

IP NURSE CALL SYSTEM TECHNICAL SPECIFICATION

1. Description

Hospital Call Systems; It is a communication and automation infrastructure consisting of Nurse Notification System, Blue Code System, Pink Code System, White Code System, Patient Monitoring System and Consultant Physician Invitation System, where these subsystems are integrated with each other and managed centrally. Detailed descriptions of these systems are given below:

The Nurse Notification System enables inpatients to send notifications to nurses from service rooms, patient toilets/bathrooms and emergency observation rooms; the location information of these notifications is transmitted through Over the Door Warning Lights, Nurse Notification Panels at service desks and DECT phones used by nurses; and a communication and automation system that enables the service performance of service nurses to be recorded and reported via smart cards. system.

The Code Blue System is a system that allows healthcare professionals to initiate calls for help from all internal telephones of the institution, Room Control Panels in patient rooms and the Emergency Service Notification Panel in the emergency department when Basic Life Support (CPR) is required within the hospital; the location information of these calls is transferred to the Code Blue team via DECT phones; and the response performances of team members are recorded and reported with their smart cards.

The Code Pink System is the system that enables the personnel to send calls via all intercoms, Room Control Panels and Emergency Service Notification Panel in patient rooms and neonatal units (if any) in events that put newborn and child safety at risk; the address information of these calls is transferred to the Code Pink team via DECT phones; and it is also the system that ensures the recording and reporting of all notifications.

The White Code System is a system that allows the personnel to make calls via all intercoms, Room Control Panels and Emergency Service Notification Panel in case of physical assault, sexual harassment or violence by patients or employees; to transfer the location information of these calls to the White Code team and security unit via DECT phones; and to record and report all incidents.

The Code Orange System enables personnel to initiate calls via all intercoms, Room Control Panels and Emergency Service Notification Panel in order to ensure that patients who apply contaminated as a result of Dangerous Goods Leakage, Weapons of Mass Destruction or chemical, biological, nuclear, radiological accidents are decontaminated in the most regular and fastest way and access medical support; the location information of these calls is transmitted to the Code Orange team via DECT phones; recording and reporting functions It is the system that covers.

The Consultant Physician Invitation System is a system that enables authorized personnel to make invitation calls from the Emergency Service Notification Panel and Room Control Panels for a consultation branch needed in the emergency department or patient rooms through their smart cards; to transmit these calls to consultation DECT phones; to end calls with the smart cards of the consultation team; and to record and report all processes.

2. Purpose

The purpose of Hospital Call Systems is to increase the quality and performance of hospital services by creating a notification, communication and automation infrastructure between patients and/or healthcare professionals.

The purpose of the Nurse Notification System is to improve the quality of care services provided by providing easy and fast access to nurses by allowing patients to send notifications to nurses from their rooms, patient toilets/bathrooms and emergency observation areas when needed.

The purpose of the Blue Code System; In case a patient experiences respiratory or cardiac arrest at any point in the institution, the expert team that will perform resuscitation is informed as quickly as possible, directed to the scene and the success rate of Basic Life Support is improved. In addition, it is aimed to increase the quality of service by recording the response information of all Code Blue incidents and producing performance reports (in accordance with the Communiqué on Patient and Employee Safety dated 29.04.2009).

The purpose of the Code Pink System;In order to ensure the safety of newborns and children in the hospital, it is to warn the security personnel in the fastest way in case of emergency and to eliminate the emerging threat. In addition, it is aimed to record all Code Pink event information (as per the Patient and Employee Safety Communiqué dated 29.04.2009).

The purpose of the White Code System;In order to take the necessary security measures to protect patients and employees against physical assault, sexual harassment and violence, the security personnel are informed of the incident as quickly as possible in the event of a threat and the threat is prevented by being dispatched to the scene. In addition, it is aimed to record all White Code event information (in accordance with the Patient and Employee Safety Communiqué dated 29.04.2009).

The purpose of the Consultant Physician Invitation System is to initiate an invitation for the consultation needed in the emergency department or patient rooms of the hospital, to end the call with the smart card of the consultation team, to record the call information and service times, and to increase the quality of service.

3. Scope

The Hospital Call System is designed to fulfill the functions described above; It consists of Room Control Panels, Above-Door Warning Lights, Patient Bedside Notification Units, Patient Handheld Device Notification Units, Patient WC-Bathroom Notification Units, Nurse Notification Panels, White Code Notification Units, Personnel Smart Cards (must be compatible with existing Mifare cards), Emergency Service Notification Panel and Hospital Call Center Server.

3.1. In the Hospital Call System, data transmission between the units in the patient room, the Nurse Notification Panel, the Emergency Service Notification Panel and the Hospital Call Center Server will not be wireless.

3.2. The company is obliged to certify that it is the manufacturer/importer or authorized dealer of the product it offers.

3.3. The importer or manufacturer must have ISO 9001:2008 certificate; Regarding the products it produces/imports, it must submit to the administration that it has TSE Service Adequacy Certificate within the scope of the TS13149 "Workplaces – General Standard for Software and Service Providers" and TS13401 "Rules Standard for Authorized Services – Pagers".

Their minimum technical specifications are as follows:

4. Room Control Panel

4.1. The unit shall be mounted on the wall so that it is easily accessible to the personnel in the room, but cannot be easily disassembled. 4.2. Panel; should be able to feed and control the in-room units (Patient Bedside Notification Unit, Patient WC-Bathroom Notification Unit) and Over the Door Warning Lamp; health personnel should be able to start and end room general control, Blue-Pink-White Code and Consultant Physician calls by reading their cards; should be able to give visual and audible warnings regarding call situations. 4.3. The panel will communicate with the Nurse Notification Panel and the Hospital Call Center Server at the service desk to which it is connected via the ethernet network in the room in accordance with the cable project. 4.4. The fixed MAC address of the room control panel and the fixed IP addresses of the Hospital Call Center Server can be manually entered by authorized persons through the unit using the Personnel Card; these addresses can only be changed by Authorized Personnel Card holders. 4.5. Room control panels; It will transmit all call information (Date/Time/Call Initiating Address) from Patient Bedside Notification Units, Patient Handheld Device Notification Units and Patient WC-Bathroom Notification Units to the relevant server using the fixed IP address of the Hospital Call Center Server. 4.6. Room Control Units will keep this information in their own memory with a capacity of at least 50 records until they receive confirmation that they have sent the call and measurement information they receive to the Hospital Call Center Server; will automatically transfer the recordings to the server when communication is established. 4.7. Room Control panels must be

able to read Mifare Staff Smart Cards available in the institution.4.8. The room control panel will provide energy supply and control of at least the following units:

- At least 3 patient bedside notification units (which patient is calling will be visible on the screen)
- 1 patient rope notification unit
- 1 on-door warning lamp
- The connection between the room control panel and the devices connected to it (Patient Bedside Notification Unit, Patient WC-Bathroom Notification Unit) will be carried out via RS485 (TIA/EIA-485) or CAN (Controller Area Network Bus) network structures.

4.9. The room control panel shall have at least a 4.3-inch touchscreen color LCD screen; On this screen, the name and surname of the health personnel entering the room will be displayed by scanning their card. The LCD screen will show the active call information in the room.4.10. There will be touch buttons for Code Blue, Code Pink, Code White and Consultation on the Room Control Unit; these buttons will only be activated when the Personnel Card is scanned. If the card is printed without reading it, no call or record will be created.4.11. In response to a call made from the units in the room, the nurse will have the staff card read by the unit and notify that he/she has arrived in the room.4.12. Nurses can perform routine room checks by scanning the staff card, even if there are no active calls in the room. This status will not generate a call, but transaction records will be kept.4.13. Health personnel will be able to initiate emergency code situations (Code Blue, Code Pink, Code White) and invitation to the Consultant Physician through the unit using their ID cards.4.14. Termination of emergency code situations and the invitation to the Consultant Physician will be made by the relevant team personnel reading their own Personnel Card through the room control unit.4.15. 10/100 Mbps CAT6 UTP HF electrical cables will be used to connect room control units to the ethernet network.4.16. The power supply will be in the form of 220VAC or 12-24 VDC/AC and will be supplied from an uninterruptible power supply (UPS).4.17. Nurse notifications will be collected on the hospital call center server and directed to DECT phones and nurse notification panels connected to the relevant telephone system.4.18. Calls made from the room will be shown as the most important or the first call with equal priority, depending on the priority.4.19. When the nurse enters the room, the nurse's information will be displayed on the screen, and this information will apply to all active calls.

4.20. The Contractor may offer more advanced technological products with touch screens. In this case, all the above functions should be able to be performed via the touch screen.4.21. The Control Panel interface will be in Turkish.

5. Over-the-door warning light

5.1. It will consist of red, green and blue warning lights.5.2. In normal condition, no lights will come on. If the patient calls a nurse, the red light turns on within 0.5 seconds at the latest. When the nurse makes an authorized entry to the room control unit or when the patient presses the call cancellation button in the bedside unit, the light turns green and this light remains green until a new call is received or for 120 seconds.5.3. In case of Blue, White, and Pink emergency code situations, the blue light is on and can only be turned off with authorized entry from the room control panel.5.4. In case of a Consultant Physician invitation, 1 second red and 1 second green light flashes alternately; this continues until the call is terminated with authorized entry from the Room Control Panel.

6. Patient Bedside Call Unit

6.1. The unit will be mounted at the bedside at all points where the patient is at the bedside or will be installed with this system.6.2. It will communicate with the room control panel via the in-room communication network.6.3. On the front:

- A "call start" key symbolizing a nurse call
- There will be call LED that informs about the call status and the unit.

6.4. The connection with the patient handheld device call unit shall be made in such a way that it can be easily attached and disconnected via a connector.6.5. A nurse call can be initiated with the call start button on the patient handset or unit. These two keys are considered equivalent. When the keys are pressed:

- If the unit can transmit the call information to the room control panel, the LED on the unit is turned on and off at 1.0-second intervals and the patient is audibly notified that the call has been transmitted.
- If the call is not transmitted to the room control panel within 2.0 seconds from the start of the call or if the transmitted call cannot be transferred to the relevant nurse notification panel within 3.0 seconds by the room control panel, a continuous red light is on in the unit to indicate the error and an intermittent audible warning is given for 3.0 seconds.
- The continuous red light indicating the error status is not turned off until the call cancellation button is pressed or a connection to the room control panel is established. The audible error warning is repeated each time the patient presses.

6.6. Call termination is performed by pressing the call cancellation button on the unit or by making an authorized entry from the room control panel. After 10 minutes, the LED flashing state ends.6.7. In case of transmission of all call requests and errors, the patient handset call unit LED works in parallel with the LED in the bedside unit.6.8. The connection of the unit with the room control panel will be provided by RS485 (TIA/EIA-485) or CAN (Controller Area Network Bus) network structures.

7. Patient Handset Call Unit

7.1. It will be hand-held, ergonomic.7.2. The patient will be able to connect to the bedside unit with an independent cable.7.3. On the front:

- A call start key that symbolizes a nurse call
- There will be a call LED that informs about the call status and the unit.7.4. Except that the audible warning is given by the patient bedside unit, the call initiation and error reporting processes are the same as the patient bedside unit. The call button and LED on it work in parallel with those on the bedside unit.

8. Patient WC-Bathroom Call Unit

8.1. It should be able to be mounted on the wall as surface mounted or flush-mounted.8.2. It will communicate with the room control panel via the in-room communication network.8.3. On the front:

- An image symbolizing a nurse's call
- A call rope at least 1.5 m long, securely attached to the unit (with call start function)
- A "call cancel" button in the form of an "X" sign, symbolizing call termination
- There will be call LED that informs about the call status and the unit.

8.4. The nurse call is started by pulling the call cord:

- If the unit is able to transmit the call information to the room control panel, the LED will flash at 1.0 second intervals and the patient will be audibly notified that the call has been forwarded.
- If the call is not transmitted to the room control panel within 2.0 seconds from the start of the call or if the transmitted call cannot be transferred to the relevant nurse notification panel within 3.0 seconds by the room control panel, a continuous red light is on in the unit to indicate the error and an intermittent audible warning is given for 3.0 seconds.
- The continuous red light indicating the error status is not turned off until the call cancellation button is pressed or a connection to the room control panel is established. The audible error warning is repeated on subsequent presses.

8.5. The connection of the unit to the room control panel will be carried out via RS485 (TIA/EIA-485) or CAN (Controller Area Network Bus) network structures.

9. Nurse Call Panel

9.1. The Nurse Notification Panel will be mounted on the wall in the area where the nurse's table is located in each ward so that authorized personnel can see and intervene.9.2. Minimum equipment features of the Nurse Notification Panel:

- Wall-mountable LCD monitor in appearance
- At least 19-inch screen
- At least 3 GB of system memory (RAM)
- I have a 160 GB SSD sabit disk
- Turkish operating system
- 10/100 MB LAN connection

9.3. The rooms in the service and the beds in the rooms and the WC/Bathrooms will be visually displayed.9.4. Room, bed and call type information of all nurse calls, emergency code calls and consultant physician invitations made from the rooms will be provided audibly and visually.9.5. Call points will be indicated with relevant icons and a color/sound warning according to the call status.9.6. The software running on the panel shall be configured to prevent the operation of other software and to prevent personnel from surfing the internet.9.7. At least 5 calls can be listed on the panel in order of priority.9.8. When the nurse enters the room, the information "nurse in the room" should be shown; When the call is canceled, it should be removed from the list.9.9. When the panel is de-energized or the network connection is lost, the time and error information will be recorded on the hospital call center server.9.10. The functions of the panel can be transferred to the nurse panel of another service when there is no nurse on duty in the relevant service.9.11. The software interface will be in Turkish.

10. Staff Smart Card

10.1. Mifare cards available in the institution will be used. Personnel information and job descriptions should be obtained from the hospital database.

11. Emergency Call Panel

11.1. The Emergency Service Notification Panel will be mounted on the wall in the area where the emergency service desk is located, so that authorized personnel can see and intervene.

11.2. Minimum equipment specifications:

- Wall-mountable, with the appearance of a touchscreen LCD monitor, at least 19 inches
- 2 GB system memory (RAM)
- 160 GB SSD hard drive
- Turkish operating system
- 10/100 MB LAN

11.3. Must be able to read the smart cards used by the personnel. 11.4. Authorized personnel should be able to initiate a Code Blue, Pink, White call through the panel using their smart cards. 11.5. Authorized personnel should be able to send calls to consultation branches in the hospital using their smart cards. 11.6. Calls should be terminated by scanning the smart card of the relevant personnel. 11.7. The software running on the panel shall be in such a way that it prevents the operation of other software and prevents the internet browsing of the personnel. 11.8. In case of power failure or network disconnection, time and error information will be recorded on the hospital call center server.

11.9. The software interface will be in Turkish.

11.10. On the main screen of the panel, there will be a call and information area of sufficient and readable size for each defined branch.

11.11. The following functions should be included in each branch area:

- Branch name
- One-touch call initiation and termination if available
- Active call start time and call duration
- Background color according to call status: no call (blue), call duration 0-5 min (orange), call duration 5-15 min (red)
- Call counter during the day

11.12. The message format to be sent to the consultant physician's DECT phones **will be:** "EMERGENCY SERVICE CONSULTATION – CALL RECORD NO – CALL START TIME".

11.13. The information message regarding the call will be sent to the consultant physician's DECT phone within 5 seconds at the latest. 11.14. The call message will be repeated at definable time intervals until the call is terminated. 11.15. When the consultant physician reaches the emergency room, he will be able to end the call by scanning his smart card.

11.16. If a message is not answered within an identifiable time, it will be canceled and

recorded as an "unattended call".11.17. Reports will be prepared under the following headings:

- List of all calls by branch, call recording number, time and response times by date range
- Statistics of the number of calls by month
- Number of calls and intervention statistics by branches
- Point-by-point graphical report of fastest, slowest, and average values of response times

11.18. The system must also be web-based on non-touch computers.

12. Hospital Call Center Server

12.1. Minimum equipment specifications:

- At least Quad-core 1.80 GHz processor
- At least 2 GB of system memory (RAM)
- 160 GB HDD
- Gigabit LAN
- Voice Response System (IVR) with integrated 4-port extension input

12.2. The server shall consist of hardware and software to operate uninterruptedly. It will be supplied from the UPS line and will automatically restart itself after a power failure.

12.3. If it has operating system running on it, it will be delivered with all its licenses.

12.4. The server can be opened with the monitor and keyboard, but it will be protected by password.

12.5. Hospital Call Center Server; The nurse should include all settings of the Call, Code Blue, Code Pink, Code White, Code Orange, and Consultant Physician systems, manage and direct all calls, keep records, report and produce statistics.

12.6. The server will connect to the local network, and the IP address can be set automatically or manually. These settings will be configured via the phone with a specific security password over the server's extensions.

12.7. The server will work in full compatibility with the institution's telephone exchange. If the telephone exchange is IP-based, IP-based lines will be used for emergency codes; If this feature is not available, analog extensions will be used.

12.8. Blue, Pink, White Code calls can be started and terminated from any phone of the institution (except for the phones in patient rooms) through the special phone numbers to be allocated by the institution.12.9. Blue, Pink, White Code and consultant physician calls can be started and terminated from all points with a room control panel.12.10. When emergency code lines are called, the Voice Response System of the hospital call center server will be activated.12.11. All directions and messages of the caller will be made with automatic robot operator voice commands.12.12. All call initiation and termination operations will be carried out automatically and unmanned.12.13. If the dialed extension has the ability to send CallerID (CLIP), this will be automatically detected by the server and the call will be initiated directly.12.14. If the CallerID feature is not available, the caller will be notified by message that he/she needs to dial his/her extension number and the phone identity will be determined with the dialed number.12.15. When a call is initiated from an intercom that is not registered in the system, the relevant DECT phones will be sent the information "extension that initiated the call" and "this number is not registered".12.16. The system should have separate management and reporting screens and these should be protected with security passwords.12.17. In the management interface; Regions, wards, rooms, telephone numbers and addresses, nurses, code teams and user information within the hospital should be updated.12.18. For each call type, message sending time, intervals and personnel assignments according to the services/regions of the hospital should be defined.12.19. There will be a hierarchical table showing the active/passive status of the system devices instantly; Devices that are not working due to power, network, or other issues will be automatically detected.12.20. The server should be able to test all devices or a group of devices defined in the system in a single operation and report the test results.12.21. In the field of reporting; call types, addresses including service and room information, times, relevant personnel and staff's response times will be reported.12.22. Call information will be sent to the personnel's DECT phones within 5 seconds at the latest and will reach the team members at the same time.12.23. The call message will be repeated until the call is terminated at time intervals that can be defined according to the type of call.12.24. If the call is not terminated for a period of time that can be defined by its type, it will be canceled and recorded as an "unattended call".12.25. Calls made from the phone are made with a second call from the same phone; Calls made from the rooms are made by scanning the smart card on the room control panel; Calls made from the emergency service panel will be terminated by scanning the smart card on the same panel.

12.26. The switchboard server will communicate with the room control units via TCP/IP socket communication over the existing local network of the hospital.12.27. All calls will be received through a single reporting system.12.28. Report records shall be capable of being kept for at least 10 years.12.29. All reports can be examined from any computer in the institution and can be protected with a password if desired.12.30. The trunk server will produce the following reports:

- Types, zones, addresses, start and end times, response times, initiating/ending patient/staff IDs of all calls
- Response time performance by region/service
- Number of calls by month
- Emergency Department Consultation times by branches
- "Post-Incident Notification Form" of the call that can be printed out

12.31. Changes (addition, removal, change) in the internal phones of the institution can be made by authorized persons from any institution computer. 12.32. It will provide web service to provide the features described in the integration with other communication and automation systems section. 12.33. Hospital Call Center Server; It can be expanded with additional voice response system cards in order to include emergency code situations (fire, epidemic, etc.) that may be added in the future into the system. 12.34. The system should continuously back up the database to another media at certain periods.

13. Installation

13.1. A Room Control Panel and an Over-the-Door Warning Lamp will be placed for each patient room and general disabled WCs in the hospital. The Room Control Panels will be made with 220VAC UPS supply as per the project. 13.2. For each bed in the hospital, 1 Patient Bedside Call Unit and 1 Patient Hand Set Call Unit will be placed. 13.3. 1 Patient WC-Bathroom Call Unit will be placed for each WC/Bathroom in the rooms used by the patients. 13.4. 1 Nurse Notification Panel will be placed on each service nurse desk and connected to the UPS line. The panel shall be mounted on the wall at a point behind the service desk that will attract attention when it gives an audible and written alarm, and can be read and intervened by touch. 13.5. An Emergency Service Notification Panel will be placed in the emergency department and will be fed from a 220VAC UPS line. The panel will be mounted on the wall at a point behind the emergency desk that will attract attention, can be read and intervened by touch in case of an alarm.

13.6. In the switchboard room, 1 Hospital Call Center Server will be placed in the cabin/place where the telephone switchboard equipment is located. 5 analog intercom lines will be connected to the point where the server is placed. The telephone exchange used in the building is the Telesis X1R5 model. 13.7. All cables, cable trays and pipes used in the system will be flame-free and halogen-free.

14. Integration with Other Communication and Automation Systems

14.1. Hospital Information Management System (HIMS)

14.1.1. It will be integrated into the HIMS to be used in the hospital via web services. The system provider is responsible for the transactions that will arise during the HIMS integration process and will not charge any additional fees.

14.1.2. The Hospital Call Center Server will host a web discovery document containing web service definitions in WSDL 1.1 standard for the use of HIMS; This document will always be visible from a web address on the server.

14.1.3. HIMS should be able to send personnel information to the system via web services. Necessary web services must be delivered in working condition.

14.1.4. HIMS should be able to send consultation requests to the system. For this, the necessary web services must be prepared. In addition, in the absence of HIMS, patient, doctor and nurse definitions should be made manually in the system and consultation requests should be made through the Hospital Call Server.

15. Warranty

15.1. The Nurse Call System must be under warranty for at least 2 (two) years; In addition, a spare parts supply guarantee should be provided for 10 (ten)

years.15.2. Parts that cannot be repaired should be replaced with new ones. Within the warranty period, defects caused by manufacturing, assembly, material, workmanship or design must be repaired free of charge by the contractor company; Faulty parts must be replaced free of charge.15.3. The periods during which the devices are defective are not included in the warranty period. Faults covered by the warranty must be intervened

within 24 hours at the latest and the fault must be rectified within 48 hours following the intervention.15.4. Technical service and part replacement services that will be needed

after the warranty period expires will be provided by paying the relevant costs to the contractor company.