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IP-COM Long-range Surveillance Wireless Transmission Solutions

Surveillance Wireless Transmission Solution for Reservoirs/ Tourist attractions/Forestry






Contents

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Reservoir Scenario Requirements

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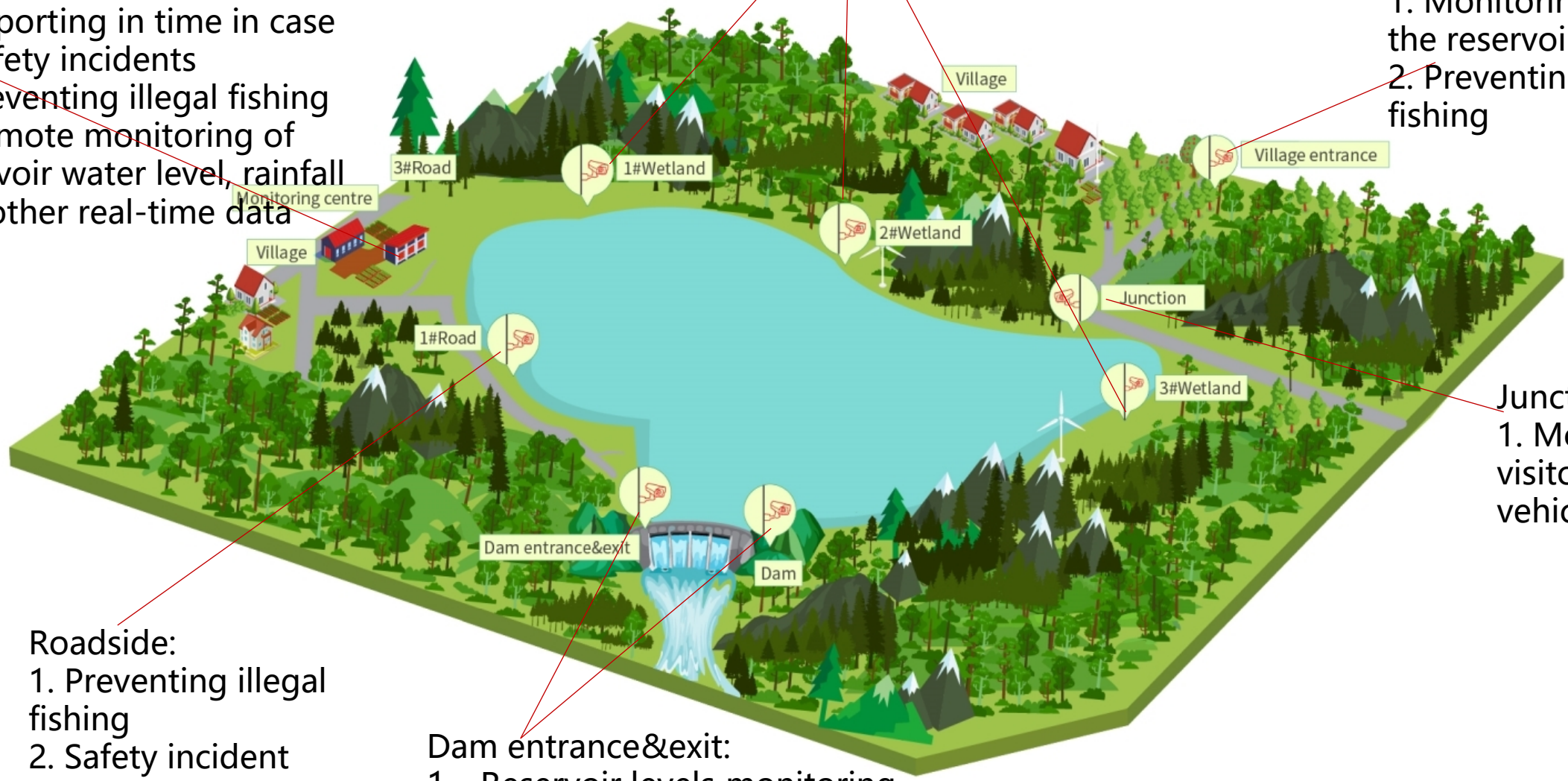
Wetland:
Reservoir levels monitoring

Monitoring centre:
monitoring all the reservoir area #Reservoir
1. Reporting in time in case of safety incidents
2. Preventing illegal fishing
3. Remote monitoring of reservoir water level, rainfall and other real-time data

Village entrance:
1. Monitoring access to the reservoir
2. Preventing illegal fishing



Junction:
1. Monitoring visitors and vehicles

Roadside:
1. Preventing illegal fishing
2. Safety incident monitoring

Dam entrance&exit:
1. Reservoir levels monitoring
2. Safety incident monitoring

Requirements Summary

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1 Stable video transmission for monitoring areas such as reservoir's entrance&exit, road junctions, dam, wetland and etc.

2 Cameras and the monitoring centre are far apart and scattered, ranging from 200m to 7km

3 Straight line path between monitoring point and the monitoring centre is blocked by the dam or trees and needs to be relayed via a network bridge

4 The outdoor CPEs around the monitoring room can be powered by PoE switches or utility poles, others need to be powered by solar/wind power panels

Requirements Summary

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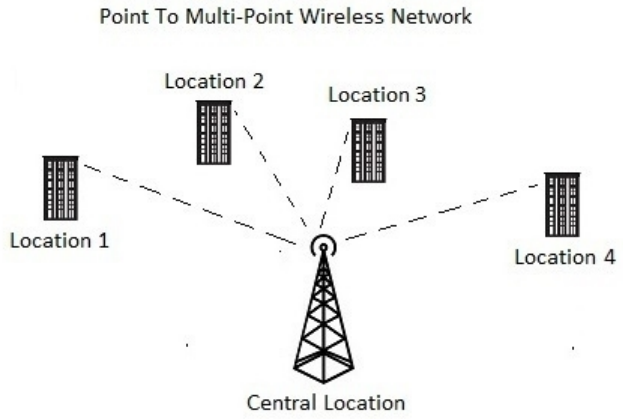
5 Devices, installed in high outdoor locations, need to be protected from lightning, dust and water

6 Builders do not have enough network knowledge, have to simplify installation

7 Point-to-multipoint transmission need to be stable



Contents

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Solution-1- Mark Monitoring Points and backhaul planning

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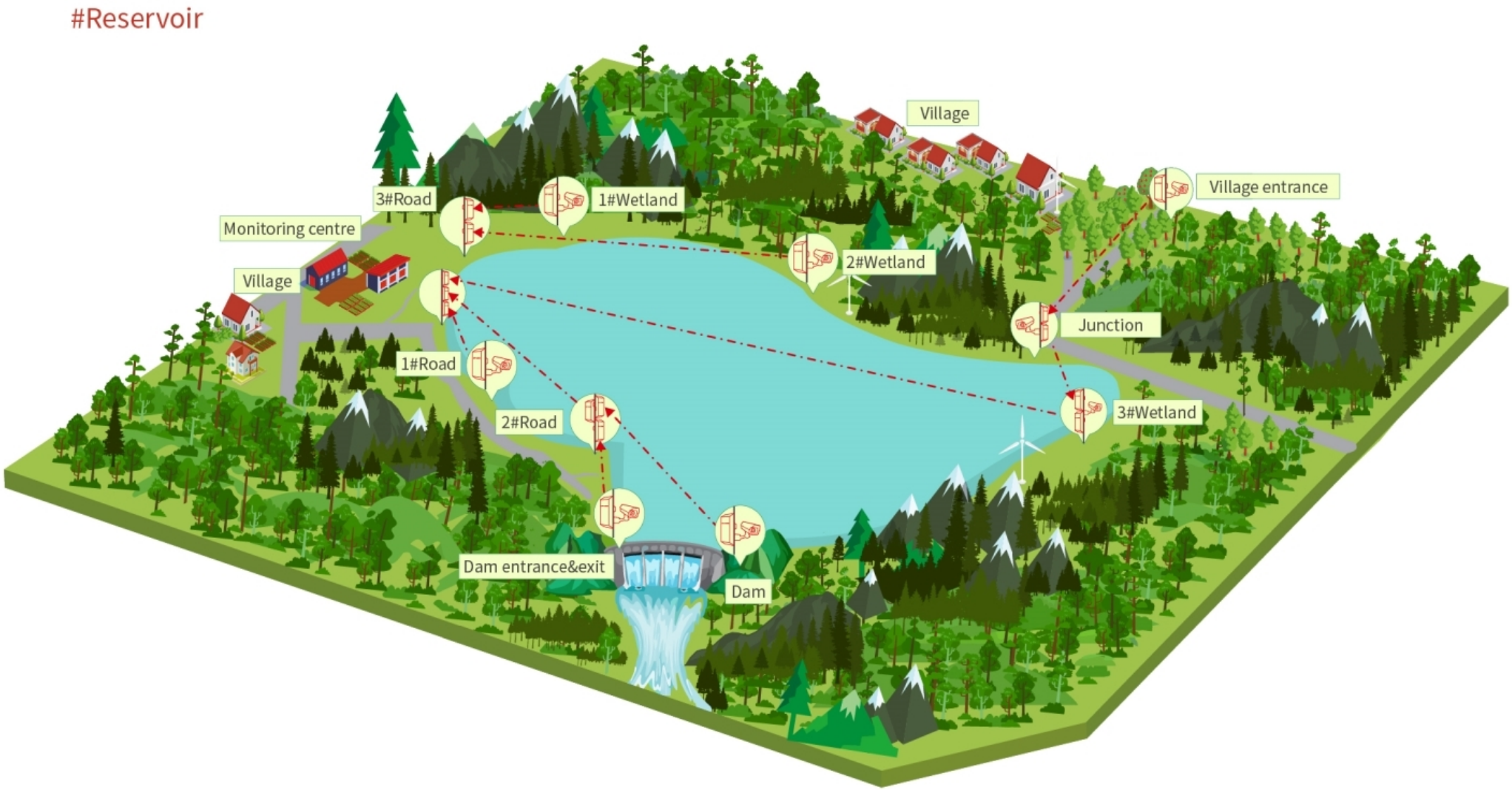
Mark all surveillance cameras locations, numbers and specifications, do on-the-spot investigation and plan data backhaul routes



Solution-2-Distance recording, Bandwidth counting and CPE model selecting

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Record the distance of each backhaul line, calculate number of cameras, count bandwidth and select the appropriate models

Backhaul line	Distance	Camera quantity	Bandwidth	Connection method	Transmitter	Receiver
1#Wetland->Monitoring centre	500m	1	4Mbps	P2P	CPE6S	CPE6S
2#Wetland->Monitoring centre	1.5km	2	8Mbps	P2P	CPE6S	CPE6S
Village entrance->Junction	1.6km	3	12Mbps	P2P	CPE6S	CPE6S
Junction->3#Wetland	1km	5	20Mbps	P2P	CPE6S	CPE6S
3#Wetland->Monitoring centre	4.6km	8	32Mbps	P2MP	BS9+ANT19-5G120	MS-5AC
Dam->2#Road	2km	3	12Mbps	P2P	CPE6S	CPE6S
Dam entrance&exit->2#Road	1.6km	2	8Mbps	P2P	CPE6S	CPE6S
2#Road->Monitoring centre	2.5km	4	16Mbps	P2MP	BS9+ANT19-5G120	CPE6S
1#Road->Monitoring centre	1.8km	2	8Mbps	P2MP	BS9+ANT19-5G120	CPE6S

Solution-3-How to ensure long distance data transmission

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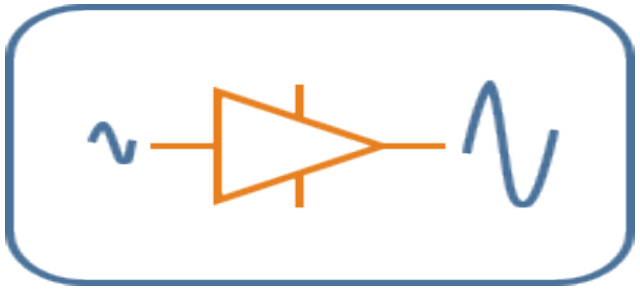
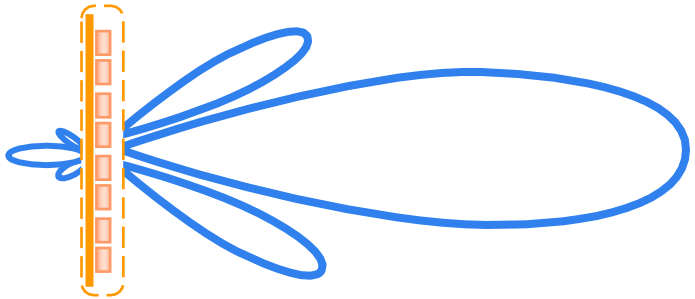


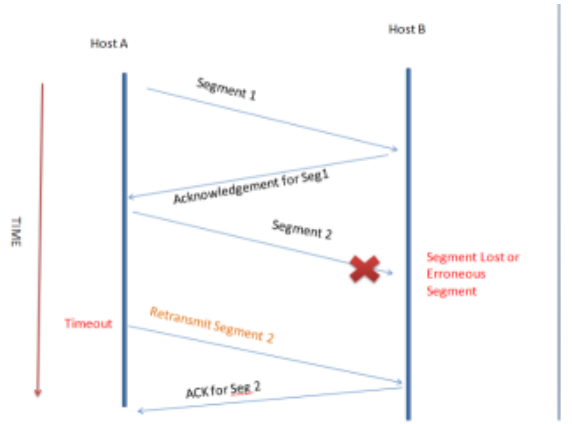
External signal amplifier

Enhances wirelessly transferable energy



Directional antenna

Focuses energy on a specific direction of emission and reception of electromagnetic waves, increasing effective signal utilization



ACK-Timeout Optimisation

Indoor APs or routers can only transmit up to 300 metres, while ACK-Timeout Optimisation extends the limit up to 25km

Solution-4-How to ensure the capacity can meet surveillance requirements

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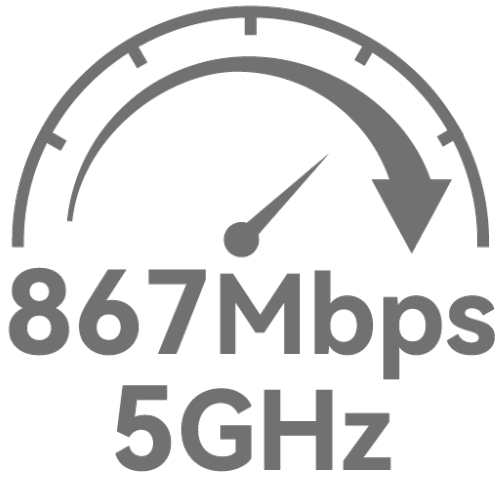
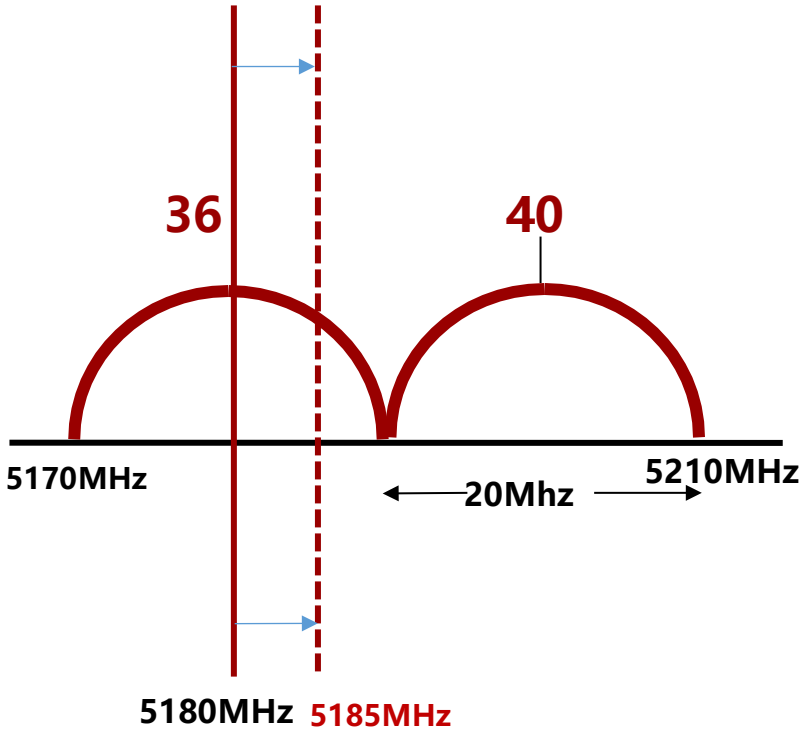
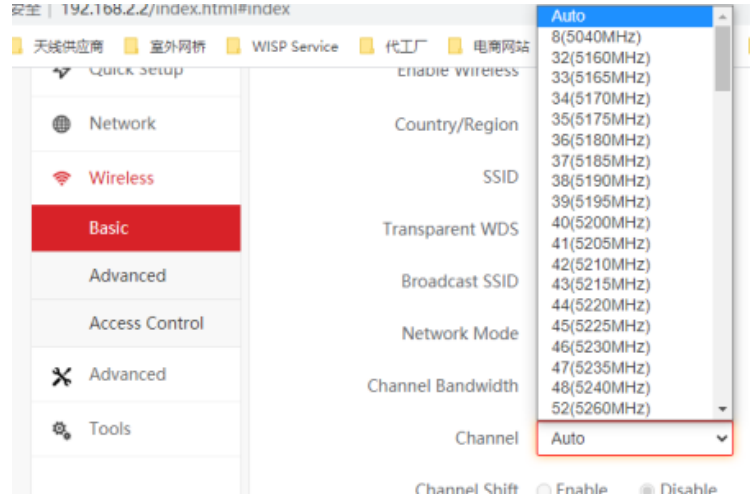
1 With 5Ghz 11AC technology to enhance wireless maximum speed up to 867Mbps

2 Adopts wireless frequency bias anti-interference mechanism to reduce the interference from circumferential devices to the connection and improves the capacity

3 Provides more optional non-overlapping channels







Solution-5-How to power the devices

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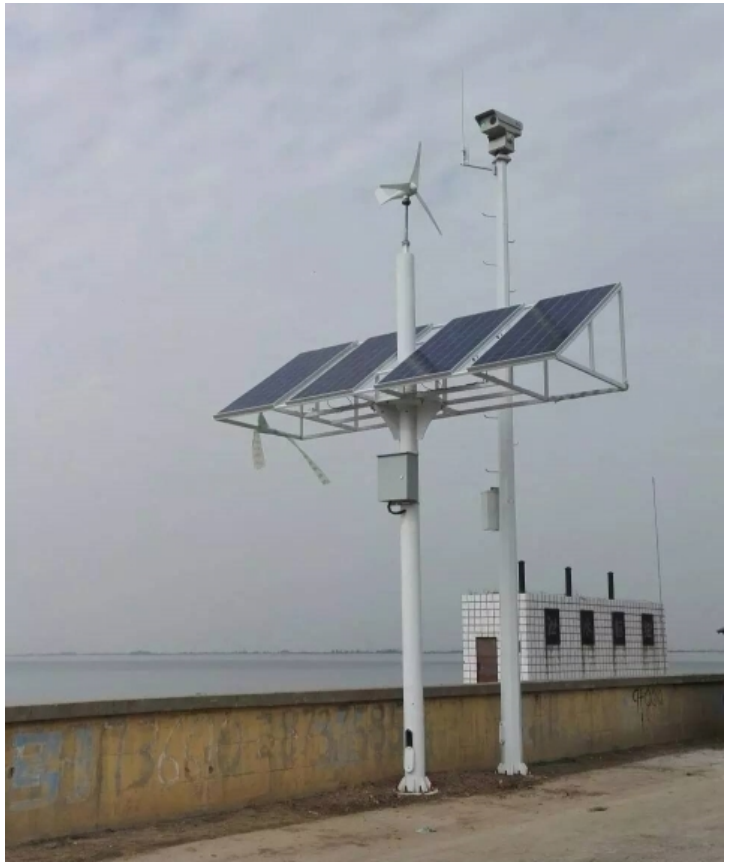
The devices support 12V/24V passive PoE, 12V1A DC power supply and standard PoE power supply and can draw power directly from the surrounding utility poles, solar panels or wind power integrated systems



Solution-6-How to align the devices

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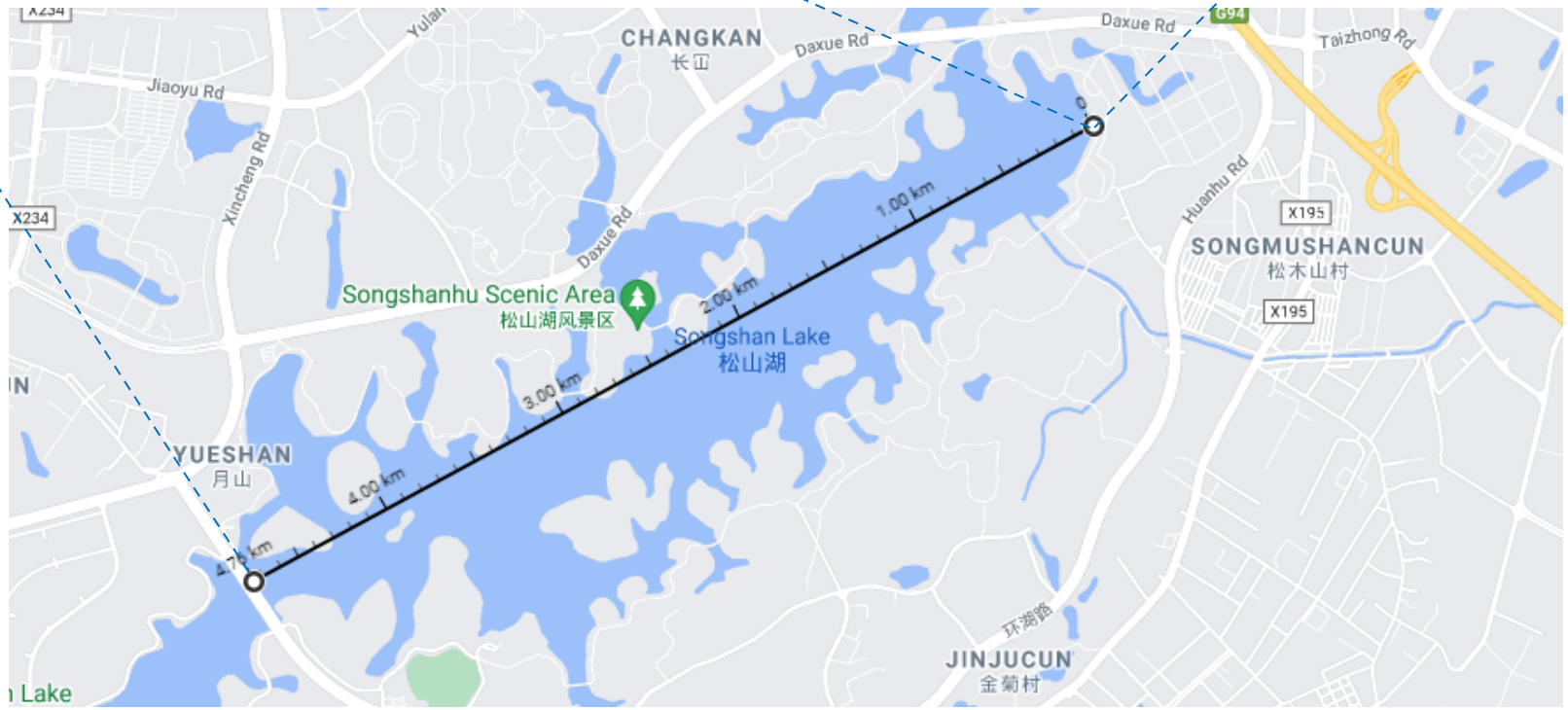
Outdoor CPEs usually have directional antennas, and angular misalignment will result in poor wireless signal quality. Installation can be done with the help of maps and reference points.

1 Drawing connection with AP site and station site

2 Look for landmarks near two points, install CPE in line with the landmarks.

3 Install client site with the landmark building. Adjust CPE according to signal LED or signal status on the web management.



Solution-7-Topography

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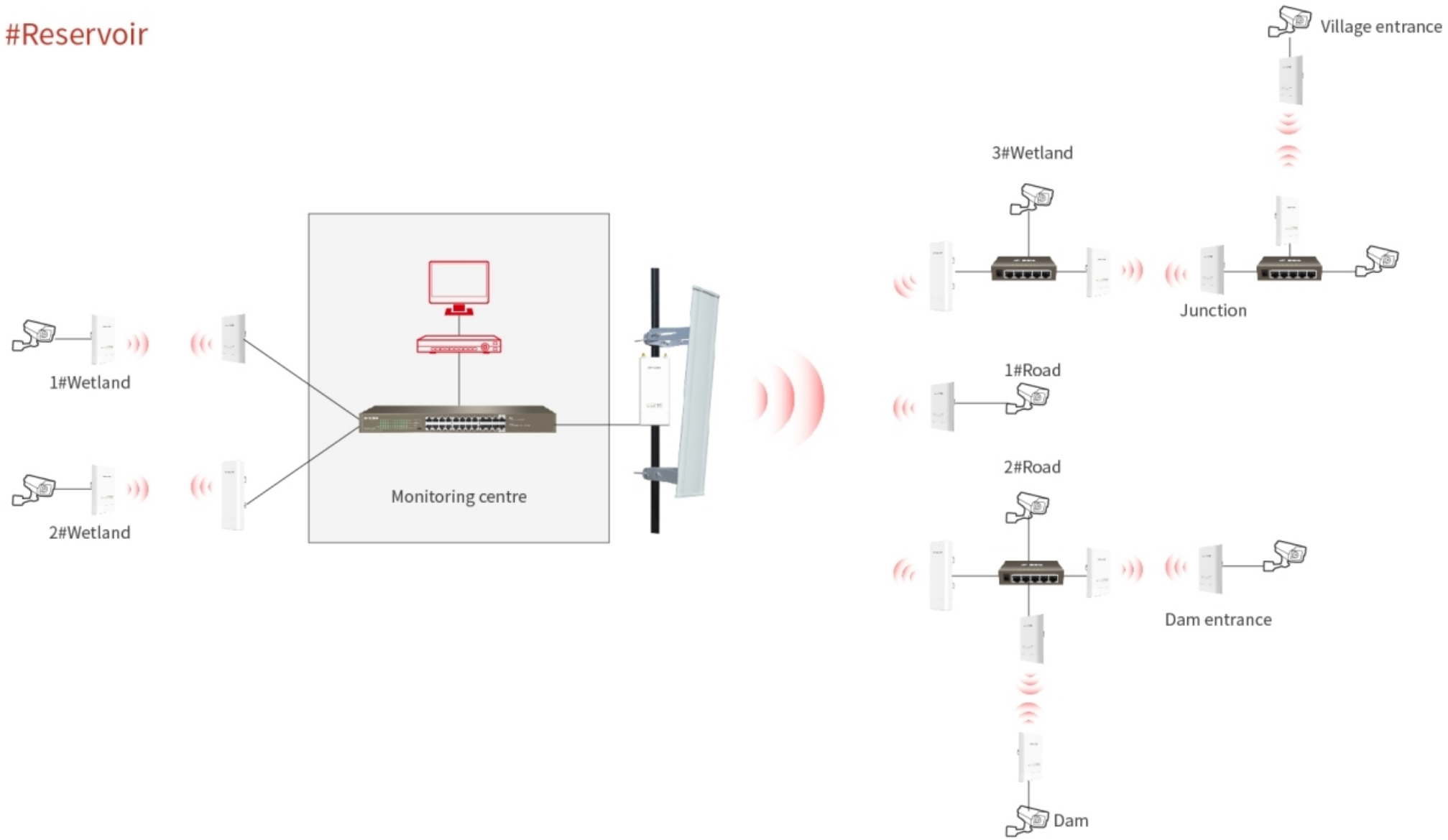

Contents

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1. Stability is of Top Priority

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As the surveillance video needs to be uploaded to the monitoring room 24 hours a day, stability of the CPEs' wireless connection is the most important guarantee in the application scenario of video surveillance wireless transmission.

Stability tests with cameras over 30 days in a real environment

7*24 hours, -30°~+60° temperature cycle aging test

2. Wireless performance optimisation technology for over 20% improvement in capacity

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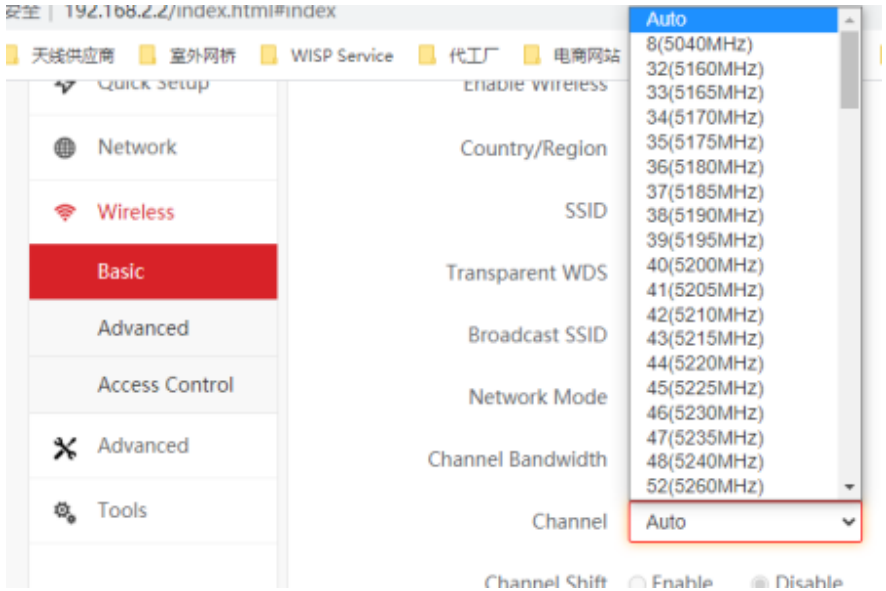
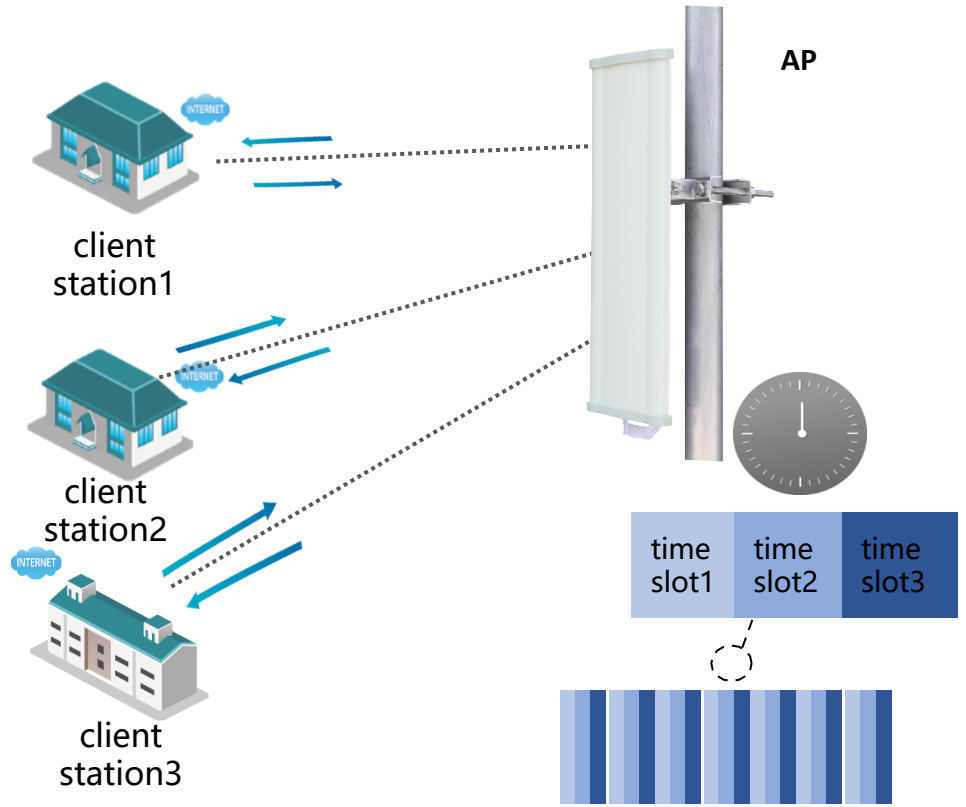
1 Channel redefinition to provide more optional non-overlapping channels



2 ipMAX point-to-multipoint user capacity optimisation



3. Simple installation and easy configuration

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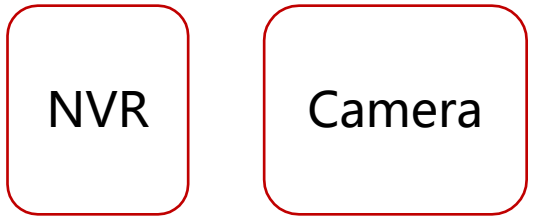
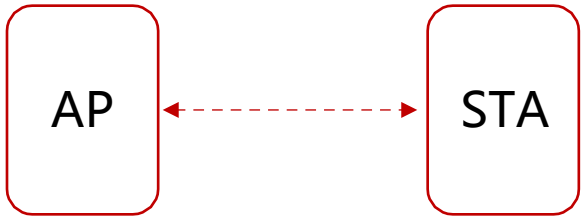
1 **Plug and Play Kit**

The kits can be installed directly by factory default



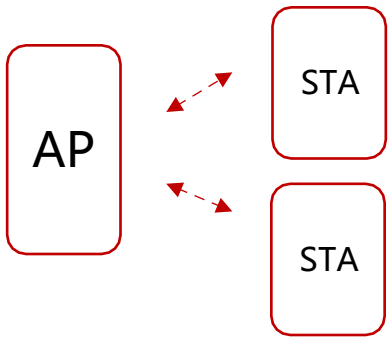
2 **Automatic pairing and bridging**

By default, two devices are automatically paired and bridged after powering on, instead of entering management page



3 **P2MP auto-bridging**

Every single device supports automatic bridging. Once the two devices are automatically paired, others can join easily.



4 **Bridging indicator**

Bridge LED can be used to recognize bridge status and signal strength

4. Three types of power supply available, low labor cost

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1 **Passive PoE**

When the device is installed on the roof, it can be powered directly by the 12V/24V passive PoE Injector.

2 **Standard PoE switch power supply**

When the installation point is close to the monitoring room, device can share power by PoE switch

3 **12V1A DC power supply**

The device can be powered directly with 12V1A DC solar panels outdoors, no inverter conversion is required

5. A product portfolio solution

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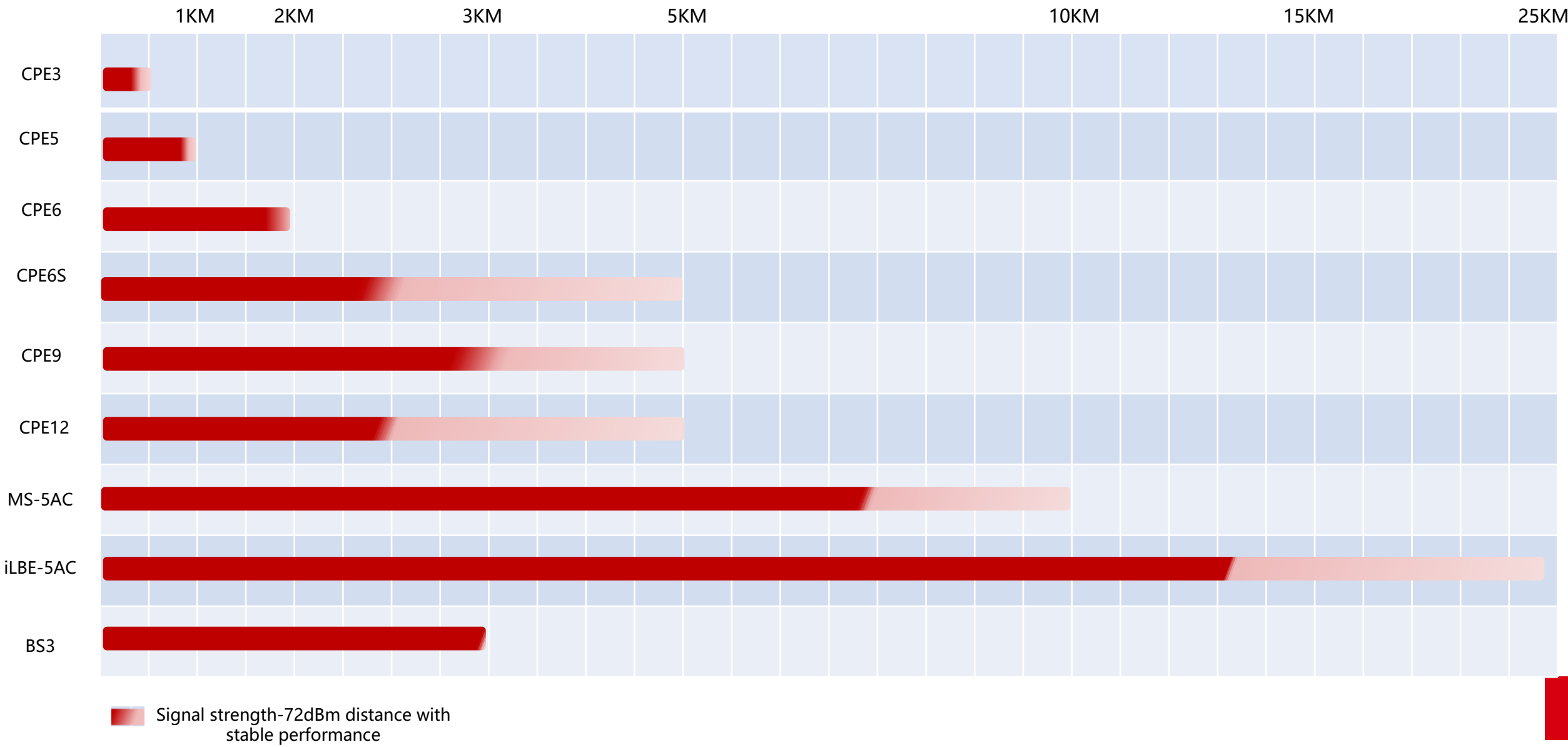

6.More useful tools

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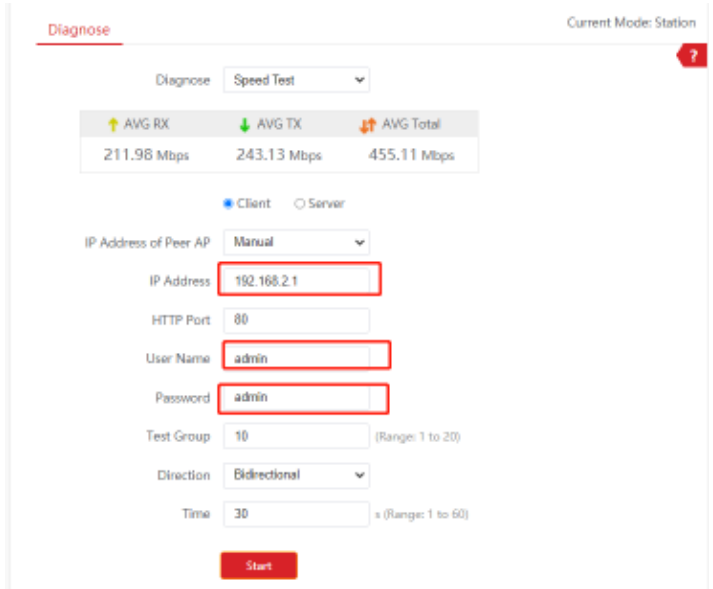
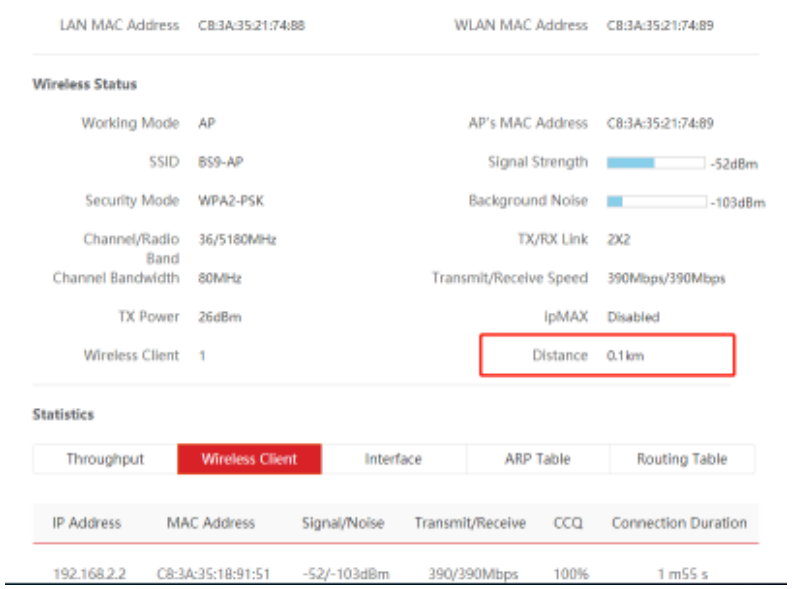
1 Wireless Data Capacity Test

2 Frequency analysis for optimal channel selection

3 Automatic distance calculation between CPEs





Contents

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Product Recommendations - Cost-Effective Solutions

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Scene	Device	Model	Image	Features	Layer
Monitoring centre	Switch	G1124P-24-250W		➢ 24*10/100/1000M RJ45 ports ➢ All 24 ports support af/at PoE power supply ➢ Whole device PoE Power Supply: 250W	Access layer
Monitoring centre	Basestation	BS9		➢ 5GHz 11AC 867Mbps ➢ 1*Gigabit Ethernet port ➢ TDMA supported, point-to-multipoint with up to 20 cameras	Access layer
Monitoring centre	Antenna	ANT19-5G120		➢ 5GHz Dual Polarisation Directional Antenna ➢ 19dBi high-gain antenna ➢ Covering angles up to 120 degrees	Access layer
Transmit point	Switch	G1005		➢ 5 *10/100/1000Mbps ports ➢ All ports 6KV lightning protection	Access layer
3#Wetland（Transmit point)	CPE	MS-5AC		➢ Transmission range 10km ➢ 5GHz 11AC 867Mbps ➢ 1*Gigabit Ethernet port ➢ Standard PoE/24V0.5A/12V1A DC ➢ 2km point to point with 40 cameras	Access layer
Village/Road/ Junction/ Dam/Wetland	CPE	CPE6S		➢ Transmission range 5km ➢ 5GHz 11AC 867Mbps ➢ 4*FE ports ➢ 12V1A DC/Passive PoE ➢ 2km point to point with 8 cameras	Access layer

Product Recommendations - High-Performance Solutions

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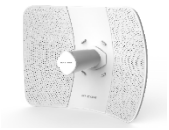
Scene	Device	Model	Image	Features	Layer
Monitoring centre	Switch	G1124P-24-250W		➢ 24*10/100/1000M RJ45 ports ➢ All 24 ports support af/at PoE power supply ➢ Whole device PoE Power Supply: 250W	Access layer
Monitoring centre	Basestation	BS9		➢ 5GHz 11AC 867Mbps ➢ 1*Gigabit Ethernet port ➢ TDMA supported, point-to-multipoint with up to 20 cameras	Access layer
Monitoring centre	Antenna	ANT519-120		➢ 5GHz Dual Polarisation Directional Antenna ➢ 19dBi high-gain antenna ➢ Covering angles up to 120 degrees	Access layer
Transmit point	Switch	G1005		➢ 5 *10/100/1000Mbps ports ➢ All ports 6KV lightning protection	Access layer
3#Wetland（Transmit point)	CPE	iLBE-5AC		➢ Transmission range 25km ➢ 5GHz 11AC 867Mbps ➢ 1*Gigabit Ethernet port ➢ Standard PoE/24V0.5A/12V1A DC ➢ 2km point to point with 60 cameras	Access layer
Village/Road/ Junction/ Dam/Wetland	CPE	MS-5AC		➢ Transmission range 10km ➢ 5GHz 11AC 867Mbps ➢ 1*Gigabit Ethernet port ➢ Standard PoE/24V0.5A/12V1A DC ➢ 2km point to point with 40 cameras	Access layer

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