

Hearty Welcome



Matrix GSM Family

- GSM FCTs (Data ,Voice and FAX Services)
- Multi-Port GSM-FXO-FXS Gateways
- Multi-Port GSM-ISDN BRI Gateways

CONFIDENTIAL



Pre-eminent Features

- Reliable, Compact and Sturdy Design
- ETSI GSM Phase2/2+ Compliance
- Superior Call Routing Techniques
- Quad-band 2G and Tri-band 3G Network Support
- Compatible With any Make of PBX

CONFIDENTIAL



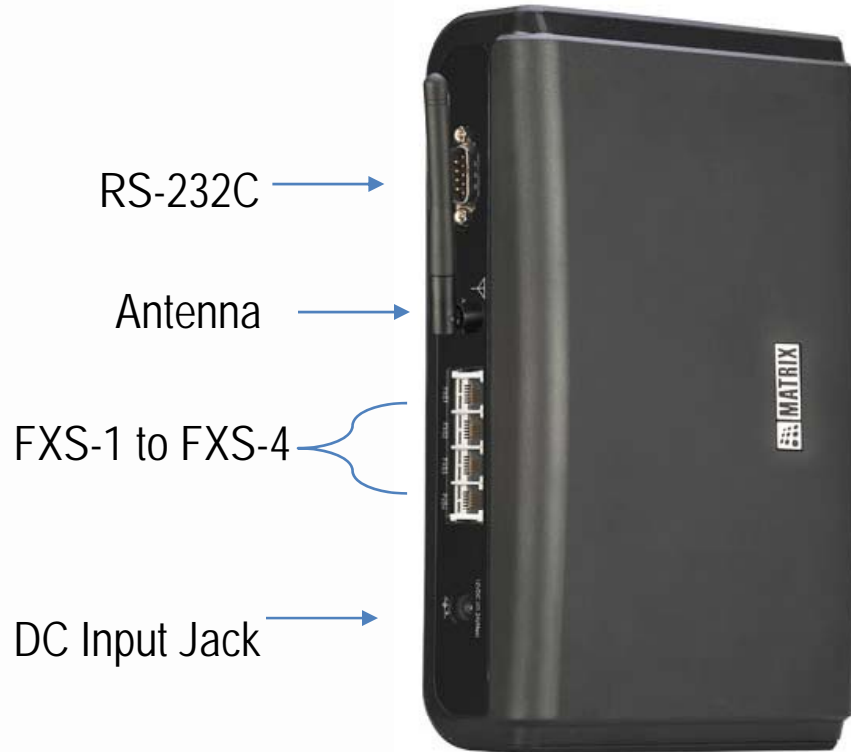
MATRIX SIMADO GFX44 Multi-Port GSM/3G-FXS Gateway



Introduction

- Acts as a Bridge to GSM/3G Network
- Incoming Calls on GSM/3G Network are Routed to the FXS Port
- Initiate Calls From FXS Port (Analog Terminals) to GSM/3G Network
- Powerful Least Cost Routing
- Can be Used in Stand-alone Mode
- Can be Connected With Any Existing PBX

System Interfaces





System Models

SIMADO GFX44	FCT for Voice Applications With 4 GSM Port and 4 FXS Port
SIMADO GFX44 3G	FCT for Voice Applications With 4 GSM Port , 4 FXS Port, With 3G Network Support

CONFIDENTIAL

Network Support



3G Network Support



- Matrix SIMADO GFX44 3G Model Supports:
 - ✓ 2G Network: Quad-band Support for GSM Network
 - ✓ 3G Network: Tri-band Support for WCDMA Network
- Call Established over 3G Network offer:
 - ✓ Noise-free, Stanch Voice Quality
 - ✓ Enhanced Security
- Fallback Compatibility
 - ✓ In Case Preferred (3G) Network is Not Available
 - ✓ Flexibility to Switchover to Alternate Network (2G)
 - ✓ Assures Network Connectivity Round-the-Clock
 - ✓ Users Can Traverse Between Regions Uninterruptedly

	2001	
	Japan Used WCDMA as a Commercial Service, Bypassing Earlier GSM Generations	
	Source: Mobile Communications Systems and Security/Man Young Rhee	

RS232C Port



- RS232C (DB9 Connector) Communication Port for:
 - ✓ System Debug
 - ✓ Downloading Call Detail Reports
 - ✓ System Programming (through Jeeves)

LED Indications



GSM	1 LED per Port for Network and Call Status
FXS	1 LED per Port for Call Status
Power	1 LED for On/Off Status

Real Time Clock (RTC)

- Built-in RTC Circuit
- Ensures Accurate Functioning of System Features Like:
 - ✓ Time Table (Routing Calls as per Time), Setting Alarms, Call Reports and Many Others
- The System's RTC Automatically Tunes With a Country's Day Light Saving Adjustment



System Features

- Allowed and Denied Lists
- Answer Signaling on FXS Port
- Answer-Number Based Routing
- Automatic Number Translation
- Automatic Call Distribution (ACD)
- Call Detail Recording (CDR)
- Call Duration Control (CDC)
- Call Progress Tone Generation
- Calling Line Identification Presentation (CLIP)
- Day Light Saving Time Adjustment

CONFIDENTIAL



System Features

- Disconnect Signaling on FXS Port
- Emergency Number Dialing
- Fixed Number Dialing
- International Mobile Equipment Identity (IMEI)
- Jeeves
- Multi-stage Dialing
- Network Selection
- Reinstate Default Settings
- Day Light Saving Time Adjustment (DST)
- Returned Calls to Original Callers (RCOC)

CONFIDENTIAL



System Features

- Routing Group
- Routing Type
- Signal Strength Indication
- SIM PIN
- Software Version/Revision Display
- Speech Gain
- System Programming
- System Restart
- System Security
- Time Table

CONFIDENTIAL

Allowed and Denied Lists

- Allow/Deny Dialing of Specific Numbers
- An Allowed/Denied Number List Can be Programmed for Each System Port
 - ✓ SIMADO GFX44 Supports 16 Number Lists
 - ✓ Each List Can be Programmed to Allow/Deny 24 Numbers
- Programmed Emergency Numbers are Excluded From Such Verification
- Useful to Control Telephone Call Cost
- Limit Use of System National/International Dialing Facility as per Requirement
- Example: Restrict 0-Dialing Facility for One System Port and Allow the Same On Another System Port

Answer Signaling on FXS Port

- When Called Party Answers a Call (i.e. on Call Maturity)
- The Signal (In form of Polarity Reversal) is Generated on FXS Port
- SIMADO GFX44, When Connected With a Payphone or FXO Port of the PBX
- It is Obligatory to Generate Call Maturity Information on the FXS Port
- This Assists the Connected (Payphone or PBX) in Accurate Billing
- Ensures, All Matured Calls are Billed
- Evades Billing Unanswered/Unsuccessful Call Attempts

Answer-Number Based Routing

- Different Service Provider Offer Varied Call-Cost Saving Schemes

- Least Cost May be Charged Based on:

- ✓ Dialed Number
- ✓ Carrier Selection
- ✓ Time
- ✓ Location Called

	<p>Service Provider's Scheme: <i>Dial 079 + Number to be Called and Calls Within Gujarat State Will be Charged as Local Calls</i></p>	
--	--	--

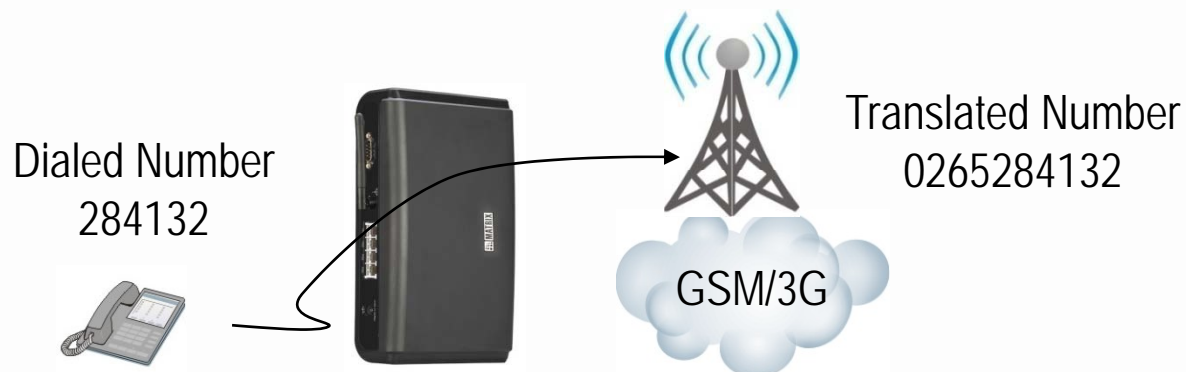
- Answer-Number Based Routing Routes Calls Based on Dialed Number
- Calls are Placed Using Routing Groups Defined for the Specific Number String
- Routing Groups in turn are Programmed for Selection the Most Cost-effective Route

Automatic Call Distribution(ACD)

- Different Logics are Considered While Choosing a Group Member to Route a Call, Example:
 - Rotation Method:
 - ✓ Call Lands on Destination Next to One Which Received the Last Call
 - ✓ This Method Ensures Equal Call Distribution Among Group Members
 - ✓ A Technique Useful in Call Centre Setups
 - First Free:
 - ✓ Calls Always Lands on a Free Port as per Port Numbering
- Further, Routing Groups Can be Defined per Port, as per a Time Zone
- Ensures All Calls are Established using the Most Cost-effective Route
- Avoids Missed Calls Ratio, as Calls are Routed to a Programmed Destination as per Time Zone

Automatic Number Translation

- Translates Dialed Number String to a Format Understood by the GSM/3G Network, Example:
 - ✓ While Placing Calls to Landline Numbers
 - ✓ User May Dial Only the Number
 - ✓ SIMADO GFX44 Prefixes the Area Code
 - ✓ The Number String Can then be Understood by the GSM Network
- No Need to Change Habituated Dialing Practices
- Aids in Speed Dialing and Multi-stage Dialing Set-ups



Call Detail Recording(CDR)

- Records Details of Calls Made Through the Gateway
- 2000 Calls Can be Recorded in Memory
- Only Answered Calls are Stored in Memory
- Varied Reports Can be Generated Using Filters Like:
 - ✓ Port Number, Dialed or Received Numbers, Date, Duration of Call, etc
- Easy Transfer of CDR to PC



Call Detail Recording(CDR)

CALL DETAIL RECORDS REPORT as on 01-Oct-2007 at 09:53:56

Source Port	Destination Port	NUM LIST	: Called - 02 Calling - 02	
FXS : 1 To 4	FXS : 1 To 4	DATE	: 01-Oct-2007 To 01-Oct-2007	
MOB : 1 To 4	MOB : 1 To 4	DUR(sec)	: 1	TIME : 00:00 To 23:59

SR.	S-PORT	D-PORT	CALLED NUMBER	CALLING NUMBER	DATE	TIME	DUR
1	FXS 2	FXS 4			01-Oct-2007	09:27:53	6
2	FXS 4	FXS 2			01-Oct-2007	09:28:32	3
3	FXS 2	MOB 2	9898091380		01-Oct-2007	09:39:59	12
4	FXS 2	MOB 2	9824981745		01-Oct-2007	09:49:43	3
5	FXS 2	FXS 4			01-Oct-2007	09:27:53	6
6	FXS 4	FXS 2			01-Oct-2007	09:28:32	3
7	FXS 2	MOB 2	9898091380		01-Oct-2007	09:39:59	12
8	FXS 2	MOB 2	9824981745		01-Oct-2007	09:49:43	3

Matrix SIMADO GFX44 V1R7 Page: 01

Call Duration Control(CDC)

- Control the Duration of Calls Made Through the System
- Calls Get Disconnected After a Pre-defined Duration
- Different Time Limit Can be Set On Each Ports
- Option to Alert a Caller Prior to Call Disconnection
- Controls Misuse of Calling Facilities
- Ensures Ports are Released On Call Completion

Call Progress Tone Generation(CPTG)

- Different Tones to Indicate the Progress of Call Activity
- Example: Dial Tone, Ring Back Tone, Busy Tone, Error Tone
- CPT With Difference Cadences, to Match the Ones Used in a Region



Caller Line Identification Presentation(CLIP)

- CLI Can be Presented on FXS and GSM Ports
- Detection of DTMF, FSK ITU-T and FSK Bellcore
- CLIP for External and Internal Numbers
- CLIP on Transfer of Call
- Ports Can be Programmed to Send/Receive CLIP

CONFIDENTIAL

Day Light Saving (DST)

	<p>Department of Transportation, U.S, Reports: We Trim the Entire Country's Electricity Usage by About One Percent EACH DAY With Daylight Saving Time Adjustments</p>	
--	--	--

- DST: Assignment of New Local Time to the Region for a Part of Year
- System's Real Time Clock Shifts (Forward/Backward), in Accordance to DST Observed in a Country
- DST Can be Set: Week-Day-Month Wise or Date-Month Wise

Disconnect Signaling on FXS Port

- When SIMADO GFX44 is Connected With a Payphone or FXO Port of the PBX
- The Signal (In form of Polarity Reversal or Open Loop Disconnect Pulse) is Generated on FXS Port
- The Signal is an Indicator of Call Disconnection From the Called Party End
- Else Call Will be Disconnected Only When the Caller Goes On-Hook, Resulting in Inaccurate Billing
- Be Assured for Most Accurate Billing

Emergency Number Dialing

- Program Up to 4 Emergency (Ambulance, Police, Fire Brigade and Others) Numbers
- Place Calls Even if a SIM is Not Inserted in the GSM Module
- Placing an Emergency Call is Not Subject to Verification With the Allowed-Denied Number List
- In Case, No Emergency Number is Programmed, Emergency Number Stored in the SIM Will be Dialed
- Else Default Emergency Number Stored in the Firmware Will be Dialed

Fixed Number Dialing

- As Soon As a Call Lands on a Port
- A Pre-defined Number Can be Dialed Out
- For Number Called Frequently, Avoid Repetitive Number Dialing
- Delay After Which the Fixed Number Will be Dialed is Also Programmable
- Helpful for Establishing Point-to-Point Connectivity
- Feature Can be Activated / De-activated for Each GSM / FXS Ports

International Mobile Equipment Identity(IMEI)

- 15/17 Digit Code Used to Identify a GSM Module on GSM Network
- When SIMADO GFX44 is Switched on, the IMEI Number is Verified With the Service Providers List of Authorized Users
- In Case of Lost/Stolen Equipment
 - ✓ Get IMEI Number Blocked
 - ✓ Prevents Misuse of Information Stored in the Gateway




Jeeves

- Customized, Windows Based Programming Tool
- User-friendly Tool With Mouse Operated GUI

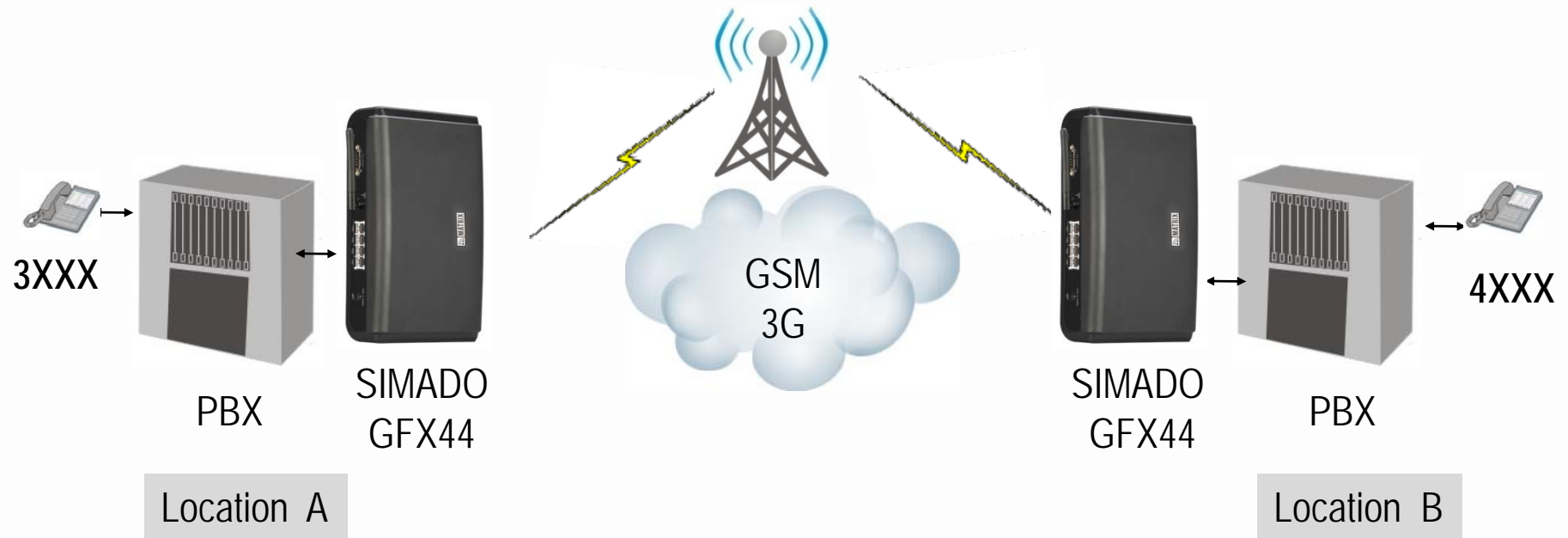


CONFIDENTIAL

Multi-stage Dialing

- At Times Series of Number are to be Dialed, before Dialing the Actual Number
- Example: When Using a Virtual Calling Card (ITC Card) 
 - ✓ User is Required to Dial Long Number Strings
 - **A Toll-free Number Provided by the Service Provider+ ITC Card Number +Destination Number to be Called**
 - ✓ With Multi-stage Dialing Feature, Eliminate Dialing the Long Number Strings
 - ✓ Program the ANT Table, Calling Card Password Table and the Calling Card Service Provider Table
 - ✓ User Will then be Required to Dial Only the Destination Number

Multi-stage Dialing: Application Scenario

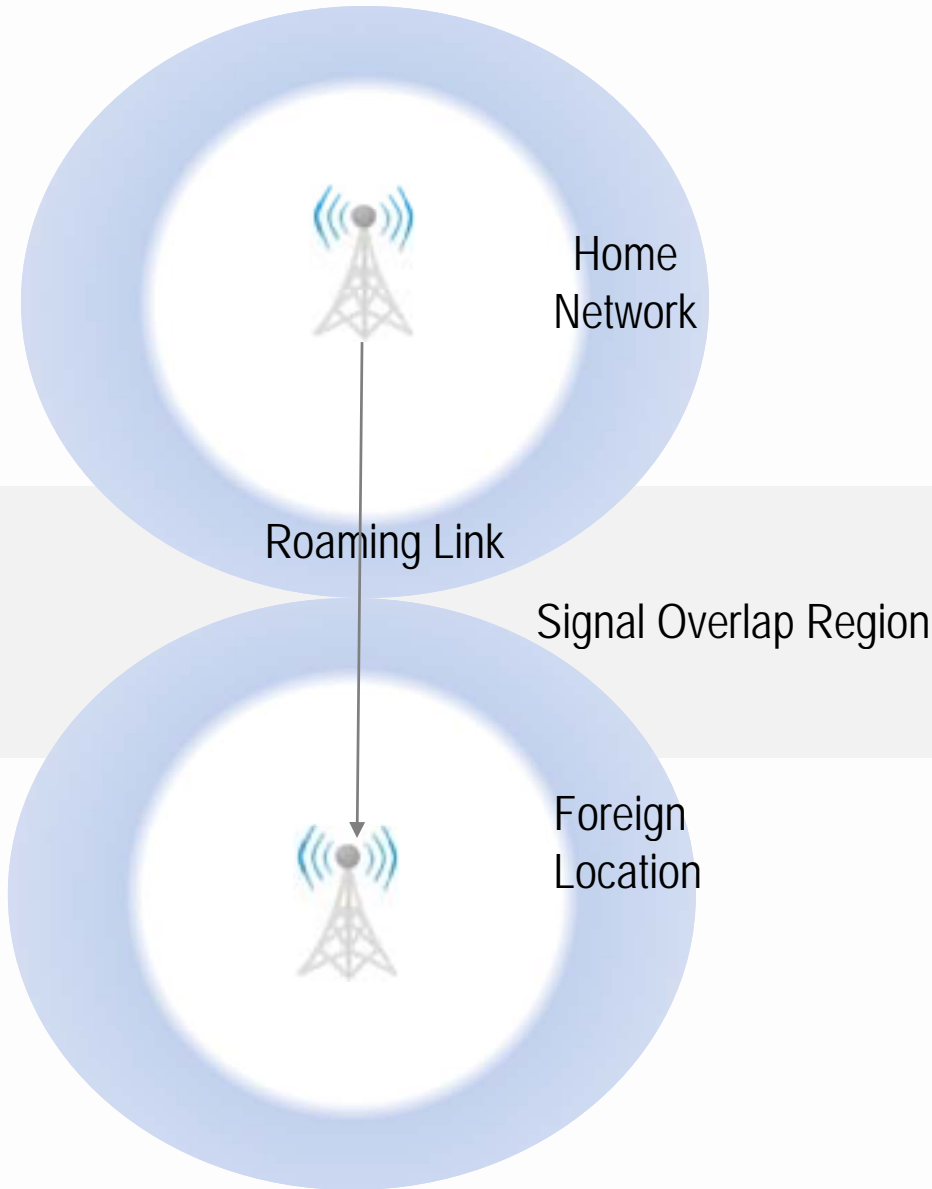


- For Organizations With Multiple Branch Offices
- Link Various Locations via GSM Network
- Connect SIMADO GFX44 in Front of the Pre-installed PBX System
- Avail CUG (Closed User Group) Services From the Service Provider for Free Dialing between the Offices
- Call Originated for 4XXX Destination, From Location A , Lands on 4XXX at Location B
- Call Originated for 3XXX Destination, From Location B , Lands on 3XXX at Location A
- System Supports Differentiated Tones to Indicate Various Dialing Stages

Network Selection

- At Each Power-On, System Auto Searches and Registers With an Available Network (Automatic Network Selection Mode)
 - ✓ Network is Selected as per Network Signal Strength
 - ✓ Ensures Round-the-Clock Connectivity by Registering With the Available Network
- System Can be Programmed for Manual Network Selection Mode
 - ✓ Avoids Unnecessary Charges Due to Registration With Unwanted Networks
 - ✓ Network is Selected as per Assigned Priority in a Priority Table
- Each GSM Port Can be Programmed for Maximum of 9 Networks
- Multiple Attempts are Made to Register With the Available Network

Network Selection



- Network Signals May Overlap in the Expanse of a National Border
- Set the System for Manual Network Selection Mode
- Avoid False Roaming Charges, due to Registration With a Foreign Network

Reinstate Default Settings

- SIMADO GFX44 is Supplied With Default Settings for Various Parameters
- A Programming Error or an Operating Mistake May Necessitate Defaulting of System Parameters
 - ✓ Default the System, Entering SE Mode , From the Telephone Instrument
 - ✓ Default the System From Jeeves
- Minimizes Programming Labor

Return Call to Original Caller(RCOC)

- If a Call Attempted From the System is Not Answered or the Called-party is Found Busy
- The System Keeps a Record of FXS/GSM Port Number and Called Party Number in its Database
- On Receiving a Call From the Called Party, System Identifies the Called Party Number
- The Call is then Routed to the Specific Caller, Who Attempted the Call

Return Call to Original Caller(RCOC)



System Stores Called Party's no, Calling Party's no With its Extension no

When the User Calls Back, Call Gets Routed to the Same Extension

Call Routing Scenarios

- A Call May be Attended by Any Member of the Group
 - ✓ A Call to Sales Team, May be Attended by Any Team Member
- Certain Incoming Calls are Intended for Fixed Destinations
- Routing a Call Might be Restricted to/through a Particular Port
- Screening (Denial) of Dialing Facilities May be Imposed Differently on Users

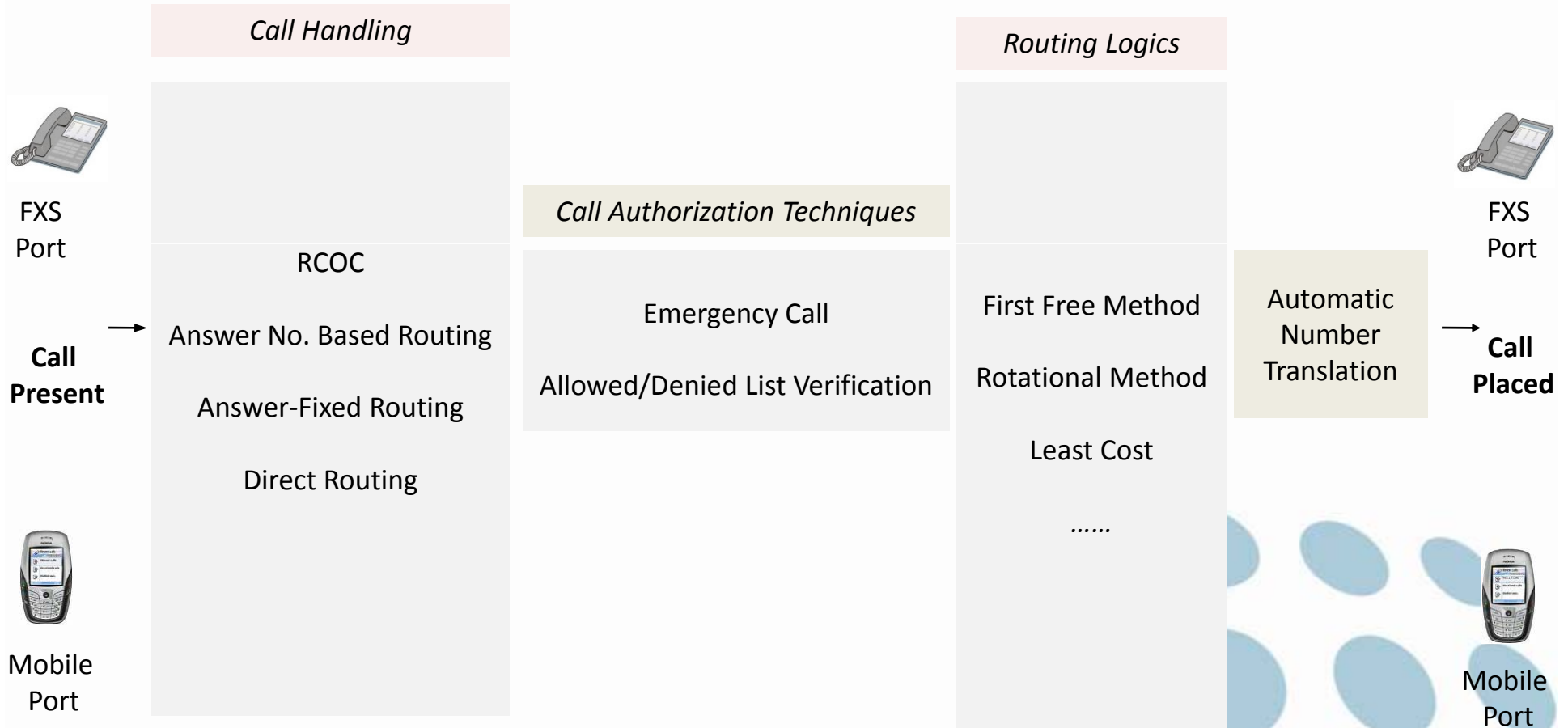
Routing Group

- Each Port of GFX44 is Given a Specific Group Number(Routing Group No.)
- Each Routing Group Consists of Members With Assigned Priorities
- 8 Such Groups, Each of 4 Members May be Defined

Routing Type

- Routing Types Delineate the Way to Route Calls
- Various Routing Types Supported by the System are:
 - ✓ Rounding OFF: Disallow All Calls from/to the Port
 - ✓ Answer-Number Based Routing: Routing Groups Assigned on Basis of Dialed Number
 - ✓ Answer-Fixed Routing: Routes Calls to a Specific Port
 - ✓ Direct Routing: Applicable if User Needs to Dial a Number Directly, Bypassing Verification With Any of the Programmed System List

Ingenious Call Management





Signal Strength Indication

- 15 Step Indication of Signal Strength on Telephone Instrument's LCD (FXS Port)
- Telephone Instrument Should be FSK Compatible

SIM PIN

- SIM is a Smart Card With Subscriber Specific Data Stored in it
- SIM PIN is a Security Feature Used by the GSM Network
- A PIN (Personal Identification Number) Check Can be Enabled in the SIM
- At Each Power-On, System is Authenticated for PIN
- This PIN Should Match With the One Stored in SIM as SIM PIN
- System Will Attempt Registration to a GSM Network, Once a Correct SIM PIN is Issued
- Prevents Misuse of the SIM Card

Software Version/Revision Display

- Regular Adherence to Customer Feedbacks Directs Software Upgradation
- Current Software Version Should be Known before Upgrading to the Higher One
- No Need to Open the System
- View the Software Revision of Current System Software through Jeeves



Speech Gain

- Set Transmit/Receive Gains of GSM Ports
- Means of Improving Speech Quality

CONFIDENTIAL

System Programming

- Program the System From:
 - ✓ FXS/Mobile Port
 - ✓ Jeeves (Windows Based Programming Tool)
- Remote Programming:
 - ✓ Program Mobile Port to be Used for Remote Programming, for its Routing Type
 - ✓ Place Call on System Mobile Port
 - ✓ System Can be Programmed After Authentication for SE(System Engineer) Password
 - ✓ Diverse Tones to Indicate Various Programming Stages



System Restart

- When Physical Reach to System is Difficult
- Restart the System From:
 - ✓ Telephone Instrument (FXS Port)
 - ✓ Jeeves

CONFIDENTIAL

System Security

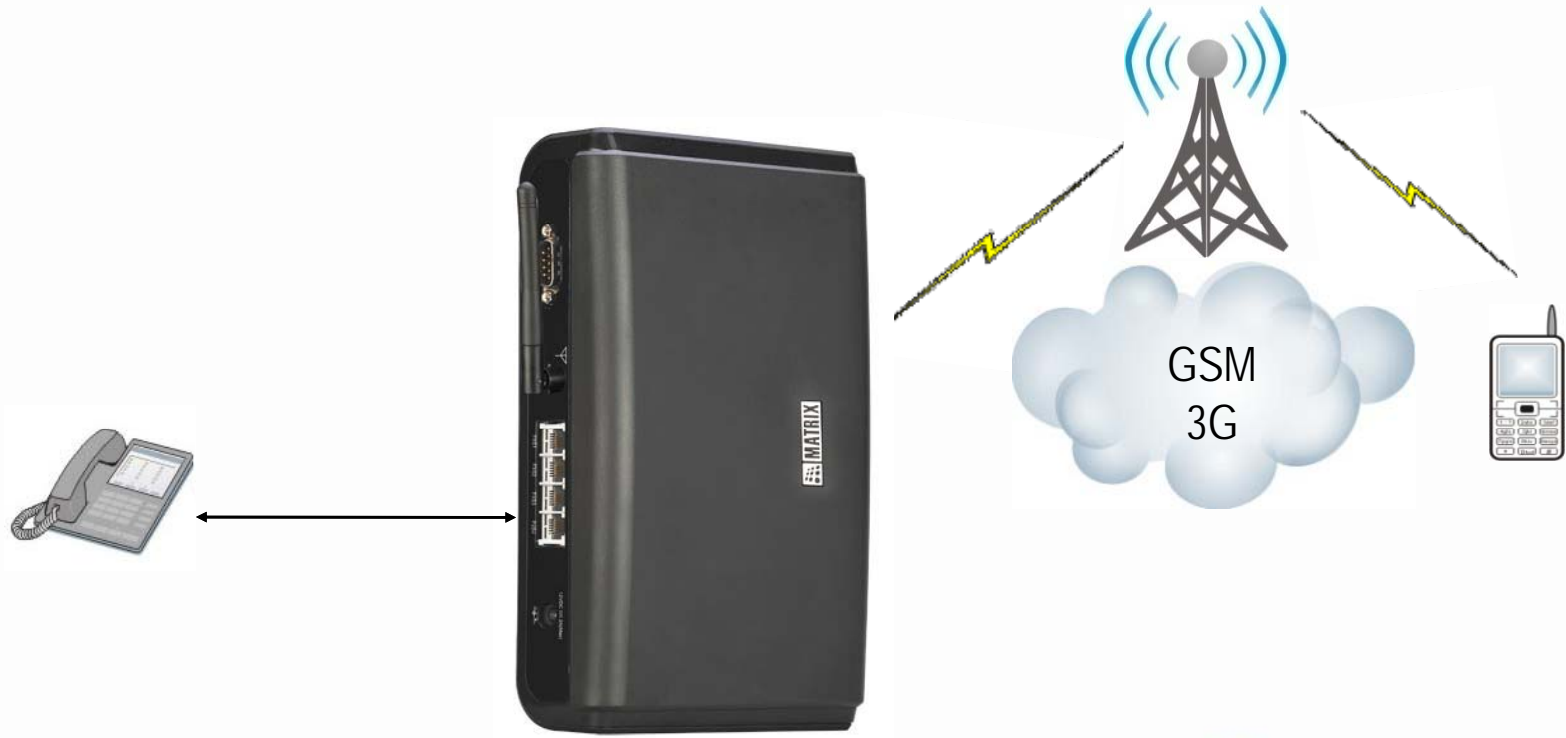
- SIMADO GFX44 is Secured With Passwords at Two Levels:
 - 1) System Engineer (SE) Level
 - 2) System Administrator (SA) Level
- System Engineer Can Alter SA Password if Required
- Technique to Default SE Password in Case of Forgotten Password
- Prevents Unauthorized Alterations and Misuse of System Features and Facilities

Time Zones

- Route Incoming/Outgoing Calls on Each Port (GSM/FXS) as per 'Time of the Day' (Time Zone)
- Defined Schedule for a Day is Called Timetable
- A Timetable Divides Entire Day in to Four Time Zones
- Calls are Routed as per the Timetable, Following the Routing Logic (Routing Group and Routing Type) of the Port
- Benefit From the "Minimum Call Charging Schemes", Offered by Various Service Providers based on Cal Time (Off-Peak Hours)
- Notable Reduction in Call Charges
- Provides Flexibility to Receive Ones Calls on Different Terminals as per the Time

Applications

Stand-alone Application



SIMADO GFX44

- Works Independently
- Users Can Make Calls to GSM/3G Network From FXS Ports
- Incoming Calls on Mobile Ports are Routed to FXS Ports

SIMADO GFX44 – With PBX Application



- A PBX System Can be Interfaced With FXS Ports
- PBX Users Can Make Calls to GSM/3G Network
- Route Calls on Mobile Ports to the PBX Extensions
- Compatible With Any Make of PBX

SIMADO GFX44: Stand-alone + PBX Application



- PBX/FXS Terminals Can Place Calls Via GSM/3G Network
- Incoming Calls on Mobile Ports Can be Routed to Directly Connected FXS Terminals or to PBX Extensions
- Compatible With Any Make of PBX



Target Customers

- Point-to-Point Communication Points
- Corporate Offices and Factories
- Organizations With Field Staff
- Remote Project Sites
- Hotels
- Residences
- Public Call Offices
- Call Centers
- Emergency Applications

CONFIDENTIAL



Technical Specifications

Power Supply	External Adaptor 12V DC/2A (Universal input range 90-265VAC, 47- 63Hz)
Power Consumption (Typical)	8 Watt
RF Sensitivity	Better than -106dBm at GSM850/EGSM900/DCS1800/PCS1900 Better than -106dBm at WCDMA 850 Better than -108dBm at WCDMA 1900/2100
Dimensions (W X H X D)	6.10"x8.66"x1.95"
Unit Weight	1000 Grams
Mounting Options	Wall Mount and Table Top
Antenna Connector	SMA (Female)



Thank You

