

VOS3000 VoIP Operation System

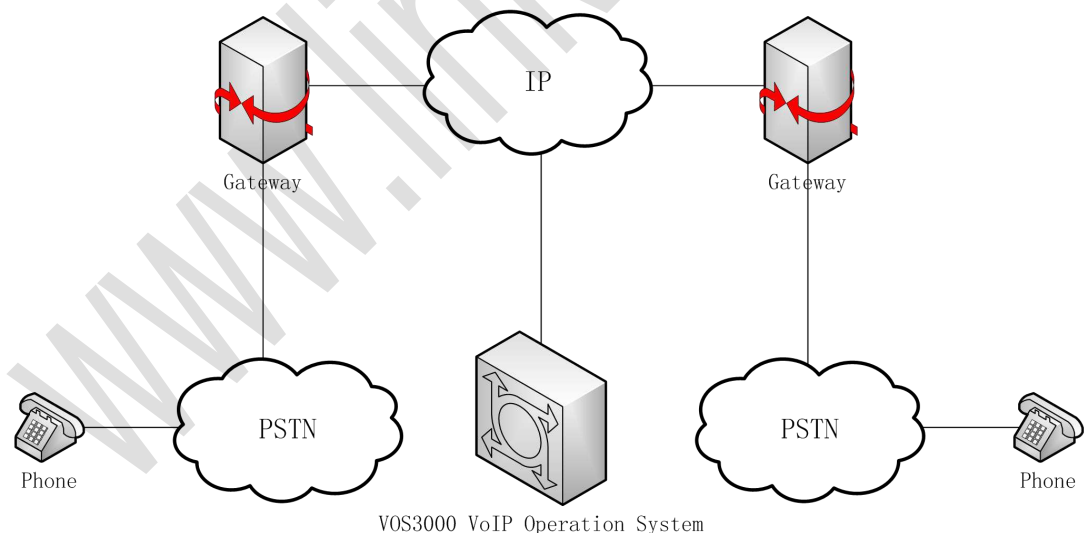
Introduction

VOS3000™ system is designed for VoIP operation by Linknat Limited.

Used for audio, data and multimedia services control, connection management, protocol adaptation, address resolution, routing, authentication, billing and so on. Support international standard protocol: SIP and H323.

Provide operation rate management, package management, account management, terminal management, gateway management, data query, data report, CDR analysis, cards management, alarm management, number management, system management and so on. Integrate extreme media proxy module, support millions phone card business. Under rigorously tested, stable, effective, safe and reliable.

Figure 1-1 VoIP Solutions' Location



Features

Hardware Security

VOS3000 support hot standby to ensure no single point of failure in the system. When master server failure, services can switch to slave server immediately.

Support network traffic, CPU utilization, memory utilization, hard disk real-time monitoring, can find unusual situations rapidly.



NOTE

Hot standby needs to buy 2 copies of VOS3000 and hot standby module.

Software Security

System is designed to ensure safety, provide the following security:

- SSH security reinforcement: prohibit root Telnet, SSH login will send email notification automatically
- MySQL security reinforcement: binding the private network address, user without password is forbidden
- Linux security reinforcement: login user check, service check
- Password authentication mechanism: login uses SHA512, RSA2048, encrypt storage with AES128
- Detailed logs: time, operator, IP, content
- Client login email notification
- Detailed operation and privilege define
- Backup database directory to do data recovery

Reliable Business

- Load balance design, switch routing automatically, when abnormal
- Graphical signaling tracing, ensure data integrity and service access, find problem accurately
- Analysis report, assess connection rate, average duration and system load
- Call detail report, ensure integrity of each call
- Dynamic blacklist, prevent malicious call

Centralized and Decentralized Control

VOS3000 is based on IP interconnection, administrators use client to manage and monitor the whole system.

- Configure multi data in one client
- Guarantee data consistency and integrity
- Reduce errors brought by manual operation

Flexible Billing

VOS3000 has flexible billing strategy and various packages, such as phone's private rates, minimum consumption, package rent, gift money, gift time and so on. Support various business model, sales strategy and market plan.

- Support pre-paid and post-paid
- 6+6, 1+1, 60+6, N+M
- Real time billing, force cut off
- Billing by prefix
- Various package

Extensive Compatibility

Summed up years of experience, VOS3000 has broad compatibility with all major equipment, through detailed configuration items to adapt special equipments.

- Protocol compatibility: softswitch do unidirectional negotiation with terminal, support non-standard signaling filter and rebuild
- Audio codec support: G.711, G.723, G.729, iLBC and so on
- Video codec support: H.261, H.263, H.264, VP8 and so on
- Fax support: T38
- Specify audio and video codec
- Support DTMF conversion and transmission settings: RFC2833, SIP INFO

Routing Strategy

VOS3000 supports multiple routing strategies: according to the minimum rate routing (LCR), according to the connection rate (ASR) routing, priority, routing gateway group, identify black and white list and so on to meet business requirements.

Set priority for international business, load balance in gateways with the same priority.

Support routing retry, when failed to connect a routing, system will try next one automatically.

Support cross carrier networks, make interoperability across multiple carrier networks.

Support routing optimization between different operators, ensure the best call quality.

Real Time Alarm

VOS3000 provides full alarm mechanism, beside monitor software and hardware, business conditions are also monitored. System will make audio alarm, interface alarm, send alarm email and dial alarm number to give alarm at the first time, keep business security and smooth.

Value Added Service

VOS3000 is a pure software solution, easy for upgrading, can achieve rapid response to new businesses. Audio service is designed in atomic operations, can be combined to meet business demands.

- Color ring back tone
- Voicemail
- Call transfer
- Balance spots
- IP PBX
- Direct Callback
- Audio self service



NOTE

Value added modules are sold separately.

Various Reports

- Terminal reports, whole sale reports
- Clearing reports
- Analysis reports
- Phone card reports

Third Party Support

- Support SIP message extension
- Support HTTP + JSON interface

Applications

VoIP operation: whole sales, terminal business, phone card business, call routing control.

Enterprise/Industry customer: VoIP network construction and value added business applications (such as IP PBX, voicemail, CENTREX and so on).

Parameters

Items	Parameter
BHCA (Busy Hour Call Attempt)	4,320,000
CPS (Call Per Second)	1,200
Concurrency	5,000
Account	About 1,000,000
Fee Rate	About 2,000,000
Phone	About 50,000
Online Phone	About 20,000
Phone Card	About 6,000,000

CDR		73G/Year/1000 Concurrency
Network Protocol		TCP、UDP、RTP、RTCP
Signaling Protocol		H323、SIP、RFC2833、H245
Interface Protocol		HTTP、HTTPS
Software Requirements	Operation System	Red Hat Enterprise Linux Server 64bit (5.4 to 6.4)
Hardware Requirements	CPU	Intel Xeon E5 Serials (or above)
	Memory	8 G (or above)
	Disk	146 G SAS (or above)

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Screenshots

Figure 1-2 Account Management

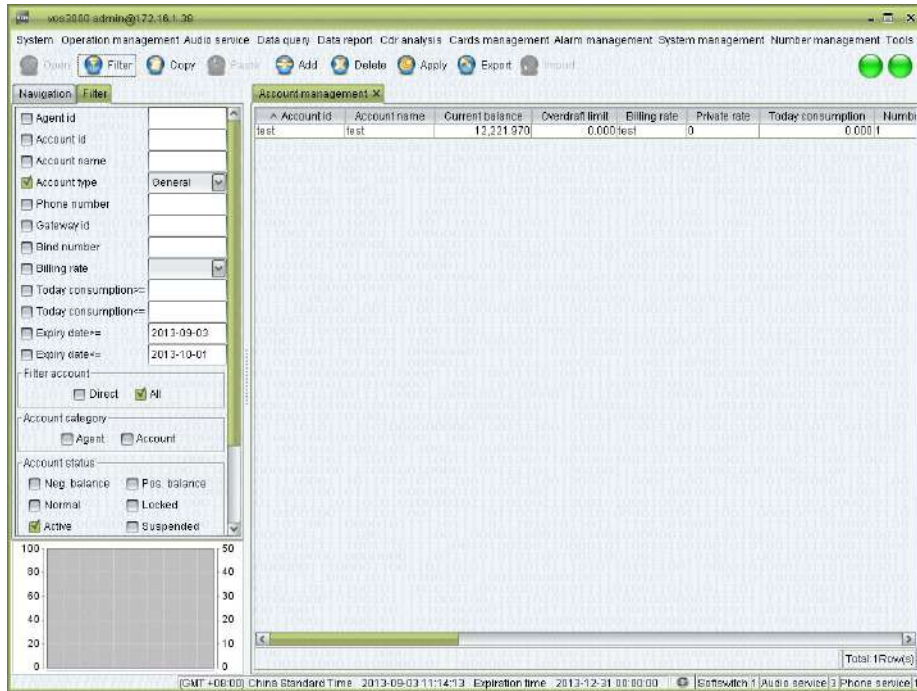


Figure 1-3 Call Analysis

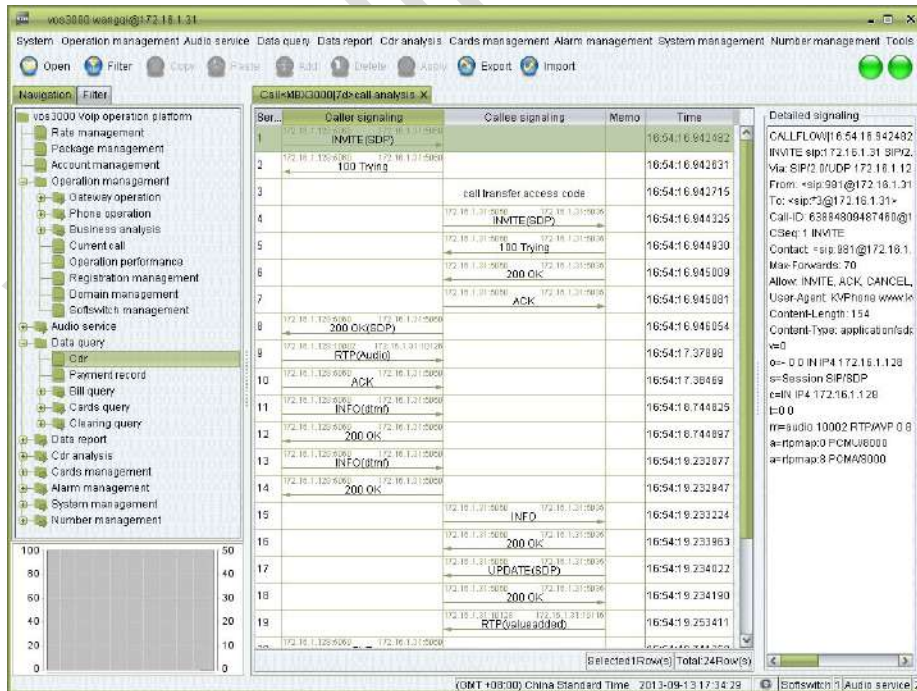


Figure 1-4 Connect Analysis

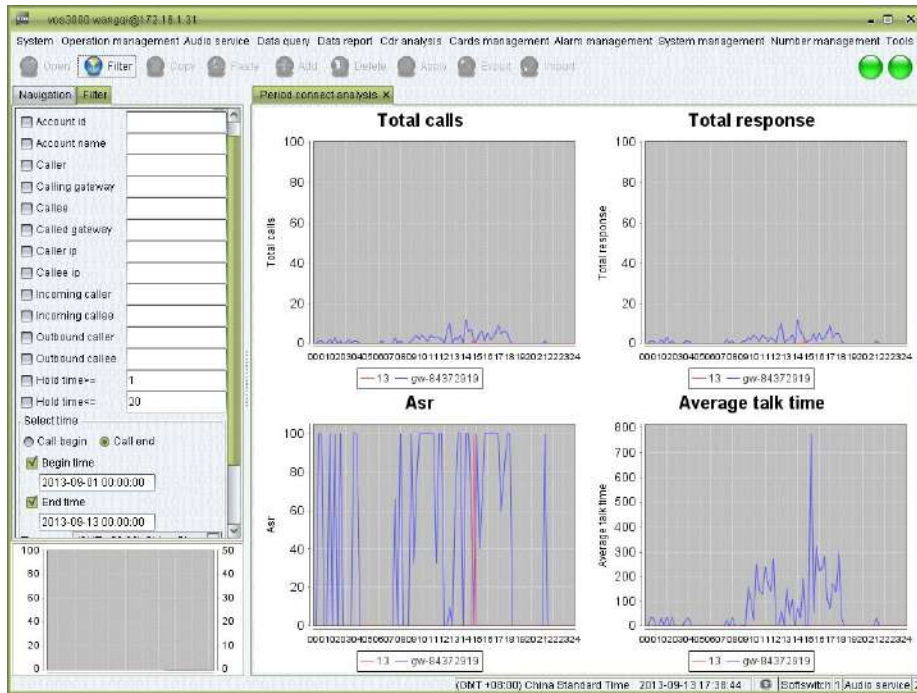
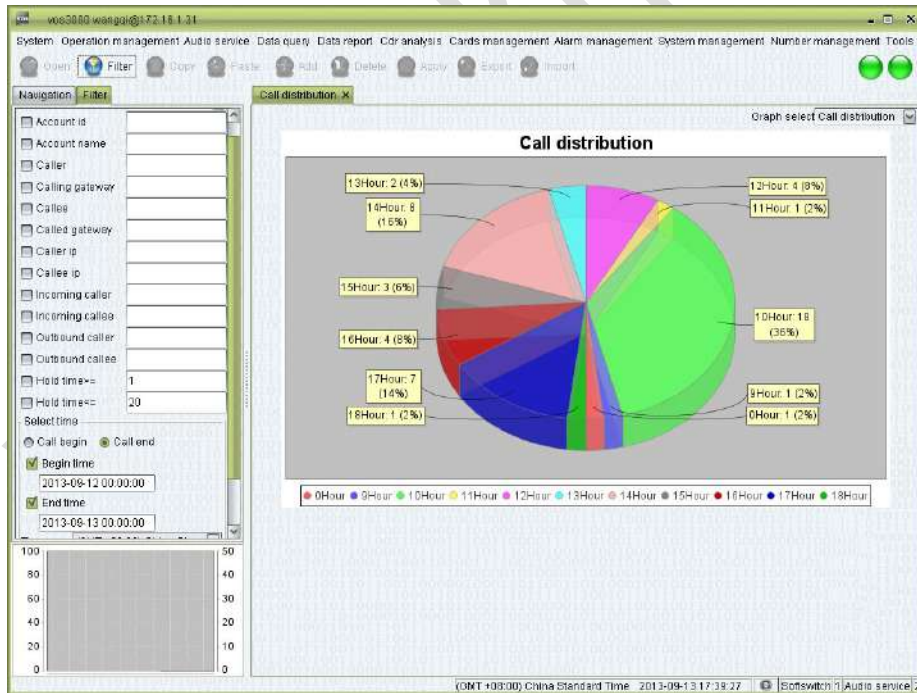


Figure 1-5 Call Distribution



Functions

Rate Management

Function	Memo
Fee rate group	Independent with account, different accounts can have different rate groups
Fee rate prefix	Prefix match, support millions of rates
Fee rate level	International/Domestic/Local/Net
Fee rate billing time	Time in seconds, supports section fee rate
Import fee rate	Support excel and text files
Export fee rate	Support excel/txt/html
Filter fee rate	Filter by prefix/type/location
Section fee rate	Each section can set different amounts

Package Management

Function	Memo
Package	Account can have different packages, billing by cheapest one
Rent type	Support rent period and rent unit setting
Period rate	Support week period/month period/year period
Fee duration	According to area prefix, begin time and end time
Fee money	According to package rent time

Account Management

Function	Memo
Account	Support account id, account name, current balance, overdraft limit, billing rate, private rate, today consumption, billing gateway, phone, phone card, bind number, package, customer information
Billing	Real time billing, insufficient force cut off
Pay	Direct pay/Web pay/IVR pay
Fee rate	Different account can choose different fee rate group
Account's phone	Enter account's phone management
Account's gateway	Enter account's gateway management
Clearing account	Set routing gateway rate
Filter	Filter by agent id, account id, account name, type, phone number, gateway id, billing rate, status

Call Analysis

Function	Memo
Trace length	Set trace time
Trace file size	Set trace file size
Call analysis	Detailed call signaling

Local Settings

Function	Memo
Minimize	Status bar/System tray
Auto lock	No operation automatically lock
Voice alarm	Critical/Major/Minor/General

Agent Management

Function	Memo
Agent	No limit on agent level, real time billing
State	Agent insufficient, sub account cannot use
Account	No difference between agent and account
Browse	Show agent relationship by filter and level

Gateway Operation

Function	Memo
Routing gateway	Support gateway id, prefix, mode, gateway group, lock type, line limit, priority, IP, password, callee black/white list group, memo, clearing account, clearing balance
Routing gateway additional setting	Support type, protocol, signaling port, media proxy, encryption, routing prefix, period control, codec
Routing gateway prefix management	Support allow/forbidden caller/callee prefix, caller/callee rewrite rule
Routing gateway number management	Support automatically add area code for mobile, regional restriction for mobile, call restriction on local city
Routing gateway switch	Support fault switch, longest prefix match, priority, line percent
Routing gateway filter	Filter by account, gateway id, prefix, IP, lock type
Mapping gateway	Support gateway id, lock type, authorization type, gateway group, line limit, routing gateway group, IP, account id, account name, password, priority, caller/callee black/white list group, memo
Mapping gateway additional setting	Support gateway type, media proxy, RTP interrupt detection, mapping prefix, period control, codec

Function	Memo
Mapping gateway prefix management	Support allow/forbidden mapping caller/callee prefix, mapping caller/callee rewrite rule
Mapping gateway Filter	Filter by account, gateway id, IP, lock type, authorization
Gateway group	Support gateway group, line limit, routing gateways, mapping gateways
Online routing gateway	Show routing gateway id, prefix, number of calling, line limit, ASR, ACD, registered IP, register time, update time, duration, encryption type, softswitch
Online mapping gateway	Show mapping gateway id, number of calling, line limit, ASR, ACD, registered IP, register time, update time, duration, encryption type, softswitch
Gateway status	Show gateway id, total calls, total connected, callee rejected, trunk error, trunk error, network error, caller abandon, average talk time, total talk time, IP

Phone Operation

Function	Memo
Phone	Support phone number, password, display caller id, lock type, authorization, monthly consumption, monthly min, monthly max, monthly service fee, billing rate, line limit, caller/callee black/white list group
Supplementary service	Support display caller id, call forwarding, do not disturb, call forwarding on period, call forwarding unconditional, call forwarding no reply, offline forward, call forwarding on busy
Lock type	Bar outgoing/Bar incoming/Bar all calls/No lock
Account	Support set account, change account
Online phone	Show phone number, number of calling, line limit, call in capacity, call in limitation, call out capacity, call out limitation, device id, protocol, registered IP, registration time, update time, duration, encryption type, local IP, softswitch

Business Analysis

Function	Memo
Routing Analysis	Support routing query by authentication method, device type, caller, callee
Call Analysis	Analysis call signaling to find problems
Registration Analysis	Analysis register signal to find problems

Business Management

Function	Memo
Current call	Show caller, callee, calling gateway, called gateway, connect time, duration, continue duration, connect delay, calling code, caller audio traffic, callee audio traffic, caller coding, callee coding, caller information, callee information, caller DTMF, callee DTMF, media routing, calling device name, called device name, caller encryption type, callee encryption type, softswitch
Filter	Filter by caller, callee, gateway id, IP
Statistic	Show setup, call processing, progress, alerting, invite, trying, session progress, ringing, total call, total duration, media routing
Registration management	Support add/import SIP account to generate routing gateway
Domain management	Show domain's IP, do check every 15 minute
Operation performance	Show concurrency performance, system performance and CDR queue
Softswitch management	Support data synchronize

Audio Service

Function	Memo
Public audio	Support audio name, size, audio import and audition
Internal audio	Support audio name, size, audio import and audition
Language management	Show directory name, number of audios
Direct/callback service	Show service name, number of menu, directory, service audio, device
Direct/callback audio	Support audio name, size, audio import and audition
Direct/callback template	Show template id, name, number of menu, device
Direct/callback device	Show access name, mark, number of service, creation time, access IP, access time
IP PBX service	Show service name, number of menu, directory, service audio, device
IP PBX audio	Support audio name, size, audio import and audition
IP PBX template	Show template id, name, number of menu, device
IP PBX device	Show access name, mark, number of service, creation time, access IP, access time
Value added service	Show service name, number of menu, directory, service audio, device
Value added audio	Support audio name, size, audio import and audition
Value added template	Show template id, name, number of menu, device

Function	Memo
Value added device	Show access name, mark, number of service, creation time, access IP, access time
Phone polyphonic ringtone	Support audio name, size, audio import and audition
Voice mail audio	Support audio name, size, audio import and audition
Alarm prompt audio	Support audio name, size, audio import and audition

Data Query

Function	Memo
CDR	Show caller, callee, begin time, end time, conversation time, charged duration, call charges, call expense, termination reason, hang up side, calling gateway, called gateway, caller IP, callee IP, account name, account id, agent id, call type, area prefix, incoming caller, incoming callee, outbound caller, outbound callee, calling device name, called device name, package duration, package charges, billing method, charge mode, continue duration, connect delay
CDR Filter	Filter by agent id, account id, account name, caller, calling gateway, callee, called gateway, caller IP, callee IP, incoming caller, incoming callee, outbound caller, outbound callee, begin time, end time
Payment record	Show account id, account name, money amount, account balance, type, payment time, mode, user, agent id, agent name, serial number
Payment Filter	Filter by agent id, account id, account name, type, begin time, end time, mode
Revenue Detail	Show account id, account name, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR
Gateway Bill	Show gateway id, IP, account id, account name, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR
Phone Bill	Show phone number, account id, account name, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR

Function	Memo
Area Detail	Show area prefix, area name, total charges, total duration, package charges, package duration, number of CDR
Account Area	Show account id, account name, area prefix, area name, total charges, total duration, package charges, package duration, number of CDR
Account Balance	Show account id, account name, revenue, expenditure, agent id, agent name

Cards Query

Function	Memo
Phone card bill	Show card number, account id, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR
Bind number bill	Show incoming caller, card number, account id, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR

Clearing Query

Function	Memo
Account clearing balance	Show account id, account name, number of CDR, total charges, total duration, clearing costs, clearing duration, total profit, package charges, package duration, clearing package amount, clearing package duration, routing clearing account id, routing clearing account name
Clearing account detail	Show routing clearing account id, routing clearing account name, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, total package, package duration, number of CDR
Clearing gateway detail	Show gateway id, IP, total charges, total duration, local charges, local duration, domestic charges, domestic duration, international charges, international duration, net charges, net duration, number of CDR

CDR Analysis

Function	Memo
Connect analysis	Show gateway id, IP, total calls, total unconnected, total connected, total response, average talk time, total talk time
History performance	Show call performance in particular time
Gateway performance	Show gateway performance in particular time
Signaling analysis	Show call signaling flow
Interrupt analysis	Show gateway id, IP, termination reason, total call
Call distribution	Show call distribution, duration distribution, revenue distribution, expenditure distribution
Period connect analysis	Show total calls, total response, ASR, average talk time in particular time

Gateway Area Analysis

Function	Memo
Mapping area analysis	Show gateway id, area prefix, area name, total calls, total unconnected, total connected, total response, average talk time, total talk time
Routing area analysis	Show gateway id, area prefix, area name, total calls, total unconnected, total connected, total response, average talk time, total talk time
Cross area analysis	Show mapping gateway, routing gateway, area prefix, area name, total calls, total unconnected, total connected, total response, average talk time, total talk time

Data Report

Function	Memo
Bill report	Include revenue detail report, gateway bill report, phone bill report, account area report, account balance report
Cards report	Include phone card bill report, bind number bill report
Clearing report	Include clearing account detail report, clearing gateway detail report, account clearing balance report
Analysis report	Include mapping gateway analysis report, routing gateway analysis report, mapping gateway location analysis report, routing gateway location analysis report, gateway cross location analysis report
Report management	Support generate all reports or special report

Cards Management

Function	Memo
Create phone card	Create by number of cards, type, password mode, begin card number, password length, money amount, billing rate, package name, agent id, memo
Phone card	Show serial number, management id, card number, password, money amount, overdraft limit, billing rate, package name, agent id, lock type, sold, bind number limit, display caller id, produce time, expire time, active, enable date, memo, type, user's account id, user's account name
Active phone card	Show card number, password, display caller id, enable date, number of bind number, bind number limit, account id, account name, memo
Bind number	Show phone number, display caller id, rewrite rule, enable date, directory, card number, account id, memo

Alarm Management

Function	Memo
System alarm	Support alarm type (CPU, memory, pending CDR, softswitch offline, conversation time, database, CDR insert failed), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Network alarm	Support network device, alarm type (packages receive, bytes receive, packages transmit, bytes transmit), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Disk alarm	Support device id, alarm type (disk usage), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Mapping alarm	Support gateway id, alarm type (mapping ACD, mapping ASR, mapping concurrency change), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Routing alarm	Support gateway id, alarm type (routing ACD, routing ASR, routing concurrency change), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Balance alarm	Support account id, account type, alarm type (account balance), alarm severity, upper, period, voice alarm, voice alarm call number, email alarm, email
Current alarm	Support alarm object, alarm type, alarm severity, alarm begin, alarm end, alarm value, upper, lower, ACK user, ACK time, memo

Function	Memo
History alarm	Support alarm object, alarm type, alarm severity, alarm begin, alarm end, alarm value, upper, lower, ACK user, ACK time, memo, cleared user, cleared time

System Management

Function	Memo
User management	Support user creation, authorization
System log	Show operation log, record time, operating user, event
System parameter	Support detailed settings for business
System information	Show license information, CPU, RAM, hard disk, product version
Data maintenance	Include cleanup system log, empty history alarm, clean payment record, clear CDR, clean data report, auto cleanup and backup
Online user	Query current login user

Number Management

Function	Memo
Number section query	Query used and unused number
Mobile area	Set mobile prefix, area code, local area, memo
City code	Set area code, province, city, length of caller, length of callee, area
Area information	Set area prefix, area name, memo
Number transform	Set mapping gateway incoming caller, phone number, routing gateway outbound callee, account id, memo
Black/white list group	Set black/white number
System while list	Set system white number
Dynamic black list	Show phone number, type, effective date, expiration time, last call time, softswitch