



# A Guide to Simple IP Camera Deployment Using ZyXEL VLAN Solutions



2015/7/22

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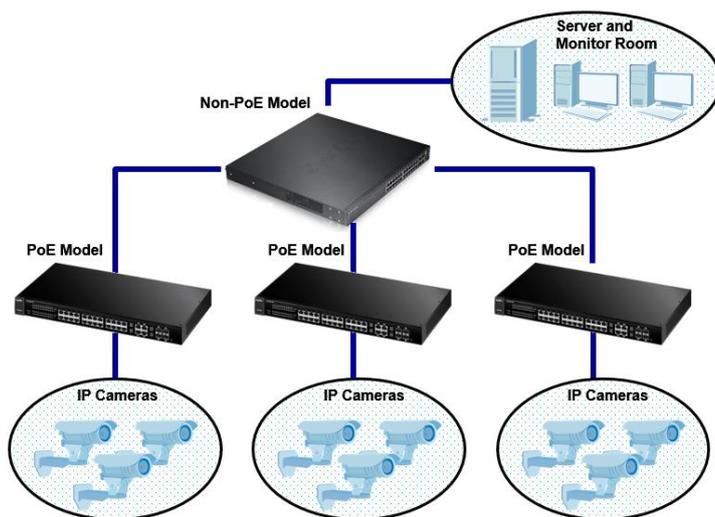
## Overview:

This article contains guidelines on how to introduce IP cameras into your local network using ZyXEL switches. This article focuses on the fundamental design and data forwarding considerations. Methods on how to improve and troubleshoot VLANs will also be included. This article assumes that IP camera service is deployed for small to medium businesses and uses unicast instead of multicast. Interaction between the IP camera and server will be strictly through the same layer-2 domain and will not cross any gateways.

## Objectives:

- Explain using VLAN to segregate the IP cameras' traffic
- Present VLAN configuration examples using Web GUI
- Troubleshooting guide for VLAN

## Basic IP Camera Network Topology:



The topology shown in the above graphic explains the following: multiple IP cameras are installed throughout the building for security surveillance purposes. We divide these devices in the order of downlink to uplink: the End Devices, the Access Layer, the Aggregation Layer, and the Server Room.

End devices include your PCs, laptops, printers, access points, IP phones, and IP cameras. These devices are normally placed installed throughout the building and their physical locations are restricted by their Ethernet cables. In this topology, we will assume that there are other end devices connected to the switch. However, we will only focus on the IP cameras.

The Access Layer is the initial point where all the end devices access the internal network. These end devices are usually directly connected to a switch. In this topology, using a PoE supported switch has the advantage of offering your IP cameras (or other powered devices) more flexibility by not needing to worry about the distance between the IP cameras and the

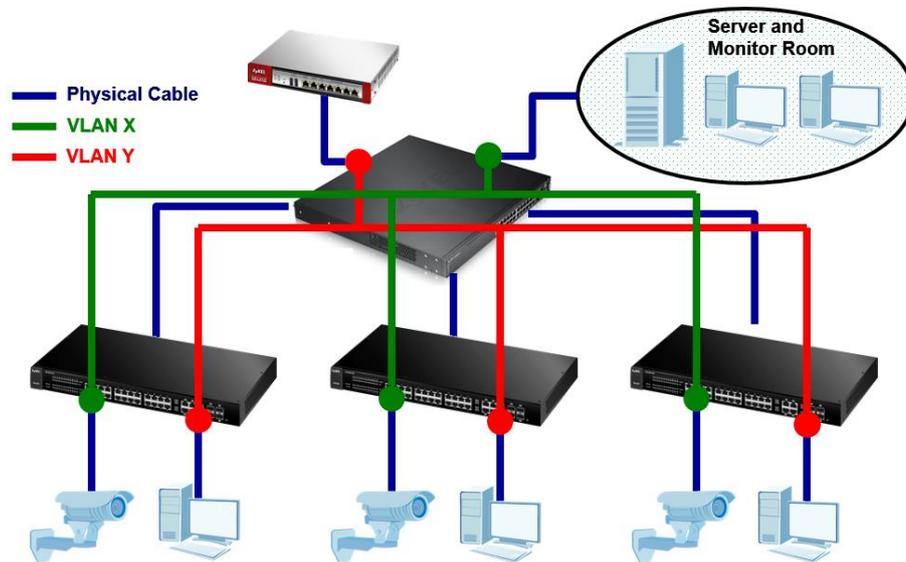


power outlets. This allows the IP cameras to be placed at their most ideal locations.

The Aggregation Layer is where all devices in the Access Layer converge. Devices in this layer are usually connected to other switches. Distribution switches can also be connected to administrator tools such as servers and administrator terminals. However, the distribution switch is responsible for converging all other switches in the network. Therefore, ports are reserved for switches and installing a PoE switch model in this case will not be the best choice.

Finally, we have the Server Room. The server room, or in this case, the monitor room, will require constant data transfer between all IP cameras below the Access Layer. This is where all surveillance videos are sent to.

### VLAN Consideration:



This topology assumes that the IP camera service is not available for non-authorized personnel. PC icons indicate that connected ports are for users or guests that only require Internet service. The USG indicates path to the Internet. Separating the traffic between IP cameras and other end devices can improve network management, service stability, and security.

The benefit to network administrators separating VLAN among the network's various services is that administrators may logically group end-stations or end-devices, which are independent from physical location or connection. This allows them to refine or modify different traffic across the network more conveniently.

Service stability is also an advantage of using VLAN. Administrators can configure the switch to give more priority to your IP camera traffic than users using the IEEE 802.1p. This ensures that if the bandwidth over a link is full, the switch will process the packets in the VLAN with a higher priority first. Service stability is also improved by cutting the broadcast domain smaller, thereby decreasing the overall packet transmission.

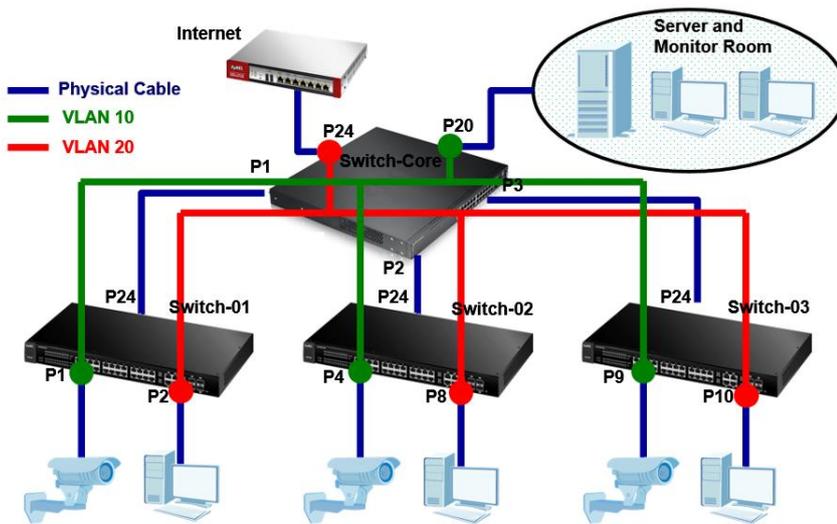
Security would be the most important concern in this scenario, especially if the IP cameras are



used for surveillance. If you allow all end points to access the same VLAN, your network will be open to spoofing attacks. Hackers can either copy sensitive information or disable some network services. The VLAN ID should be random to prevent this.

### VLAN Configurations in Web GUI:

We will now try to configure the proposed topology using Web GUI. Since the purpose of this article is meant for IP camera deployment, we will assume IP camera service has a higher priority. As a reminder, the USG indicates path to the Internet.



Devices:

Device Name	Model
Switch-01	GS1920-24HP
Switch-02	GS1920-24HP
Switch-03	GS1920-24HP
Switch-Core	GS1920-48

Objectives:

- IP cameras and IP camera server will use VLAN 10.
- PC or non-IP camera devices will use VLAN 20.
- Only PC or non-IP camera devices can access Internet.
- VLAN 10 should have a higher traffic priority.

Procedure:

**Step 1:** Go to **Advance Application -> VLAN -> VLAN Configuration -> Static VLAN Setup.**

Create VLAN 10. "Fix" ports that goes to IP cameras, server, and neighboring switches. Set ports to IP cameras and server as "untagged".



# Switch-01

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension GS1920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queueing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Errisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name IP Camera  
VLAN Group ID 10

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 type="checkbox"/> Tx Tagging
2	<input checked="" type="radio"/> Normal	<input 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
14	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

# Switch-02

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension GS1920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queueing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Errisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name IP Camera  
VLAN Group ID 10

Port	Control			Tagging
*	Normal			<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input checked="" type="radio"/> Normal	<input 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 type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input 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
14	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input checked="" type="radio"/> Normal	<input type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal	<input checked="" type="radio"/> Fixed	<input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging



### Switch-03

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application Management  
Management

Dimension 651920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queueing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Errdisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name IP Camera  
VLAN Group ID 10

Port	Control	Tagging
*	Normal	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

### Switch-Core

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application Management  
Management

Dimension 651920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queueing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Errdisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name IP Camera  
VLAN Group ID 10

Port	Control	Tagging
*	Normal	<input checked="" type="checkbox"/> Tx Tagging
1	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
2	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
3	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal <input type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging



**Step 2: Go to Advance Application -> VLAN -> VLAN Configuration -> Static VLAN Setup.**

Create VLAN 20. "Fix" ports that goes to PC, Internet, and neighboring switches. Set ports to PC and Internet as "untagged".

Switch-01

Static VLAN Configuration for Switch-01:

Port	Control	Tagging
1	Normal	<input checked="" type="checkbox"/> Tx Tagging
2	Fixed	<input checked="" type="checkbox"/> Tx Tagging
3	Normal	<input checked="" type="checkbox"/> Tx Tagging
4	Normal	<input checked="" type="checkbox"/> Tx Tagging
5	Normal	<input checked="" type="checkbox"/> Tx Tagging
6	Normal	<input checked="" type="checkbox"/> Tx Tagging
7	Normal	<input checked="" type="checkbox"/> Tx Tagging
8	Normal	<input checked="" type="checkbox"/> Tx Tagging
9	Normal	<input checked="" type="checkbox"/> Tx Tagging
10	Normal	<input checked="" type="checkbox"/> Tx Tagging
11	Normal	<input checked="" type="checkbox"/> Tx Tagging
12	Normal	<input checked="" type="checkbox"/> Tx Tagging
13	Normal	<input checked="" type="checkbox"/> Tx Tagging
14	Normal	<input checked="" type="checkbox"/> Tx Tagging
15	Normal	<input checked="" type="checkbox"/> Tx Tagging
16	Normal	<input checked="" type="checkbox"/> Tx Tagging
17	Normal	<input checked="" type="checkbox"/> Tx Tagging
18	Normal	<input checked="" type="checkbox"/> Tx Tagging
19	Normal	<input checked="" type="checkbox"/> Tx Tagging
20	Normal	<input checked="" type="checkbox"/> Tx Tagging
21	Normal	<input checked="" type="checkbox"/> Tx Tagging
22	Normal	<input checked="" type="checkbox"/> Tx Tagging
23	Fixed	<input checked="" type="checkbox"/> Tx Tagging
24	Fixed	<input checked="" type="checkbox"/> Tx Tagging

Switch-02

Static VLAN Configuration for Switch-02:

Port	Control	Tagging
1	Normal	<input checked="" type="checkbox"/> Tx Tagging
2	Normal	<input checked="" type="checkbox"/> Tx Tagging
3	Normal	<input checked="" type="checkbox"/> Tx Tagging
4	Normal	<input checked="" type="checkbox"/> Tx Tagging
5	Normal	<input checked="" type="checkbox"/> Tx Tagging
6	Normal	<input checked="" type="checkbox"/> Tx Tagging
7	Normal	<input checked="" type="checkbox"/> Tx Tagging
8	Fixed	<input checked="" type="checkbox"/> Tx Tagging
9	Normal	<input checked="" type="checkbox"/> Tx Tagging
10	Normal	<input checked="" type="checkbox"/> Tx Tagging
11	Normal	<input checked="" type="checkbox"/> Tx Tagging
12	Normal	<input checked="" type="checkbox"/> Tx Tagging
13	Normal	<input checked="" type="checkbox"/> Tx Tagging
14	Normal	<input checked="" type="checkbox"/> Tx Tagging
15	Normal	<input checked="" type="checkbox"/> Tx Tagging
16	Normal	<input checked="" type="checkbox"/> Tx Tagging
17	Normal	<input checked="" type="checkbox"/> Tx Tagging
18	Normal	<input checked="" type="checkbox"/> Tx Tagging
19	Normal	<input checked="" type="checkbox"/> Tx Tagging
20	Normal	<input checked="" type="checkbox"/> Tx Tagging
21	Normal	<input checked="" type="checkbox"/> Tx Tagging
22	Normal	<input checked="" type="checkbox"/> Tx Tagging
23	Fixed	<input checked="" type="checkbox"/> Tx Tagging
24	Fixed	<input checked="" type="checkbox"/> Tx Tagging



### Switch-03

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension G51920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queuing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Erdisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name PC-Internet  
VLAN Group ID 20

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 type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging

### Switch-Core

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension G51920

VLAN  
Static MAC Forwarding  
Static Multicast Forwarding  
Filtering  
Spanning Tree Protocol  
Bandwidth Control  
Broadcast Storm Control  
Mirroring  
Link Aggregation  
Port Authentication  
Port Security  
Classifier  
Policy Rule  
Queuing Method  
Multicast  
AAA  
IP Source Guard  
Loop Guard  
Layer 2 Protocol Tunneling  
PPPoE  
Erdisable  
Private VLAN  
Green Ethernet  
LLDP

**Static VLAN** VLAN Configuration

ACTIVE

Name PC-Internet  
VLAN Group ID 20

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 type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
4	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
5	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
6	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
7	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
8	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
9	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
10	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
11	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
12	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
13	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
14	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
15	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
16	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
17	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
18	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
19	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
20	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
21	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
22	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
23	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging
24	<input type="radio"/> Normal <input checked="" type="radio"/> Fixed <input type="radio"/> Forbidden	<input checked="" type="checkbox"/> Tx Tagging



**Step 3: Go to Advance Application -> VLAN -> VLAN Configuration -> VLAN Port Setup.**

Configure the PVID. Ports to IP cameras and server will use PVID 10, while ports to PC and Internet will use PVID 20. You can ignore PVID of ports to neighboring switches.

Switch-01

**ZyXEL**  
MENU  
Basic Setting  
Advanced Application  
IP Application  
Management  
Dimension GS1920

VLAN Configuration

VLAN Port Setting

GVRP

Port	Ingress Check	PVID	GVRP	Acceptable Frame Type	VLAN Trunking	Isolation
*	<input type="checkbox"/>		<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
1	<input type="checkbox"/>	10	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	20	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
21	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
22	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
23	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>

Switch-02

**ZyXEL**  
MENU  
Basic Setting  
Advanced Application  
IP Application  
Management  
Dimension GS1920

VLAN Configuration

VLAN Port Setting

GVRP

Port	Ingress Check	PVID	GVRP	Acceptable Frame Type	VLAN Trunking	Isolation
*	<input type="checkbox"/>		<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
1	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	20	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	10	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	20	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
21	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
22	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
23	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>



### Switch-03

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension G51920

VLAN Configuration

VLAN Port Setting

GVRP

Port	Ingress Check	PVID	GVRP	Acceptable Frame Type	VLAN Trunking	Isolation
*	<input type="checkbox"/>		<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
1	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	10	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	20	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
21	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
22	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
23	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>

### Switch-Core

**ZyXEL**

MENU  
Basic Setting  
Advanced Application  
IP Application  
Management

Dimension G51920

VLAN Configuration

VLAN Port Setting

GVRP

Port	Ingress Check	PVID	GVRP	Acceptable Frame Type	VLAN Trunking	Isolation
*	<input type="checkbox"/>		<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
1	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
7	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
9	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
16	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
17	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
18	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
19	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
20	<input type="checkbox"/>	10	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
21	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
22	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
23	<input type="checkbox"/>	1	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	20	<input type="checkbox"/>	All	<input type="checkbox"/>	<input type="checkbox"/>



#### Step 4: Go to **Basic Settings -> Port Setup.**

Now we need to give IP camera video traffic a higher priority. In this case, we will need to configure all ports to IP cameras and server with an 802.1p priority of 5.

#### Switch-01

The screenshot shows the ZyXEL web interface for Switch-01. The 'Port Setup' page is active, displaying a table of 10 ports. The '802.1p Priority' column for port 1, which is named 'Camera-01', is highlighted with a red circle and set to 5. All other ports have a priority of 0.

Port	Active	Name	Type	Speed / Duplex	Flow Control	802.1p Priority
*	<input type="checkbox"/>		-	Auto	<input type="checkbox"/>	0
1	<input checked="" type="checkbox"/>	Camera-01	10/100/1000M	Auto	<input type="checkbox"/>	5
2	<input checked="" type="checkbox"/>	PC	10/100/1000M	Auto	<input type="checkbox"/>	0
3	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
4	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
5	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
6	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
7	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
8	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
9	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
10	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0

#### Switch-02

The screenshot shows the ZyXEL web interface for Switch-02. The 'Port Setup' page is active, displaying a table of 10 ports. The '802.1p Priority' column for port 4, which is named 'Camera-02', is highlighted with a red circle and set to 5. All other ports have a priority of 0.

Port	Active	Name	Type	Speed / Duplex	Flow Control	802.1p Priority
*	<input type="checkbox"/>		-	Auto	<input type="checkbox"/>	0
1	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
2	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
3	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
4	<input checked="" type="checkbox"/>	Camera-02	10/100/1000M	Auto	<input type="checkbox"/>	5
5	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
6	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
7	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
8	<input checked="" type="checkbox"/>	PC	10/100/1000M	Auto	<input type="checkbox"/>	0
9	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
10	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0

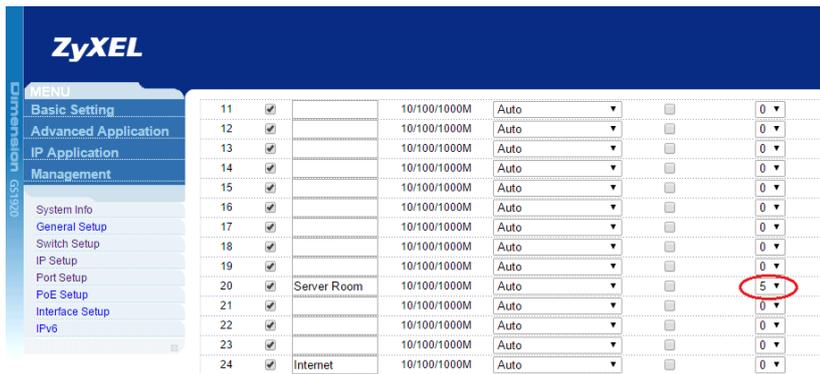
#### Switch-03

The screenshot shows the ZyXEL web interface for Switch-03. The 'Port Setup' page is active, displaying a table of 10 ports. The '802.1p Priority' column for port 9, which is named 'Camera-03', is highlighted with a red circle and set to 5. All other ports have a priority of 0.

Port	Active	Name	Type	Speed / Duplex	Flow Control	802.1p Priority
*	<input type="checkbox"/>		-	Auto	<input type="checkbox"/>	0
1	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
2	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
3	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
4	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
5	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
6	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
7	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
8	<input checked="" type="checkbox"/>		10/100/1000M	Auto	<input type="checkbox"/>	0
9	<input checked="" type="checkbox"/>	Camera-03	10/100/1000M	Auto	<input type="checkbox"/>	5
10	<input checked="" type="checkbox"/>	PC	10/100/1000M	Auto	<input type="checkbox"/>	0



## Switch-Core



**Optional:** You can configure the Queuing Method. For more details on Queuing Method behavior, refer to

<http://kb.zyxel.com/KB/searchArticle!viewDetail.action?articleOid=014142&lang=EN>

### Troubleshooting VLAN:

1. From the port connected to the IP camera, ping the IP camera server's IP address. A successful ping shows that traffic is flowing both ways. If ping is unsuccessful, verify that packets are processed in the correct VLAN.

- a. Go to **Management -> MAC Table**.
- b. Select condition: All.
- c. Click the "Search" button.

Index	MAC Address	VID	Port	Type
1	00:0c:29:75:2b:5a	100	1	Dynamic
2	00:0c:29:cb:38:d7	100	2	Dynamic
3	00:0c:29:28:4f:ae	100	3	Dynamic
4	00:0c:29:11:d4:51	100	4	Dynamic
5	00:0c:29:2e:98:b9	100	5	Dynamic
6	4c:9e:ff:6f:90:3f	1	24	Dynamic
7	64:66:b3:50:08:1e	1	24	Dynamic
8	74:d4:35:f4:6b:4e	1	24	Dynamic
9	b0:b2:dc:6f:3a:d3	1	24	Dynamic
10	b0:b2:dc:6f:55:db	1	24	Dynamic

- d. A list should appear similar to the image above.
  - e. Look for the MAC address of the IP camera. If MAC address does not appear, then IP camera most likely has not sent any packets to the switch within the past five minutes. If MAC address of the IP camera does appear in the MAC table but in an incorrect VLAN, then there is a strong indication of misconfiguration.
2. The ZyXEL VLAN concept follows three rules: the ingress, forwarding, and egress rule. This refers to the PVID, normal/fix/forbidden ports, and Tx-tagging; respectively. Make



sure all three rules meet your network policy.

3. If the MAC address of the IP camera does appear in MAC table of your uplink switches and are processed in the correct VLAN, the final thing to consider is if the packets sent to either the IP cameras or server carries any VLAN tag. End-devices by default cannot process packets with VLAN tags. Make sure that ports leading to your IP cameras or servers are set to "untagged".

For more product information, visit us on the web at [www.ZyXEL.com](http://www.ZyXEL.com)

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