



NAFFCO
A V I A T I O N



VCCS

VOICE COMMUNICATION CONTROL SYSTEM

ICS2020 VOICE COMMUNICATION CONTROL SYSTEM

Security – Reliability - Flexibility

OVERVIEW

NAFFCO AVIATION DICOM Voice Communication Control System (VCCS) model ICS2020 is based on IP technology, providing a variety of communication control functions optimized for Air Traffic Control Center and Communication Command Centers. The configuration is suitable for small to large-scale Command Centers, the fixed and mobile applications. ICS2020 designed with strong security, innovative resilience and easy administration.

COMPLETELY IP BASED TECHNOLOGY

The system designed based on progressive internet protocol (IP) at the core technology allows user makes us of advantage of modern communication enhancements such as high reliability, security and flexibility. It also provides the ability to develop additional function for both administrators and technicians in the future easily.

MODULAR, EQUIPMENT AND NETWORK REDUNDANCY

System availability is paramount for critical mission operations. ICS2020 implements redundancy methods such as distributed architecture design, modular redundancy, equipment redundancy and CWP redundancy, using independent dual LANs, dual power supply (Main / Backup) to ensure the system works 24/7 without interruption when fault occurs.

REDUNDANT CONFIGURATION

- Hot swappable with modular design.
- Equipment redundancy.
- Modular redundancy.
- System redundancy.
- Two completely independent networks

DISTRIBUTED DESIGN STRUCTURE

ICS2020 designed in a distributed architecture, each CWP, each module of media Gateway has its own processor, when there is a device failure, it does not affect to other devices in the system.

BENEFITS

- IP technology enables customers to invest in different stages. The elements of the system are connected together via IP network (according to ED-137 standard), thus there is no limit to expand, upgrade, and connect to other IP devices.
- Provide operational flexibility, allowing the operator to control all transceivers, telephones, and legacy VCSs in the same network.
- Intuitive user interface simplifies, easy to use with clearly divided functional areas.
- Ability to operate continuously without interruption thanks to distributed architecture, redundancy for all devices and connection.

CYBER SECURITY

For connecting the system to external networks, ICS2020 uses security mode recommended by CANSO Cyber Risk Assessment Guide and EUROCAEED-201. Basically, the Voice Communication Command System is protected when connecting to external systems by with state-of-the-art security mechanisms such as firewalls as well as encrypted traffic management and enhanced security functions of software. This ensures safe and confidential information operations in the 3rd party infrastructure environment. Login and access level to the system are divided according to priority and password-secured. It will record the history of access to the system.

STANDARDS

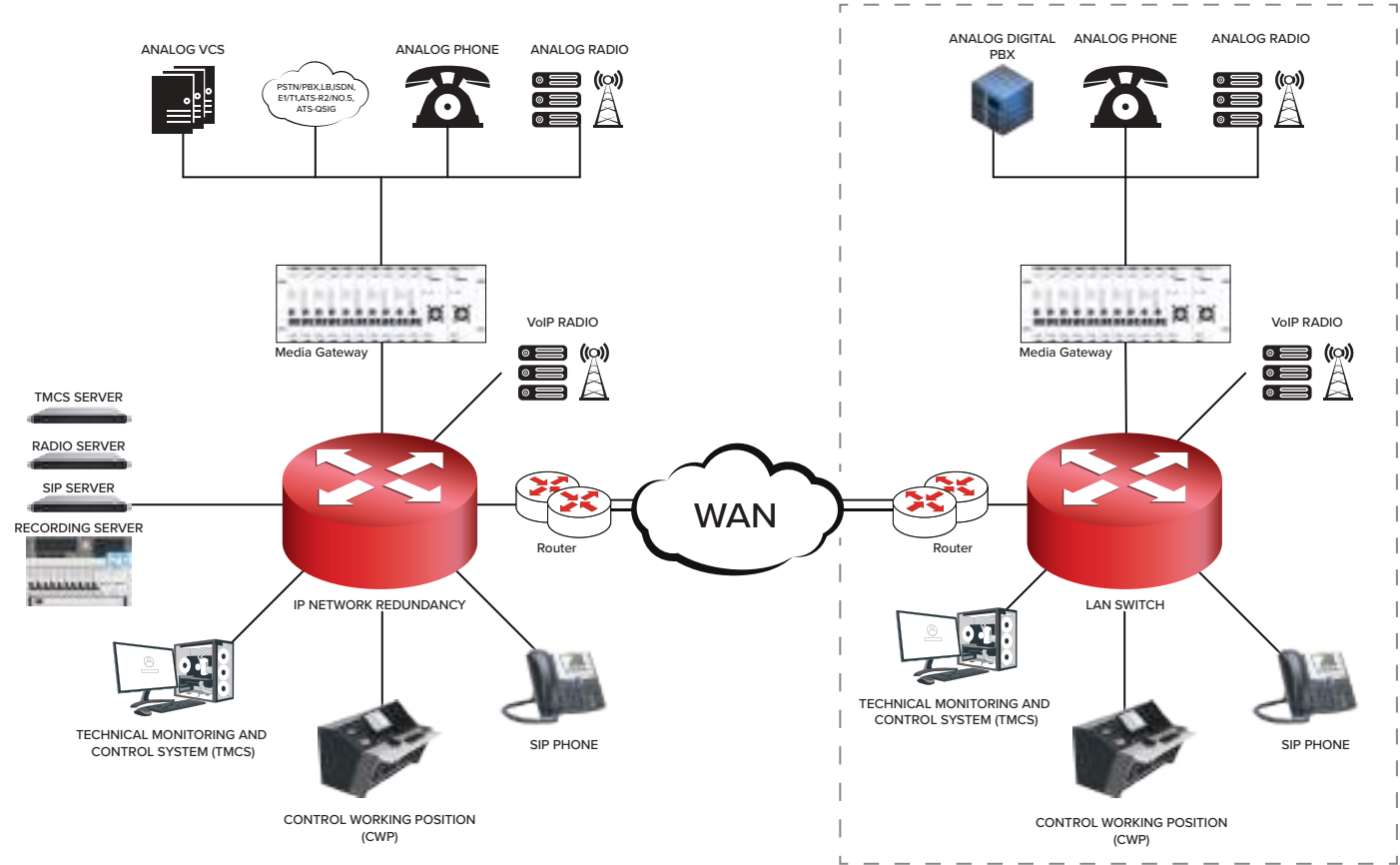
ICS2020 fully complies with the standards issued by ICAO, EUROCONTROL, ICS2020 is designed based on IP architecture and fully complies with standards such as ED-153, ED-136, ED-137, ED-138.

SUPPORT SERVICES

- System design.
- Installation and commissioning.
- Training and technology transfer.

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COMPLETELY IP BASED TECHNOLOGY



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MAIN COMPONENTS

ICS2020 consists of controller working positions (CWP), media gateways, technical monitoring and control system (TMCS), radio servers, VOIP servers and networking devices. CWPs provide intuitive user interface in which is divided into multiple functional areas. The servers are available for different operational needs, e.g. for centralized system configuration and monitoring. All servers are standardized COTS systems with long-term support. Other devices are special designed for the unique requirements of the ICS2020.

CONTROLLER WORKING POSITION (CWP)

CWP used to provide an interface for the operator to communicate with the system. Each **CWP** is equipped with headsets, microphones, handset, speakers and Footswitch as well as a console display. From the **CWP**, the operators can access the system according to the access level and can select the radio channels for communication as well as telephone and intercom. Each **CWP** fully supports ED-136 features such as: Air-Ground, Ground - Ground, BSS, Climax offset, frequency crossover, short time recording, conference call, queue calls, configure users based on roles and Task ... Operations and functions are performed on the touch screen with high resolution, providing a common operating platform for radio and telephone communication. User interface layout can be adjusted according to operator's requirements, based on specific projects. The CWP platform is fully for future and supports new IP-based services such as data and multimedia services.



MAIN FEATURES

- Friendly user interface, reliable and configurable.
- Touch screen, high brightness, multi-function.
- Can be configured according to customer requirement.
- Compliant with ED-137, ED-136, ED-153 standard.
- Connect to radio, telephone based on IP platform.
- Dual LAN.
- Dual DC power supply units.
- Low power consumption.

SPECIFICATIONS

- Display: touch screen LCD, 12"
- Ethernet Interface: 02 ports 100/1000 BaseT, RJ-45 Ethernet (IEEE 802.3).
- Recording port: 02 analog channels.
- ON/OFF and RESET button, built-in beep speaker.
- Power supply: 2 x DC input 9-36 VDC (optional AC power).

ACCESSORIES FOR CWP



Audio Box



Loudspeaker Box



Microphone



Headset



Handset



Footswitch

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MEDIA GATEWAY

The Air Traffic Management systems around the world operate simultaneously with many communication methods such as analogue voice, digital voice and VoIP. Media gateway is a multi-protocol, multi-purpose connection device used to convert all different connection methods to IP interface (ED-137).

Media gateway provides interfaces to connect to analog radios, analog telephones, PABX / PSTN network and analog legacy VCCS.

The media Gateway designed in accordance with VoIP ED-137 standard, with modular design, standard 19" 4U (or 1U) rack mount, dual power supply units, redundant and auto-switch when one power fails. Each gateway provides up to 10 I/O modules like E&M, FXS, FXO, LB, ISDN, E1 / T1, ATS-R2 / - No.5, ATS-QSIG. Depending on the needs of the user, the corresponding modules can be selected. Each module includes two LAN interfaces, which can connected to two Ethernet switches and automatically switched in the event of either network failure.

The media gateway operates based on VoIP platform, allowing connection of analog radios, telephone lines to the system almost unlimited. System and maintenance configurations are stored in TMCS, based on SNMP standard.



MAIN FEATURES
Compliant with ED-137, ED-136, ED-153 standard.
Common protocol monitoring.
Radio and telephone interface module in the same rack case.
Modularity and scalability.
Hot swappable.
Open structure, easy to expand.
Dual power supply units.
Dual LAN.
Interface functions E&M, FXS, FXO, LB, ISDN, E1 / T1, ATSR2/No.5, ATS-QSIG, etc.
DSP technology.
Radio loop test.
Low power consumption.

SPECIFICATIONS
Dimensions: standard 19" 4U (or 1U) rack mount.
Voice codec: G.711 (A-law and -law).
I/O modules: Up to 10 I/O cards, each card includes 1 CPU and 2 Ethernet ports.
Recording: 01 port / channel.
Power supply: 1 x DC input 18-75 VDC, 1 x AC input 85-265 VAC (Optional 1 x DC input and 1 x AC input).

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TECHNICAL MONITORING AND CONTROL SYSTEM (TMCS)

The TMCS is used to monitor, configure, statistic and control all ICS2020 system.

Allows users to configure network devices such as CWP, media Gateway, Radio Server, VoIP servers as well as configuring access and roles / Task. The TMCS server uses the database management to store all the information and configuration of the ICS2020 system.

THE TMCS PERFORMS TWO MAIN TASKS AS FOLLOWS

System configuration: Roles, Tasks, Scenarios, CWP, media Gateway and other parameters of ICS2020 System. When an account is logged in at the CWP, its profiles are automatically downloaded from database of the TMCS server. Likewise, when the media Gateway start up, its configuration is automatically loaded from the TMCS server database and stored temporarily in this media Gateway.

Monitoring system status: Administrator / Technician can monitor the entire system components from the TMCS server through web browser interface. TMCS continuously collects status of each device, displays real-time status and alerts via SNMP message if device fails.

Even if the TMCS temporarily loses connection, other devices in the ICS2020 system will continue to operate in their current state without interruption.

TMCS runs on standardized COTS server platform with long-term support, it can operate in single or dual configuration (1+1).



MAIN FEATURES
VoIP (ED-137 standard).
Configuration and status management.
Provide roles, task and scenarios.
Access and configure the system based on web browser.
Dual LAN.
Dual power supply units.

SPECIFICATIONS
Dimensions: standard 19" rack mount.
Voice codec: G.711 (A-law and μ -law).
Ethernet Interface: 02 ports 100/1000 BaseT, RJ-45 Ethernet (IEEE 802.3).
02 HDDs, RAID 1/5.
Power supply: 02 x AC input 110-240 VAC.



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RADIO SERVER

Radio Server deployed when there are a large number of radios in the system (transmitter, receiver or transceiver). The main function of Radio Server is to synthesize and divide voice streams from / to the radio in order to optimize bandwidth and avoid collisions on the links to remote radios.

Radio Server receives a single stream from the specific radio and divides it for all the CWP that want to listen to that radio. Moreover, it can perform BSS, PTT priority, PTT key, provides RTSP message for IP recorder.

Radio Server runs on standardized COTS server platform with long-term support, it can operate in single or dual configuration (1+1). Multiple Radio Server can be deployed as needed.

In case of Radio Server failure, the ICS2020 system still works normally by bypass mode and connecting directly from the CWP to radios.



MAIN FEATURES

VoIP (ED-137 standard).

Bandwidth management, SIP management.

Radios management.

Dual LAN.

BSS selection.

Radio loop test.

SPECIFICATIONS

Dimensions: standard 19" rack mount

Voice codec: G.711 (A-law and μ -law).

Ethernet Interface: 02 ports 100/1000 BaseT, RJ-45 Ethernet (IEEE 802.3).

02 HDDs, RAID 1/5.

VoIP SERVER

VoIP Server work as an IP PBX in the system, it allows connecting voice communication and provides standard interface for recording IP phones. In addition, it also provides resources to set up conference calls for the system in case ICS2020 connected to an analog PBX or IP PBX from third party via SIP trunking, TDM trunk or analog trunk.

The VoIP Server collects information about the users, incoming / outgoing calls of the IP Phone and sends it to the TMCS for monitoring purposes.

VoIP Server runs on standardized COTS server platform with long-term support, it can operate in single or dual configuration (1+1).

MAIN FEATURES

VoIP (ED-137, RFC3261 standard).

SIP user management.

Provides standard interface for recording IP phones.

Dual LAN.

Conference call.

Call transfer.

Call Forward.

Call Hunting, forking, pickup, etc...

SPECIFICATIONS

Dimensions: : standard 19" rack mount.

Voice codec: G.711 (A-law and μ -law).

Ethernet Interface: 02 ports 100/1000 BaseT, RJ-45 Ethernet (IEEE 802.3).

02 HDDs, RAID 1/5.



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