







# Hytera XPT Digital Trunking

## Trunked Professional Mobile Radio Solution

-  Trunking system without the need for a Dedicated Control Channel
-  Quick deployment with simple infrastructure and architecture
-  Large capacity with 16 voice and 16 data channels in each site
-  Economical and practical digital solution



# What is XPT

XPT (Extended Pseudo Trunk) is a scalable digital trunking solution that allows you to increase the capacity of an existing conventional DMR system by simply upgrading the current RD98XS repeater and DMR radios. XPT connects a larger number of users with voice and data turning your conventional DMR System into a virtual trunking system. XPT allows faster access to the system for multiple users from various departments, this can increase productivity, enhance customer service and provide better dispatching to security personnel responding to emergencies.

XPT allows the radio to scan time slots on multiple repeaters and dynamically choose an open time slot to initiate a call. Less wait time is used than those who are fixed to a specific time slot. In typical conventional systems it is common that some repeaters are always busy while others remain unused, this is where XPT Digital Trunking comes into action. The XPT system broadcasts the availability of channels throughout every repeater ensuring the users will have a guaranteed channel to initiate a call.

Within the XPT system, groups of radios will be allocated to a "home repeater". When the home repeater is idle all calls will be made through this repeater. When the home repeater is busy the XPT system will automatically and dynamically assign a "free repeater", which temporarily provides available channels to initiate a call. Once the home repeater has an available resource the groups of radios will switch back to it. This process is repeated on the system to ensure instant communications with no interruptions or constant busy signals, no designated control channel is needed in this process. The same process works with group or all calls, all related radios are moved to a single repeater, freeing up the other repeaters for use, even if the radios on the call are assigned to other repeaters.

## Functions of XPT Digital Trunking

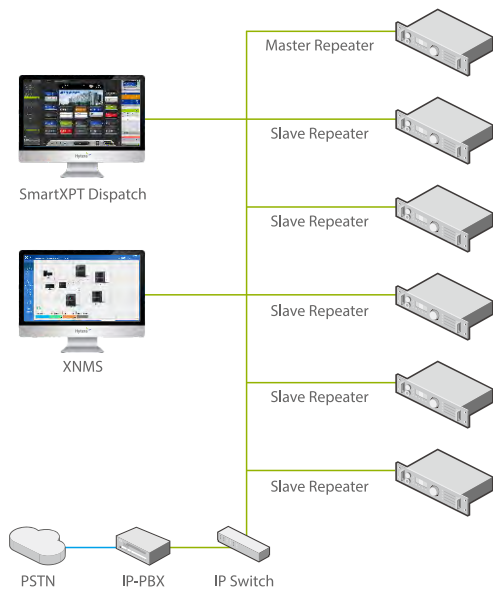
Voice call	Supplementary call	General features	Data operation	Dispatcher features
Private call	Alert call	Access limitation	TMS	GPS Tracking
Group call	Remote monitor	Dynamic authentication	RRS/GPS	IP-PBX
All call	Radio enable/disable	Interference detection	Quick GPS	Voice recording
Emergency call	Radio check	Fault tolerance	Dedicated data revert channel	Voice dispatch
Telephone call	Emergency alarm	XNMS		Short message
		Encryption		Crosspatch group
		Roaming		History report





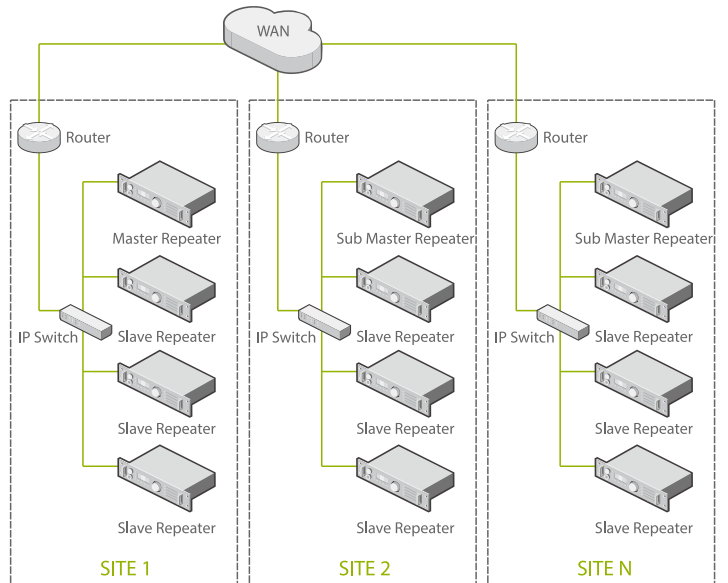
## Single-site Trunking System

XPT single-site trunking system consists of one master repeater and multiple slave repeaters, which are connected to each other via IP switch. Radios in the system can share the idle channels of these repeaters and communicate on these channels.



## Multi-sites Trunking System

XPT multi-sites trunking system is built by connecting multiple XPT single-site trunking systems via IP network. XPT multi-sites trunking system can share the channel resources of XPT single-site trunking systems and extend the communication coverage of XPT system at the same time.



# Highlight

## **No dedicated control channel**

In contrast to the classic trunked radio, Hytera XPT does not use any control channels. All available radio channels are utilized for the communication. On top of that, all channels are managed by the mobile radio infrastructure. The benefit: A manual channel selection at the radio is no longer required. Open channels are automatically determined for call requests. This allows Hytera XPT to combine the advantages of DMR Tier II with the mobile radio properties of state-of-the-art and powerful trunked radio systems.

## **Simple expansion, flexible networking**

All repeaters in the XPT system are connected with each other via an IP network. As a result, besides the XPT repeaters, you only need IP switches and an antenna connection suitable for your purpose in order to set up your mobile radio system. PC hardware is not required for the mobile radio system since calls are set up directly in the XPT system. No central system controller node is required.

If your requirements for your professional mobile radio should change, it enables you to quickly respond in order to increase your mobile radio capacity. To do so, you only have to expand your repeater site by additional repeaters and connect them to your IP network.

## **Simple migration from DMR Tier II to XPT**

Are you already using conventional DMR radio from Hytera (DMR Tier II)? Then you are well prepared! Your existing DMR mobile stations and RD98XS repeaters can be upgraded to XPT without any complications via a license upgrade. This keeps your investment safe and you do not have to purchase new radios.

## **Large capacity**

One XPT site consists of up to 8 voice repeaters and 8 data repeaters, each repeater can provide 2 logical channels, thereby the system is able to provide up to 32 communication channels in each site.

## **Dedicated data revert channel**

You can specify that some channels are only used for RRS/GPS or quick GPS, so there will not be any conflict between voice and data upload.

## **Improved system security**

With Dynamic Authentication, terminals in the system must use a dynamic authentication code generated by the basic key to get authenticated from the system.

## **Auto detect interference**

To guarantee reliable communication channels for terminal users, repeater in XPT systems can detect the interference from air interface and notify the terminal to switch to another available channel.

## **System load balance**

With home repeater concept, you can manually change the load balance of each repeater in the system and improve the call setup time with lower conflict ratio.

## **Fault tolerance**

### **IP Router Fail**

Repeaters in each site will fall back to single-site operation mode, radios in each site can talk with radios in the same site.

### **LAN Switch Fail**

Each repeater starts working as a two channels trunking system.

### **Repeater Fail**

Radios in failed repeater channel will switch to another repeater automatically, system remains operational with less capacity.





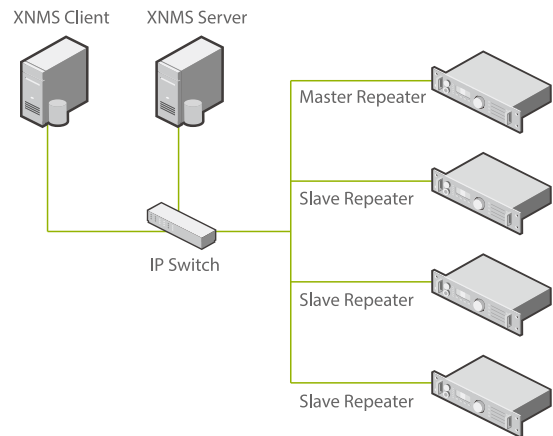
# XPT Network Management System (XNMS)

XNMS software can help you monitor the status of XPT repeaters and the workload of each carrier remotely, also help you maintain the XPT repeaters in the office without going on-site.

## • XNMS network topology

XNMS is a Windows software with client and server architecture, multiple clients can use IP network to connect with a centralized server and monitor all the repeaters in the network.

XPT repeaters use SNMP protocol to send report data to the XNMS server.



## • XNMS software functions

### Network Topology View

Monitor all the connected repeaters with status information in a single window.

### Repeater Activity View

Activities and RSSI of recent 30s in each slot could be displayed in real-time.

The collage displays several key features of the XNMS software interface:

- Network Topology View:** Shows a graphical representation of the network with repeaters and their connections.
- Repeater Activity View:** Displays real-time activity and RSSI for different slots, using bar charts and gauges.
- Parameters Read & Write:** Provides a configuration window to manage repeater settings.
- Repeater Events Query:** Offers a table-based interface to query and export event logs for specific sites.

### Parameters Read & Write

Read & write the parameters of XPT repeaters remotely.

### Repeater Events Query

Query and export the events log of each site in an easier way.

### Repeater Events Statistics

Analyze the events workload of a repeater in a period to deploy devices to support the capacity.



## Smartone(XPT) Dispatch

Smartone(XPT) Dispatch, a new designed dispatching platform based on IP network, realizes unified dispatching over DMR conventional system and XPT digital trunking system. With assistance of additional gateway DS-6610 MPUC and different types of mobile radios, it's much easier to start conversations across different platforms.

- **DS-6610 MPUC**

DS-6610 MPUC is a mobile radio gateway in SmartXPT dispatch solution, it could be used in flexible modes as below:

1. Working as a bridge for mobile radios in different system.
2. Connect to the SmartXPT server with centralized dispatching features for mobile radios.



- ① Connect with Analog/DMR mobile radios
- ② Upgrade firmware
- ③ Ethernet network

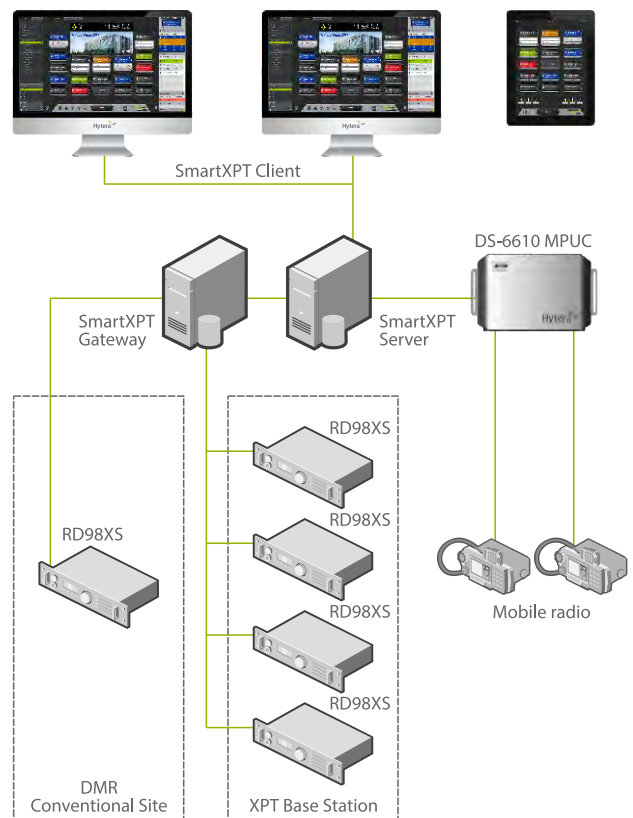




• Smartone(XPT) Dispatch

Call features	Individual call
	Group call
	Emergency call
	All call
	Remote monitor
	Call alert
	Crosspatch
	Simul-select
	Dispatcher intercom
	Supplementary
Phone call	IP-PBX interconnection
Voice recording	Voice recording in all system channels
GIS features	GPS position
	Real-time track
	History track
	Google online/offline map
Report features	MapX
	Call record enquiry
	Message record enquiry
	Online/offline record enquiry
Message features	Emergency alarm record enquiry
	Text message
	Emergency alarm
	Message template

• Smartone(XPT) Dispatch network topology



# System Specifications

General	
Transceiver Model	RD98XS
Operating Frequency	UHF: 400-470MHz, 450-520MHz, 350-400MHz, 806-941MHz, VHF: 136-174MHz, 210-270MHz
Nominal Operating Voltage	AC 100-240V / DC 13.6V
Power Consumption	≤150W @ 50W Transmit / Carrier
Channel Spacing	≥250kHz @ Cavity Combiner ≥250kHz @ Hybrid Combiner (only for base station with 4 carriers or less)
Duty Cycle	100%
Operating Temperature	Normal temperature: +15°C ~ +35°C, Extreme temperature: -30°C ~ 60°C
Storage Temperature	-40°C to +85°C
Dimensions (WxDxH)	2-carrier: 600 x 600 x 675 mm (13U Cabinet), 4-carrier: 600 x 600 x 1750 mm (37U Cabinet)
Humidity	Normal: 20%~75% RH, Extreme: 5%~95% RH
Weight	2 carriers: ≤110Kg; 4 carriers: ≤200Kg
Receiver	
Static Sensitivity	-118dBm @ BER≤5%
Blocking	≥90dB
Co-channel Rejection	≥-12dB
Adjacent Channel Selectivity	≥60dB
Intermodulation Response Rejection	≥70dB
Radiated Spurious Emission	-57dBm<1GHz, -47dBm>1GHz
Transmitter	
TX Power	Transceiver: 1-50W
Power Adjustment Range	1-50W in 400-470MHz, 450-520MHz, 350-400MHz, 136-174MHz, 1-35W in 806-941MHz
Occupied Bandwidth	≤8.5kHz @ 99% TX Power
Modulation Accuracy	≤5.0%
Frequency Stability	±0.5ppm
Adjacent Channel Power Rejection	Normal condition: ≥60dB @ 12.5kHz, Extreme condition: ≥50dB @ 12.5kHz
Spurious Emission	9kHz-1GHz: <-36dBm, 1GHz-4GHz: <-30dBm
Terminal Frequency	
PD60X / PD66X / PD68X	UHF: 400-527MHz, VHF: 136-174MHz
PD70X / PD78X	UHF: 400-470MHz, 450-520MHz, 350-400MHz, 806-941MHz, VHF: 136-174MHz, 210-270MHz, 66-88MHz
MD65X	UHF: 400-470MHz, 450-527MHz, VHF: 136-174MHz,
MD78X	UHF: 400-470MHz, 450-520MHz, 350-400MHz, 806-941MHz, VHF: 136-174MHz, 210-270MHz
X1e / X1p	UHF: 400-470MHz, 450-520MHz, 350-400MHz, 806-941MHz, VHF: 136-174MHz
PD70XG UL913 / PD78XG UL913	UHF: 400-470MHz, 450-520MHz, 350-400MHz, 806-941MHz, VHF: 136-174MHz
X1p UL913	UHF: 400-470MHz, 450-520MHz, 806-941MHz, VHF: 136-174MHz
PD71X Ex / PD79X Ex	UHF: 400-470MHz, VHF: 136-174MHz

Notes: PD78X/78XG, X=0, 2, 5 or 8, model number varies geographically. For details, please contact our regional sales representatives.

UHF5(806-941MHz) frequency range of mobile/portable radio: 806 – 825MHz (Tx), 851 – 870MHz (Tx&Rx), 896 – 902MHz (Tx), 935 – 941MHz (Tx&Rx).

UHF5(806-941MHz) frequency range of RD98XS: 806 – 825MHz (Rx), 851 – 870MHz (Tx), 896 – 902MHz (Rx), 935 – 941MHz (Tx).



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