

A faint, blue-tinted world map is visible in the background on the left side of the slide.

# Excera Company & Products Introduction

Shenzhen Excera Technology Co.,Ltd.

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**EXCERA Services**

## 1. Leading enterprise in private network communications field

- ◆ EXCERA was established in 2012 and her mother company Beijing Vigor was founded in 1993, which is the earliest manufacturer and provider of wireless trunking system equipment and solution for Chinese Police;
- ◆ Built thousands of base station and ten thousands of transceivers for Chinese Police
- ◆ Vigor is the only participator and maker for both MPT1327 and PDT standard in private network communications field in China.

## 2. Strong technical innovation ability

- ◆ World-leading R&D base for digital radio and trunking system with more than 20 years of experience in this field;
- ◆ Honored with various patents and medal in private network communications field;
- ◆ Created a number of technical innovation in PMR field.

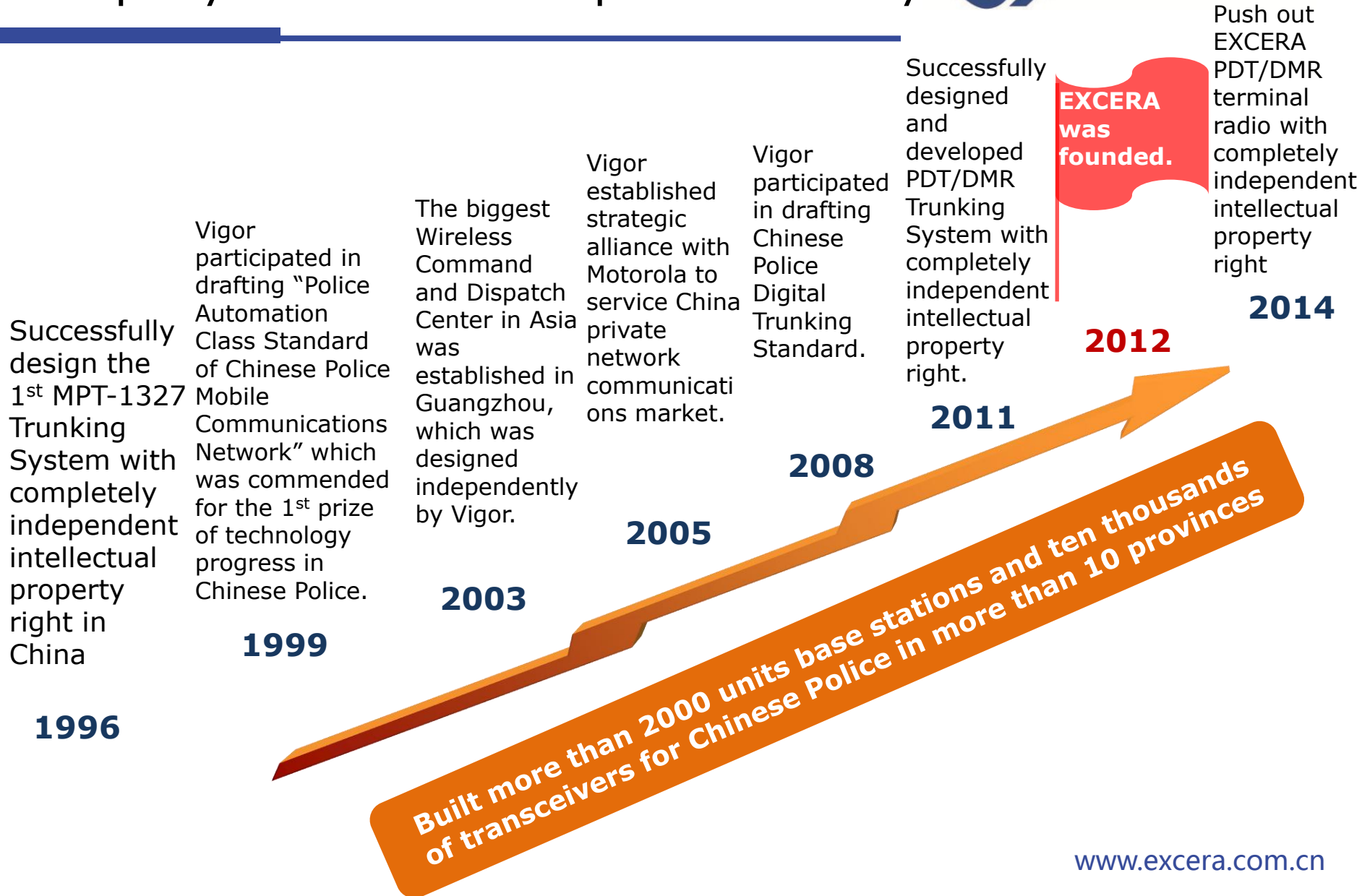
## 3. Fast growth

- ◆ More than 100% growth in sales volume in successive of 10 years;
- ◆ Honored the high-tech medium-sized enterprise with most development potential in China.

# Company Profile—Development History



# EXCERA



# Company Profile—Qualification



Vigor is the Key Member of PDT Association and one of five sponsors for drafting PDT standard, and EXCERA is also PDT Association member.



Category 1 member of DMR Association.

## International Certification



RoHS



# Company Profile—Certificate



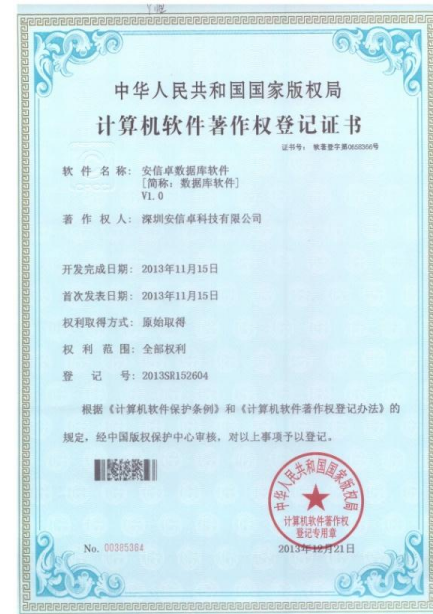
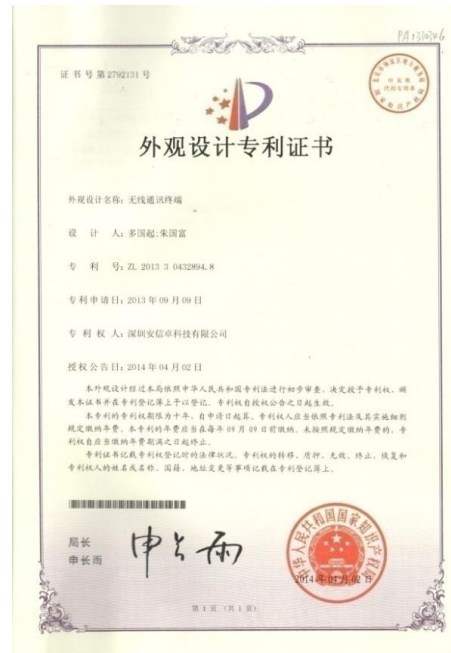
◆ Honored with various patents in this field

Utility model patents: 7

Design patents: 3

Software copyright: 7

Invention Patents: 3



# Company Profile—Quality Control



- ◆ Improved Quality Assurance throughout all the processes of R&D and manufacturing.
- ◆ 6-Sigma, QCC and various quality improvement tools, ensure the product with high quality.
- ◆ Strictly comply with national/ industry/American Military standards.
- ◆ Compliant with ISO9001 and ISO14001

Scenes of product tests



**Rolling compaction**



**Dust-proof test**



**Low temperature  
test**



**Water-proof test**

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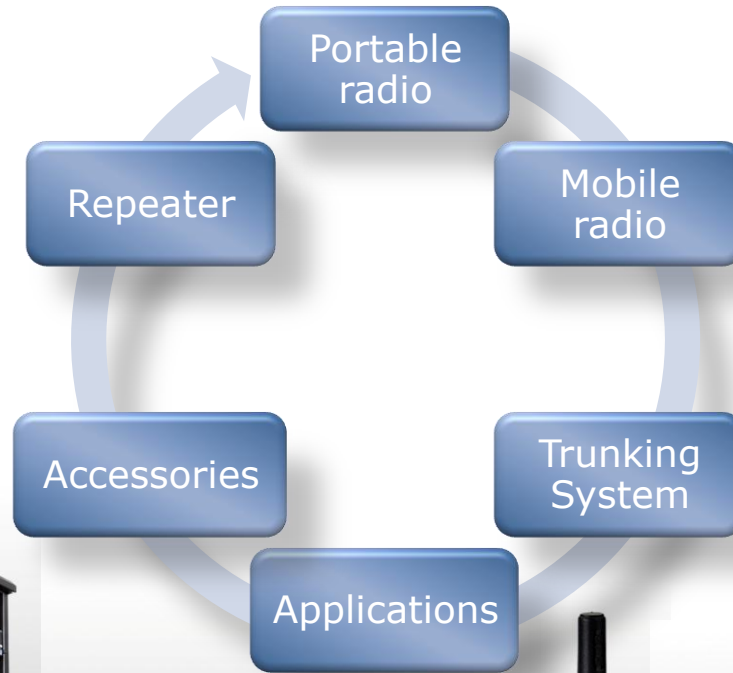
EXCERA DMR Trunking System

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EXCERA Services



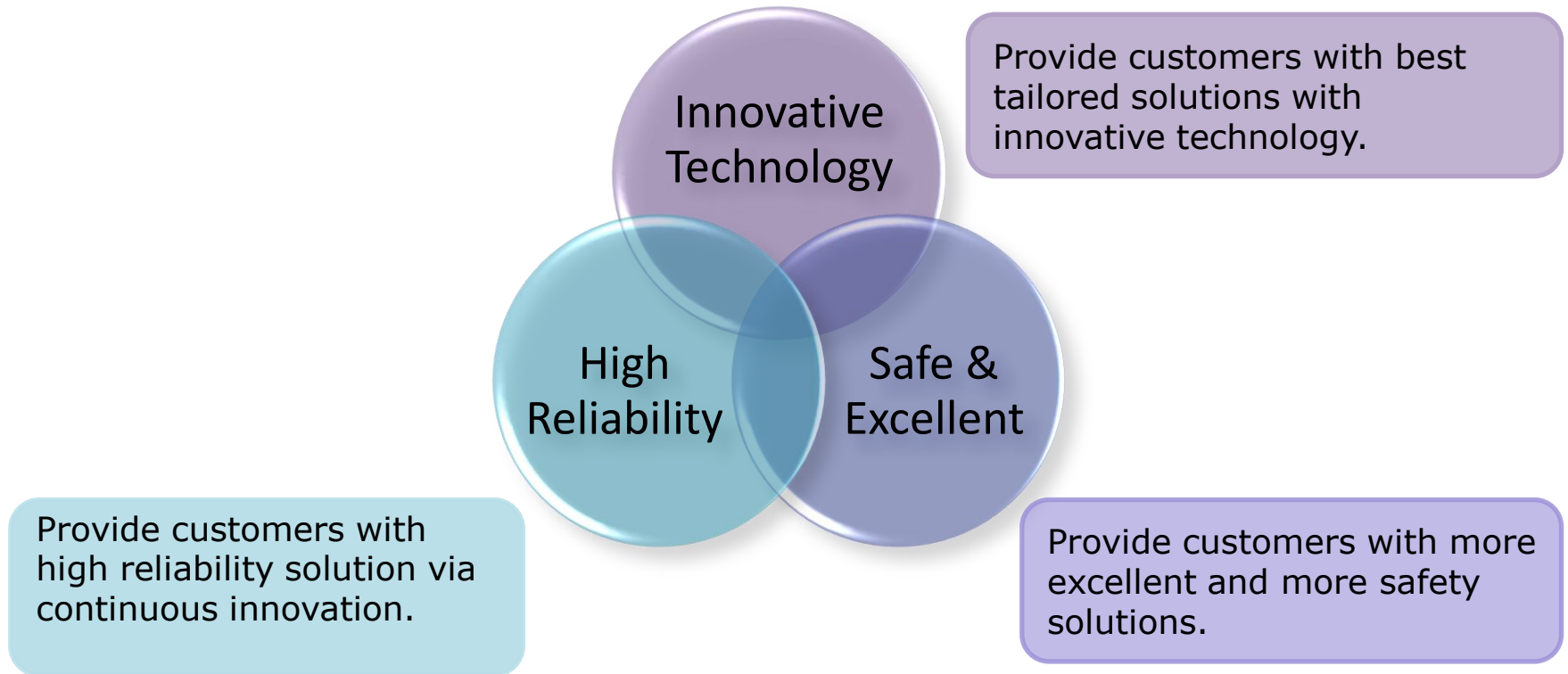
# EXCERA DMR Product Family



# EXCERA DMR Technology Strength



***EXCERA DMR Solution,  
Excellent Communications and digitalized the future***



## Portable radio EP8100



### ◆ EP8100 Highlights

- Full Duplex Communications
- 2.0" HD Transflective TFT LCD Display
- IP67 and MIL-STD-810 Standards Compliance
- DMR TierII Conventional and DMR TierIII Trunked

# Portable Radio EP8100



## ◆ Advantage Features

- **2.0" HD transfective LCD color display**



- **High capacity battery**



- **Built-in Bluetooth (Optional)**



- **Built-in noise reduction function (Optional)**



- **Full- duplex call (Optional)**



- **Built -in GPS (Optional)**



- **Support DMR Tier III by software upgrade**



- **Rich API for 3rd party**



- **IP67 and MIL-STD-810 Standards Compliance**



# Portable Radio Accessories



## ◆ EP8100 Optional Accessories



3400 mAh Battery



Remote Speaker  
Microphone



C type  
Earphone



One wire Transparent  
Tube Earphone



2-wires tube  
earphone



Police Bone  
Conduction Headset



Fireman Bone  
Conduction Headset



Bluetooth  
Earphone



Smart Bluetooth  
Earphone



Bluetooth  
PTT



Hang  
Rope



USB Programming  
Cable

## Mobile Radio EM8100



### ◆ EM8100 Highlights

- Full Duplex Communications
- 2.8" HD Transflective TFT LCD Display
- IP54 and MIL-STD-810 Standards Compliance
- DMR TierII Conventional and DMR TierIII Trunked

# Mobile Radio EM8100



## ◆ Advantage Features

- 2.8" HD TFT LCD color display



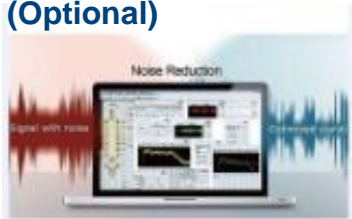
- Innovative Auto-protecting Technology



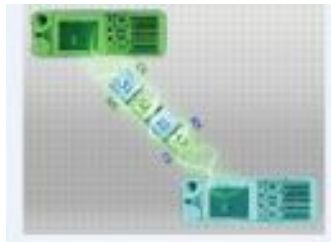
- Built-in Bluetooth (Optional)



- Built-in noise reduction function (Optional)



- Full-duplex call (Optional)



- Built-in GPS (Optional)



- Support DMR Tier III by software upgrade



- Rich API for 3rd party



- Remote Mount Control Head



# Mobile Radio Accessories



## ◆ EM8100 Optional Accessories



Keypad  
Microphone



Power Supply



Antenna



GPS  
Antenna



Remote Control  
Head(3M)



Bluetooth  
Earphone



Smart Bluetooth  
Earphone



Bluetooth  
PTT



USB Programming  
Cable



# EXCERA DMR Terminal Product



- ◆ Low-cost digital radio for business users



## Repeater/Transceiver ER9000



### ◆ ER9000 Highlights

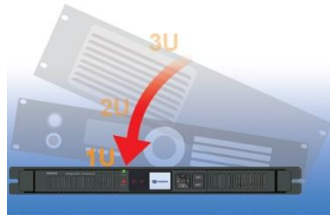
- 19 Inches, 1U Cabinet Size Design with Power Supply Inside
- 100% Continuous Duty Cycle with 50W High Power Output
- Upgrade to DMR Trunking Basestation Transceiver by software
- Upgrade to DMR Simulcast Basestation Transceiver by software

# Repeater/Transceiver ER9000

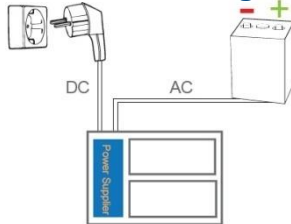


## ◆ Advantage Features

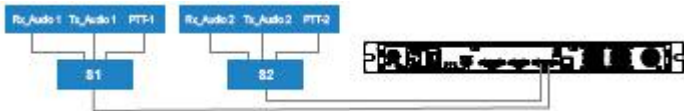
- 19 inches, 1U standard cabinet design with power supply inside



- Support AC/DC power supply, automatic switching function



- Digital dual-slot transmission and voice reception



- 50W high power output, 100% duty-cycle



- Support analog and digital dual-mode and automatic switching



- Rich API for 3rd party



- Military standard MIL-STD-810 100000 hours MTBF



- Support multi-site IP interconnection



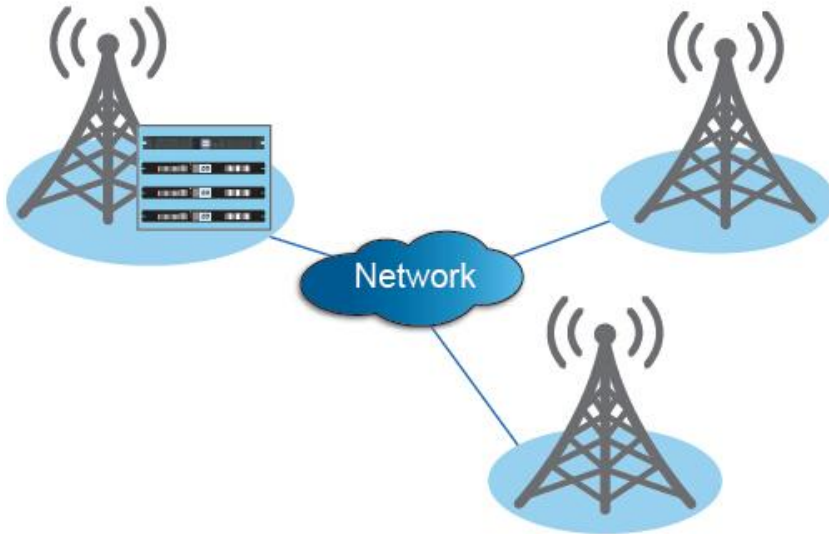
- Support remote diagnosis, maintenance and software upgrade



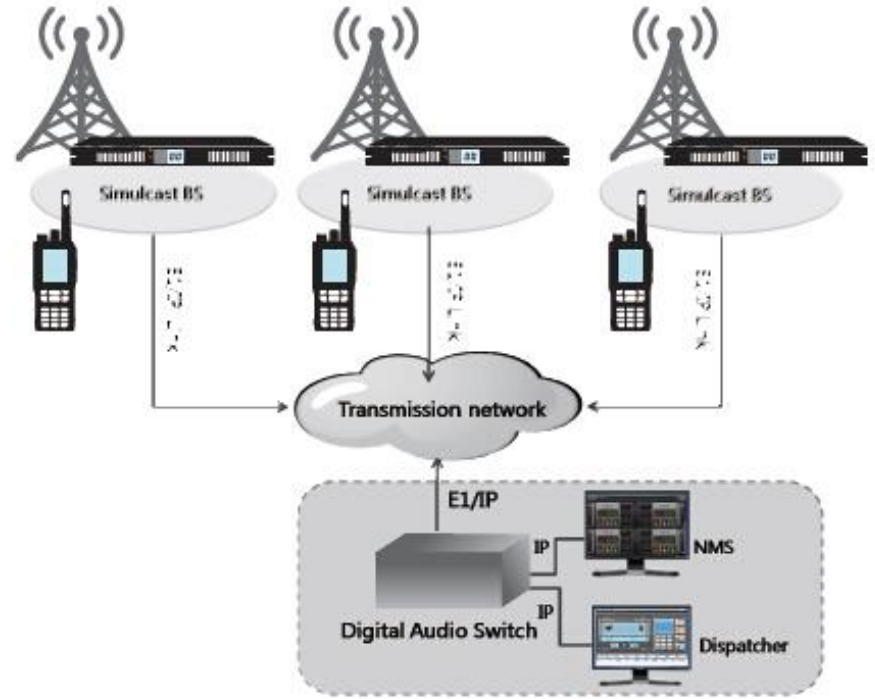
# Repeater/Transceiver ER9000



- Upgrade to DMR Trunking Basestation Transceiver by software (optional)



- Upgrade to DMR simulcast basestation transceiver by software (optional)



# Repeater/Transceiver ER9000



## IP Multi Sites Connect Solution

IP Multi-site Connect enables repeater ER9000 in different areas to exchange data, voice and packets over a TCP/IP-based network, which makes the customer's communication more effective and wider.



NMC/RADC  
Dispatcher/GPS  
Location/Telephony gateway/.....

Connect to all kinds of applications based on PC



Interconnectivity between VHF and UHF

# Repeater Accessories



## ◆ ER9000 Accessories



AC Power  
Cable



Passive duplex



Antenna



Fiberglass  
Antenna



Power Cord

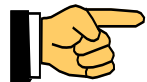


USB Programming  
Cable

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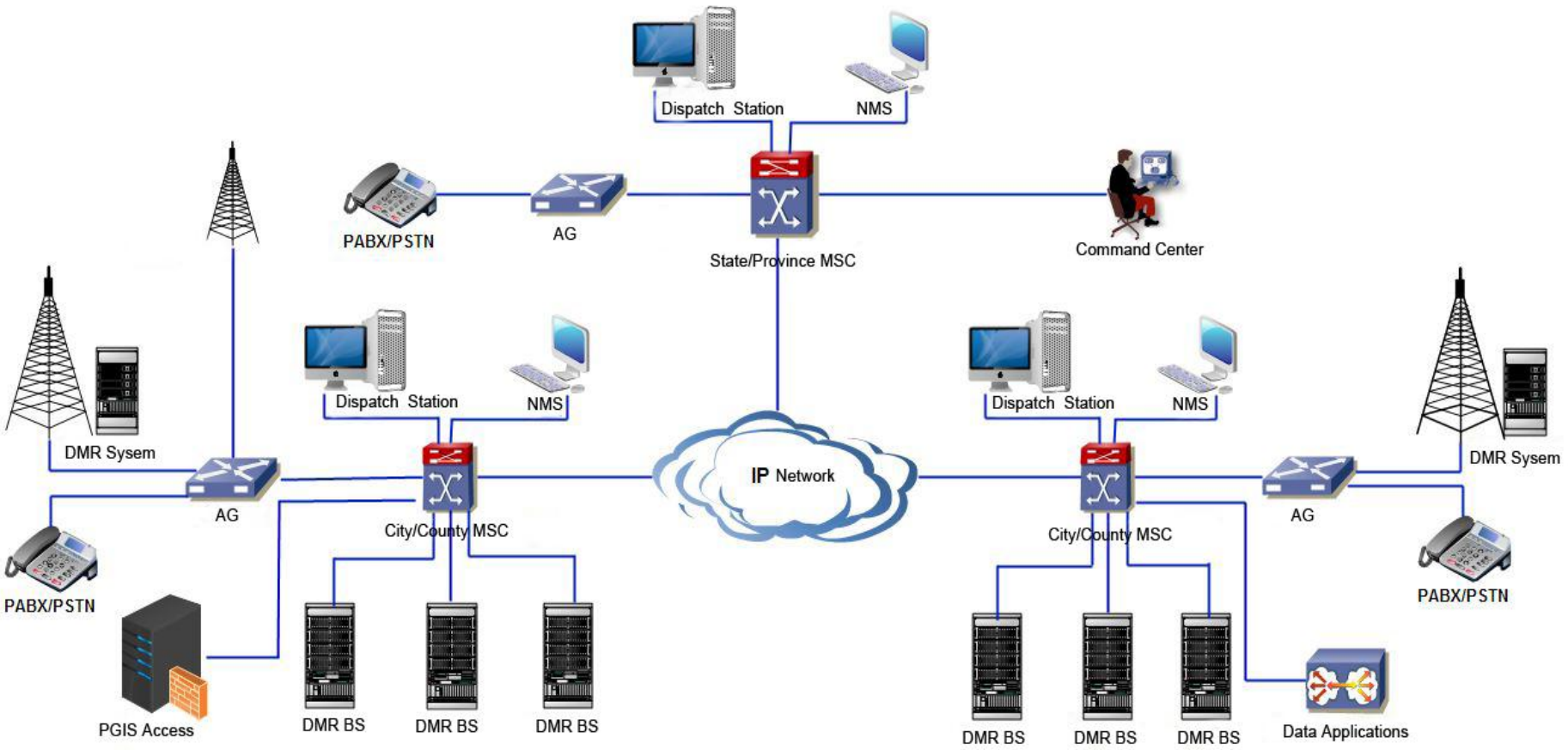
**02** EXCERA DMR Terminal Products



**03** EXCERA DMR Trunking System

**04** EXCERA Services

# EXCERA DMR Trunking System Overview





# EXCERA DMR Trunking System Advantage



Completely IP Design and support remote maintenance, RADC and remote software upgrade.

Adopt distributed and flattening design; the base station adopts unique design of transceiver hot backup, which makes sure the system can be hierarchical graceful degradation .

The basestation transceiver has the advantage of multiple working modes, high reliability, integration, HD colorful LCD display, etc.

Compatible with digital and analog modes and smooth migration

Optional functions (such as call forwarding, IP/E1 link hot backup) can be customized according to different requirement

Adopt dual time slot TDMA technology and spectrum utilization is four times of MPT1327 system



Big regional coverage

Seamless hand-over and keep continuous communications when trans-regional

Support GPS and BeiDou positioning

More safety with encryption

Digitalized voice and enhancing the anti-jamming ability, which ensuring the good voice quality

# DMR Trunking Base-station Transceiver



## Features



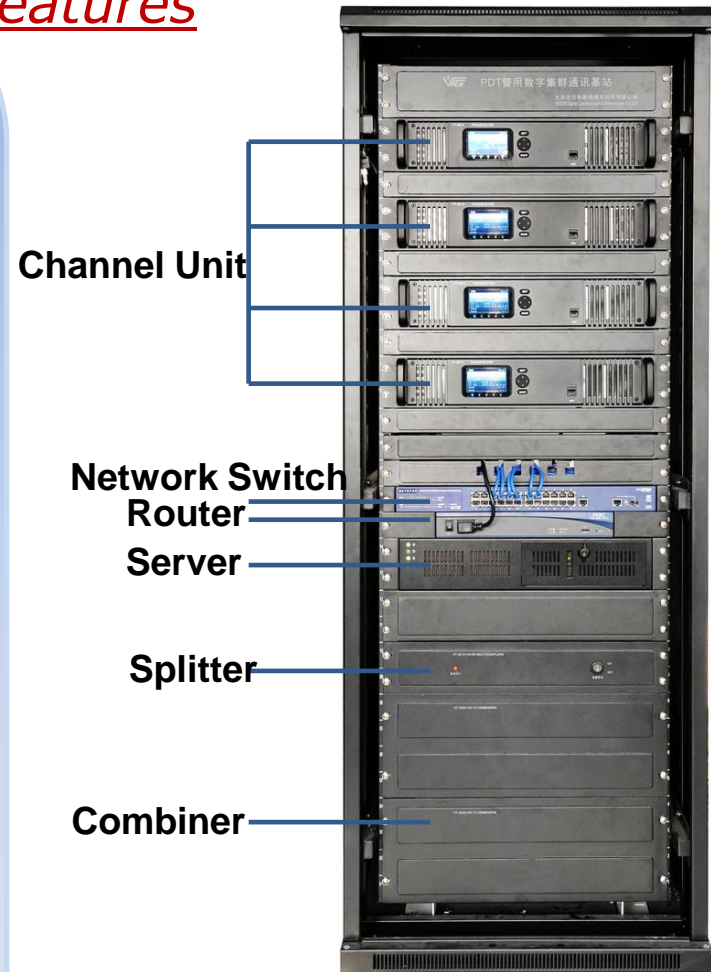
- 19 inch 2U standard cabinet design
- 50W high power and 100% duty cycle
- HD color LCD display
- Load mismatch detection protection
- **Independent installation of power amplifier tube (patent)**
- Design with military reliability standard, MTBF 100000 hours
- High integration with trunking controller and channel controller and built-in duplexer and power supply inside
- Adopts IP link among BSs
- Rich API for the 3<sup>rd</sup> party
- Supports RADC, remote maintenance and remote upgrade

# DMR Trunking Base Station



## Features

- Adopt TDMA technology, improving spectrum utilization greatly
- Adopt IP SoftSwitch Technology
- Big regional coverage
- Digital and analog dual modes, supporting digital and analog radio to access the network at the same time.
- Seamless hand-over and automatic roaming when trans-regional.
- Good voice quality with completely digital voice processing
- Redundancy backup of the key equipment and modules.
- Support remote support remote maintenance, RADC and remote software upgrade.



**DMR Trunking BS**

# Mobile Switching Center (MSC)



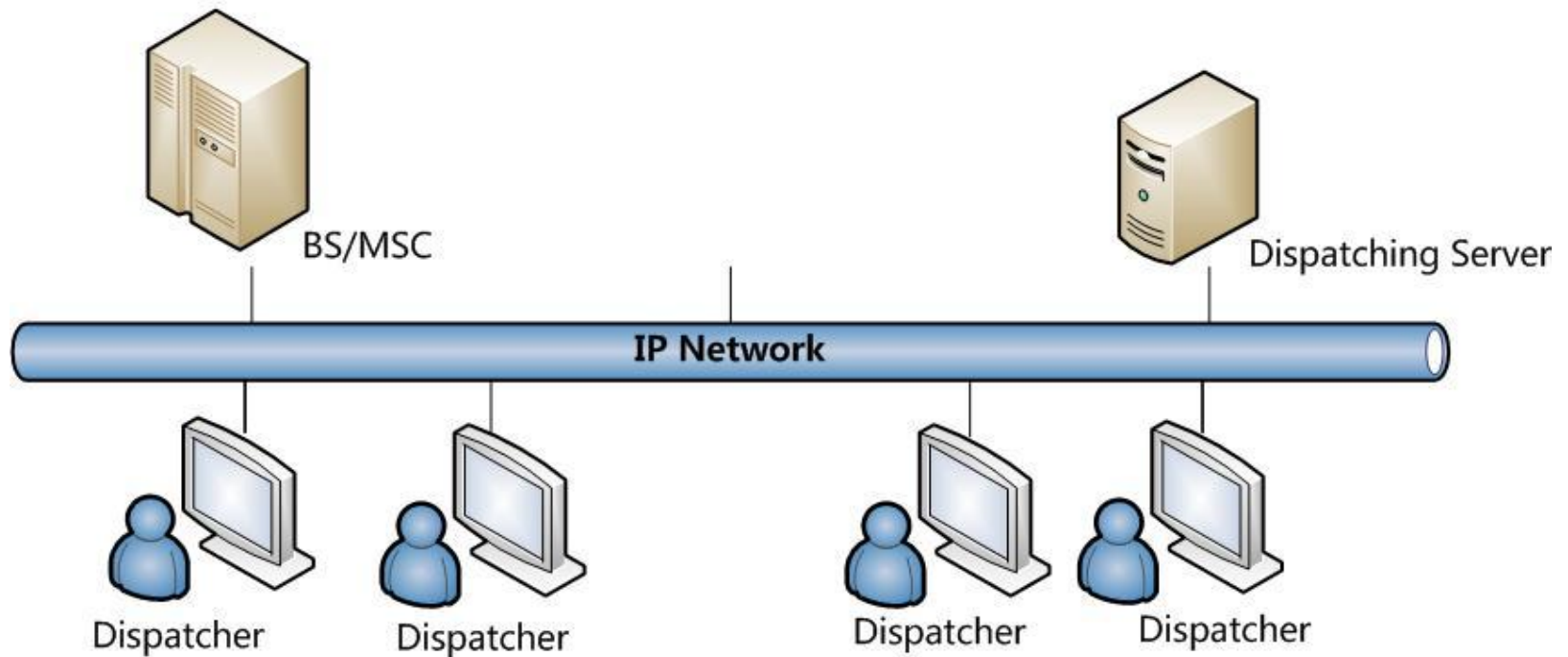
## Features



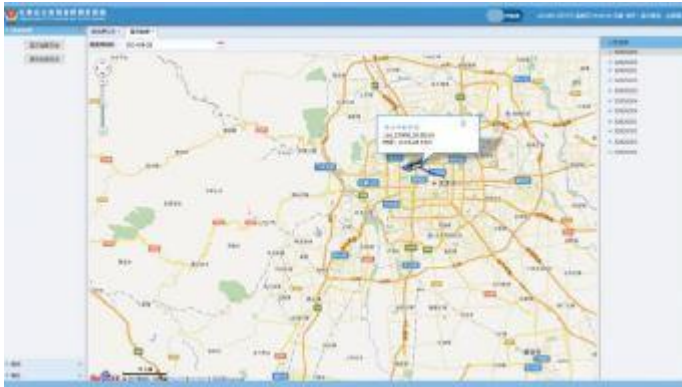
- Adopt flattening design with coordinate structure among MSCs, which facilitates system planning and construction
- Adopt software modular design, allowing different users to do the different configuration flexibly
- Adopt multiple redundancy hot backup of database , ensuring the system data safe and complete
- Provide multiple Access Gateway such as PSTN/PABX gateway, GPS Server gateway, MPT system gateway.
- Real-time operating monitoring, remote maintenance and configuration management

# Dispatching Center (DIP)

Dispatching System Structure Chart



# Dispatching Center (DIP)



Visual Dispatching Interface



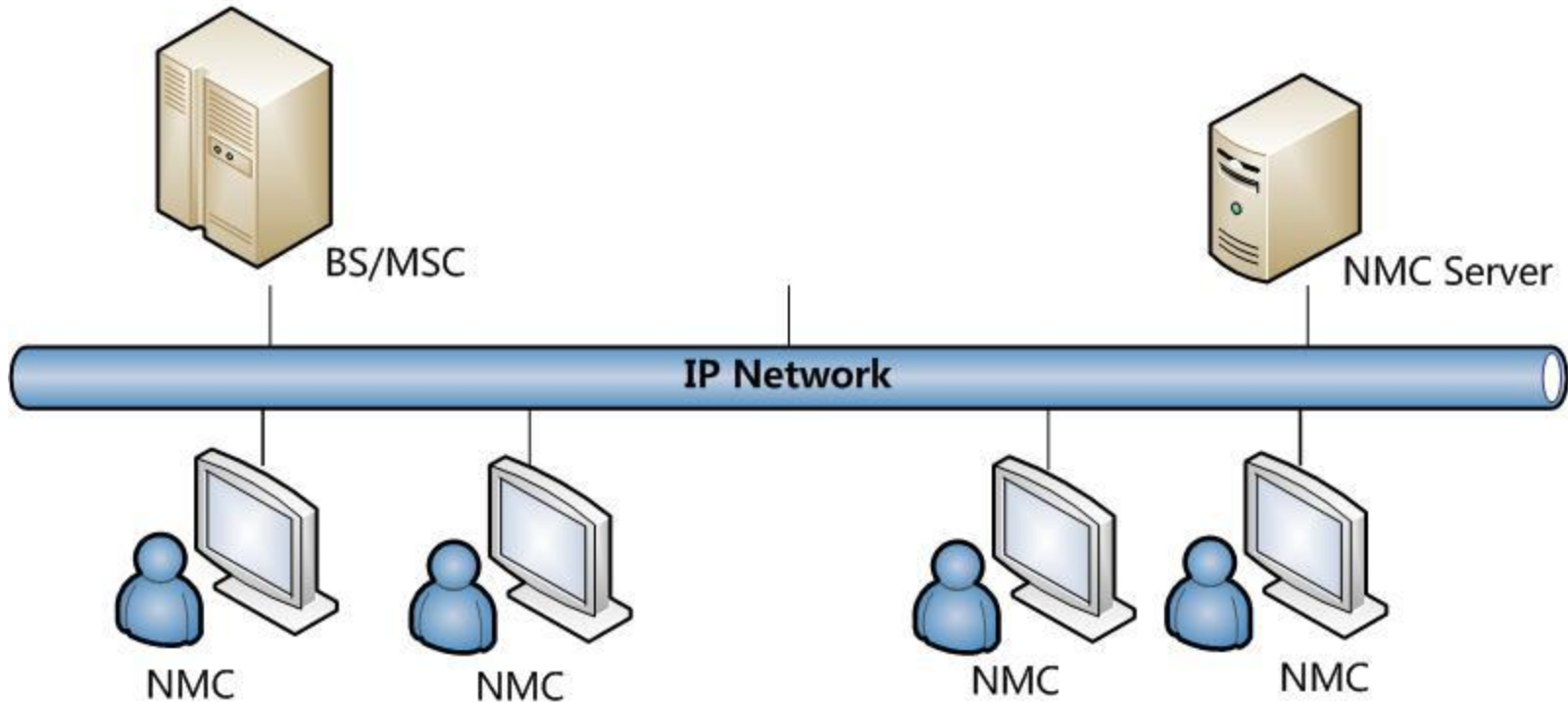
Dispatcher Interface

## Main Services

- Voice Dispatching
- Short Data Message Management
- Visual Dispatching (AVL)
- Track Playback
- Discreet and ambience Listening
- Override and Interrupt
- Dispatching Plan Management
- Log management
- Dispatching System Configuration

# Network Management (NMC)

NMC System Structure Chart





# Network Management (NMC)

## Main Services



NMC Interface

- Security Management
- Device Management
- Alarm Management
- Subscriber Management
- Statistics Management
- Staff Management
- OTAP (Over the Air Program) Management
- Upgrade management

# EXCERA DMR Trunking System



**Reliable**

**stable**

**Multiple redundant backup greatly improves the system reliability and stability**



Hot backup of the key modules for each transceiver



Hot backup of transceiver for each BS



Hot backup of key equipment and modules for BSs



Hot backup of database among MSCs

# EXCERA DMR Trunking System



## Reliable

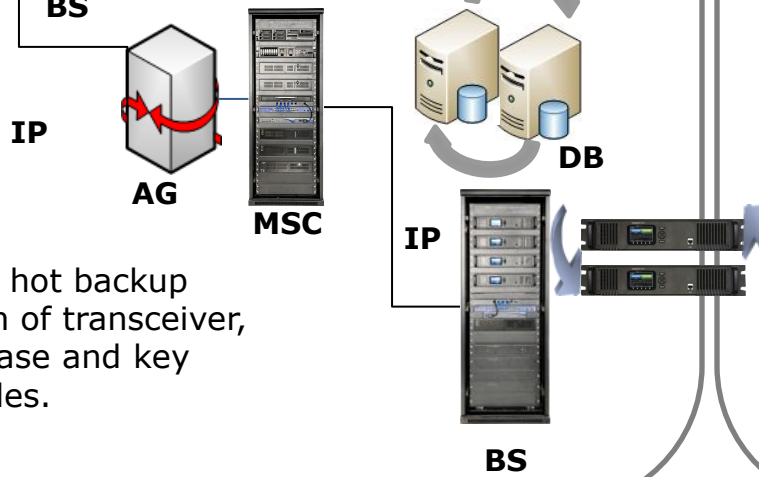
The system safety is ensured via multiple technologies.

## safety

### Safety of system design

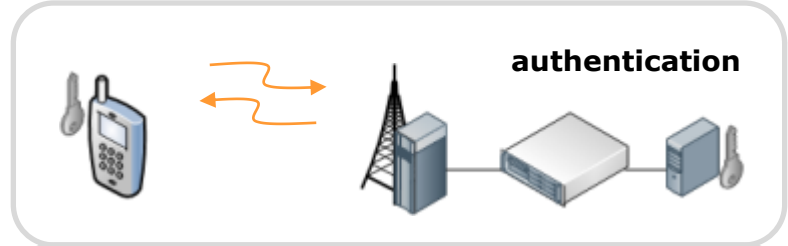


Adopt distributed and flattening design; which makes sure the system can be hierarchical graceful degradation .

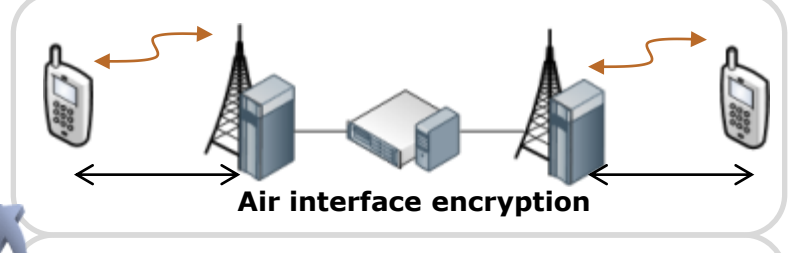


Adopt hot backup design of transceiver, database and key modules.

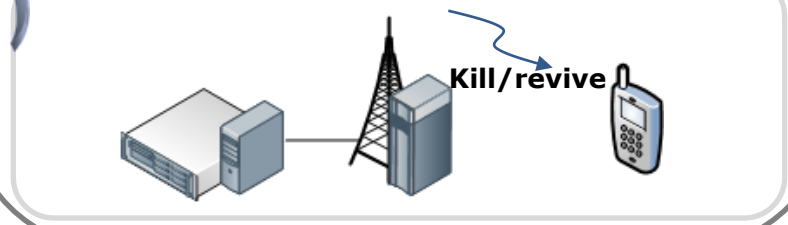
### Safety of information



authentication



Air interface encryption



Kill/revive

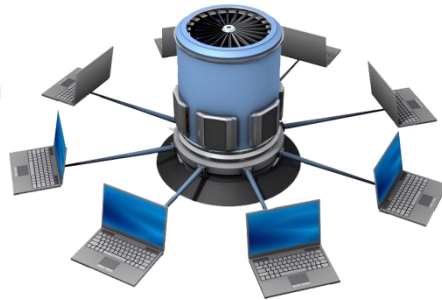
# EXCERA DMR Trunking System



## High-efficient & Flexible

### Flexible software modular design

MSC adopts software modular design with Different functions, which can be done the Flexible configuration according to different Requirement by different users.

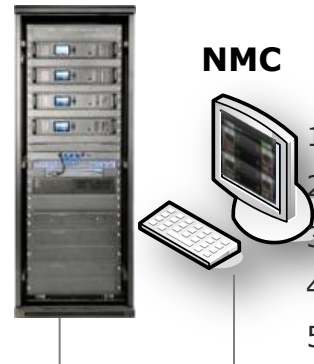


### Flexible working modes

NMC

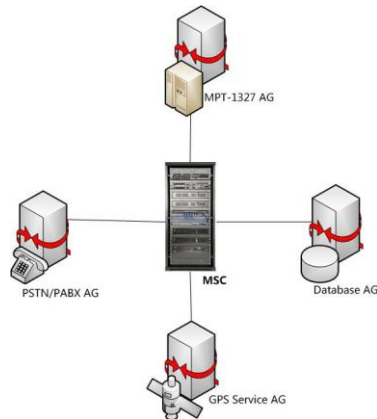
Five in One:

1. Analog MPT trunking system
2. Digital DMR trunking system
3. MPT/DMR dual-mode trunking system
4. Analog conventional simulcast system
5. Digital DMR conventional simulcast system

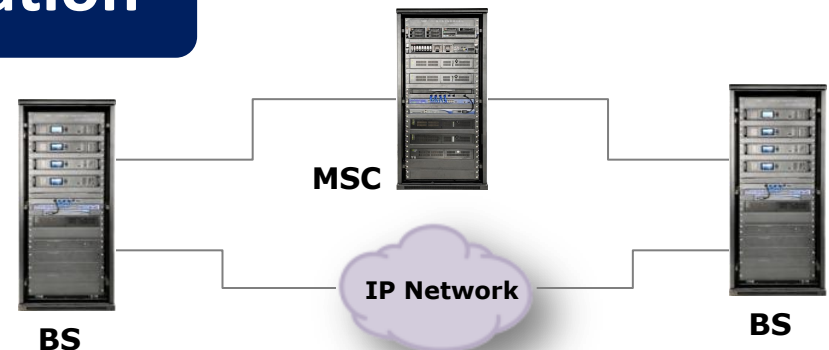


## Innovation

### Flexible Applications



MSC provides multiple Access Gateway such as PSTN/PABX AG, GPS Server AG, MPT system AG, etc. the users can choose different application AG according to different requirement.



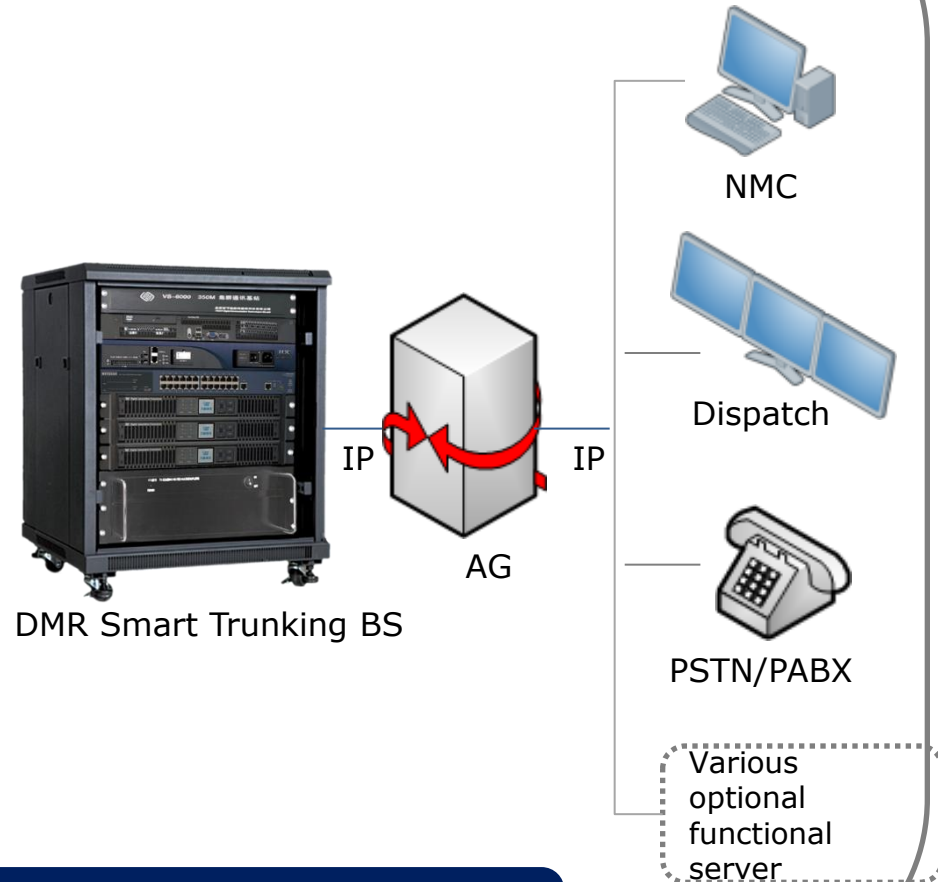
Flexible remote management and control via IP network

# EXCERA DMR Trunking System



## Single Site Solution — EXCERA DMR Smart Trunking

- ◆ Support max. 1200 subscriber
- ◆ Support voice and data service
- ◆ Support max. 6 repeater and 12 dynamic voice/Data channel
- ◆ Support max. 12 repeater and 24 static data channel
- ◆ Compatible with MOTOTRBO terminal radio and realize **Capacity Plus** functions



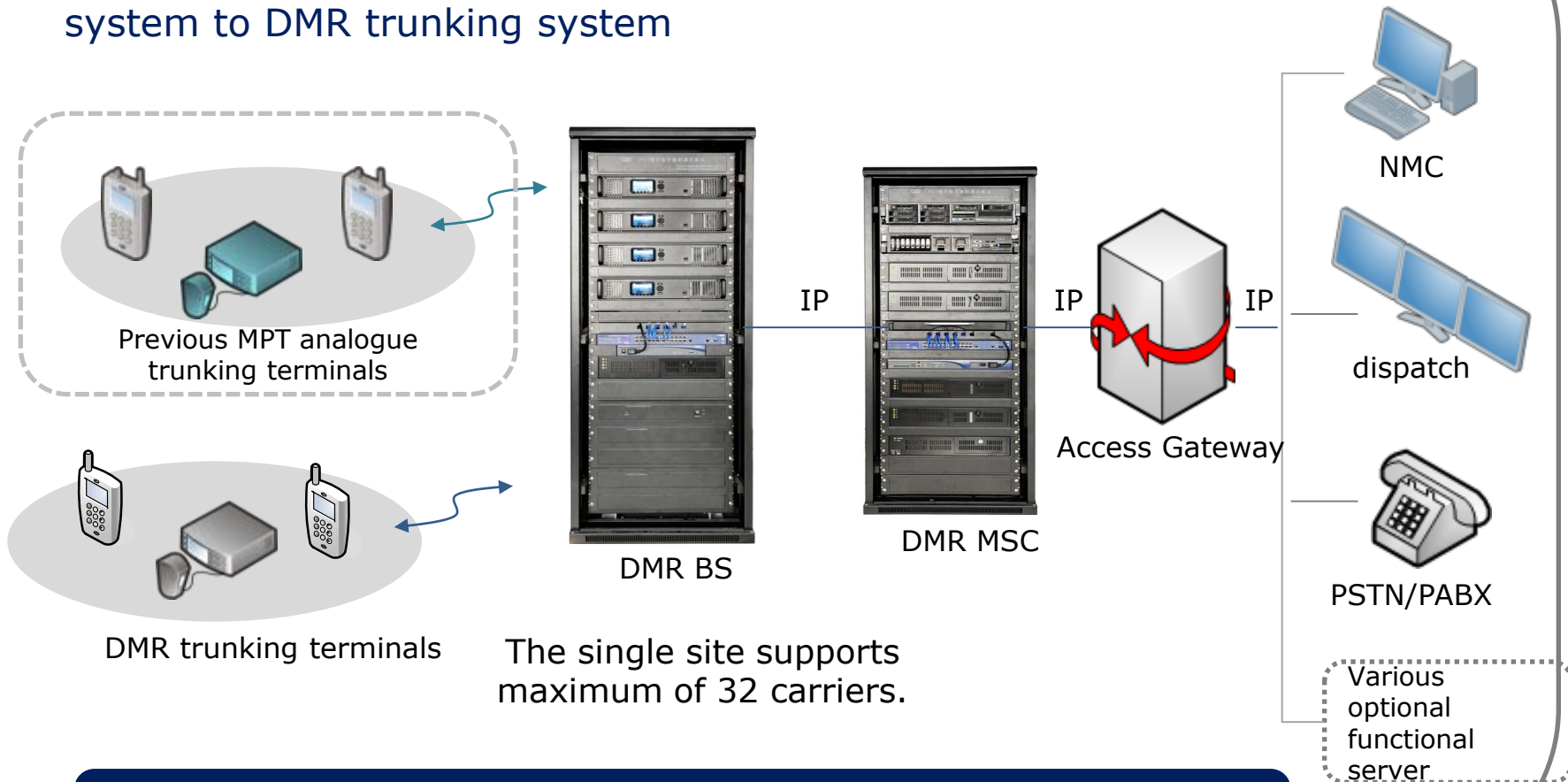
**Especially tailored for the users who require small-scale networking**

# EXCERA DMR Trunking System



## Single Site Solution --- DMR TierIII Trunking System

-- smooth escalation of small and middle scale analogue trunking system to DMR trunking system



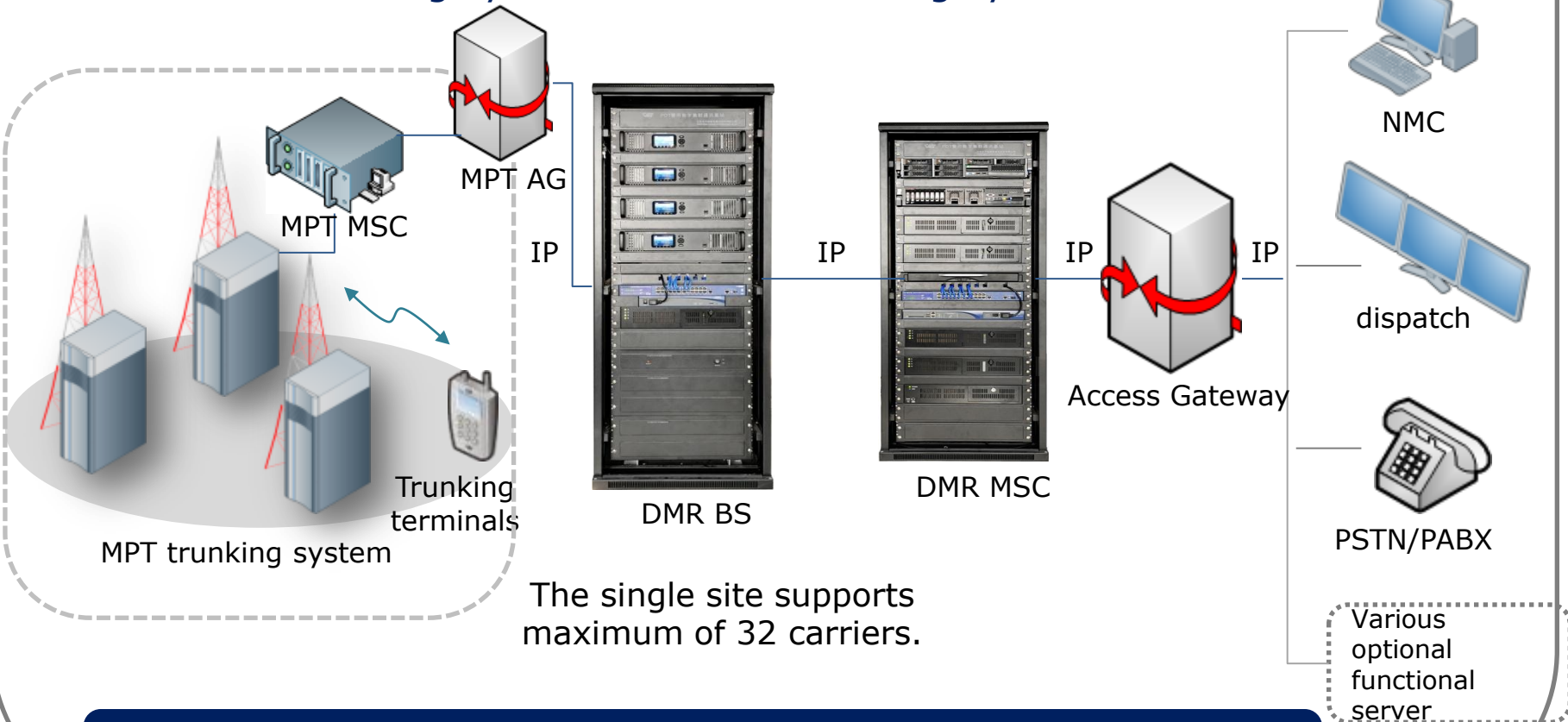
**Make use of most of the previous terminals and meanwhile upgrade the system to digital one.**

# EXCERA DMR Trunking System



## DMR Trunking System Solution

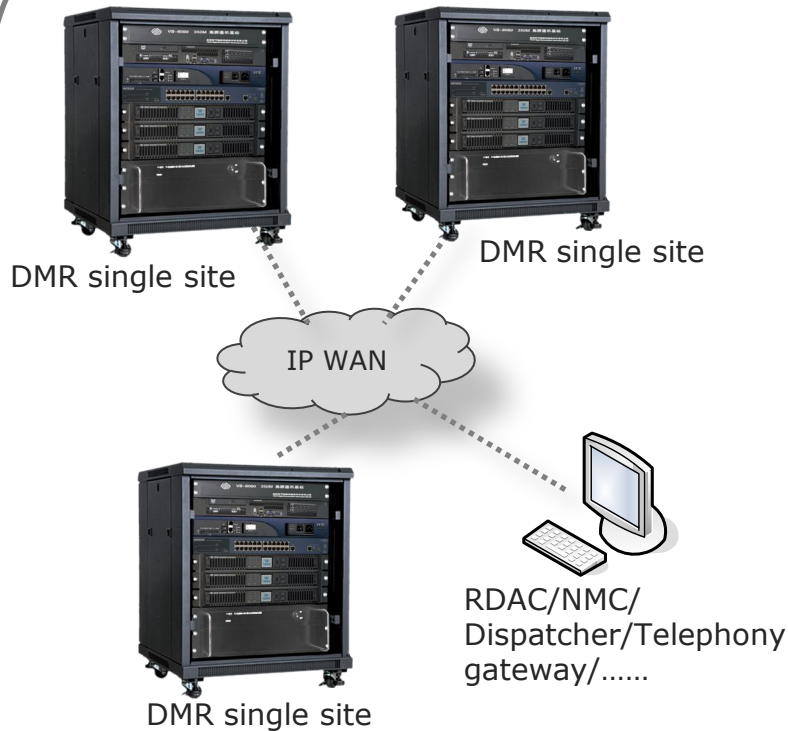
-- smooth extension of the small and middle scale analogue MPT-1327 trunking system with DMR trunking system



The single site supports maximum of 32 carriers.

**The previous MPT-1327 trunking system is still working while extend the system with DMR trunking system.**

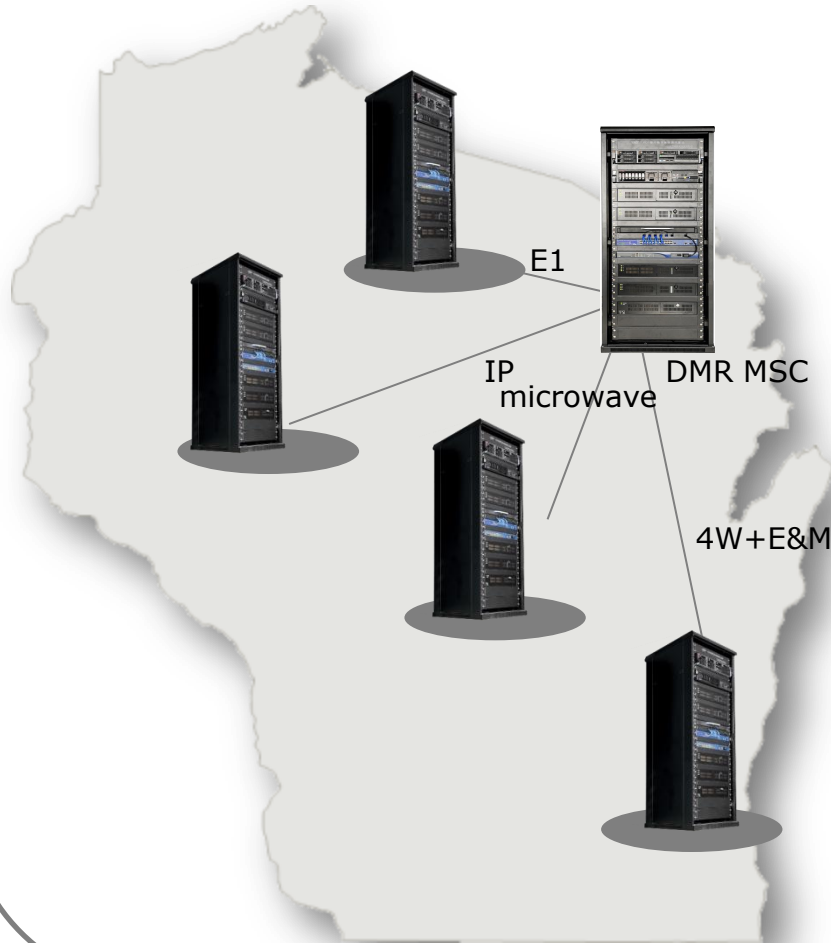
## Smart Trunking Multi Sites Solution



- ◆ **Multi Sites pseudo trunked solution**
- ◆ **Support multi-site simulcast**
- ◆ Inter-connected among DMR single site by IP link
- ◆ This system with multi sites and multi channels can do :
  - **Extend the coverage** for the single site
  - **Increase the system capacity** for the sites with IP link
- ◆ Upgrading with software, no any hardware is needed
- ◆ No BS controller
- ◆ Compatible with MOTOTRBO terminal radio
- ◆ Use EXCERA MSC as switching node, supporting maximum of 62 sites.

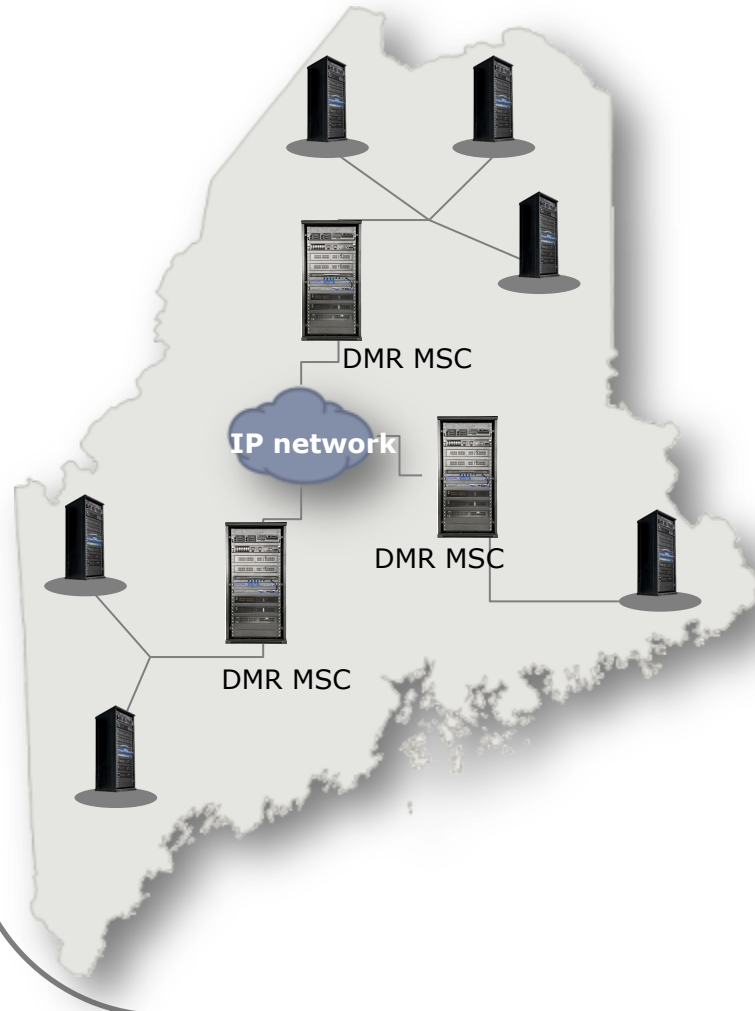


## Single Node Multi Sites System -- middle scale digital trunking system solution



- ◆ Adopt IP soft switching technology, which is more flexible, effective and open, and easy to connect with other network device;
- ◆ Each MSC can support max. of 62 base stations;
- ◆ The key equipments, modules and DB are all adopted redundancy hot backup, greatly reducing the possibility of system breakdown;
- ◆ Multi links are supported such as IP, E1, 4W+E&M and microwave;
- ◆ Provide various applications access gateway: dispatching service, GPS positioning, recording and PABX/PSTN, etc.

## Multi Nodes Multi Sites System -- large scale digital trunking system solution

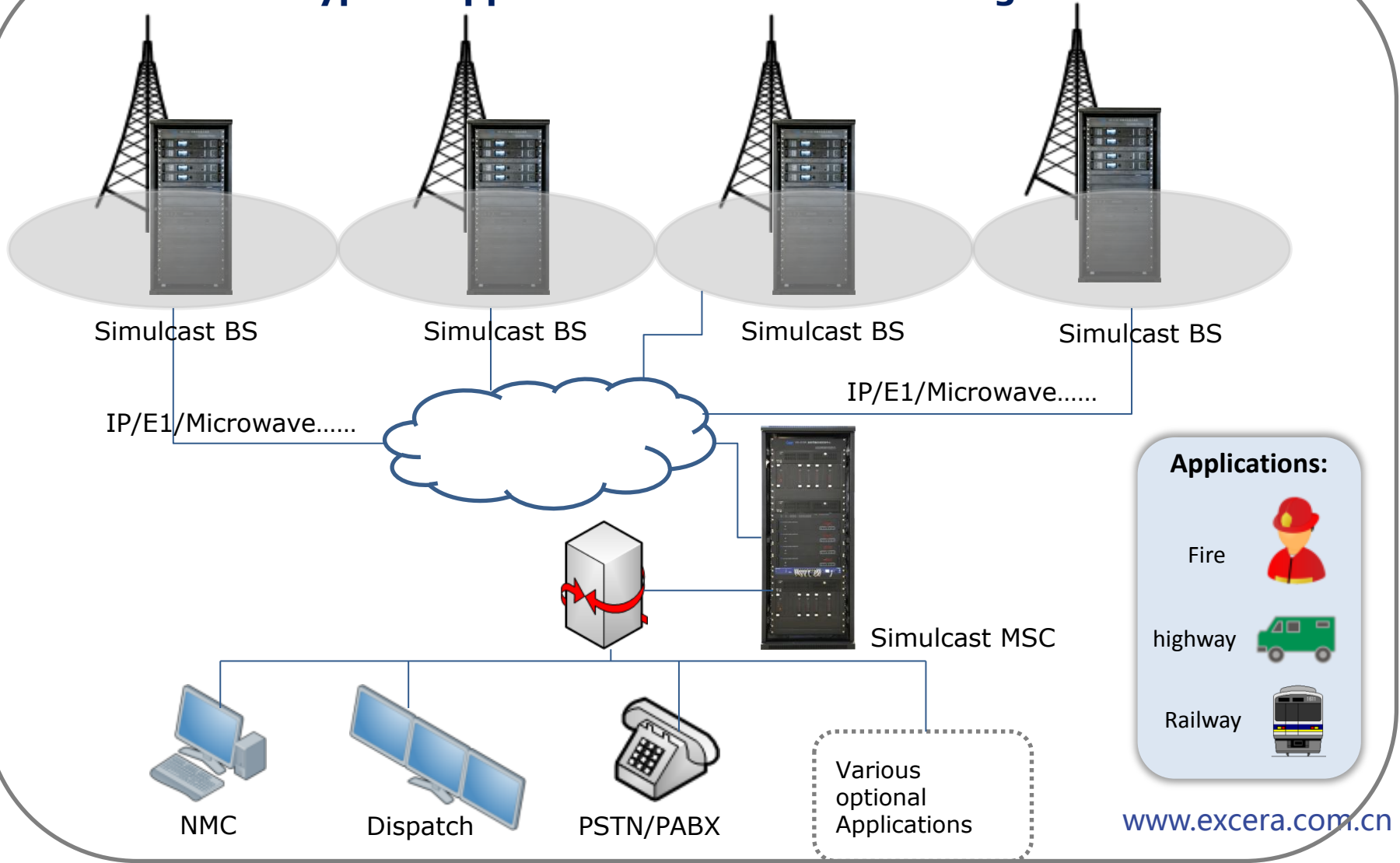


- ◆ Adopt the mainstream of soft switching technology:
  - Support various network programmable processing system with different protocol;
  - Can be operated conveniently on various PC with various OS
  - Flexible and effective to connect with external network device
  - Open for the 3<sup>rd</sup> party development (API)
  - Convenient for system expansion station
- ◆ Adopt automatic roaming technology, ensuring seamless hand-over and keep continuous communications when trans-regional;
- ◆ Adopt flattening design with coordinate structure among MSCs, which facilitates system planning and construction;
- ◆ Adopt distributed and flattening design; the base station adopts unique design of transceiver hot backup, which makes sure the system can be hierarchical graceful degradation;
- ◆ Provide various applications access gateway: dispatching service, GPS positioning, recording and PABX/PSTN, etc.

# EXCERA DMR Simulcast Solution



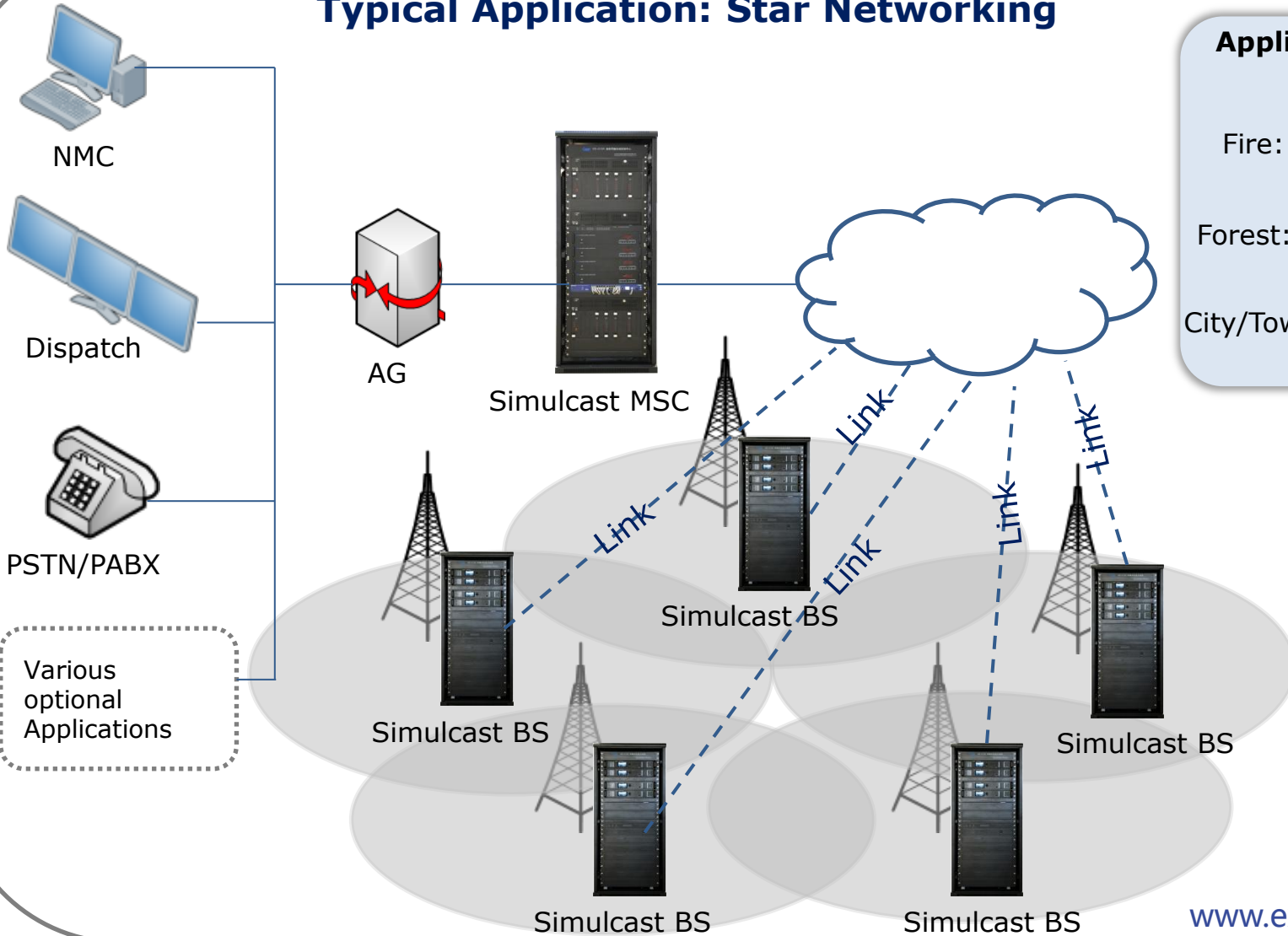
## Typical Application: Linear Networking



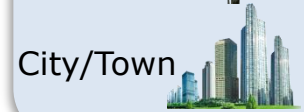
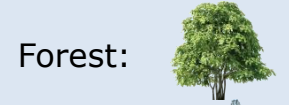
# EXCERA DMR Simulcast Solution



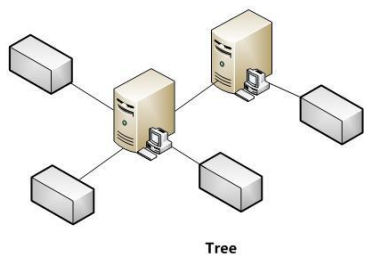
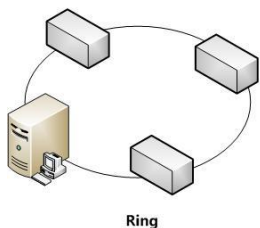
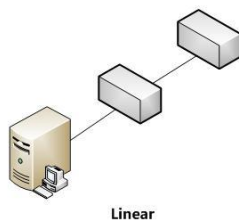
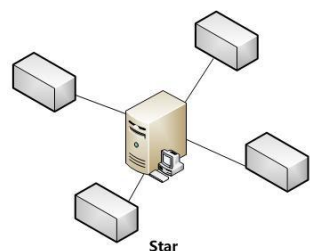
## Typical Application: Star Networking



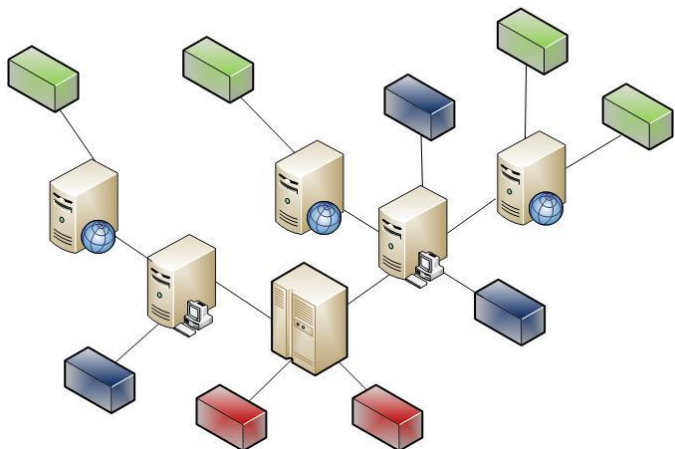
### Applications:



# EXCERA DMR Simulcast Solution



Nested Infrastructure



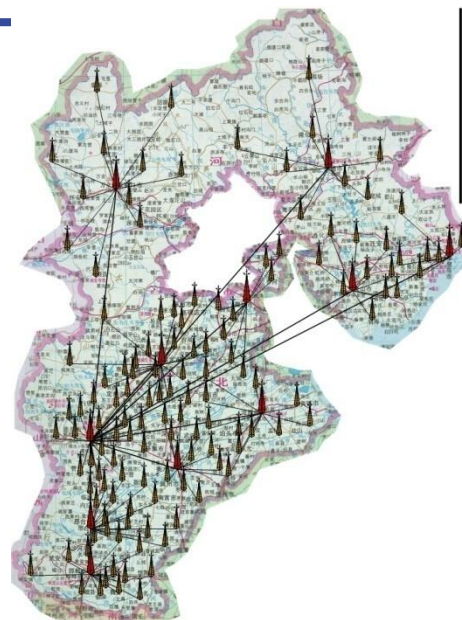
Professional/business critical users can benefit from EXCERA simulcast solution in terms of:

- ◆ Frequency saving
- ◆ Wide area coverage
- ◆ Intrinsic hand-over and roaming
- ◆ Fast call set-up time
- ◆ Support analogue and digital dual-mode simulcast
- ◆ Unauthorized Access Protection with system management
- ◆ Digital voice protection with encryption
- ◆ Same DMR channel for voice and data communications
- ◆ Network flexibility: EXCERA Simulcast solution can be deployed in any network topology configuration (linear, star, tree, ring, mixed). Its nested infrastructure logic levels allow the solution easily widen its topology for any future use.

# Typical Cases

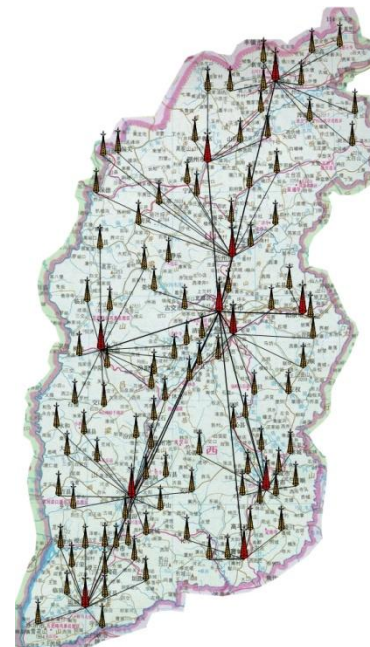
## Typical Cases of Chinese Police in recent 6 years

Province	BS Qty	Trans. Qty	Subscriber Qty
Hebei	240	1020	71000
Shanxi	162	706	56000
Anhui	160	710	67000
Jiangxi	150	540	63000
Henan	140	690	41000
Jiangsu	50	170	17000
Total	902	3836	315000



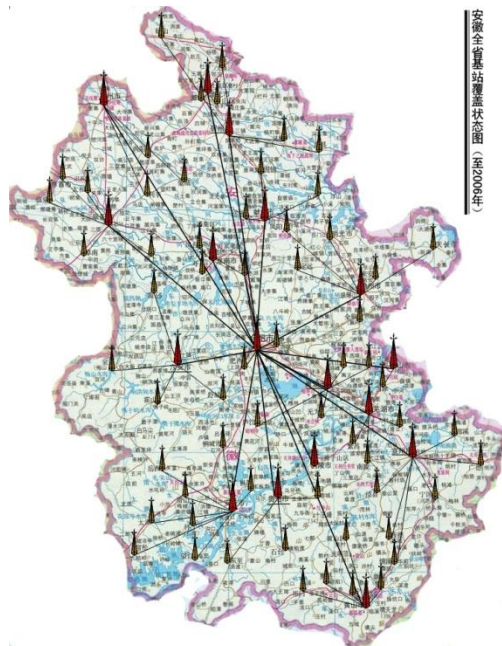
河北省基站网络图 (2007年)

Hebei Province



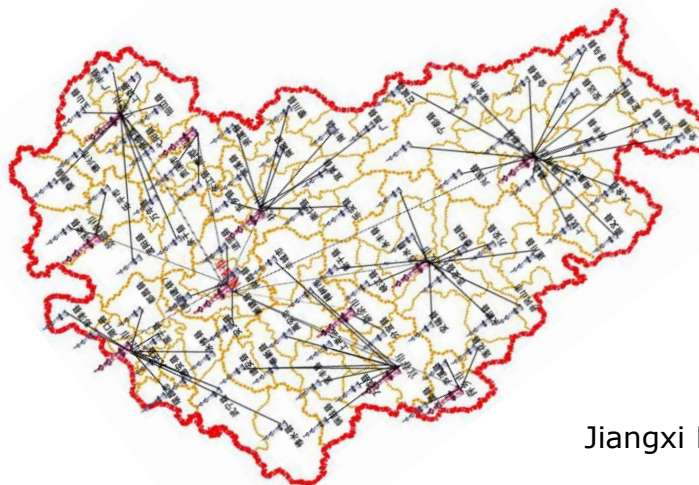
山西省基站网络图 (2007年)

Shanxi Province



安徽省基站网络图 (2007年)

Anhui Province



Jiangxi Province

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# EXCERA Service --- One-stop Service



**Full series of DMR Solution**



**Various Applications**



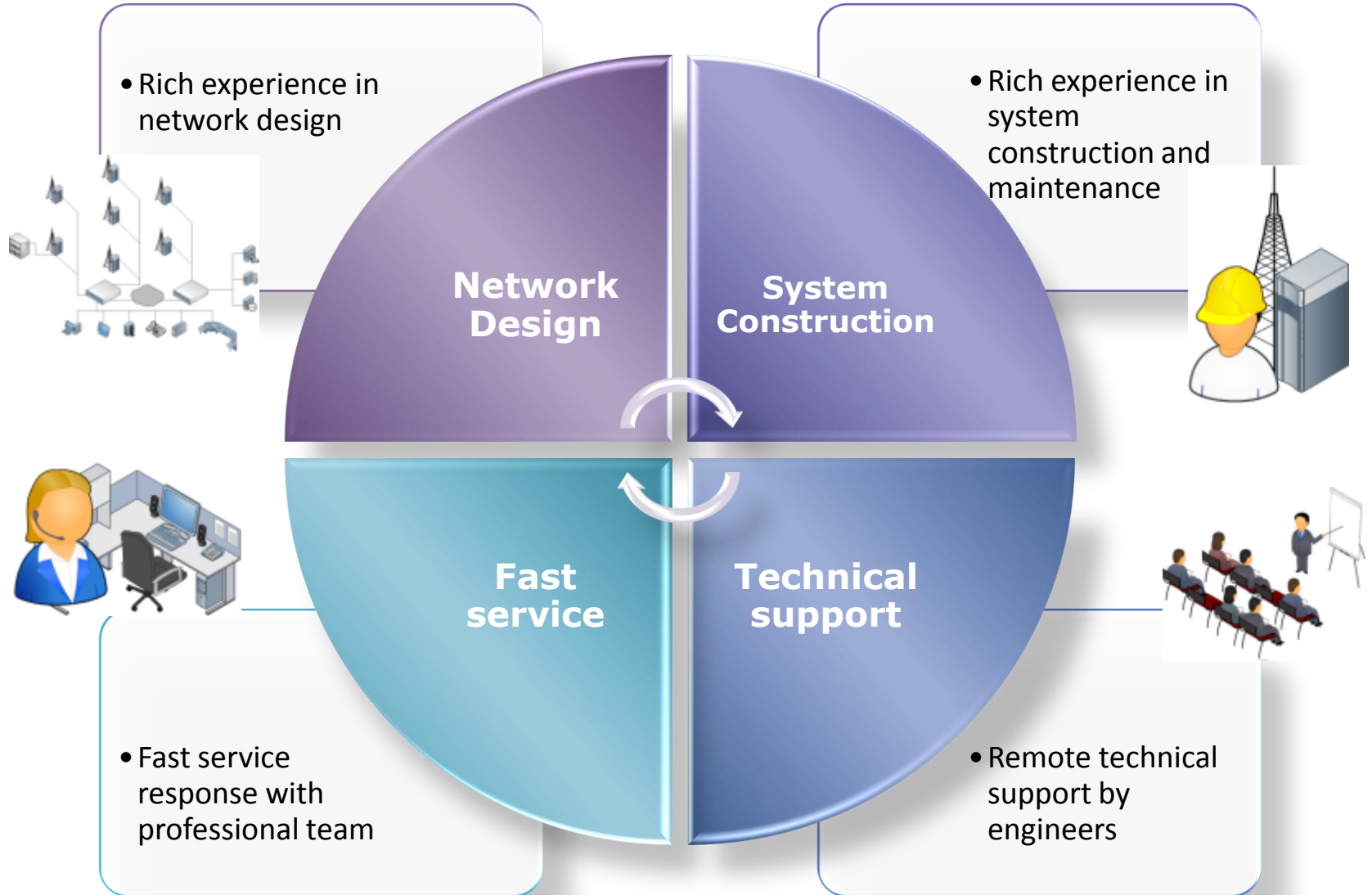
**Professional network design and engineering ability**



**Project service and technical support, training included**



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*Thanks*