PR900 IP Connection Solution

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CONTENTS

1 Overview.....5

1.1 IP Connection Introduction.....5

1.2 Application Scenario and Feature.....5

1.3 Function.....5

2 Equipment requirement.....6

3 IP Connect Solution.....6

3.1 Case1: Local Area Network.....7

3.2 Case2: Wide Area Network.....7

3.3 Case3: Wireless Access.....8

1 Overview

1.1 IP Connection Introduction

Repeaters distributed in different areas are connected through an IP network, and different repeaters exchange voice, data and control signaling through the IP network to form a multi-repeater IP connection system. The IP connection expands the communication coverage of the repeater and realize long distance cross area communication. In the IP connection system, application software such as dispatch and network management can be used to improve the dispatch and remote management of repeaters.

1.2 Application Scenario and Feature

The IP connection is applicable to the following scenarios:

(1) Connect repeaters distributed in different areas. For example, office buildings and factories of a company in different areas could be connected.

(2) Provide better wireless signal coverage for different terrains. For example, it could solve coverage problems for multiple buildings in dense urban area, for different floors of a building, and for different places of the same floor with penetration loss.

(3) Connect repeaters of different frequency bands. For example, connect UHF and VHF band repeaters to realize communication between different frequency systems.

The IP connection has the following features:

The IP connection expands the communication coverage of the repeater.

In the IP connection system, users of different repeaters can communicate to each other, and radios can roam between different repeaters.

In the IP connection system, users can use application software such as the dispatch and network management to improve the dispatch and remote management to repeaters.

1.3 Function

The IP connection system capacity, functions and related configurations are as follows:

- Support up to 64 repeaters connection, including 1 master and 63 slaves. The master needs to be configured with a static IP address. The slave can dynamically obtain an IP address. The slave needs to be configured the IP address of the master to establish IP connection with the master.
- Support IP connection services, roaming, IP access management, remote dispatch and management. IP connection services are those voice, data, alarm and supplementary services that radios get from IP connection. Remote dispatch means using the dispatch software to support voice, SMS, positioning, recording and other functions. Remote management means using the network management software to do the performance scanning, fault diagnosis and control to the repeater remotely.
- The IP connected repeater must be configured in digital mode. The IP address, port, type (single site, master, slave) of the repeater, and IP access management are configured through CPS software.

2 Equipment requirement

(1) PR900 Repeater

(2) Radios：PH6X and PH7X series

(3) Switch

(4) Router

(5) Wireless access equipment

3 IP Connect Solution

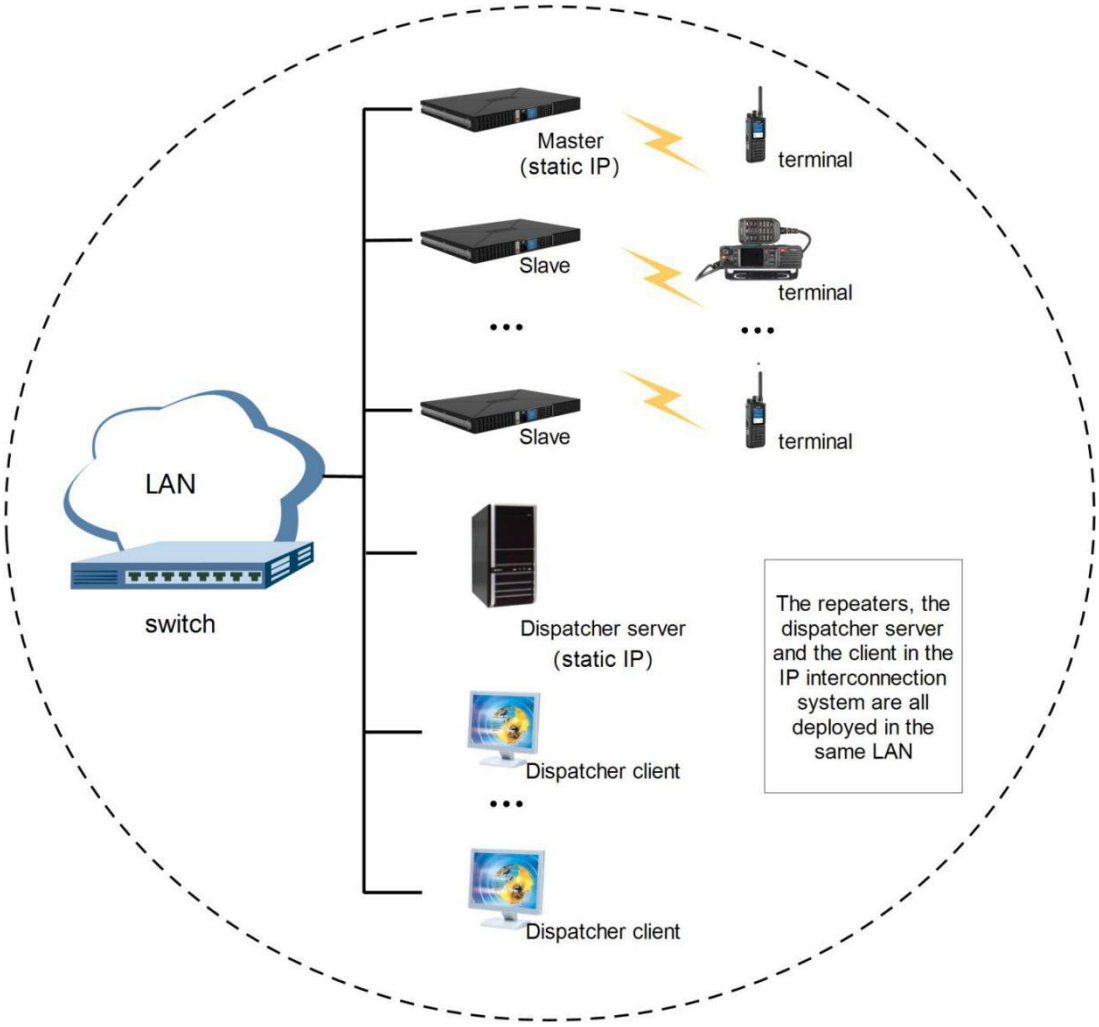
The IP connection system includes master and slave, there is only one master in the system for maintaining and broadcasting the access management table information, and there could be multiple salves in one system. After the slave is powered on, it actively establishes a connection with the master, and establishes connections with other slaves based on the access management table information broadcast by the master.

The master and slave can be distributed in different areas. Most of IP connection system's network topology is composed of local area network and wide area network. The typical network topology is given below.

3.1 Case1: Local Area Network

This network topology is mainly used for IP connection in the same LAN, and it has one master and several slaves. The dispatch software is optional, if it is provided, the dispatch server, the dispatch client and all repeaters are also in the same LAN. Switches are used for connections between repeaters, between the repeater and the dispatch server, and between the dispatch server and the dispatch client.

The static LAN IP address needs to be configured for the master and the dispatch server, and the slave and the dispatch client will be dynamically assigned with IP addresses via DHCP.

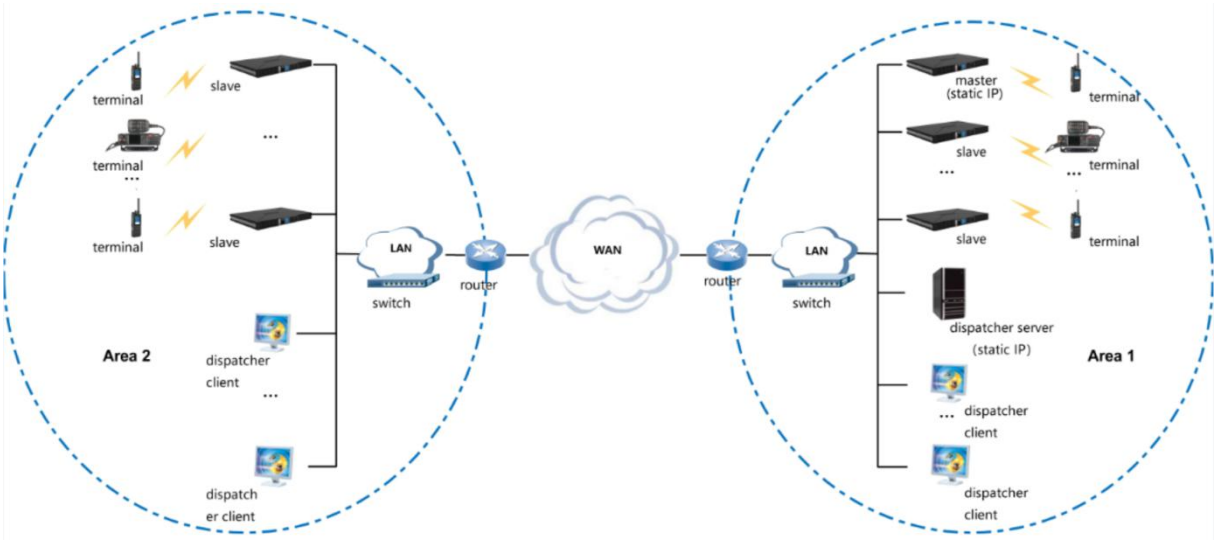


3.2 Case2: Wide Area Network

The network topology is for cross area IP connection, multiple repeaters in different areas are

connected via routing devices to implement the IP connection of the WAN. The solution consists of one master and several slaves. The master and some slaves are in one LAN (Zone 1), and the other slaves are in another LAN (Zone 2). The dispatch software is optional. If the dispatch software is provided, it is recommended that the dispatch server and the master be placed in the same LAN, so that the master and the dispatch server can share the same static WAN IP address. The dispatch server and the master can also be placed in different LANs. Therefore, both LAN routers need to be configured with static WAN IP addresses. The dispatch client can be in zone 1 or zone 2.

The master and dispatch server are configured with static LAN IP addresses, and the slaves and dispatch clients use DHCP to dynamically assign IP addresses. The LANs are connected to the WAN through routing devices. The routers on the LAN where the master and the dispatch server are located need to be configured with static WAN IP addresses. The slaves can find the master and the dispatch server through the static WAN IP, and the dispatch client can find the dispatch server through the static WAN IP.



3.3 Case3: Wireless Access

The solution supports cross area communication of multiple repeaters through wireless connection, for example, communication via wireless links such as Wi-Fi, 3G, 4G, and satellite. It is convenient for emergency communication system or portable repeater to access the IP connection network.