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New Generation 110/122 Command & Dispatching System (CDS) of TONG GUANG NORTEL

Necessities of construction of new generation 110/122 Command & Dispatching System (CDS)

The very fast development of modern communication technique urges people to use communication tools such as telephone, computer, etc. gradually, while the use quantity of traditional letters and mails is less and less gradually, under this circumstance, the improvement of post services is more important. Therefore, to establish a modern post customer service center, on one hand, can satisfy the increasingly requirements of customer, improve QoS, and enhance competition of post to fit the increasingly keen competition of market; on the other hand, through establishing customer service center, and developing VAS and services such as mail order, express delivery, etc. to generate new economic growth points.

With continuous development of social politics and economy and improvement of people's living standard in our country, in the face of new situations of current social security, Public Security Bureau is facing with new grave challenges. Although traditional alarm hotline telephone like "110", "122", etc. have played an effective role in solving difficulties for the mass and consolidate the relationship between police and the mass, normal telephone call station can no longer adapt to modernization demand, so how to be seasoned with development of social security? How to cooperate with the innovation of public security system? How to improve the quick response, scientific decision-making and comprehensive capabilities in coordination, organization, command and dispatching of public security team on emergency? New generation 110/120 command & dispatching system of TONG GUANG NORTEL is just the powerful weapon for solving foregoing problems.

Advantages of CTI Command & Dispatching System

Before emergence of digital switching technology, traditional electromechanical dispatching console control system is the only tool of command & dispatching telephone system, these traditional dispatching console control systems adopt wired logic and accomplish system switching. Systems with different models are incompatible and have no interfaces with external, and development of such systems must depend on manufacturers, so only manufacturers have breakthrough in technologies, can such systems be improved. However, with emergence of time-division digital switching technique, especially the fourth generation switching technology, exchanger has been in the representative of another kind of powerful command & dispatching system. With combination with computer application and adoption of CTI technique, compared with traditional dispatching console, new CTI command & dispatching system has more advantages as follow:

- * All dispatching operations are conducted through computer, on friendly man-machine dispatching interface, dispatching operations will become very quickly and effectively;
- * With background database, dispatcher can know the background of the other party from the auto pop-up information on screen and how to execute dispatching operations before he answers the phone, therefore, work efficiency and quality of service are greatly improved through dispatcher's foreseeing.
- * CTI technique can integrate the voice network and data network of dispatching communication system, so as to reduce cost of user's investment, administration and maintenance;
- * CTI makes various functions accomplished by hardware originally be finished by software now. Since programming of software is of great flexibility, modification of functions and expansion of the whole system are very easy and fast. At the same time, the flexibility of such open platform will also significantly reduce the unnecessary investment due to hang behind of technique, but for traditional dispatching system, it is unavoidable.



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- * Due to industrial standards of computer and its components, it is obviously that maintenance for computer is fast and cost-effective compared with maintenance of special dispatching console. In another word, it enhances reliability of the whole system;
- * Based on reliability of computer and mature backup structure, data network of CTI has intrinsically high reliability. When route table of router is taken into account, route alternative function of Meridian1 and channel configuration of backup can form an alternative channel extending to all directions. In case of occurrence of grave malfunction of computer cause paralysis of the whole network, Meridian1 can still provide voice service independently, and support most dispatching functions. Such multilayer and allround redundancy structure makes the whole system extremely reliable.

Composition of 110/122 Command & Dispatching System

The 110/122 command & dispatching system of Public Security Department of the province is usually composed of digital dispatching exchange, wireless dispatching system, fax group sending system, digital recording & monitoring system and dispatching operator positions, etc.

The command center of Province Public Security Department is responsible for collecting, handling and delivering public security information, facilitating leaders of the Bureau to implement uniform command to important and severe police events, in routine work, the command center will not receive alarm telephone and dispatching externally. Since 110/122 command & dispatching system of local Public Security Bureau has to implement intensively receiving alarm telephone and hierarchically dispatching, its system composition is based on district tertiary network.

The 110/122 command system of typical local station is connected with PSTN through E1 relay; connected with administrative exchanger of local station through E1 interface and, making dispatching exchange and administrative exchanger of local station so as to have dispatching exchange and local station administrative exchanger constitute an organic integrality; connected with 350MHz trunk radio system through E&M relay; establish hotline telephone dispatching with command center of province/city Public Security Bureau through special network for public security composed by Nortel's Passport multiservice exchanger (or other network nodes); establish communication with sectors that require manual transferring or secondary dialing such as Armed Police Force, frontier defense, etc. through hotline telephone; receive and handle the calls from 350MHz trunk radio station and send paging command through dispatching operator positions.

Province/city 110 command center uses Mini11C with lowest configuration of Nortel as telephone call platform, As Gateway between Passport and existing administrative exchanger, Mini11C is connected with province/city administrative exchanger through E&M relay, finally realizing transparent dispatching of the whole special network of public security. The construction for county/city 122 command center is divided into two schemes: one is 122 hotline telephone which is currently in traffic police station and is separated from county/city geographically is integrated into 110 command & dispatching network as voice port of Passport; another is 122 hotline telephone of county/city traffic police station is integrated into 110 command & dispatching system as remote operator position of local station dispatching exchange.

Realization of system functions

A. Basic dispatching function

Nortel's Meridian exchangers are adopted as dispatching host machine, which feature normal traffic functions and various dispatching functions of digital subscriber exchanger. Specially includes queue exchange,



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abbreviated dialing, outgoing call barring, hostile searching, alarm clock service, hotline telephone, free from disturbing, call transfer, incoming call barring, call forwarding on busy, call forwarding on no response, intrusion, forced release, monitor, optional calling, pick-up service, continuous and group calling and full interactive tele-conference with 30 parties involved (dispatcher can control allowance of interactive of several parties), auto traffic distribution, etc.

B. Networking functions

Dispatching host machine can be configured with common analogue subscriber interface, digital subscriber interface, digital relay interface, loop relay interface and various E&M interfaces, and can be networked flexibly with various models of machine, so as to realize network-wide uniform dialing.

The dispatching host machine supports R2 format of China No. 1 Signaling, China No. 7 Signaling, ISDN Signaling, and China No. Signaling, and signaling format can be easily adjusted to meet the requirement of local networking.

C. Intelligent secondary receiving alarm telephone Function

When command & dispatching center receives a alarm telephone, it can obtain the host RegName, installed address, etc. of incoming call, and identify the counties (cities) which the telephone set is subordinated to. If the call is from the direct-line subscriber of subordinated counties (cities), i.e. transfer the incoming call to corresponding county (city) through internal route (voice channel of Passport), send message to PC of the county (city), and display all relevant information about this incoming call while the telephone set of operator position receiving alarm telephone of corresponding county (city) is ringing.

If all dispatching operator positions of the county (city) are busy, the incoming call will enter the waiting queue of the county (city) from the local station dispatching exchange, once there is idle operator position, the call will be immediately received.

The incoming call of special telephone subscriber will be directly transferred to local station operator position. If all operator positions are on busy, the incoming call enters waiting queue, once there is idle operator position, the incoming call which has waited for the longest time in the waiting queue will be received.

In addition, command center is installed with several hotline telephones, by which, fire-alarm telephone called through 110 can be transferred to 119 command center.

D. Replace function

When an alarm telephone is transferred to county/city, command & dispatching operator position will hold 110 alarm telephone and continuously monitor the status of operator position receiving alarm telephone of county/city, if the operator position of county/city fails to respond within three ringing, to avoid wasting time, the command & dispatching center will transfer the incoming call held to local operator position, i.e. local station operator position which will execute receiving alarm telephone and dispatching.

E. Interception function

In order to enable the system to auto intercept misdialing telephone of 110 caused by various reasons, users will firstly hear a prompt, such as "You dialed 110 alarm telephone, please hung up immediately if you misdial the number. Wait a moment please if you want to alarm" etc. to let user who misdial the number hung up actively.



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F. Leader monitoring function

The dispatching operator position in command & dispatching center consists of digital dispatching telephone set and computer for dispatching use, and adopt method of touching screen of computer to dispatch; additionally, for the leaders like director, director-general of a bureau etc., only install dispatching software is in their PC, and a set of intercommunicating telephone of analogue telephone, can the simple calling be functioned. According to authority, status of receiving alarm telephone and dispatching can be real-time monitored.

G. Calling-line display function

When ordinary subscribers within the district dial 110/122, RegName and installed address of the alarm telephone can be auto displayed on computer of the operator position receiving alarm telephone.

H. Single-key processing

The operator on duty presses the called subscriber key on touch screen of dispatching operator position, to activate single-key function, dispatching exchange will auto arrange calling order according to different time slices such as working and off-working, etc., and cycle call subscriber's internal telephone of office and dormitory, local phone, mobile phone and BP; and through auto or manually identifying busy and idle state and busy tone, give prompt on computer, and next calling number will be determined by the operator on duty. Definition of different time slices such as working time and off-working time, etc., calling times of each telephone and duration of ringing are set by the operator on duty.

I. Intrusion, forced release, monitor and talking among multiparty

Through digital recording equipment, dialogues of receiving alarm telephone can be monitored at any time within the district, and controlled by CTI to make intrusion and forced release to end talking. People who alarms, county/city 110/122, and local station 110/122 or multiparty can talk simultaneously.

J. Processing of authorization in different places

When grave police event happens, and the leaders of Public Security Bureau arrive at the field or in local command center in person, the local 110 alarm service station can be entitled to be as remote dispatching station of command center of province Public Security Bureau, here, screen interface of computer at dispatching station is same as that at command center of province Public Security Bureau, so do operation methods.

K. Digital recording/Chronograph

Global real-time monitoring/digital recording can be conducted to all alarm telephones received by local station dispatching exchange, and can conduct fixed recording and dynamic recording to designated subscriber. Subscriber can selectively hear specific telephone recordings according to various searching conditions (such as date, time, relay line number, the calling number, etc.) It is unnecessary for county operator position receiving alarm telephone to increase any hardware equipment since the phone set can search and listen to the recording of receiving alarm telephone and dispatching of alarm telephone; alternatively, play designated recording content to designated telephone subscriber through the setting of operator on duty. At the same time, the entitled subscribers can also send designated recording to his designed telephone set through recording setting interface.



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All recordings will be auto saved in computer for searching. When recording file occupies 85% disk space of hard disk of recording server, warning prompt will appear, and recording file can be backuped to optical disk for recovery to hard disk when necessary. Recording can be integrated with information system, through matching ID, automatically combine the recording file of certain case and logging file of pre-case for future searching and proving.

L. Tele-conference function

Tele-conference system consists of a telephone interface and a set of conference system. Conference system can auto initiate timing conference according to preset time table and directory; the operator on duty at dispatching operator position can also initiate a temporarily conference. The conference system can organize a conference with up to 62 parties involved, and support several conferences randomly combined. The conference system supports multiple relay modes, the party that participates in the conference can be subscriber within network, and external-line subscriber is also allowed to take part in the conference; during the conference, chairman can view the status of parties involved, control dialing in and exit of them, and full interactive or broadcasting, etc.

M. Statistics and analysis function to police events

The system can input, search and print the information of receiving alarm telephone and dispatching, and make selective statistics and analysis to it as time.

N. Fax group sending function

The local station operator position that receives alarm telephone can send group fax. Telephone number of object can be from preset number combination, or be designated one by one by operators.

O. Soft telephone function

Soft telephone function of CTI can be implemented by local station operator position terminal, and dialing, hung up, holding/recovery, call transfer, intrusion, forced release and tele-conference, can be accomplished by keyboard, mouse and touch screen.

P. Integration with other systems

This system is a kind of open platform, can be easily integrated with VOD system, GIS electronic map system, GPS, wireless communication system, paging system, etc., to obtain an effect of monitoring network-wide by one platform.

Performances and characteristics of command & dispatching system

1. Resource sharing, investment saved

Network-wide "110" and "122" alarm telephone can be uniformly tanderred to command center of district public security bureau for secondary receiving alarm telephone, communication, network, and information resources are shared, and investment are saved. For county public security bureau, traffic police station, and local station command center which currently have no available telephone exchangers, the local station dispatching



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exchange not only functions through receiving alarm telephone and dispatching quickly, but also has county/city bureau guided and monitored by local station.

2. The system uses modular structure, in favor of capacity expansion

The system adopts modular structure, which is in favor of capacity expansion and upgrade. The system is reserved with expandable space and system interconnection interface during planning, the operator positions of receiving alarm telephone and dispatching can be divided flexibly, support various working modes of "110", "122", "119", "120" alarm services, and facilitate the expansion of system and response with other social sectors.

3. Advanced and practical techniques of system

The system adopts advanced CTI technique which facilitates the implementation of dispatching function. The scheme takes fully use of stability of dispatching machine platform and flexibility of computer's software, realizing coordination of computer network, and police force, emergency material resources can be uniformly dispatched when grave case occurs.

4. Stable and reliable system

The system adopts Nortel's Meridian I series exchanger with high stability as communication platform, the tertiary network consists of multiservice exchanger Passport of Nortel, and architecture of the system features mature technology and stability and reliability.

5. Interface friendly, simple and easy operation

Digital dispatching system takes comprehensively use of communication facilities of carrier network and private network, interface receiving alarm telephone is friendly, and functions can be implemented only by clicking mouse or touching.

TONG GUANG NORTEL adopts CTI 110/122 command & dispatching system which is the hub of public security bureau to collect, handle and deliver public security information and the command hinge of the leaders to uniformly command the grave police events, deal with emergency and severe public security disaster accidents as well as the command department of government to manage great emergency events and grave disaster accidents. Following Nortel launched network-wide dispatching system for Hong Kong's metro, TONG GUANG NORTEL's 110/122 command & dispatching center has been successfully running in Shandong Public Security Bureau. We would like to provide public security command & dispatching center with solid communication platform and application and make more contributions to high efficient operation of public security system.

Tong Guang-Nortel hopes to establish a close cooperative relationship with customers from all over the world and help make virtual operation a reality everywhere as well as to jointly advance the development of this industry in China.