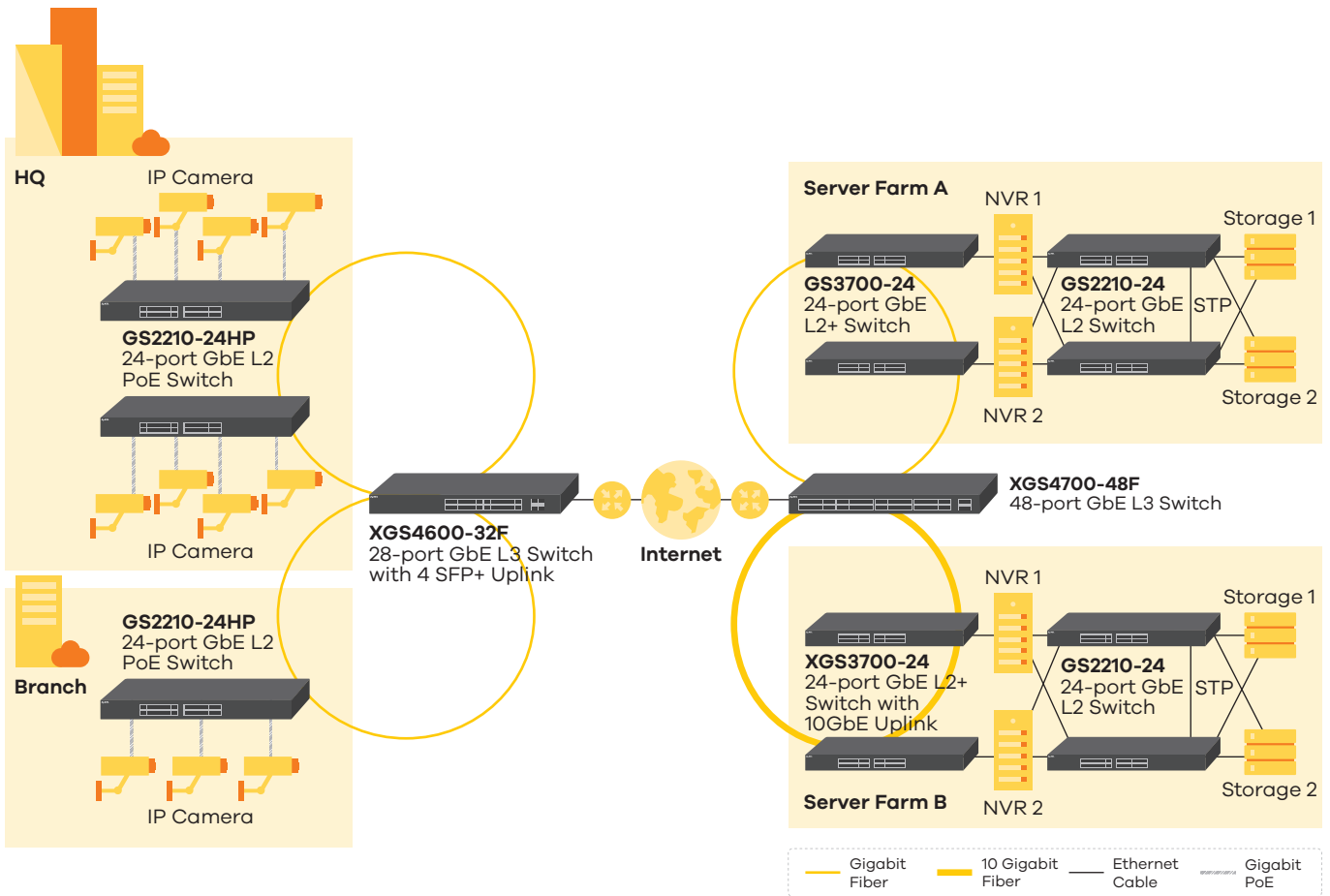# Network resilience

The network resilience application describes how to build a high-availability IP surveillance system. When some nodes in the IP network are disconnected, it's important for IP surveillance operators to quickly identify the problems and recover the network to avoid security threats. To achieve this goal, IP networks should have a network monitoring status mechanism to ensure network resilience. As such performance monitoring and STP features are very critical elements for network architecture.

HQ
IP Camera

GS2210-24HP
24-port GbE L2
PoE Switch

IP Camera

GS2210-24HP
24-port GbE L2
PoE Switch

Branch

IP Camera

XGS4600-32F
28-port GbE L3 Switch
with 4 SFP+ Uplink

Internet

Server Farm A

NVR 1

GS3700-24
24-port GbE
L2+ Switch

NVR 2

Storage 1

GS2210-24
24-port GbE
L2 Switch

STP

Storage 2

XGS4700-48F
48-port GbE L3 Switch

NVR 1

XGS3700-24
24-port GbE L2+
Switch with
10GbE Uplink

Server Farm B

NVR 2

Storage 1

GS2210-24
24-port GbE
L2 Switch

STP

Storage 2

Gigabit Fiber	10 Gigabit Fiber	Ethernet Cable	Gigabit PoE

Balanced Network Traffic

In a multi-site surveillance environment, the network architecture is divided into aggregation and access layers. The access layer switches are generally Layer 2 which provide port capacities to connect cameras or application clients. The aggregation layer switches are generally Layer 3 which provide not only Gigabit fiber connectivity to the distribution switches, but also enough bandwidth for the high-volume traffics.

Performance Monitoring via RMON Features

Performance monitoring is used to gather, store and report performance data for early detection of network problems. The Zyxel Switches with RMON features will collect and monitor the network status data; in which the RMON features enable switches to continuously monitor the setting by themselves and send out the preconfigured event/alarm messages once the monitored values are over/under the rising/falling threshold. For example, when some IP cameras have abnormal traffics, RMON feature will alarm the network administrators and help taking proactive activities to prevent security threat.

DDMI SFP Enhances Management Capability

The enhanced digital interface enables a real-time link to be established between the switch and the SFP transceiver. This enables the switch to access operating parameters within the fiber link, and it includes digital features such as soft control and monitoring of SFP I/O signals. In addition, the DDMI functionality enables the capability to implement digital alarms and warnings.

The DDMI enables users to have the capability of performing component monitoring, fault isolation and failure prediction tasks on their transceiver-based links. This feature also ensures the businesses to be proactive in preventative maintenance of the network for guaranteed non-stop operations.

Network Resilience

To build a high-availability IP surveillance system, the network must offer link redundancy with failover protection. The key element of high-availability IP surveillance system is Spanning Tree Protocol (STP) technology; the STP detects and breaks network loops, and it also provides backup links between switches, bridges or routers. It allows a device to interact with other STP-aware devices on the network to ensure that only one path exists between any two stations on the network. The STP technologies (MSTP/RSTP/MRSTP) provide link failover capability to the access switches connected to the IP cameras or storage devices.

PoE Scheduling

Zyxel fully managed PoE switches feature PoE scheduling to supply power to devices only during working hours, saving energy and money while preventing improper use of business network resources.