Tree Protocol”** button and back to **“Spanning Tree Protocol Status”** page. Click **“MSTP”** and go to the **“Multiple Spanning Tree Protocol”** page, you can do detail MSTP configuration from here.

e

10. At the “Multiple Spanning Tree Protocol” page, create a MSTI 0 setting by following steps. All ports want to join MSTP must be included into MSTI 0

1. Configure the MSTP bridge parameters. (All switches in the same region must have the same “Configuration Name”, “Revision Number” and “vlan-MSTI mapping”).)

- 1.) Check “Active” eeHello Time
- 3.) Configure the “Max Age” time
- 4.) Configure the “Forwarding Delay” time
- 5.) Configure the “Max hops”
- 6.) Configure the “Configuration Name”
- 7.) Configure the “Revision Number”
- 8.) Click “Apply” button

Multiple Spanning Tree Protocol

[Status](#)

Bridge:

Active	<input checked="" type="checkbox"/>	
Hello Time	2	seconds
MAX Age	20	seconds
Forwarding Delay	15	seconds
Maximum hops	128	
Configuration Name	demo	
Revision Number	111	

2. Configure the MSTI parameters and choose which vlan should join this MSTI and click "Add". Because switch A is the root of this region, we must set the "Bridge Priority" of MSTI 0 to "0"

Instance:

Instance	0		
Bridge Priority	0	▼	
VLAN Range	Start	End	

Enabled VLAN(s)

1, 4-4094

3. Choose which port should be included in this MSTI. Click "Add"

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

11. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”

Instance:

Instance	1
Bridge Priority	32768
VLAN Range	Start End

2

Enabled VLAN(s)


2. Choose which port should be included in this MSTI. Click “Add”




Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

12. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”

Instance:

Instance	2
Bridge Priority	32768 
VLAN Range	Start <input type="text"/> End <input type="text"/>

Enabled VLAN(s)

3

2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

13. Create vlans corresponding to MST instances.

1.)Go to “Static VLAN” page by clicking “Advanced Application” “VLAN”
“Static VLAN”

ZyXEL Save Status Logout Help

MENU
Basic Setting
Advanced Application
IP Application
Management

VLAN
Static MAC Forwarding
Filtering
Spanning Tree Protocol
Bandwidth Control
Broadcast Storm Control
Mirroring
Link Aggregation
Port Authentication
Port Security
Classifier
Policy Rule
Queueing Method
VLAN Stacking
Multicast
Auth and Acct
IP Source Guard
Loop Guard

VLAN Status VLAN Port Setting **Static VLAN**

The Number of VLAN = 3

Index	VID	Elapsed Time	Status
1	1	0:11:13	Static
2	2	0:11:13	Static
3	3	0:11:13	Static

Change Pages Previous Next

2.)Create vlan 2 for MSTI 1 and click “Add”

Static VLAN

[VLAN Status](#)

ACTIVE ☒

Name

VLAN Group ID

2

Port	Control			Tagging	
*		Normal <input checked="" type="radio"/>	Fixed <input type="radio"/>	Forbidden <input type="radio"/>	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	

3.) Create vlan 3 for MSTI 2 and click “Add”

Static VLAN
VLAN Status

ACTIVE
☒

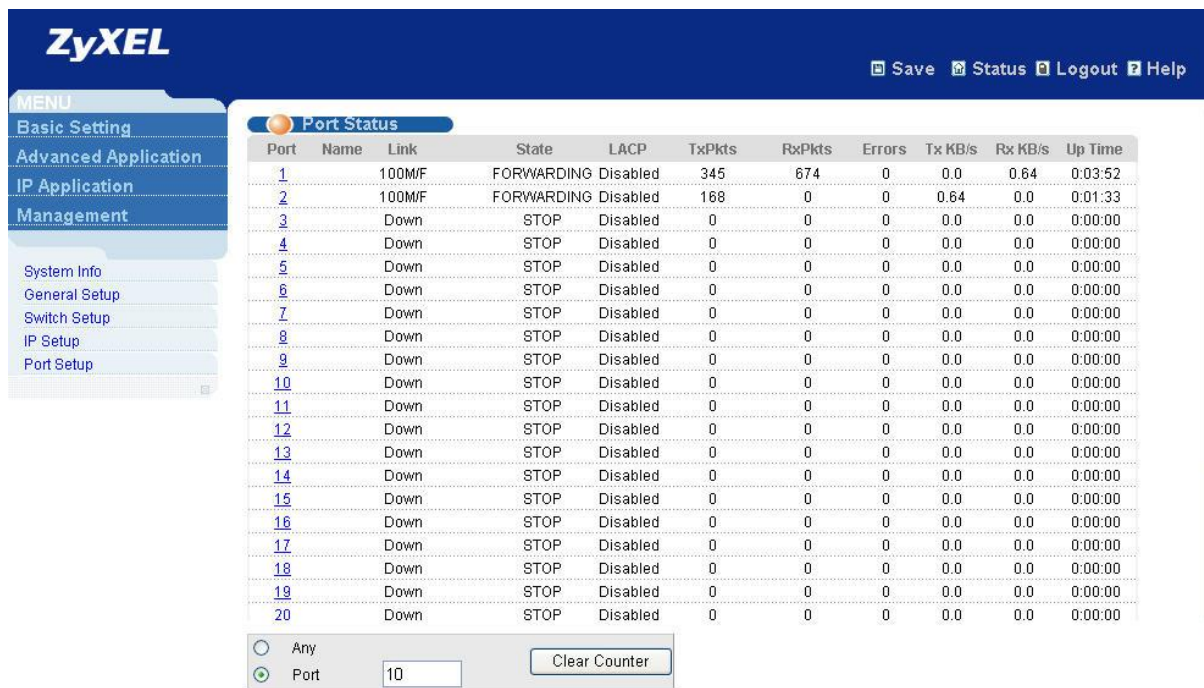
Name

VLAN Group ID

Port	Control			Tagging
*		Normal ▼		<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Configuration using the Web GUI – Switch B

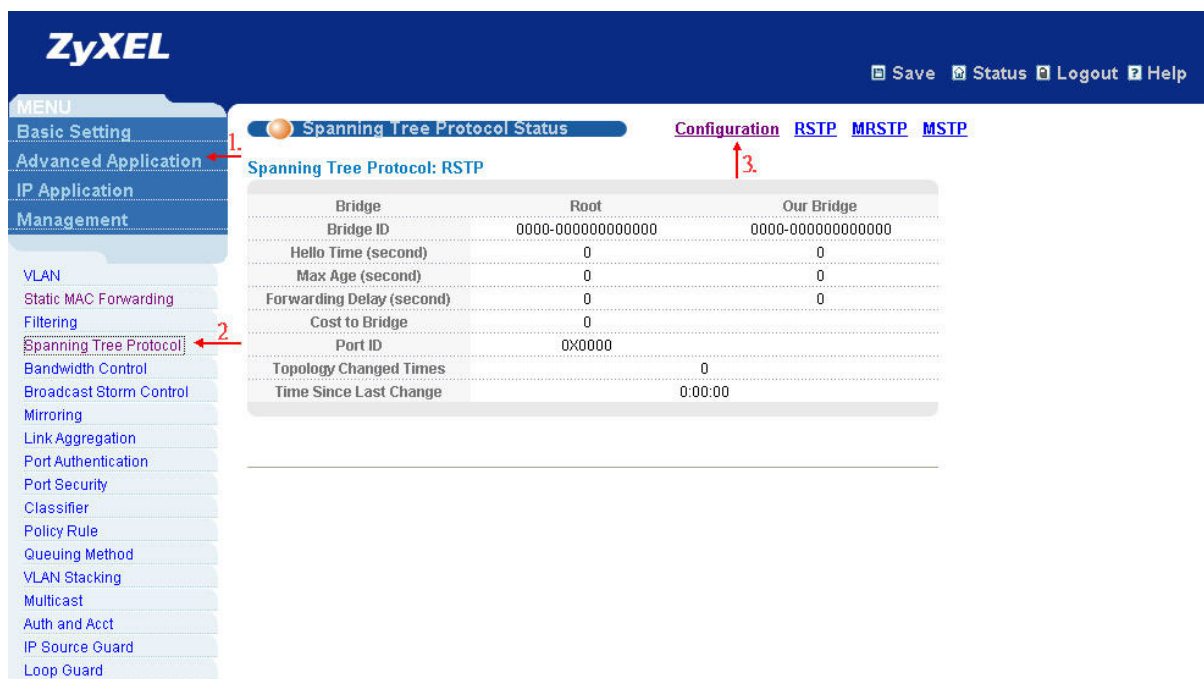
1. Connect MGMT port with a PC or Notebook via the RJ45 Cable.
2. By default, the MGMT IP of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter <http://192.168.0.1> in the URL field.
5. By default, the username for the administrator is “admin” and the corresponding password is “1234”.
6. After successful login you will see a screen similar to the one on the screenshot below.



The screenshot shows the ZyXEL web interface with the 'Port Status' tab selected. The left menu has 'Advanced Application' highlighted. The main area displays a table of 20 ports. Ports 1 and 2 are in 'FORWARDING' state, while ports 3 through 20 are in 'STOP' state. Below the table, there are radio buttons for 'Any' and 'Port', a text input field with '10', and a 'Clear Counter' button.

Port	Name	Link	State	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	100M/F		FORWARDING	Disabled	345	674	0	0.0	0.64	0:03:52
2	100M/F		FORWARDING	Disabled	168	0	0	0.64	0.0	0:01:33
3	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
4	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
5	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
6	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
7	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
8	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
9	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
10	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
11	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
12	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
13	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
14	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
15	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
16	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
17	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
18	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
19	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
20	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00

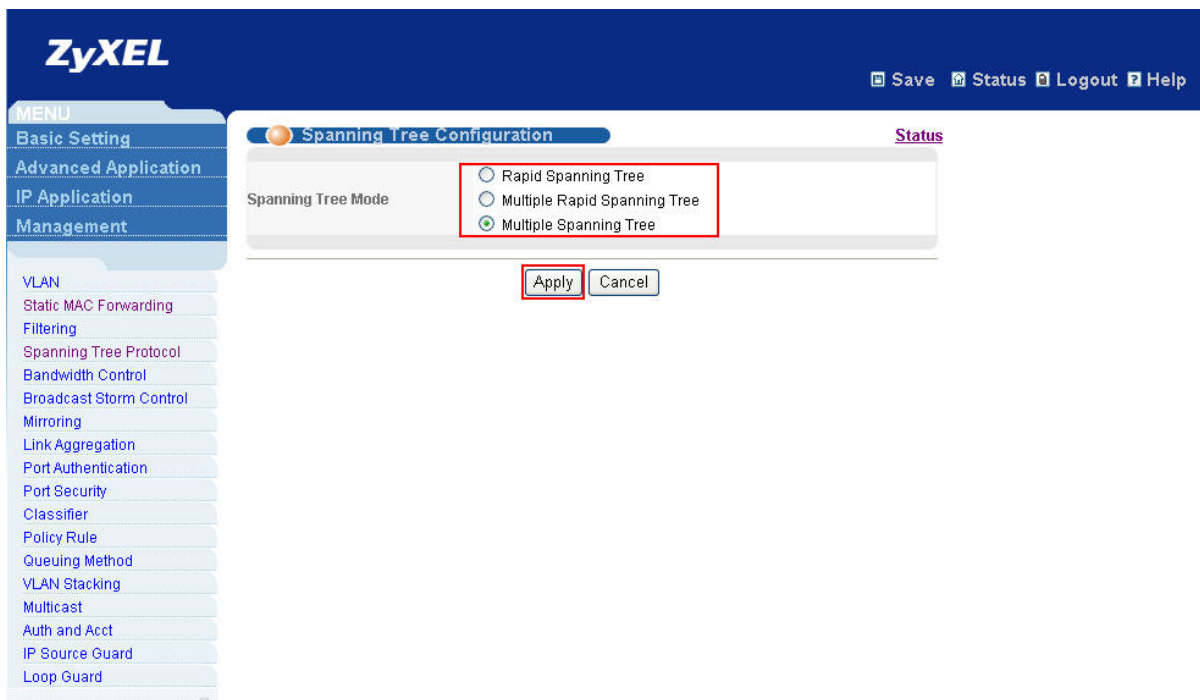
7. First of all, you need to enable the switch's MSTP function. To do so, click items depicted below. **Advanced Application -> Spanning Tree Protocol -> Configuration**



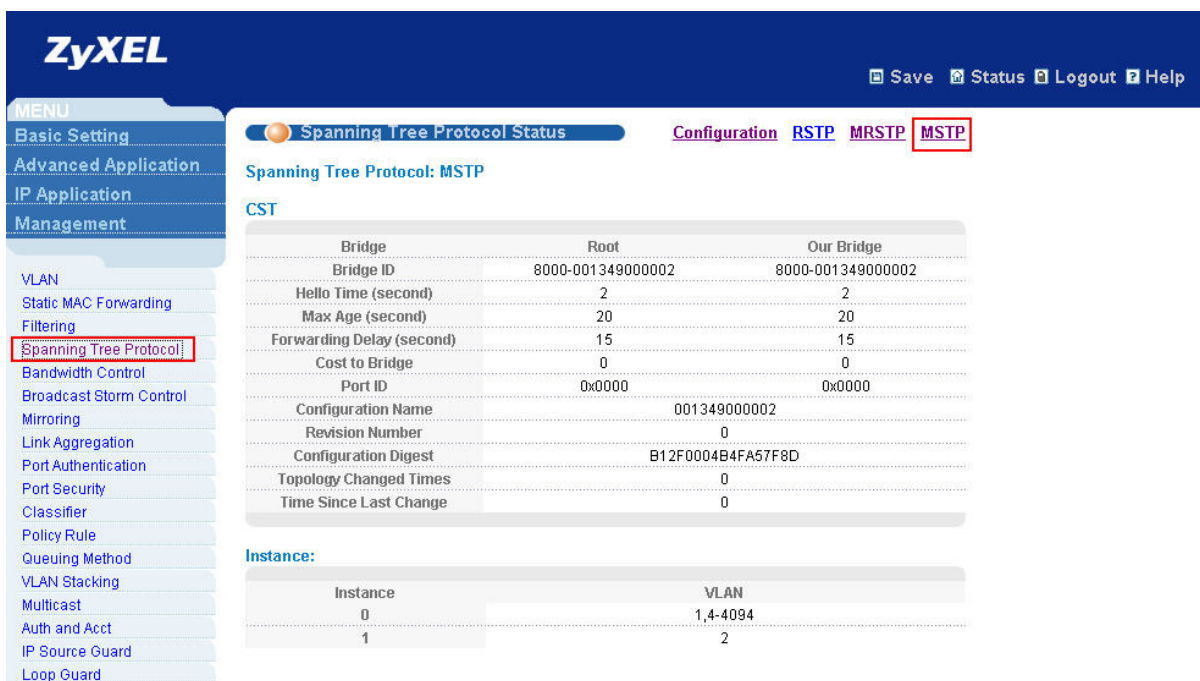
The screenshot shows the ZyXEL web interface with the 'Spanning Tree Protocol Status' tab selected. The left menu has 'Spanning Tree Protocol' highlighted. The main area displays a table with columns for Bridge, Root, and Our Bridge. The table shows various parameters like Bridge ID, Hello Time, Max Age, Forwarding Delay, Cost to Bridge, Port ID, Topology Changed Times, and Time Since Last Change. Red arrows indicate the navigation path: 1. Advanced Application, 2. Spanning Tree Protocol, 3. Configuration.

Bridge	Root	Our Bridge
Bridge ID	0000-000000000000	0000-000000000000
Hello Time (second)	0	0
Max Age (second)	0	0
Forwarding Delay (second)	0	0
Cost to Bridge	0	0
Port ID	0X0000	
Topology Changed Times	0	
Time Since Last Change	0:00:00	

8. After step 7. It will direct you to a "Spanning Tree Configuration" page, choose "Multiple Spanning Tree" then click the "Apply" button.




9. Click “**Spanning Tree Protocol**” button and back to “**Spanning Tree Protocol Status**” page. Click “**MSTP**” and go to the “**Multiple Spanning Tree Protocol**” page, you can do detail MSTP configuration from here.



10. At the “Multiple Spanning Tree Protocol” page, create a MSTI 0 setting by following steps. All ports want to join MSTP must be included into MSTI 0.

1. Configure the MSTP bridge parameters. (All switches in the same region must have the same "Configuration Name", "Revision Number" and "vlan-MSTI mapping".)

- 1.) Check "Active"
- 2.) Configure the "Hello Time"
- 3.) Configure the "Max Age" time
- 4.) Configure the "Forwarding Delay" time
- 5.) Configure the "Max hops"
- 6.) Configure the "Configuration Name"
- 7.) Configure the "Revision Number"
- 8.) Click "Apply" button

 Multiple Spanning Tree Protocol
[Status](#)

Bridge:

Active	<input checked="" type="checkbox"/>
Hello Time	2 seconds
MAX Age	20 seconds
Forwarding Delay	15 seconds
Maximum hops	128
Configuration Name	demo
Revision Number	111

2. Configure the MSTI parameters and choose which vlan should join this MSTI and click "Add"

Instance:

Instance	0		
Bridge Priority	32768		
VLAN Range	Start	End	<input type="button" value="Add"/> <input type="button" value="Remove"/> <input type="button" value="Clear"/>
Enabled VLAN(s)	1, 4-4094		

3. Choose which port should be included in this MSTI. Click "Add"

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

11. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”. Because Switch B is the root of MSTI 1, we need to configure the “Bridge Priority” of this instance to “0”

Instance:

Instance	1
Bridge Priority	0 <input type="button" value="v"/>
VLAN Range	Start <input type="text"/> End <input type="text"/>
<input type="button" value="Add"/> <input type="button" value="Remove"/> <input type="button" value="Clear"/>	
Enabled VLAN(s)	2

2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

13. Create vlans corresponding to MST instances.

1.)Go to “Static VLAN” page by clicking “Advanced Application” “VLAN”
“Static VLAN”

ZyXEL Save Status Logout Help

MENU
Basic Setting
Advanced Application
IP Application
Management

VLAN
Static MAC Forwarding
Filtering
Spanning Tree Protocol
Bandwidth Control
Broadcast Storm Control
Mirroring
Link Aggregation
Port Authentication
Port Security
Classifier
Policy Rule
Queueing Method
VLAN Stacking
Multicast
Auth and Acct
IP Source Guard
Loop Guard

VLAN Status VLAN Port Setting **Static VLAN**
The Number of VLAN = 3

Index	VID	Elapsed Time	Status
1	1	0:11:13	Static
2	2	0:11:13	Static
3	3	0:11:13	Static

Change Pages Previous Next

2.)Create vlan 2 for MSTI 1 and click “Add”

Static VLAN

[VLAN Status](#)

ACTIVE
☒

Name

VLAN Group ID

Port	Control			Tagging
*		Normal <input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

3.) Create vlan 3 for MSTI 2 and click “Add”

Static VLAN
VLAN Status

ACTIVE
☒

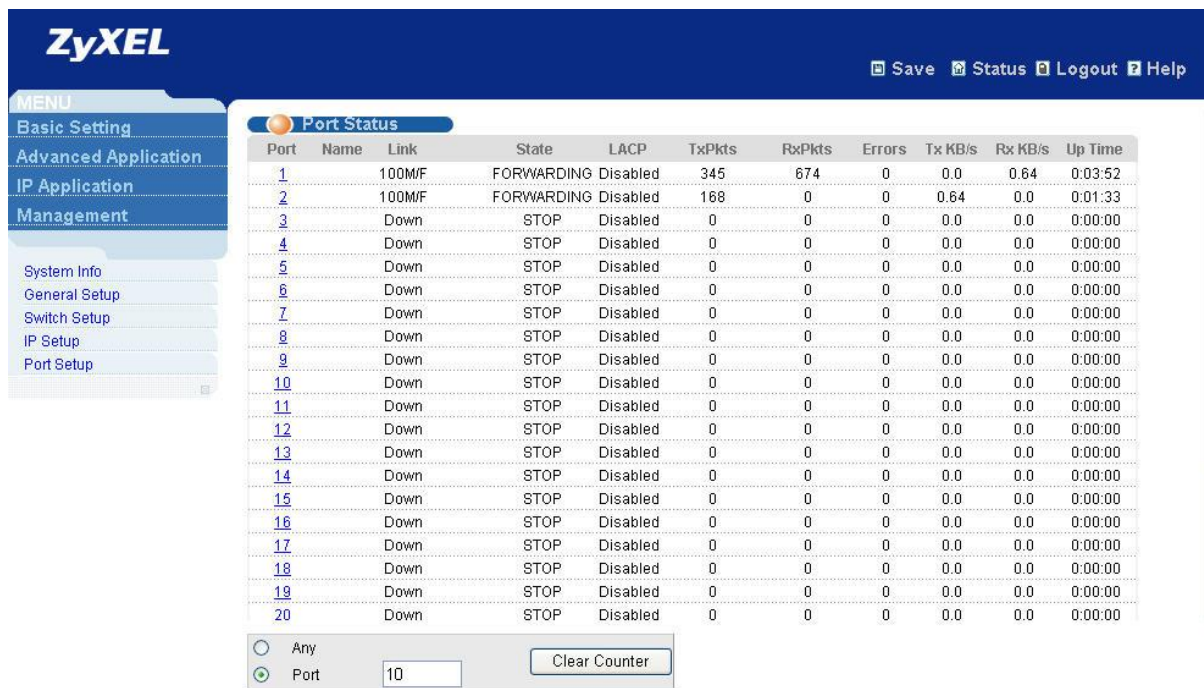
Name

VLAN Group ID

Port	Control			Tagging
*		Normal ▼		<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Configuration using the Web GUI – Switch C

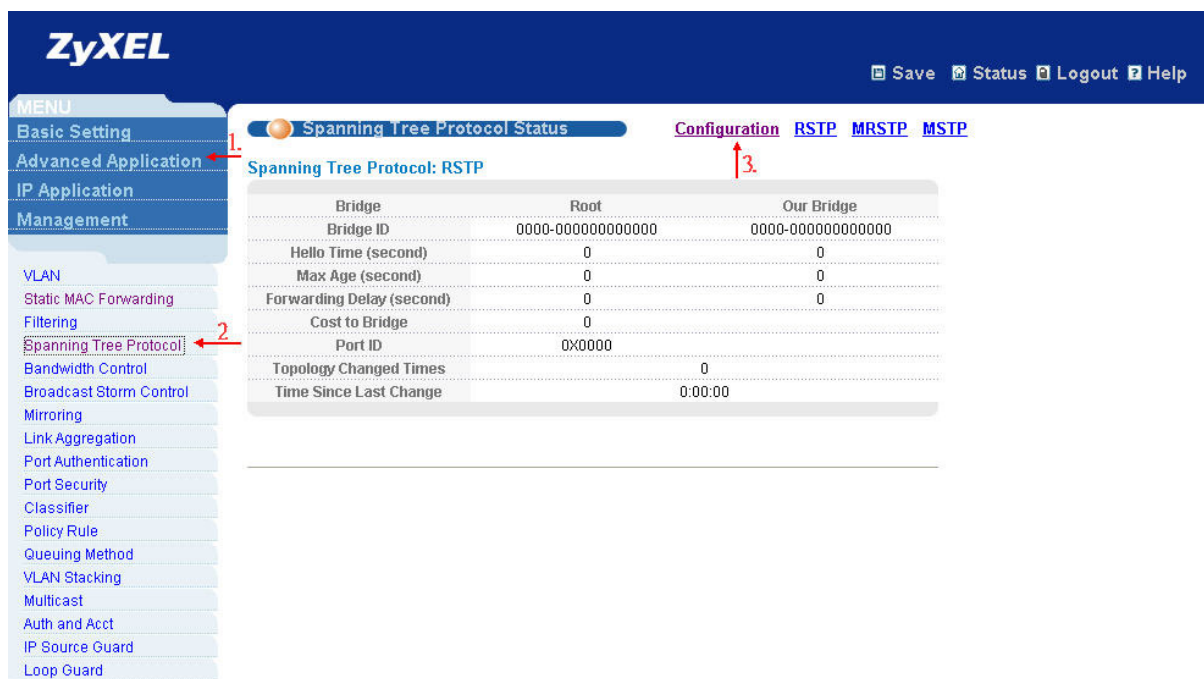
1. Connect MGMT port with a PC or Notebook via the RJ45 Cable.
2. By default, the MGMT IP of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter <http://192.168.0.1> in the URL field.
5. By default, the username for the administrator is “admin” and the corresponding password is “1234”.
6. After successful login you will see a screen similar to the one on the screenshot below.



The screenshot shows the ZyXEL web management interface. On the left is a 'MENU' sidebar with categories: Basic Setting, Advanced Application, IP Application, and Management. Under 'Management', 'Port Setup' is selected. The main content area is titled 'Port Status'. It contains a table with 11 columns: Port, Name, Link, State, LACP, TxPkts, RxPkts, Errors, Tx KB/s, Rx KB/s, and Up Time. The table lists 20 ports. Ports 1 and 2 are in a 'FORWARDING' state, while ports 3 through 20 are in a 'DOWN' state with a 'STOP' link state. Below the table, there are radio buttons for 'Any' and 'Port', a text input field with the value '10', and a 'Clear Counter' button.

Port	Name	Link	State	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	100M/F		FORWARDING	Disabled	345	674	0	0.0	0.64	0:03:52
2	100M/F		FORWARDING	Disabled	168	0	0	0.64	0.0	0:01:33
3	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
4	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
5	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
6	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
7	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
8	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
9	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
10	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
11	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
12	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
13	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
14	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
15	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
16	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
17	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
18	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
19	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00
20	Down		STOP	Disabled	0	0	0	0.0	0.0	0:00:00

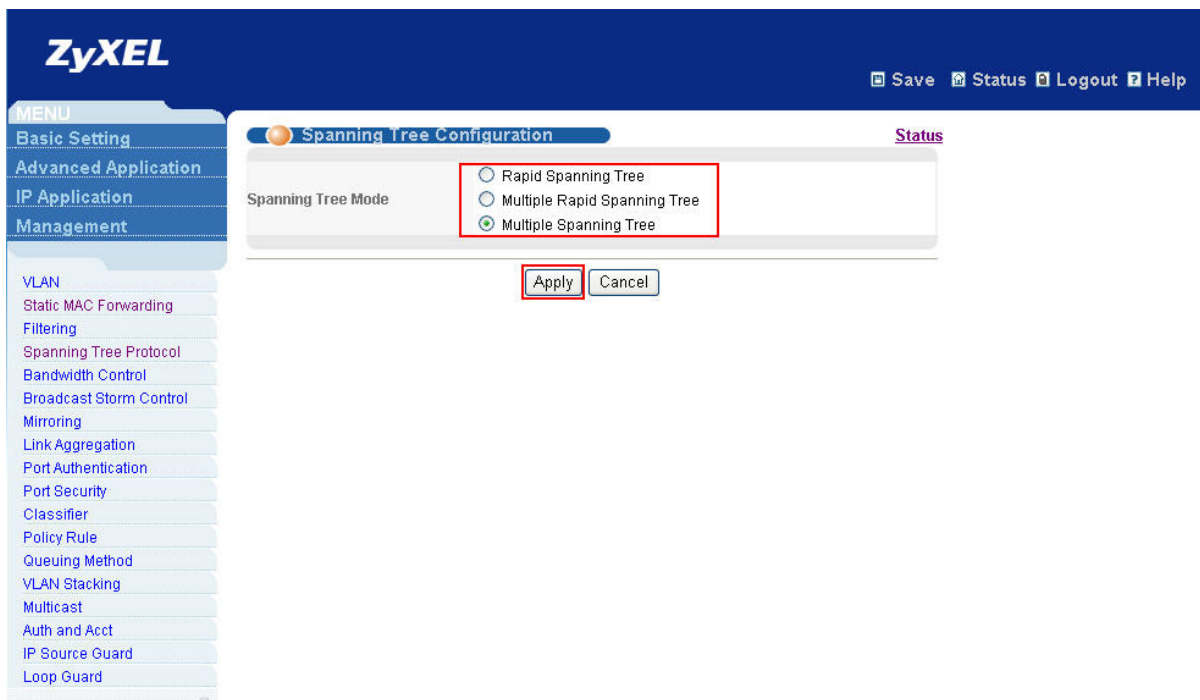
7. First of all, you need to enable the switch's MSTP function. To do so, click items depicted below. **Advanced Application -> Spanning Tree Protocol -> Configuration**



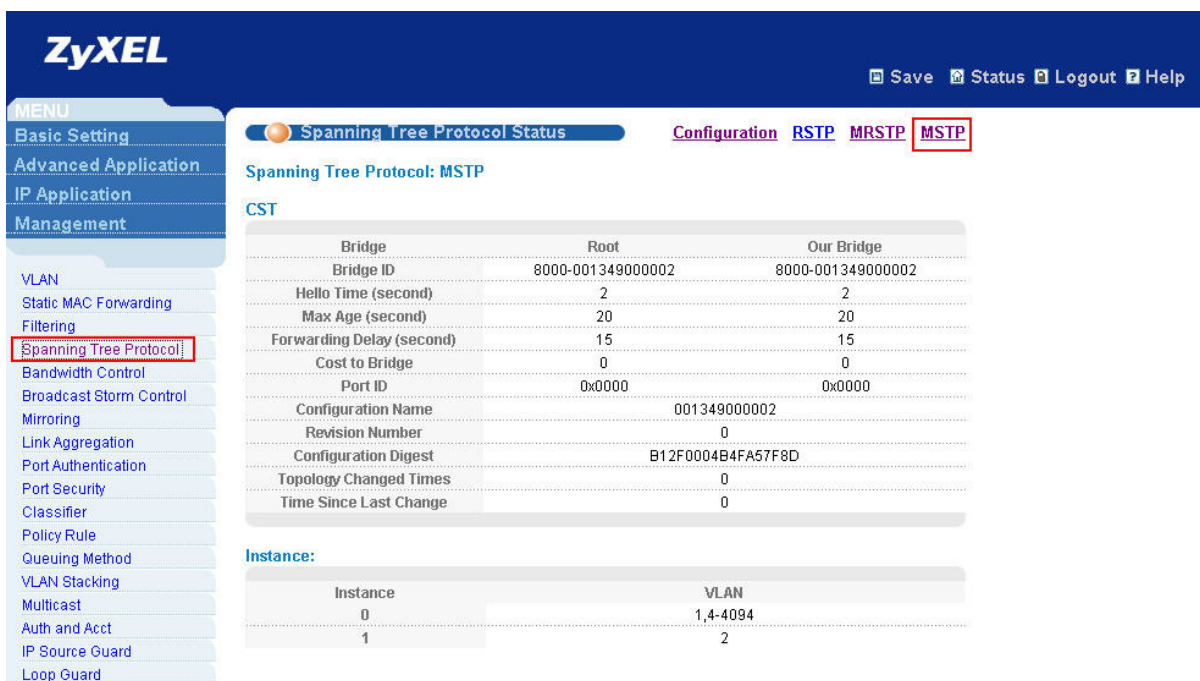
The screenshot shows the 'Spanning Tree Protocol Status' page in the ZyXEL web management interface. The left 'MENU' sidebar has 'Spanning Tree Protocol' selected under the 'Management' category. The main content area has tabs for 'Configuration', 'RSTP', 'MRSTP', and 'MSTP', with 'Configuration' being the active tab. The page title is 'Spanning Tree Protocol: RSTP'. Below the title is a table with three columns: Bridge, Root, and Our Bridge. The table contains various parameters related to the Spanning Tree Protocol, such as Bridge ID, Hello Time, Max Age, Forwarding Delay, Cost to Bridge, Port ID, Topology Changed Times, and Time Since Last Change. Red arrows and numbers are overlaid on the image: '1' points to 'Advanced Application' in the menu, '2' points to 'Spanning Tree Protocol', and '3' points to the 'Configuration' tab.

Bridge	Root	Our Bridge
Bridge ID	0000-000000000000	0000-000000000000
Hello Time (second)	0	0
Max Age (second)	0	0
Forwarding Delay (second)	0	0
Cost to Bridge	0	0
Port ID	0X0000	
Topology Changed Times	0	
Time Since Last Change	0:00:00	

8. After step 7. It will direct you to a “Spanning Tree Configuration” page, choose “Multiple Spanning Tree” then click the “Apply” button.




9. Click “**Spanning Tree Protocol**” button and back to “**Spanning Tree Protocol Status**” page. Click “**MSTP**” and go to the “**Multiple Spanning Tree Protocol**” page, you can do detail MSTP configuration from here.



10. At the “Multiple Spanning Tree Protocol” page, create a MSTI 0 setting by following steps. All ports want to join MSTP must be included into MSTI 0.

1. Configure the MSTP bridge parameters. (All switches in the same region must have the same "Configuration Name", "Revision Number" and "vlan-MSTI mapping".)

- 1.) Check "Active"
- 2.) Configure the "Hello Time"
- 3.) Configure the "Max Age" time
- 4.) Configure the "Forwarding Delay" time
- 5.) Configure the "Max hops"
- 6.) Configure the "Configuration Name"
- 7.) Configure the "Revision Number"
- 8.) Click "Apply" button

 Multiple Spanning Tree Protocol
[Status](#)

Bridge:

Active	<input checked="" type="checkbox"/>
Hello Time	2 seconds
MAX Age	20 seconds
Forwarding Delay	15 seconds
Maximum hops	128
Configuration Name	demo
Revision Number	111

2. Configure the MSTI parameters and choose which vlan should join this MSTI and click "Add"

Instance:

Instance	0		
Bridge Priority	32768		
VLAN Range	Start	End	<input type="button" value="Add"/> <input type="button" value="Remove"/> <input type="button" value="Clear"/>
Enabled VLAN(s)	1, 4-4094		

3. Choose which port should be included in this MSTI. Click "Add"

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

11. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”.

Instance:

Instance	1
Bridge Priority	32768
VLAN Range	Start End Add Remove Clear
Enabled VLAN(s)	2

2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

12. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”. Because Switch C is the root of MSTI 2, we need to configure the “Bridge Priority” of this instance to “0”

Instance:

Instance	2
Bridge Priority	0 <input type="button" value="v"/>
VLAN Range	Start <input type="text"/> End <input type="text"/> <input type="button" value="Add"/> <input type="button" value="Remove"/> <input type="button" value="Clear"/>
Enabled VLAN(s)	3

2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

13. Create vlans corresponding to MST instances.

1.)Go to “Static VLAN” page by clicking “Advanced Application” “VLAN”
“Static VLAN”

ZyXEL Save Status Logout Help

MENU
Basic Setting
Advanced Application
IP Application
Management

VLAN
Static MAC Forwarding
Filtering
Spanning Tree Protocol
Bandwidth Control
Broadcast Storm Control
Mirroring
Link Aggregation
Port Authentication
Port Security
Classifier
Policy Rule
Queueing Method
VLAN Stacking
Multicast
Auth and Acct
IP Source Guard
Loop Guard

VLAN Status VLAN Port Setting **Static VLAN**
The Number of VLAN = 3

Index	VID	Elapsed Time	Status
1	1	0:11:13	Static
2	2	0:11:13	Static
3	3	0:11:13	Static

Change Pages Previous Next

2.)Create vlan 2 for MSTI 1 and click “Add”

Static VLAN

[VLAN Status](#)

ACTIVE ☒

Name

VLAN Group ID

2

Port	Control			Tagging	
*		Normal <input checked="" type="radio"/>	Fixed <input type="radio"/>	Forbidden <input type="radio"/>	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging	

3.) Create vlan 3 for MSTI 2 and click “Add”

Static VLAN
VLAN Status

ACTIVE
☒

Name

VLAN Group ID

Port	Control			Tagging
*		Normal ▼		<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Configuration using the Web GUI – Switch D

1. Connect MGMT port with a PC or Notebook via the RJ45 Cable.
2. By default, the MGMT IP of the out-band port is 192.168.0.1/24
3. Set your NIC to 192.168.0.100/24
4. Open an Internet browser (e.g. IE) and enter <http://192.168.0.1> in the URL field.
5. By default, the username for the administrator is “admin” and the corresponding password is “1234”.
6. After successful login you will see a screen similar to the one on the screenshot below.

The screenshot shows the ZyXEL web interface with the 'Port Status' tab selected. The table lists 20 ports with their respective names, link states, and operational metrics.

Port	Name	Link	State	LACP	TxPkts	RxPkts	Errors	Tx KB/s	Rx KB/s	Up Time
1	100M/F	FORWARDING	Disabled	345	674	0	0.0	0.64	0:03:52	
2	100M/F	FORWARDING	Disabled	168	0	0	0.64	0.0	0:01:33	
3	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
4	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
5	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
6	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
7	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
8	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
9	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
10	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
11	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
12	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
13	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
14	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
15	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
16	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
17	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
18	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
19	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	
20	Down	STOP	Disabled	0	0	0	0.0	0.0	0:00:00	

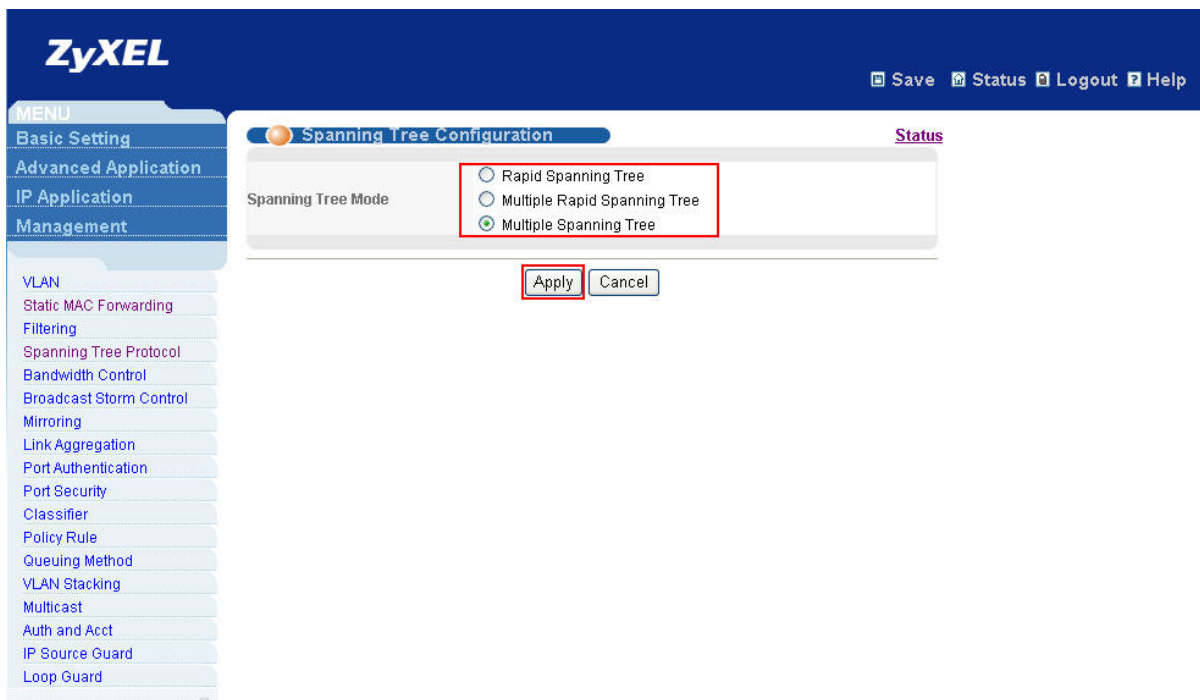
Below the table, there are radio buttons for 'Any' and 'Port' (selected), a text input field with '10', and a 'Clear Counter' button.

7. First of all, you need to enable the switch's MSTP function. To do so, click items depicted below. **Advanced Application -> Spanning Tree Protocol -> Configuration**

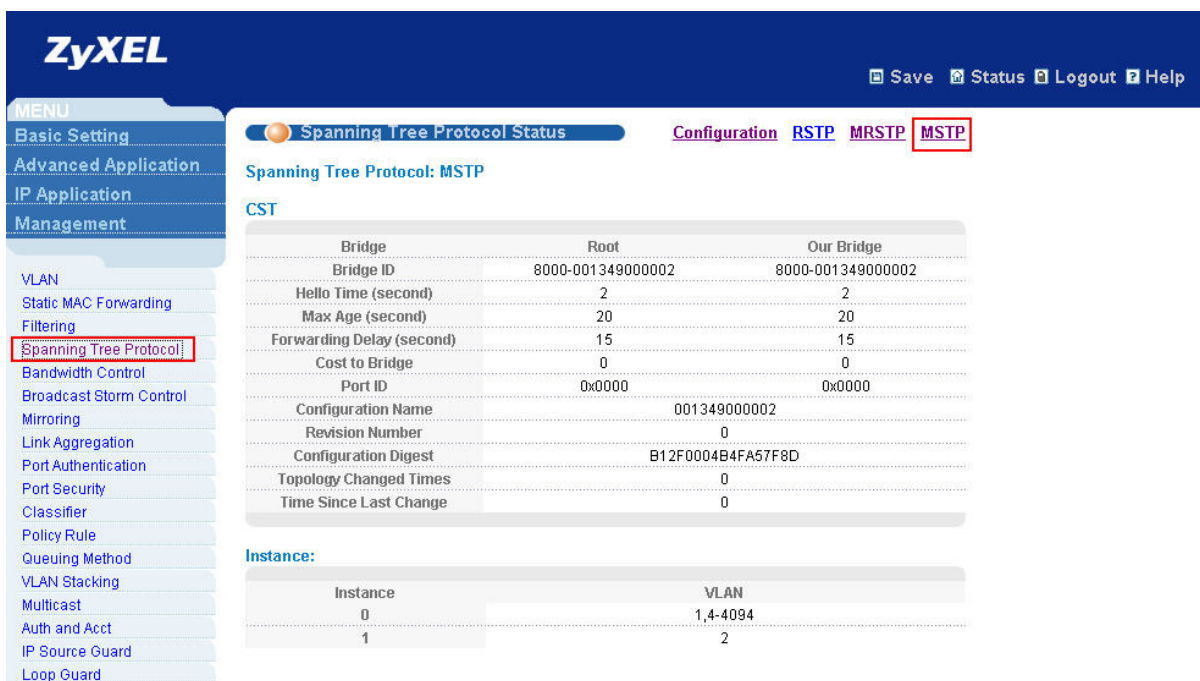
The screenshot shows the ZyXEL web interface with the 'Spanning Tree Protocol Status' page. The left menu has 'Spanning Tree Protocol' highlighted. The main content area shows the 'Spanning Tree Protocol: RSTP' configuration page. Red arrows indicate the navigation path: 1. 'Advanced Application' in the menu, 2. 'Spanning Tree Protocol' in the sub-menu, and 3. 'Configuration' in the top navigation bar.

Bridge	Root	Our Bridge
Bridge ID	0000-000000000000	0000-000000000000
Hello Time (second)	0	0
Max Age (second)	0	0
Forwarding Delay (second)	0	0
Cost to Bridge	0	0
Port ID	0X0000	
Topology Changed Times	0	
Time Since Last Change	0:00:00	

8. After step 7. It will direct you to a "Spanning Tree Configuration" page, choose "Multiple Spanning Tree" then click the "Apply" button.




9. Click “**Spanning Tree Protocol**” button and back to “**Spanning Tree Protocol Status**” page. Click “**MSTP**” and go to the “**Multiple Spanning Tree Protocol**” page, you can do detail MSTP configuration from here.



10. At the “Multiple Spanning Tree Protocol” page, create a MSTI 0 setting by following steps. All ports want to join MSTP must be included into MSTI 0

1. Configure the MSTP bridge parameters. (All switches in the same region must have the same "Configuration Name", "Revision Number" and "vlan-MSTI mapping".)

- 1.) Check "Active"
- 2.) Configure the "Hello Time"
- 3.) Configure the "Max Age" time
- 4.) Configure the "Forwarding Delay" time
- 5.) Configure the "Max hops"
- 6.) Configure the "Configuration Name"
- 7.) Configure the "Revision Number"
- 8.) Click "Apply" button

 Multiple Spanning Tree Protocol
[Status](#)

Bridge:

Active	<input checked="" type="checkbox"/>
Hello Time	2 seconds
MAX Age	20 seconds
Forwarding Delay	15 seconds
Maximum hops	128
Configuration Name	demo
Revision Number	111

2. Configure the MSTI parameters and choose which vlan should join this MSTI and click "Add"

Instance:

Instance	0		
Bridge Priority	32768		
VLAN Range	Start	End	<input type="button" value="Add"/> <input type="button" value="Remove"/> <input type="button" value="Clear"/>
Enabled VLAN(s)	1, 4-4094		

3. Choose which port should be included in this MSTI. Click "Add"

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

11. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”

Instance:

Instance	1
Bridge Priority	32768
VLAN Range	Start End

2

Enabled VLAN(s)


2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

12. At the “Multiple Spanning Tree Protocol” page, create a MSTI 1 setting by following steps.

1. Configure the MSTI parameters and choose which vlan should join this MSTI and click “Add”

Instance:

Instance	2
Bridge Priority	32768 
VLAN Range	Start <input type="text"/> End <input type="text"/>

Enabled VLAN(s)

3

2. Choose which port should be included in this MSTI. Click “Add”

Port	Active	Priority	Path Cost
*	<input type="checkbox"/>		
1	<input checked="" type="checkbox"/>	128	19
2	<input checked="" type="checkbox"/>	128	19
3	<input type="checkbox"/>	128	19
4	<input type="checkbox"/>	128	19
5	<input type="checkbox"/>	128	19
6	<input type="checkbox"/>	128	19
7	<input type="checkbox"/>	128	19
8	<input type="checkbox"/>	128	19
9	<input type="checkbox"/>	128	19
10	<input type="checkbox"/>	128	19
11	<input type="checkbox"/>	128	19
12	<input type="checkbox"/>	128	19
13	<input type="checkbox"/>	128	19
14	<input type="checkbox"/>	128	19
15	<input type="checkbox"/>	128	19
16	<input type="checkbox"/>	128	19

13. Create vlans corresponding to MST instances.

1.)Go to “Static VLAN” page by clicking “Advanced Application” “VLAN”
“Static VLAN”

ZyXEL Save Status Logout Help

MENU
Basic Setting
Advanced Application
IP Application
Management

VLAN
Static MAC Forwarding
Filtering
Spanning Tree Protocol
Bandwidth Control
Broadcast Storm Control
Mirroring
Link Aggregation
Port Authentication
Port Security
Classifier
Policy Rule
Queueing Method
VLAN Stacking
Multicast
Auth and Acct
IP Source Guard
Loop Guard

VLAN Status
The Number of VLAN = 3

VLAN Port Setting **Static VLAN**

Index	VID	Elapsed Time	Status
1	1	0:11:13	Static
2	2	0:11:13	Static
3	3	0:11:13	Static

Change Pages Previous Next

2.)Create vlan 2 for MSTI 1 and click “Add”

Static VLAN

[VLAN Status](#)

ACTIVE
☒

Name

VLAN Group ID

Port	Control			Tagging
*		Normal <input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

3.) Create vlan 3 for MSTI 2 and click “Add”

Static VLAN
VLAN Status

ACTIVE
☒

Name

VLAN Group ID

Port	Control			Tagging
*		Normal ▼		<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

Configuration using the CLI – Switch A

```

vlan 1 name 1
  normal ""
  fixed 1-28
  forbidden ""
  untagged 1-28
  ip address 192.168.1.1 255.255.255.0
exit
vlan 2
  normal 3-28
  fixed 1-2
  forbidden ""
  untagged ""
exit
vlan 3
  normal 3-28
  
```

```
fixed 1-2
forbidden ""
untagged ""
exit
interface route-domain 192.168.1.1/24
exit
ip address 192.168.0.1 255.255.255.0
spanning-tree mode MSTP
mstp
mstp configuration-name demo
mstp revision 111
mstp instance 0 vlan 1,4-4094
mstp instance 1 vlan 2
mstp instance 2 vlan 3
mstp instance 0 priority 0
mstp instance 0 interface port-channel 1
mstp instance 0 interface port-channel 2
mstp instance 1 interface port-channel 1
mstp instance 1 interface port-channel 2
mstp instance 2 interface port-channel 1
mstp instance 2 interface port-channel 2
```

Configuration using the CLI – Switch B

```
vlan 1 name 1
normal ""
fixed 1-28
forbidden ""
untagged 1-28
ip address 192.168.1.2 255.255.255.0
exit
vlan 2
normal 3-28
fixed 1-2
forbidden ""
untagged ""
```

```
exit
vlan 3
    normal 3-28
    fixed 1-2
    forbidden ""
    untagged ""
exit
interface route-domain 192.168.1.2/24
exit
ip address 192.168.0.1 255.255.255.0
spanning-tree mode MSTP
mstp
mstp configuration-name demo
mstp revision 111
mstp instance 0 vlan 1,4-4094
mstp instance 1 vlan 2
mstp instance 2 vlan 3
mstp instance 1 priority 0
mstp instance 0 interface port-channel 1
mstp instance 0 interface port-channel 2
mstp instance 1 interface port-channel 1
mstp instance 1 interface port-channel 2
mstp instance 2 interface port-channel 1
mstp instance 2 interface port-channel 2
```

Configuration using the CLI – Switch C

```
vlan 1 name 1
    normal ""
    fixed 1-28
    forbidden ""
    untagged 1-28
    ip address 192.168.1.3 255.255.255.0
exit
vlan 2
    normal 3-28
```

```
    fixed 1-2
    forbidden ""
    untagged ""
exit
vlan 3
    normal 3-28
    fixed 1-2
    forbidden ""
    untagged ""
exit
interface route-domain 192.168.1.3/24
exit
ip address 192.168.0.1 255.255.255.0
spanning-tree mode MSTP
mstp
mstp configuration-name demo
mstp revision 111
mstp instance 0 vlan 1,4-4094
mstp instance 1 vlan 2
mstp instance 2 vlan 3
mstp instance 2 priority 0
mstp instance 0 interface port-channel 1
mstp instance 0 interface port-channel 2
mstp instance 1 interface port-channel 1
mstp instance 1 interface port-channel 2
mstp instance 2 interface port-channel 1
mstp instance 2 interface port-channel 2
```

Configuration using the CLI – Switch D

```
vlan 1 name 1
    normal ""
    fixed 1-28
    forbidden ""
    untagged 1-28
ip address 192.168.1.4 255.255.255.0
```

```
exit
vlan 2
    normal 3-28
    fixed 1-2
    forbidden ""
    untagged ""
exit
vlan 3
    normal 3-28
    fixed 1-2
    forbidden ""
    untagged ""
exit
interface route-domain 192.168.1.4/24
exit
ip address 192.168.0.1 255.255.255.0
spanning-tree mode MSTP
mstp
mstp configuration-name demo
mstp revision 111
mstp instance 0 vlan 1,4-4094
mstp instance 1 vlan 2
mstp instance 2 vlan 3
mstp instance 0 interface port-channel 1
mstp instance 0 interface port-channel 2
mstp instance 1 interface port-channel 1
mstp instance 1 interface port-channel 2
mstp instance 2 interface port-channel 1
mstp instance 2 interface port-channel 2
```