

# Jaipur Metro Rail Corporation(JMRC)



□ PIDS/PAS  
{PRESENTATION}

By:-  
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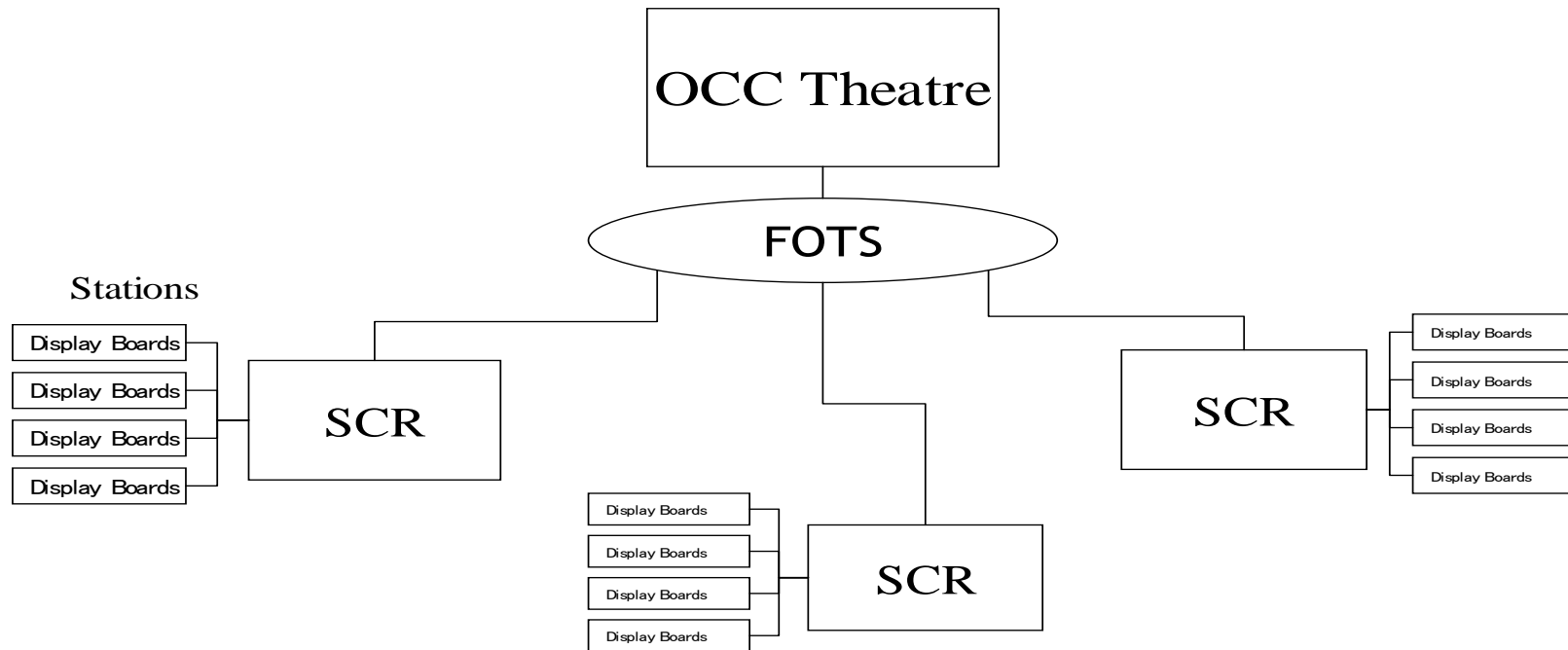
# Introduction

## ❑ Public Information Display System (PIDS)

- The purpose of PIDS is to display at station concourses and platforms on-line information about scheduled train arrivals and departures and other general purpose messages (normal and emergency) such as smoking is prohibited, evacuation messages etc.
- It displays information in any combination of English text, Hindi text, numerals, animated graphics, punctuation and symbols in real-time.

# PIDS/PAS Functional Blocks

## Operational Control Center



# PIDS/PAS functional blocks

It consists of the following functional blocks:

- ❑ **The Operational Control Centre (OCC).**

The OCC is the global control centre for the PIDS/PAS system. From the OCC system wide control of SCRs is possible.

- ❑ **The Station Control Rooms (SCR).**

The SCR is the local PIDS/PAS installation exists in each station. It manages the local PIDS/PAS system of that station.

# PIDS/PAS Server

- The central server is located in the OCC. This server, with the necessary back-up and redundancy modules is connected, via the central router to the central ATS server, to the Local ATS servers, to the SCADA server, and to the Master Clock unit. The PIDS central server is common to the PAS central server.
- The central server is composed of two machines configured as a Windows NT cluster, with shared disk storage. When one machine fails, the services are automatically started on the backup machine, which reads the state information from the shared disk array.
- The central server and the station servers are synchronized via the clock distribution system.

# PIDS/PAS functional blocks (Cont..)

- **Master Clock**

The Master clock provides for the system wide time synchronization.

- **ATS Central Server**

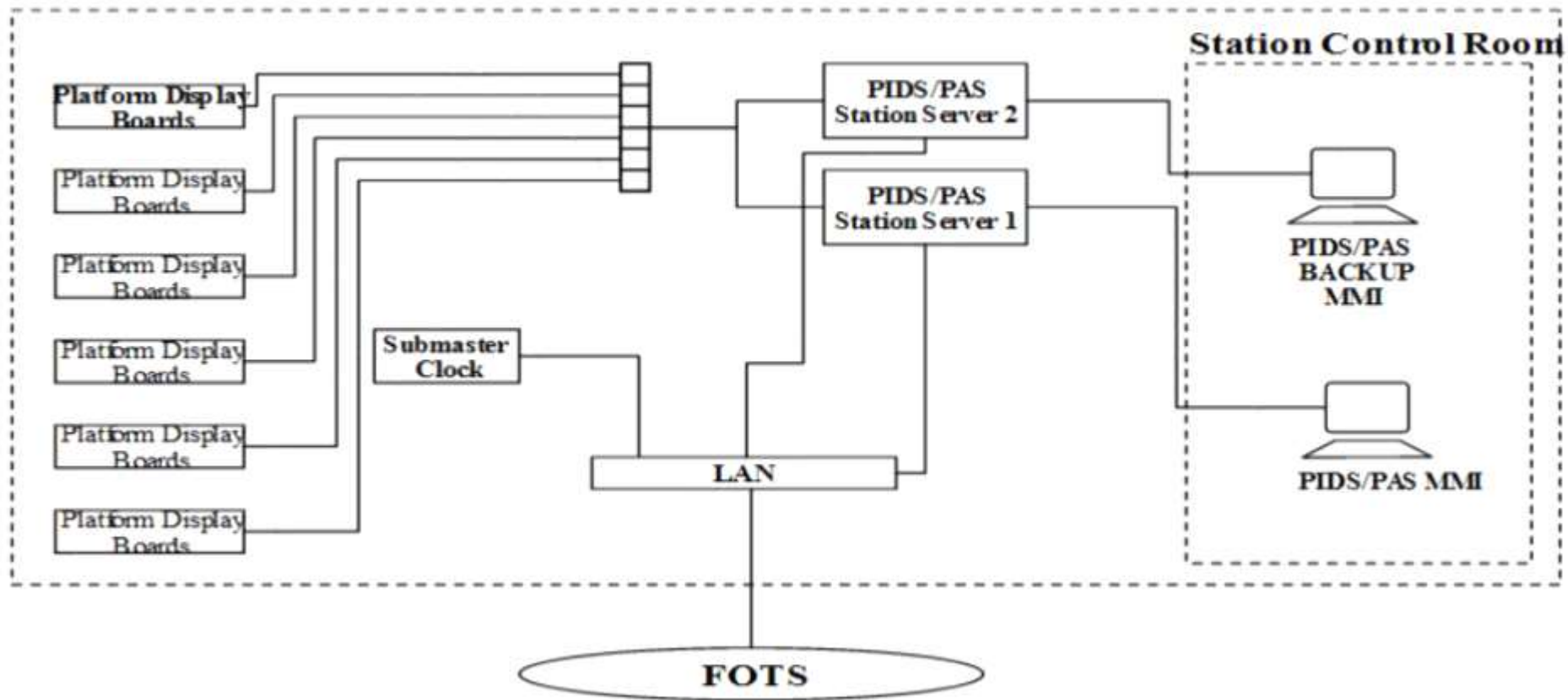
The ATS server sends information on train arrivals and departures to PIDS local ATS servers.

- **SCADA Server**

The SCADA server receives and manages alarms generated by PIDS/PAS.

# PIDS/PAS functional blocks (Cont..)

## In Each Station



# PIDS/PAS functional blocks (Cont..)

- **PIDS/PAS Servers**

The two servers at a single station are symmetric: one is active, and the other is on hot stand-by. Both systems receive all the external events and update the local state, but only the active system sends output to the displays or loudspeakers. Both systems are constantly monitoring each other for a failure. When one system fails the other automatically takes on the active role. When the changeover occurs an alarm indication (alarm pop-up window and audio signal) is shown on the active MMI

- **Sub-master Clock**

The Sub-master Clock provides a local backup for the system clock in case the latter is unserviceable .

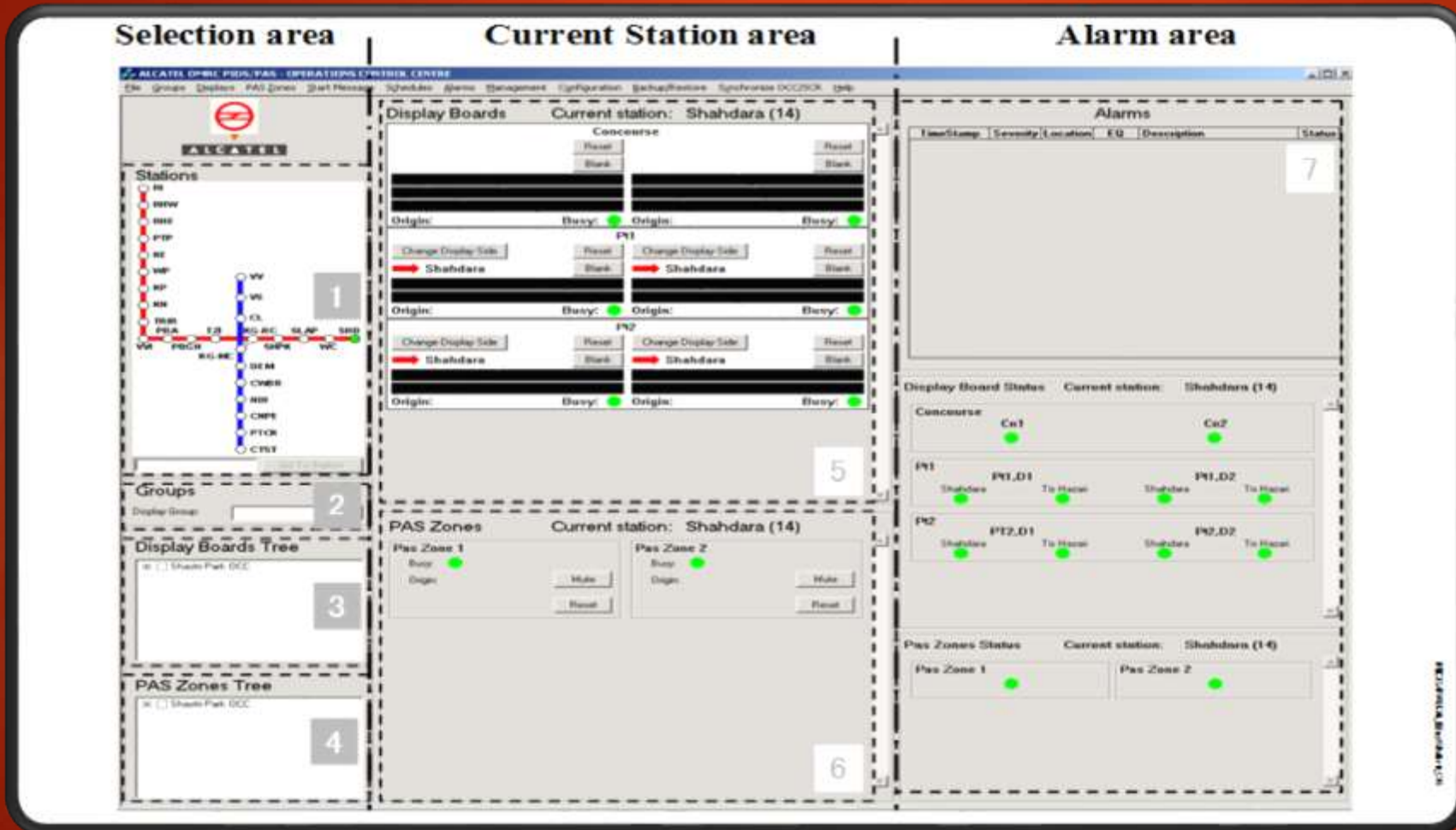
- **ATS Local Server (LATS)**

The local ATS server receives and manages ATS data from the central ATS server.



# The Main Window of PIDS/PAS Application

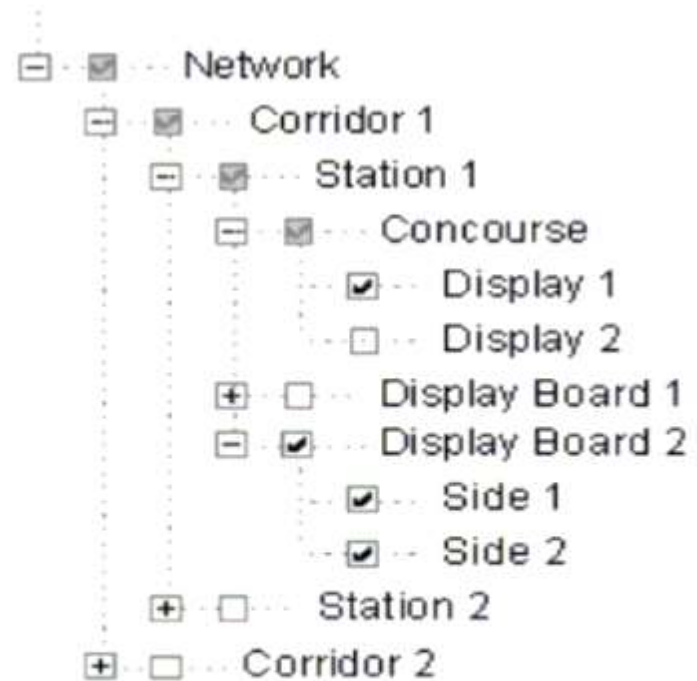
The main window is divided into different areas by function.



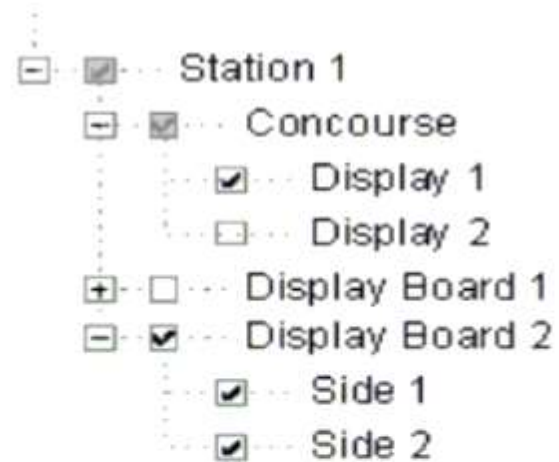
# The Display Boards Tree (3)

This panel allows us to select or deselect display boards, in order to, send a message.

## At the OCC:



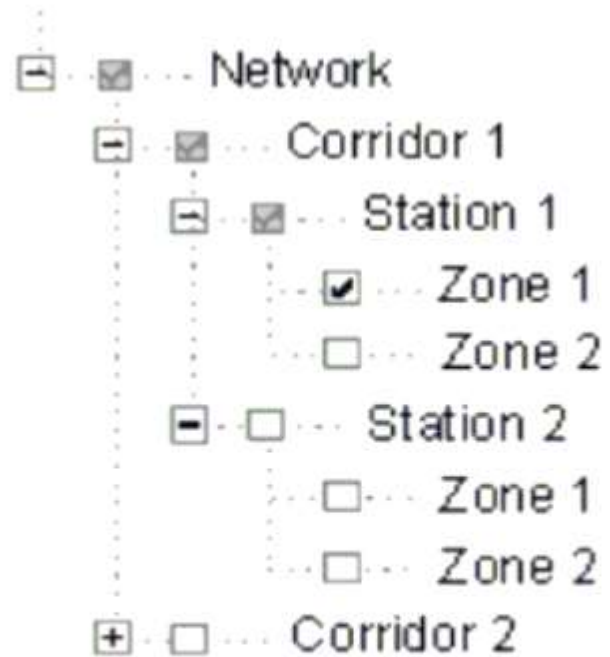
## At the SCR:



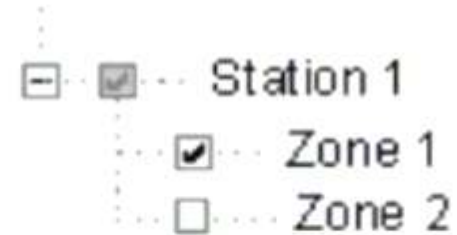
# The PAS Zones Tree (4)

The "PAS Zones Tree" allow us to select or deselect PAS zones to send a message.

## At the OCC:



## At the SCR:



# The Alarms Panel (7)

The Alarm Panel displays alarms for:

- ❑ Equipment alarms.

  - Display boards.

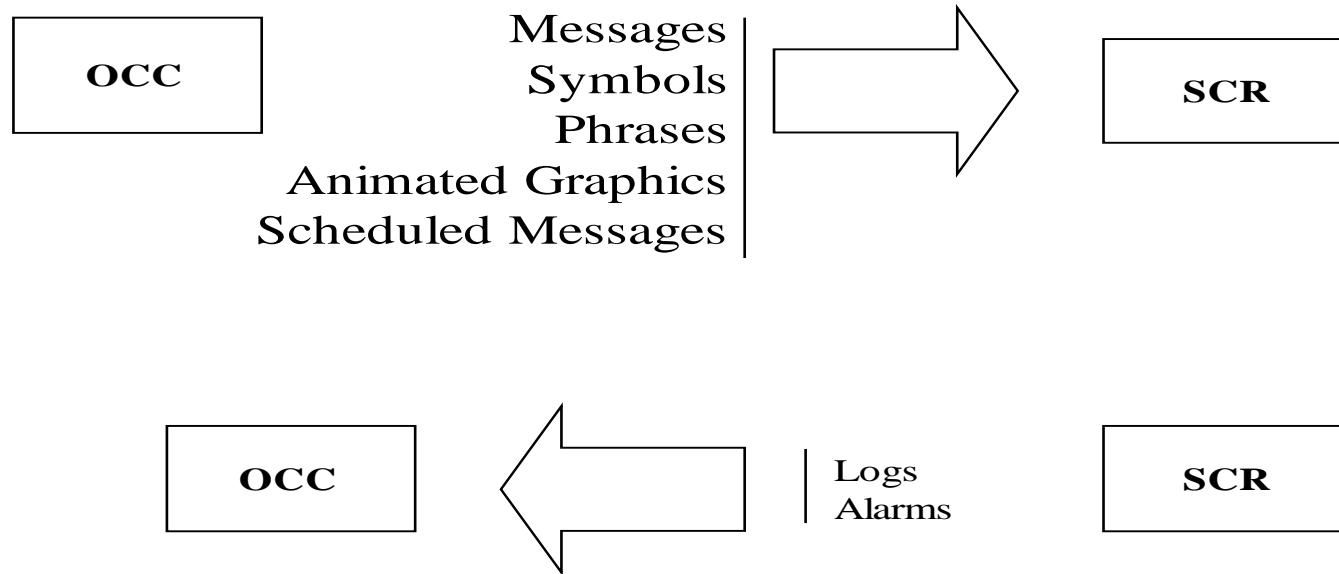
  - Public Address Zones.

  - Communication with other systems.

- ❑ Internal PIDS alarms (i.e. disk full).

- ❑ Operational alarms (i.e. message priority conflict).

# OCC/SCR Synchronization



# Public Address System(PAS)

- ❑ PAS provides broadcasting of voice messages to passengers / staff in all stations, depots and OCC. It can also be used for emergency evacuation broadcast in case of emergencies.
- ❑ The PAS announcements are co-ordinated automatically with PIDS for Real Time Passenger Audio Broadcast.
- ❑ PAS support :
  - ❑ Messages announcements in HINDI and English or any combination of these languages.
  - ❑ Different Live or Recorded announcements to separate Zones or Group of Zones simultaneously within a station.
  - ❑ Announcements from Designated Hand Portable Radios to a set of pre-defined Zones at each station.

# Four Major Types of Messages

- ❑ Fixed Message
  - Smoking is prohibited in the entire station.
- ❑ Pre-formatted with data to be added.
  - ❑ This station is.....
  - ❑ Due to .....failure, the arrival of the trains shall be delayed.
- ❑ Instantly recorded messages.
- ❑ Live audio broadcast.
  - ❑ According to situation, such as for crowd management in case of accident.



# Message Priority

- ❑ '1' – Instantly created / pre-formatted message relating to emergency like fire etc from the SCR.
- ❑ '2'-- Instantly created / pre-formatted message relating to emergency like fire etc from the OCC.
- ❑ '3'—Train arrival / departure related messages triggered automatically by the TC&S system.



# Alarms

## (Major & Minor)

- ❑ Loss of the entire PIDS facilities at a location.
- ❑ Loss of clock synchronization.
- ❑ Power supply unit failure.
- ❑ Loss of one side of a display board.
- ❑ Message priority conflict.
- ❑ Failure of communication link between OCC and station PIDS.
- ❑ Loss of both sides of a display board.

# PIDS alarms and their possible causes.

Alarm	Description	Possible Cause(s)
OCC-Station link failure	OCC Server could not connect to SCR.	LAN is down - SCR service is down
Clock synchronization failure	ApidsTime could not connect to the master clock .	- LAN is down - Master clock is down
TC&S link failure	OCC Server could not connect to ATS	LAN is down - ATS is down
Power supply unit failure	One of the power supplies failed at the OCC Server	
Display board line failure	One of the lines of a display board failed	Display board failure - Wiring
Op: System Switchover	There was a system switchover at the SCR	
MMI-OCC link failure	OCC MMI could not connect to OCC Server	LAN is down - OCC Server is down

# Components of PAS

- ❑ Codec
- ❑ Telcommander
- ❑ Amplifiers
- ❑ Gate Keeper
- ❑ Zone-8 M
- ❑ Noise Level Controller (NLC)
- ❑ Loudspeakers

# Codec

- ❑ Codec is a device that encode and decode the information from digital to analogue signals. It does this by using two X-changer cards (one is master, located in the OCC server and other is slave, located at each station client server).

# Telcommander

- Its main task is to interface the Radio System via the PABX, allowing the portable Radio units to address the PAS.

# Amplifiers

Signal sources like microphones, CD players, cassette DAT and Mini-Disc recorders, do not have the capacity to produce enough energy to directly feed a loudspeaker. It is therefore necessary to use an amplifier that transforms the low power signals of the signal sources in signals with sufficient power to feed the system loudspeakers. The numbers of amplifiers are variable according with the number of physical zones used in each station. The standard procedure is to install one amplifier by zone, and  $n$  loudspeakers per zone

# Gate Keeper

- ❑ This equipment is used as an amplifier and loudspeaker controller that performs the following tasks:
- ❑ Detect and replace any malfunctioning amplifier.
- ❑ Inform the status of each amplifier and possible cause of failure.
- ❑ Distribute the audio signal directly to the loudspeakers.

# Zone 8 Selector

- ❑ Dispatch messages to the required zones, respecting the priority scheme between terminals.



# Noise Level Controller (NLC)

- The human and traffic conditions affect the levels of background noise. Therefore, in order to deal with this issue carefully, the system will adjust the volume of the announcements to a higher level than the background noise, by using the NLC and NLC sensors.

THANK YOU