



Innovative Communication Global Services



DonJin Communication Tech Co., Ltd

Keygoe Product Brochure





Overview:

Donjin Keygoe series multi-media switch integrated voice, video, and data service. By convergence of multi services into a simple platform, you can easily build a complicated system, thus can reduce the system capital and operational costs. Aimed to different clients' different needs, Donjin developed and produced three series Keygoe products: Keygoe1000, Keygoe3000 and Keygoe8000.

Keygoe1000-Designed specially for telecom value-added services

Provide clients with the most valuable service solutions

Keygoe3000- Designed specially for telecom service providers

Provide powerful service convergence capability and service flexibility for fast and sustainable service innovations

Keygoe8000- Designed specially for large-scale fundamental telecom operators

Provide large-capacity, open and programmable convergence service platform for the concentrated operation of telecom value-added service



Keygoe1000

Currently, a large number of telecom value-added service platforms are dedicated service platforms, which easily causes one platform serving one service as the result of service increase. Due to the reason that different platforms have different technical infrastructures, development models and deployment methods together with different requirements on developers, the development of a single new service and new market are likely to be done with actions to the whole, causing sharp increase of the company's business operating cost and further restrain its possibility for sustainable development. Keygoe1000 series multimedia switch have rich media resources, simple system structure, powerful service capability and flexible development tools, enabling its ability to provide telecom value-added services with comprehensive and overall solutions from platform building, service modeling and system deployment to service operation, and eventually improve their service profitability.

Keygoe3000

In telecom value-added services, more and more clients are caring much about service experience; therefore there is a need to apply a group of services to be customized to make the characteristics such as individuation, localization and multimedia application outstanding. What the end users need the most is one-stop service, while for SP and CP, what they need the most is a standard, open, convenient and powerful support environment for their service operation which can guarantee a fast launching of service and fast selling to their targeted users. The core is a comprehensive demand by users, which requires service providers capable with stronger service integration ability and service convergence ability. With Donjin Keygoe3000 multimedia switch, it is possible for them to build a user-centered service system, helps them to create strong convergence ability and sufficient flexibility and finally realize sustainable service increase.

Keygoe8000



The traditional voice communication market is confronting great challenge due to technology evolution. The overlapping of multi-layered service network imposes adverse impact to system processing ability, increases system cost and makes it difficult to expand system processing capacity. Donjin Keygoe8000 series multimedia switch provides innovative services with standard, open, flexible and high-performance multi-service carrying platform, through which a user-centered service system can be easily constructed.

The next-generation network will be a convergent multimedia communication service network, by which users are able to be served with communicative service with the cheapest price through any equipment regardless where they are. With Donjin Keygoe8000 series multimedia switch, your subscribers can acquire comprehensive value-added services with the cheapest payment only through single-point access to your system.



Comparison of Keygoe multimedia switches vs. traditional switches

	Traditional switch	Keygoe multimedia switch
Comparison of main hardware modules	Use main CPU board as the main control board of other hardware modules	No main control CPU board, and each module is functioning as an independent sub-system
	Disadvantage: CPU board designed in fixed pattern has a poor processing ability and stability compared with general purpose computer. The centralized control by CPU board to other modules also degenerates the stability	Advantage: By using general purpose computer platform as the host machine, it creates the best system processing ability and cost performance. The modularized and full-distributed system structure improves the system reliability.
	Functional distributed modules: Different functions are realized by different hardware modules, such as telecom interface, switching matrix, audio processing, voice processing and signal processing, etc.	Functional integrated module: A single hardware module contains telecom interface, switching matrix, IP network interface, real-time voice signal processing, signaling protocol (SS1, Q921, MTP1/2, RTP/RTCP, etc.
	Disadvantage: Complicated system structure and too many module types, which affects the system's actual processing ability, increases the system cost, and a number of different modules are required to be added in case of expanding the system capacity. Furthermore, it will affect the system performance and reliability.	Advantage: Simple system structure, a real case of one point access and full function realization, strong system processing ability, low system cost, and only a single module is required in case of expanding system capacity.
Comparison of data switching structure	<p>TDM type: Traditional switches normally have a concentrated switch module used to complete TMD switching. They have poorer or no IP interconnection ability.</p> <p>IP type: VOIP switches do not use TDM switching but address VOIP function and network function.</p>	<p>Distributed TDM+IP: Each module contains TDM switching station matrix and IP network interface. All system internal switchings adopt TDM and every module has IP interconnection ability.</p> <p>Advantage: Modularized and distributed</p>



	TDM+IP integrated switches normally have a dedicated module to process TDM switching and IP interconnection.	TDM+IP data switching structure enables the product both strong TDM switch ability and IP interconnection ability.
Comparison of system processing platform	Switch products normally adopt integrated host machine to complete system main control and core functional processing. The integrated host machine includes CPU module and integration server, rather than the adoption of general purpose computer platform, and normally, only the application server uses general purpose computer. Disadvantage: Due to the limited technology applied to the design of system integration host machine, its processing ability is limited to certain degree, therefore it has no way to benefit from the processing ability and cost-efficiency advantages of fast growing general purpose computer platform.	The open structure without integrated host machine can use any general purpose computing and processing platform (host machine), and its computing and processing ability are not limited, enabling its ability to make full use of those mature functions provided by multiple operating system platforms (such as the processing abilities of various networks). Advantage: It is possible to benefit from the processing ability and cost-efficiency advantages of fast growing general purpose computer platform.

Contributions of Keygoe1000 Series to value-added services

Keygoe1000 series multimedia switch provides all media functions and service processing functions, builds high efficient service system, carries out TCP/IP encapsulation to media resources, adopts a uniformed IP network communication package mode for communication among media resource modules, and provides service with flexible resource combination and scheduling.

Contributions of Keygoe3000 Series to value-added services

Keygoe3000 series multimedia switch provides critical services with high-performance and super-stable media resources, such as video monitoring, large-capacity network fax, operation-level VoIP, etc., creating higher return of investment for critical services.



Contributions of Keygoe8000 Series to value-added services

Keygoe8000 series multimedia switch provides outstanding network convergence, application convergence and service convergence, which is able to integrate subscribers with services offered by CP, SP and operators together in a rational way, so as to build a user- centered and highly effective win-win industrial chain.



Donjin Keygoe series multimedia switch performance parameter table



Physical Size

Types	Keygoe8003	Keygoe8005	Keygoe8011
Length	130.5mm	219.4mm	486.1mm
Width	482.6mm	482.6mm	482.6mm
Depth	430mm	430mm	430mm

Technical indicators

Digital trunk interface

Support E1/T1/J1

Support digital and analog interface mixed configuration, support high-impedance voice recording and digital voice recording

Comply with suggestion G.703, support coaxial cable (75Ω nonbalance), unshielded twisted pair (120Ω balance)

Comply with the frame structure of suggestion G.704 and the multiplex-frame structure of suggestion G.706;

2048Kbps PCM basic group complies with suggestion G.732 and suggestion G.796;

Alarm complies with suggestion G.775;

Dithering and drift comply with suggestion G.823;

Analog interface



Support analog trunk, analog subscriber, analog high-impedance, analog two-line voice, analog four-line voice, EM control, magnetite, 2B+D high-impedance, etc.

PSTN signaling

Support SS7 signaling, ISDN PRI signaling and China No.1 signaling

NGN signaling

Support H.323、 SIP、 3G324、 BICC、 MGCP、 MEGACO/H.248, etc.

Audio coding/decoding:

Sampling rate: 6K/8KHZ

Coding mode: Law A/law μ PCM, AMI-ADPCM, G729, G723.1, etc.

Video coding/encoding

Support MPEG4、 H.263/H.264, etc.

Media file format:

Support 3GP、 AVI、 MPEG4、 WAVE、 PCM、 ADPCM、 VOX、 MP3, etc.

Performance parameter

Model	Keygoe8003	Keygoe8005	Keygoe8011
Slots	3 slots	6 slots	14 slots
Ports	48E1	64E1	128E1
Cascades	NA/4/16	NA/4/16	NA/4/8
SS7 links (64k)	96	128	256
SS7 links (2M)	NA/NA/24	NA/NA/32	NA/NA/64
Support PRI interface	48	64	128
Voice resource	1440	1920	3840
Conference group resource	768	1024	2048



Fax resource	360	480	960
VoIP resource	360	480	960
Video resource	NA/360/360	NA/480/480	NA/960/960

Model	Keygoe8003	Keygoe8005	Keygoe8011
Availability	0.99999	0.99999	0.99999
MTBF (mean time between failure)	100,000 hours	100,000 hours	100,000 hours
MTTR (mean time to repair)	0.5 hour	0.5 hour	0.5 hour
Average failure time in one year	5 seconds	5 seconds	5 seconds

Environmental parameter

Temperature: 15°C ~ 30°C

Relative humidity: 40% ~ 65%

Air cleanliness: <3500 particles/liter for 0.5µm/above dust particles, and <30 particles/liter for 5µm/above dust particles

Electromagnetic environment: Electrical field strength ≤130Db (µV/m), magnetic field intensity ≤800A/m

Antistatic: Reliable earthing required for equipment (earth resistance < 1)

System redundancy

1+1 power supply warm standby

1+1 network interface warm standby

1+1 switching warm standby (8011 only)



N+M comprehensive service board standby

Operational System

Windows2000/XP/2003/Vista

Linux

Unix (Solaris、AIX、HP-UX)



Introduction to Donjin Keygoe series multimedia switch functions

Keygoe Series' voice resource

- The system provides maximum 32768 voice resources
- Voice coding format: Support Law A/law μ PCM, AMI-ADPCM, G729, G723.1, etc.
- Voice file format: Support WAVE、PCM、ADPCM、VOX、MP3, etc.
- Support Law A and Law μ conversion
- Support real-time RAM and file server playback
- Support real-time file server voice-recording (dynamic memory)
- Support DTMF, FSK, R2 and self-defined envelope TONE sound detecting
- Support DTMF, FSK, R2 and self-defined envelope TONE sound generation
- Support mix voice playback/recording
- Support echo suppression (128ms)
- Support automatic gain control (AGC/ALS)
- Support full duplex recording/playback
- Support VAD and CNG

Keygoe Series' voice switching

Keygoe series multimedia switch system has maximum switching capacity up to 60000 with a stability up to 99.999%.

Interface: E1/T1/J1, POTS, and support digital and analog interface mixed configuration

System capacity: 128E1 \times 15 digital ports (60000 links voice access)

360 \times 16 analog ports



System performance: 6400000 calls/hour

Keygoe Series' signaling support

SS7 signaling

Code compliance: “ITU-T SS7 Signaling technical Code” white paper Q.700-Q.716, Q.721-Q.766 and Q.771-Q.795

Code compliance: “Technical Code for China Inland Telephone Network No.7 Signaling Mode” GF001 – 9001

Maximum message handling capability each link: 500MSU/S, BHCA each link: 360K

Support MTP、 TUP、 ISUP、 SCCP、 TCAP、 MAP、 INAP、 CAP、 OMAP

Support 64kbps standard link and 2M high-speed link

Support 14/24-bit point code length

Support telephone traffic sharing between links and link groups

Support link group internal link switching and changing back

Support multiple source signaling point code and destination signaling point code

Support link's dynamic addition/deletion, signaling link activation, restoration, go to activate, normal restart, emergency restart and signaling congest handling

Support signaling point and signaling switching point function

ISDN PRI signaling

Comply with ITU-T Q.921 LAPD

Comply with ITU-T Q.931 ISDN PRI: TR41459, EU ISDN ETSI NET5

Support network side and client side



Support overlap mode while receiving and sending called numbers

VoIP signaling

1) RTP protocol

Comply with RTP/RTCP standard protocol (RFC3551/3552)

Voice coding/decoding format : G.711 Law μ /Law A, G.723.1 (5.3/6.3 kbps self-adapting), G.729A/B/AB;

RTP dynamic DTMF load (RFC2833/4733)

Jitter buffer: Support both static buffer mode and dynamic self-adapting mode);

Support LAN multicast;

2) H.323 portocol

Comply with ITU-T H.323v2 standard (H.225v2/H.245v3)

Support G.723, G.726 and G.729 coding standard

Support fast start, H.245 Tunneling call parameters;

Call divert

Gatekeeper Auto Discovery and login (support both H.323 UID and E164 number registration modes)

User Input Indication and DTMF signal message;

3) SIP protocol

Comply with IETF SIPv2 standard (RFC3261);

UDP/TCP call mode;

MD5 (digest) ID verification;

REFER call divert (RFC3515);

SIP message subscription/notification (RFC3265 SUBSCRIBE/NOTIFY);

Agent server registration, security certificate and timing refresh;



Keygoe Series' SS7 signaling programmable ability

Keygoe can provide SS7 links up to 1920, and has MTP、TUP、ISUP、SCCP 和 TCAP 以及 MAP、INAP、OMAP these functions.

Keygoe Series' conference resource

Keygoe series can provide maximum 3584 groups conference resource, and a single conference support maximum 128 parties' two-way talk and 2048 parties' monitoring.

Keygoe Series' fax resource

Support V17/V29/V27 standard compliant
14400bps/12000bps/9600bps/7200bps/4800bps/2400bps fax receiving and sending.

Keygoe Series' video resource

With the construction of 3G network, mobile video application will be popularized in the near future. With Keygoe8000 series, a series of applications from simple video editing stream to video mail, video ring back tone and even mobile television can be realized, which can be used to provide telecom-level and technically advanced products to system integrator or OEM clients.

Video coding: H.263/MPEG4

Audio coding: AMR、G.723.1

Signalling control protocol : H.245

Multiplexing protocol: H.223



Keygoe1000 solution

Large-capacity IVR and voice recording

Donjin Keygoe 1000 series switch is able to construct large-capacity IVR. Donjin Keygoe 1000 multimedia switch uses service application software to complete service logic control and save all voice files at the same time, and is able to playback voice files or record them to the machine dynamically during service operating; in addition, Donjin Keygoe 1000 multimedia switch can playback external voice files dynamically and in real-time from file server directly through 1000M network, or record them into the directory of file server, so that a complete voice playback and recording functions are provided.

Built-in and large-capacity conference system

With Donjin Keygoe 1000 multimedia switch, it is possible to build a large-capacity conference system. Since the switch media module control and data switching are realized through Ethernet, therefore Donjin Keygoe 1000 multimedia switch based conference system can be seamlessly integrated with WEB to achieve a real network control conference; in addition, it is possible to record the conference or play background music for the conference.

Voice mail and voice SMS

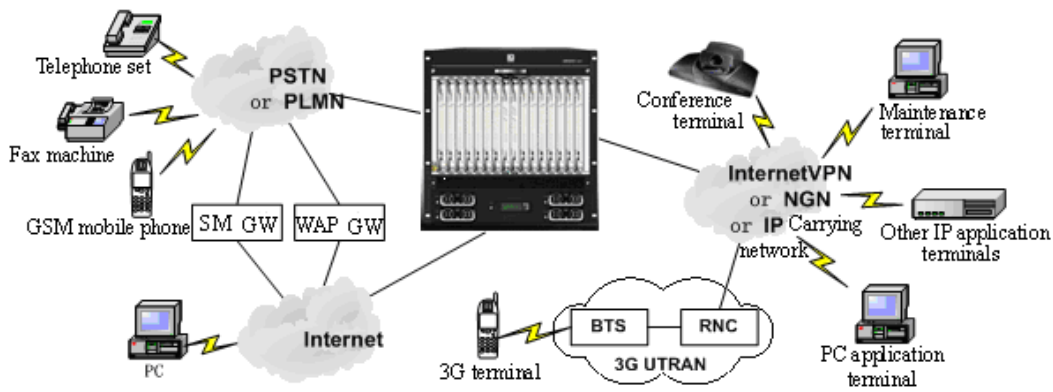
With real-time recording and playback functions, it is possible to construct built-in voice mail and voice short message functions. Its stronger switching and signaling access ability provide voice services for different circles with rich service customizing ability and voice processing ability.



Keygoe3000 solution

Donjin comprehensive telecom value-added service solution

Donjin comprehensive telecom value-added service solution is to build a flexible, reliable and cross heterogeneous networks service platform by using Keygoe 3000 service multimedia switch and its built-in switching resources and media resources for satisfying the demand for fast development, flexible loading and stable operating of telecom value-added services.



Keygoe 3000 series multimedia switch adopts Donjin Tech's core technologies in multiple domains, abstracts the complicated technical attribute, structural attribute and market attribute of voice value added services, forms the visual and graphical development means and methods, realizes the independence of voice value-added service development and deployment from the operating system, enables telecom value-added service providers the ability to to focus on the service logic design, marketing and business operating by ignoring the technical structure and realization methods of voice value-added services, thus eventually improve the service development efficiency and shorten the response to market change.

Application layer	IVR, polyphonic ringtone, BGM, supper wow, call missing protection, telephony conference, telephone QQ, callback, phone book, voice prompt, do not disturb, transport service, information inquiry, lottery purchase, stock exchange, recharge and payment
Presentation layer	Application program interface, third party middleware, graphic flow builder



Control layer	TCP/IP encapsulation										Web server	Packet switching network		
Resource layer	Resource configuration			Flow execution			Interface management			Subscriber management			WAP server	
	Switching	Voice	Video	Playback	Recording	Conference	Fax	Signaling handling	DTM	FSK	SMS		Other resources	Mail server
														Application server
														File server
Database server														
Access layer	Fixed telephone network, mobile communication network, signaling network													

IVR, polyphonic ringtone, BGM, supper wow, call missing protection, telephony conference, telephone QQ, callback, phone book, voice prompt, do not disturb, transport service, information inquiry, lottery purchase, stock exchange, recharge and payment

Mobile payment service platform

Mobile payment means a subscriber’s payment made to various service purchases through hand-set mobile terminal. Currently, mobile payment has three payment modes: phone bill payment, bank card payment and contactless site payment. Phone bill payment is suitable to pay small-amount digital and non-material products such as game electronic card and mailbox payment, etc. through which the purchased product can be obtained immediately as long as the payment is completed; contactless site payment adopts non-contact and near-distance communication technology together with mobile wireless network and terminals to provide subscribers with easy and convenient small-amount and site payment services.

With social development, more and more mobile phone subscribers have the demand for larger-amount payment, and the best way to meet this demand is the payment made through bank card. By binding the subscriber's mobile phone number with his/her bank card, the subscriber is able to securely, conveniently and flexibly manage own bank card



account through operation modes such as SMS, voice, WAP, USSD super SM and K-java, etc.; also they can use their bank card to pay a number of purchases through mobile phone, such as mobile phone shopping as well as expenses payment, insurance payment, lottery payment, tax payment, digital card payment and public utilities payment through their mobile phone.

Bank card payment service has a higher requirement on transaction security, such as using dedicated network rather than Internet, uploading security and encryption system, split of service development from business operation, and subscriber information being saved in remote, etc. In addition, mobile payment service has special requirement for the subscriber customizing flow for ensuring the safety of transaction, i.e., it requires the subscriber who is customizing such service to do comprehensive customizing through bank service point, POS machine, SM+voice or WAP method so as to transport the customizing information by splitting them in part for purpose of minimizing the possibility of reorganizing the information in the phases mentioned above. Therefore, a mobile payment service platform shall have sound flexible service combination ability, which is to say, a same platform shall have SMS, IVR, WAP and USSD multiple service combination for satisfying the subscriber's demand for a secure and safe transaction.

With Keygoe 3000 multimedia switch, a service provider is able to, in a same platform, flexibly upload, control and manage SMS, IVR, WAP and USSD multiple service channels as well as related application servers and database servers, plus realize the seamless convergence of SMS, IVR, WAP and USSD with various application services by using thoroughly-new IP encapsulation, and eventually it provides the mobile payment service with a uniformed and integrated and dedicated service platform.



Keygoe8000 solution

Donjin Keygoe 8000 series multimedia switch solution for industrial informatization

Donjin industrial informatization overall solution (Communication industry) is to build a large-capacity, programmable, scalable, multi-application, open and multifunctional application support platform by using Keygoe 8000 series multimedia switch and its features of openness, flexibility and reliability, so as to integrate the service demands of industrial users, application developers, service providers and fundamental telecom operators, build a open and cooperative industrial chain and provide industrial users with individualized and diversified telecom value-added services.

Other derived services

Pre-payment

Post-payment

Intellectual public phone

IVR

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Service types

Enterprise virtual telephone exchange

Virtual call center

Enterprise polyphonic ringtone

Network fax

Online callback

Telephone conference

Video conference

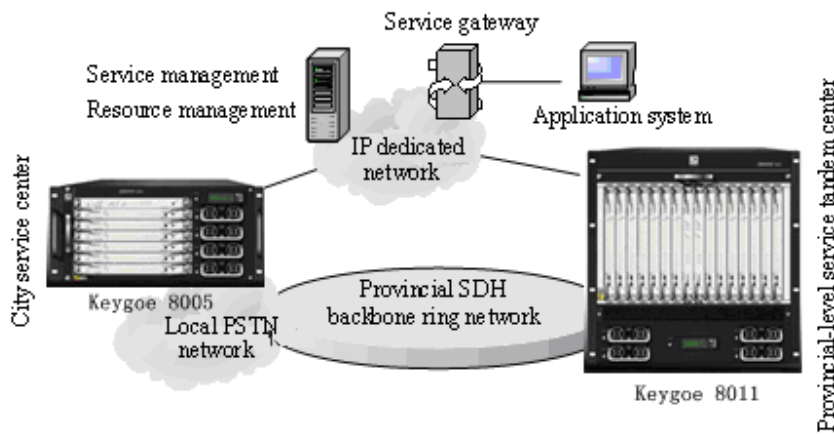
Telephone recording

Video monitoring

Platform structure

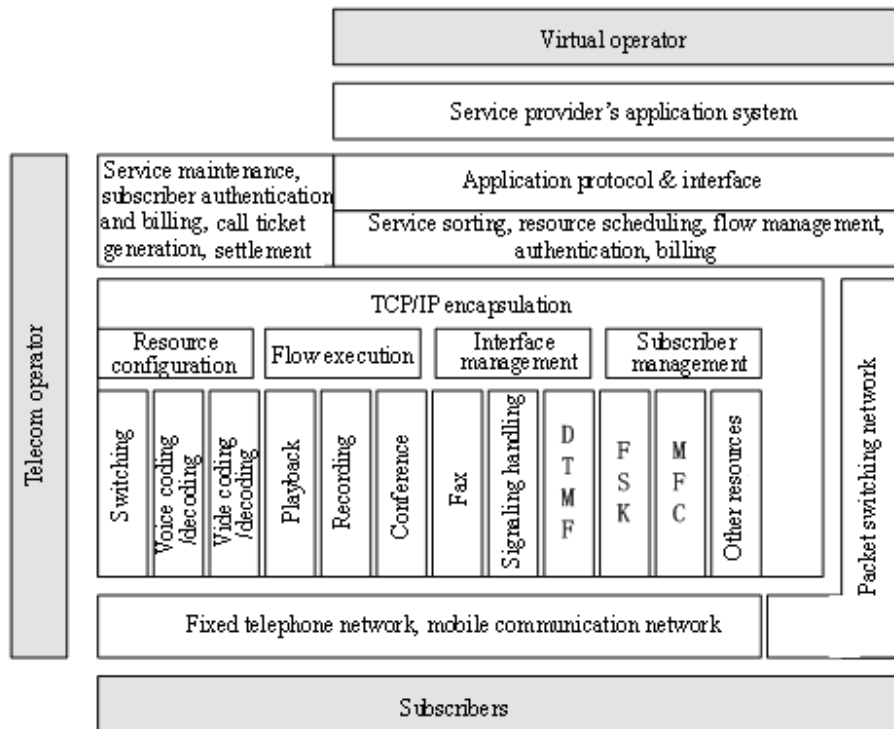


Keygoe 8011 is placed in a central city where a larger service volume exist as the provincial-level service tandem center to complete the service access from center cities with high concurrency; and Keygoe 8005 is placed in each cities to complete the local service access through local PSTN network. The service system located in the central city carries out service control over all platforms including its own local platform of the whole province through IP dedicated network to realize the uniformed service operation of the whole province together with the realization of load balance.



Building industrial chain

With Keygoe 8000, it is possible to build a hierarchical industrial chain structure, where, fundamental telecom operators provide media resources to virtual telecom operators relying on fundamental network together with control over media resources through related management interfaces, and virtual telecom operators develop rich and colorful value added services by calling media resources through flow builder.



Donjin Keygoe 8000 series multimedia switch application in software exchange

The next-generation network (NGN) realizes the split of service from call control and the split of call control from carrying with its open and hierarchical system structure, which is able to provide users with powerful value-added service, and the media server comprising one part of NGN is one of the critical and the most important service components.

Keygoe 8000 series multimedia switch is a kind of multimedia processing unit based on high IP integration, which can be used dedicatedly for NGN and telecom-level media server.

Service application



DTMF number receiving, outbound, network notification, fax signal detection, voice dial, multi-party conference, voice mail, card number service, call center, automatic station service, voice portal, video service, IVR service and IP Centrex

Main performance parameter

System capacity: A single machine supports maximum 4000 full duplex media processing ports

Protocol support:

SIP(RFC 3261), Voice XML 2.0, RFC 4240(Netann), media service markup language (MSML) IETF standard draft, MGCP, PacketCable and H.248

Main function

Signal and playback, DTMF signal detection and generation, conference, recording and playback and media stream connection

Video, fax (fax signal identification and notification, T.38), tone (TTS, ASR)

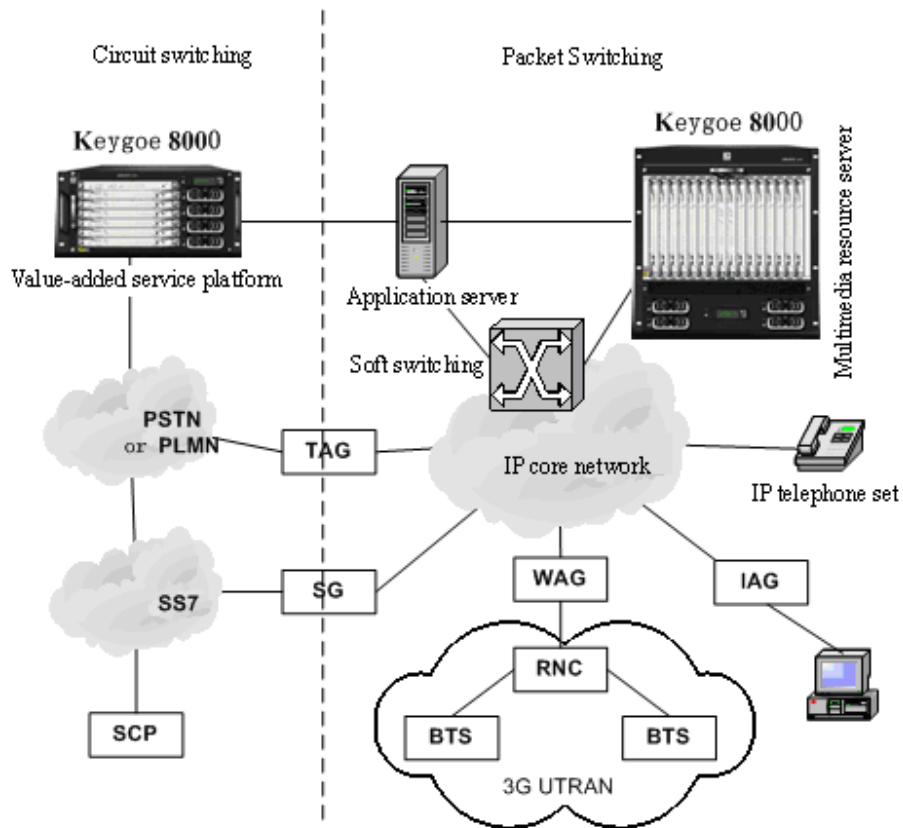
Audio and video coding

G.711 G.723.1A G.726 G.729AB AMR EVRC iLBC
H.263 MPEG-4

Network interface

Two 100/1000 BaseT kilomega Ethernet interfaces (RJ45)

Keygoe 8000 Series' location in NGN as a media server



Keygoe 8000 series not only is used as a stand-alone multimedia resource server but also can be integrated with application server to build multifunctional and concentrated and fully comprehensive value-added service platform which can integrate heterogeneous access networks and devices.

Functional structure of Keygoe 8000 multimedia resource server

It can provide basic and enhanced media processing functions, such as dual-tone multifrequency detection, voice notification/stream audio, conference, fax, voice memory/return visit, volume control, IVR, ASR, video as well as resource maintenance and management



Operation monitoring and maintenance configuration	Enterprise direct line, online callback, mobile telephone exchange, virtual call center, virtual telephone exchange, enterprise polyphonic ringtone, telephone conference, video conference, SMS												Call agent interface	
	API													
	Media and media conversion resource													
	Voice processing	Video processing	I V R	Signaling processing	Conference	BMG	Ring back tone	W E B	Fax	Mail	W A P	M M S		Other resources
	Carrying interface and transmission coding													
	Fixed telephone network				Mobile communication network				Packet switching network					