# MSG3100 Unified Communication Series

The unified communication solution, designed for enterprise communication markets, is implemented through the Unified Communication System (UCS) series (MSG3xxx), Multi-Service Gateway series (MSG2100E-XXX), Integrated Access Device (IAD) series (MSG3xx), and soft terminal APP. The MSG3100 which belongs to the UCS series, is a device used in the core aggregation layer of the enterprise network. It can not only solve the problems of multiple networks and terminals within the enterprise but also provide abundant application services, which greatly reduces the cost on network establishment and maintenance, and improves the enterprise communication efficiency.

## Introduction

The MSG3100, designed for government bodies and enterprises, is an enterprise unified communication product with cartridge design, applicable to enterprises with employees less than 300. The 1U-cartridge MSG3100 is used in the intersection of the enterprise Intranet and the access network. Featuring routing, switching, and IPPBX, it meets the service requirements of voice, data, and network security, and provides a platform for unified communication. It can provide different voice interfaces if being configured with different cards. The voice interface can be classified into three types in terms of quantity: 64 FXS interfaces, 96 FXS interfaces, and 128 FXS interfaces. And there are three types of uplink interfaces: 1000 Mbit/s Ethernet uplink interface, 8 FXO uplink interface, and E1 uplink interface.

When the MSG3100 is configured with different subcards, it will become a diffident model, such as the MSG3100-64FXS-AC, MSG3100-64FXS8FXO-AC, MSG3100-64FXS2VE1-AC, MSG3100-96FXS-AC, MSG3100-96FXS8FXO-AC, MSG3100-96FXS2VE1-AC, and MSG3100-128FXS-AC.

This document takes the MSG3100-96FXS-AC for example (for detailed parameters, see specifications), with the appearance as below:



MSG3100-96FXS-AC

## Features

**Moderate density**

- It is 1U high, small in size, high in capacity, and embedded with the fan.

- Cards with E1, FXO, and FXS interfaces can be combined freely, thus providing abundant and flexible interfaces.

- It supports up to 300 extensions (among which up to 128 are analog extensions) and up to 100 concurrent calls.

## Carrier-grade reliability

- The service channel and management channel are independent physically while the voice service and data service are independent logically, thus ensuring the QoS of all services.

- The fan can automatically adjust its speed according to the temperature, thus extending its life cycle, reducing noise, and saving energy.

## Abundant interfaces and flexible networking

- Support configuring the E1 and FXO interfaces to be connected uplink to the PSTN or downlink to the PBX.

- Support connecting 2 Combo uplink interfaces to the carrier Internet, IMS, and NGN.

- Support 1 Combo interface and 2GE downlink interfaces for expanding downlink services.

- Support the high-density FXS and FXO analog voice interfaces and support the USB interface.

- Support multiple interconnection protocols, such as IMS-SIP, SIP, H.248, and SS7 (ISUP)/PRI.

- Support interconnecting multiple branches.

## Unified system platform with high performance

- It adopts the high-performance X86 CPU for main services.

- It is a RCIOS open system software platform with independent intellectual property right developed based on Linux. It can integrate or load various enterprise applications, provide an open API, and interconnect third-party applications.

- With high switching capacity, it is suitable for data and voice integration services of high bandwidth.

## Abundant enterprise communication functions

- Support short codes, fax, and abbreviated dialing.

- Support multimedia communication.

- Support call transfer, three-way calling, call waiting, call hold, pickup, co-vibrating group, and sequential vibrating group.

- Support virtual Centrex.

- Support accessing multiple carrier lines and distributing voice streams.

- Support 8 FXO interfaces for emergency escape.

- Support centralized conference, instant conference, and reserved conference.
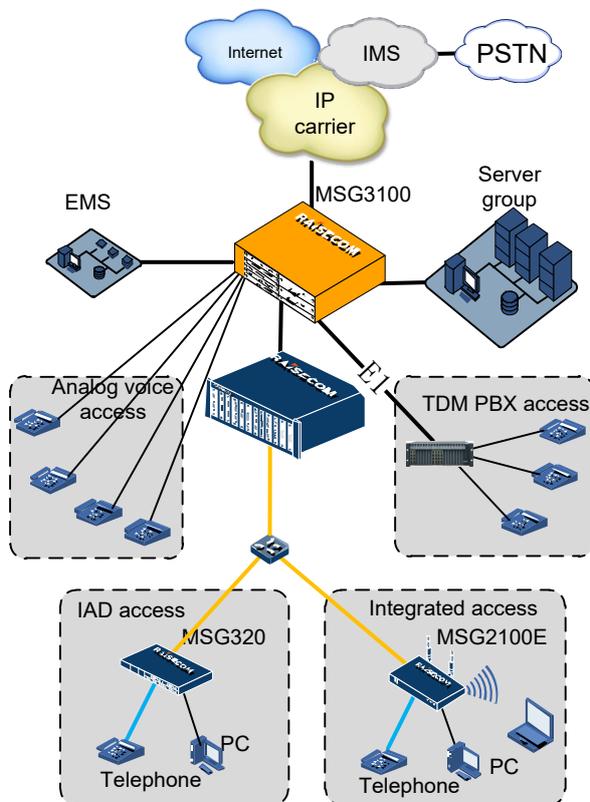
## Data and gateway features

- Support Layer 2 wire-speed forwarding and various Layer 2 data services, such as VLAN, ACL, and QoS.

- Support NAT, routing, VPN, firewall, and online behavior management.

## Convenient maintenance mode

- Support multiple maintenance modes, such as SNMP, Web, and CLI.

## Networking

### Typical networking of single enterprise



- ■ **Applicable scenarios**

    It is applicable to enterprises with 50 to 300 employees (the amount of voice extensions are calculated on the condition that each person has one telephone, one PC, and one mobile phone), which need to fully utilize the original analog telephones and data network, and have requirements on expanding new data and voice services.
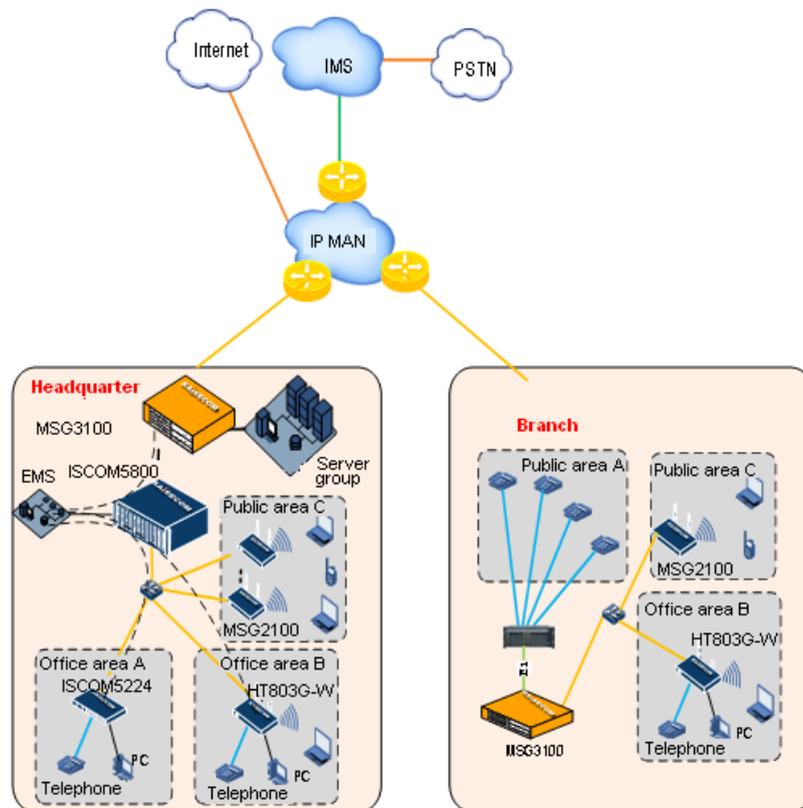
- ■ **Application schemes**

    - ➢ For the established analog telephone network: connect the MSG3100 downlink to the original PBX through the E1 cable, or directly transform the analog voice service in the PBX to the MSG3100 to utilize the original network, thus saving the cost in maintaining the traditional PBX.

    - ➢ For new employees: connect the switch or IAD downlink to the Ethernet or PON and use the MSG2100E to implement the aggregation of the PC and analog/VoIP voice terminals and network integration.

    - ➢ Unified network management: the MSG3100 is connected to the downlink Raisecom switches, OLT/ONU, gateway, IAD, and AP, to be managed uniformly, thus reducing the maintenance cost.

- ■ **Service applications**

    - ➢ Support data interconnection, VPN, conference, business contacts, CTD, Centrex, IVR, and

instant messaging, to interwork with the original data and voice network and share services.

**Enterprise branch networking**



■ **Application scenarios**

It is applicable to the enterprise with multiple branches which access the headquarter through the VPN, and can meet the requirements of internal sessions and data transmission between the headquarter and the branches, and the branches and branches.

■ **Application schemes**

➢ Deploy one UCS device to the headquarter to provide unified services, such as data and voice. Deploy small UCS, PBX, or IAD to the branch according to the access volumes of the staff and access the headquarter UCS through the VPN to implement internal communication.

➢ Integrate the analog telephone network and data network in the whole enterprise to solve the problem of the separation of the office desktop, phone desktop, and computer desktop.

➢ Implement uniform service application across regions.

➢ Support being managed uniformly, thus saving maintenance cost.

■ **Service applications**

➢ Support data interconnection, VPN, conference, business contacts, CTD, Centrex, IVR, and instant messaging, to interwork with the original data and voice network and share services.

## Specifications

| Hardware specification | | | | |
|---|---|---|---|---|
| Model | | MSG3100-64FXS, MSG3100-96FXS, MSG3100-128FXS | MSG3100-64FXS8FXO, MSG3100-96FXS8FXO | MSG3100-64FXS2VE, MSG3100-96FXS2VE1 |
| Type | | 1U cartridge device | | |
| Dimensions (Length × Width × Height) | | 440mm × 317mm × 43.6mm (1U), without brackets | | |
| Full weight | | 3.6 kg | | |
| Power supply | | 220 VAC | | |
| Voltage range | | 90–264 VAC | 90–264 VAC | 90–264 VAC |
| Maximum power consumption | | 150 W | | |
| Lightning protection level | | AC power supply<br>• Differential mode: 2 kV<br>• Common mode: 4 kV | | |
| Working temperature | | -10 to 55 °C | | |
| Storage temperature | | -25 to 60 °C | | |
| Storage humidity | | • Outdoor: 5% to 95% RH (non-condensing)<br>• Indoor: 10% to 90% RH (non-condensing) | | |
| Dustproof level | | IP20 | | |
| Interface | Voice interface | • E1: N/A<br>• AT0: N/A<br>• SCSI50 interface: 64FXS, 96FXS, and 128FXS | • E1: N/A<br>• AT0: 8FXO<br>• SCSI50 interface: 64 FXS and 96 FXS | • E1: 2VE1<br>• SCSI50 interface: 64 FXS and 96 FXS |
| | Data interface | • 2 Combo uplink interfaces<br>• 1 Combo interface and 2 GE downlink interfaces<br>• Transmission rate: 100/1000 Mbit/s auto-negotiation | • 2 Combo uplink interfaces<br>• 1 Combo interface and 2 GE downlink interfaces<br>• Transmission rate: 100/1000 Mbit/s auto-negotiation | • 2 Combo uplink interfaces<br>• 1 Combo interface and 2 GE downlink interfaces<br>• Transmission rate: 100/1000 Mbit/s auto-negotiation |
| | Management interface | 1 Console interface | 1 Console interface | 1 Console interface |

| Functions | | |
|---|---|---|
| **Service type** | **Function** | **MSG3100** |
| Voice service | Basic function | • Support accessing IMS network.<br>• Support standard IMS-SIP, SIP, H.248, and SS7 (ISUP)/PRI. |
| | | Support Intranet and Internet SIP ALG to implement voice service NAT |

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| | | traversing. |
| | | • Support voice and video call.<br>• Support fax/Modem services. |
| | | Call signaling: SIP, PRI, and SS7 (ISUP) |
| | | Voice CODEC: G.711A, G.711U, G.723.1, and G.729 |
| | | Video CODEC: H.263 and H.264/AVC |
| | | Fax standard: T.30 and T.38 |
| | | Media protocol: RTP\RTCP |
| | | • Support multi-mode DTMF and call event processing.<br>• Support various CID services. |
| | | Support performance statistics and signaling tracing. |
| | Supplementary services | Support forwarding services and service of number replacement on the same phone, such as CFU, CFB, CFNR, and unregistered forwarding. |
| | | Support call transfer, call hold, call waiting, and three-way calling. |
| | | Support abbreviated dialing (10 per user), designated pickup, and group pickup. |
| | | Support sequential ringing (5 users/group), co-vibrating ((5 users/group), and sequential vibrating (5 users/group) |
| | | Support Do not Disturb (DND), incoming and outgoing call barring (20 calls per user respectively), password-based call barring, and whitelist and blacklist (20 items per user). |
| | Enhanced function | Support virtual group services; support configuring multiple virtual and small PBXs within the PBX to implement short code dialing and other virtual group services. |
| | | • Support built-in meetings.<br>• Support 12 groups of concurrent conferences with 20 persons talking in each conference. |
| | | Support Interactive Voice Response (IVR), namely it plays information according to the contents inputted by the user. |
| | | Support color ring service. |
| | | Support manual attendant console, barge, and forced release. |
| | Extended function | Support calling for conferences through the attendant console. |
| | | Support initiating or accessing the conference through fixed phones, mobile phones, and PC clients. |
| | Sever function | Business contacts and clients |
| | | Call center server |
| | | Voice mail server which stores and manages voice messages uniformly<br>Users can listen to the messages at any time and any places through intra-office or inter-office phones. |
| | | Third-party service access capability |
| Data service | Access capability | • Provide 16 Gbit/s switching capability.<br>• Provide one Combo interface and 2 GE downlink interfaces which connect the OLT, ONU, and switch in the downlink direction, thus expanding the access |

| | | interfaces.<br>• Support up to 300 registered extensions and 128 FXS interfaces by the entire device.<br>• Support up to 100 concurrent voice services.<br>• Support layer 2 and layer 3 data forwarding. |
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| | VLAN | Support sixty-four 802.1Q VLANs. |
| | QoS guarantee | • Support up to 512 policies, such as 802.1P, DSCP, and IP TOS.<br>• Support Layer 2 and Layer 3 bandwidth management.<br>• Support traffic classification and QoS based on MAC address, IP address, and service. |
| | Service priority | Support 4 priority queues: High, Medium, Normal, and Low. The higher priority queue can occupy the bandwidth of the lower priority queue. |
| | Rate limiting | Support rate limiting based on interface, MAC address, IP address, VLAN ID, protocols, and application combinations, with a granularity up to 64 kbit/s. |
| | Route | • Support accessing IPv4 and IPv6 services concurrently and support route forwarding.<br>• Support automatically starting the protocol stack according to different applications. |
| | VPN | • Support IPSec, L2TP, and SSL VPN.<br>• Support point-to-point and point-to-multipoint secure VPN connection. |
| | Security | • Support preventing network attacks, such as DoS and ARP, to ensure the network security.<br>• Support preventing attacks on anomalous packets, such as IP deformity packets, IP spoofing, and TCP invasion.<br>• Support access control based on source/destination IP address, source/destination interface number, IP, and time period.<br>• Support ACL packets filtering.<br>• Support standard and extended ACL. |
| | Online behavior management | • Support the realtime collection of network traffic, graphical monitoring, refined analysis, visualized inspection on the network working status.<br>• Support the permit and deny feature based on source IP address, destination IP address, time, protocol, and application, which can precisely identify 160 protocols, such as P2P application, IM, stock software, and streaming media.<br>• Support controlling the bandwidth management policy based on group objects. |
| | Network audit | • Support auditing the whitelist and blacklist.<br>• Support auditing HTTP, including auditing the web page browsing, access address of the forum or social network, and the posted text content.<br>• Support auditing the mails, including the subject, sender, receiver, and contents.<br>• Support auditing the IP address used by the user to access the FTP, login user name, directory traversal, uploaded or downloaded file names.<br>• Support auditing chat tools, such as recording QQ user accounts or MSN user accounts and the user behavior.<br>• Support auditing logs, including the flow log, egress NAT log, URL log, device log, and attack log. |

## Ordering information

| Model | Description |
|---|---|
| MSG3100-64FXS-AC | • Provide 64 FXS voice interfaces (3 SCSI50 connectors).<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN |

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| | interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-64FXS2VE1-AC | • Provide 64 FXS voice interfaces (3 SCSI50 connectors).<br>• Provide two unbalanced E1 voice data relay interface.<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-64FXS8FXO-AC | • Provide 64 FXS voice interfaces (3 SCSI50 connectors).<br>• Provide 8 FXO voice interfaces and 8 FXS voice interfaces (1 SCSI50 connector).<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-96FXS-AC | • Provide 96 FXS voice interfaces (5 SCSI50 connectors).<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-96FXS2VE1-AC | • Provide 96 FXS voice interfaces (5 SCSI50 connectors).<br>• Provide two unbalanced E1 voice data relay interface.<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-96FXS8FXO-AC | • Provide 96 FXS voice interfaces (5 SCSI50 connectors).<br>• Provide 8 FXO voice interfaces and 8 FXS voice interfaces (1 SCSI50 connector).<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |
| MSG3100-128FXS-AC | • Provide 128 FXS voice interfaces (6 SCSI50 connectors).<br>• Provide two 1000 Mbit/s Combo WAN interfaces.<br>• Provide one 1000 Mbit/s Combo LAN interface and two 1000 Mbit/s LAN interfaces.<br>• Provide one Console interface.<br>• Provide one USB 2.0 interface and support 3G/4G uplink.<br>• AC power: 220 VAC (ranging from 100 to 240 VAC) |