SBC Product Introduce

Foreword

- This course is mainly:
  - Describe what is SBC
  - Explain why we need SBC in VoIP network
  - Describe SBC common function
  - Explain Dinstar SBC product function and key feature
  - Introduce Dinstar SBC application scenario

Course Objective

Through this course you will be able to

Understand and know what is SBC

Be familiar with SBC main function

Know Dinstar SBC product and application

Contents

About SBC

01

DINSTAR

What is SBC

- Session Border Controller

Session

- The service is transmitted after a link is established through negotiation. Such as: phone calls, video calls, telephone/video conferencing, video monitor etc.
- They are non-instant business
- It is different from non-instant business whatsapp chat, Internet, download etc

Application Scenarios

Border

Deployed at the network edge

Networking Position

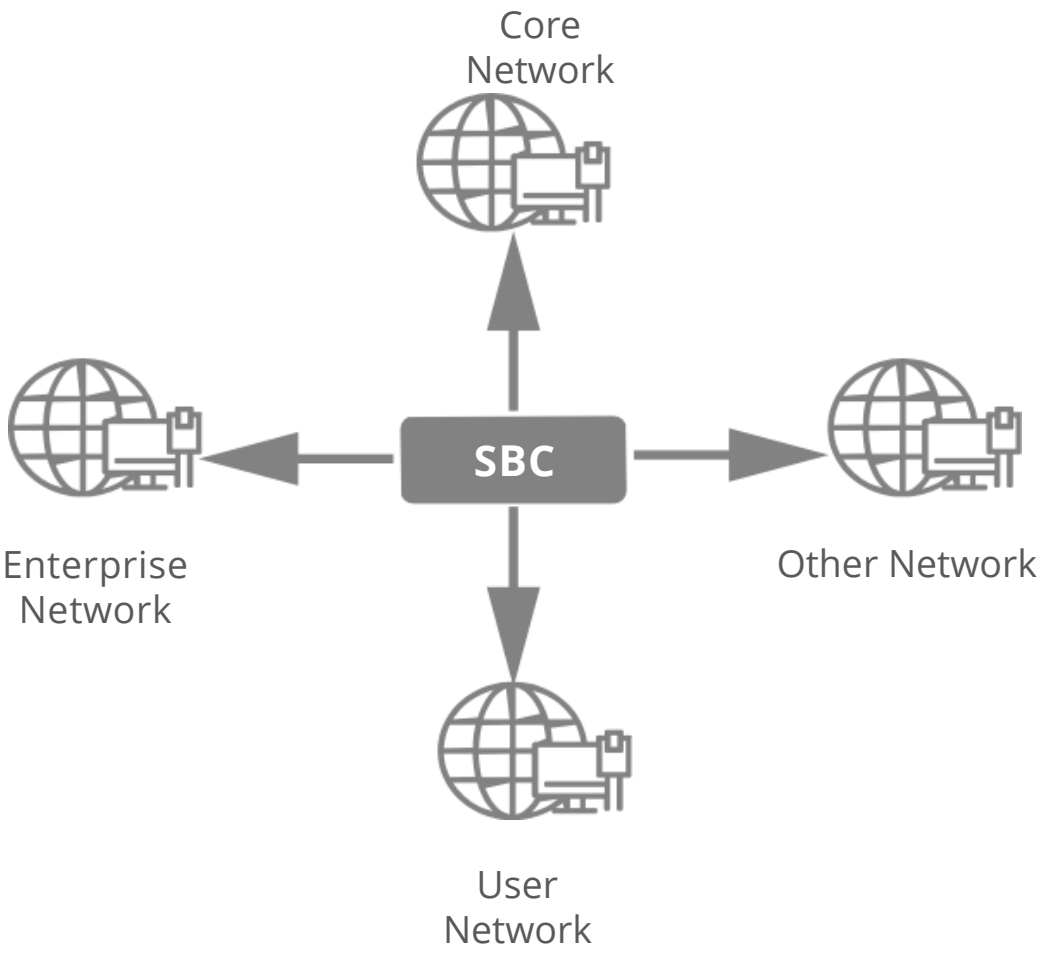
Controller

- Voice and video control:
- Security, access, routing, policy, signaling, media, QoS...

Function

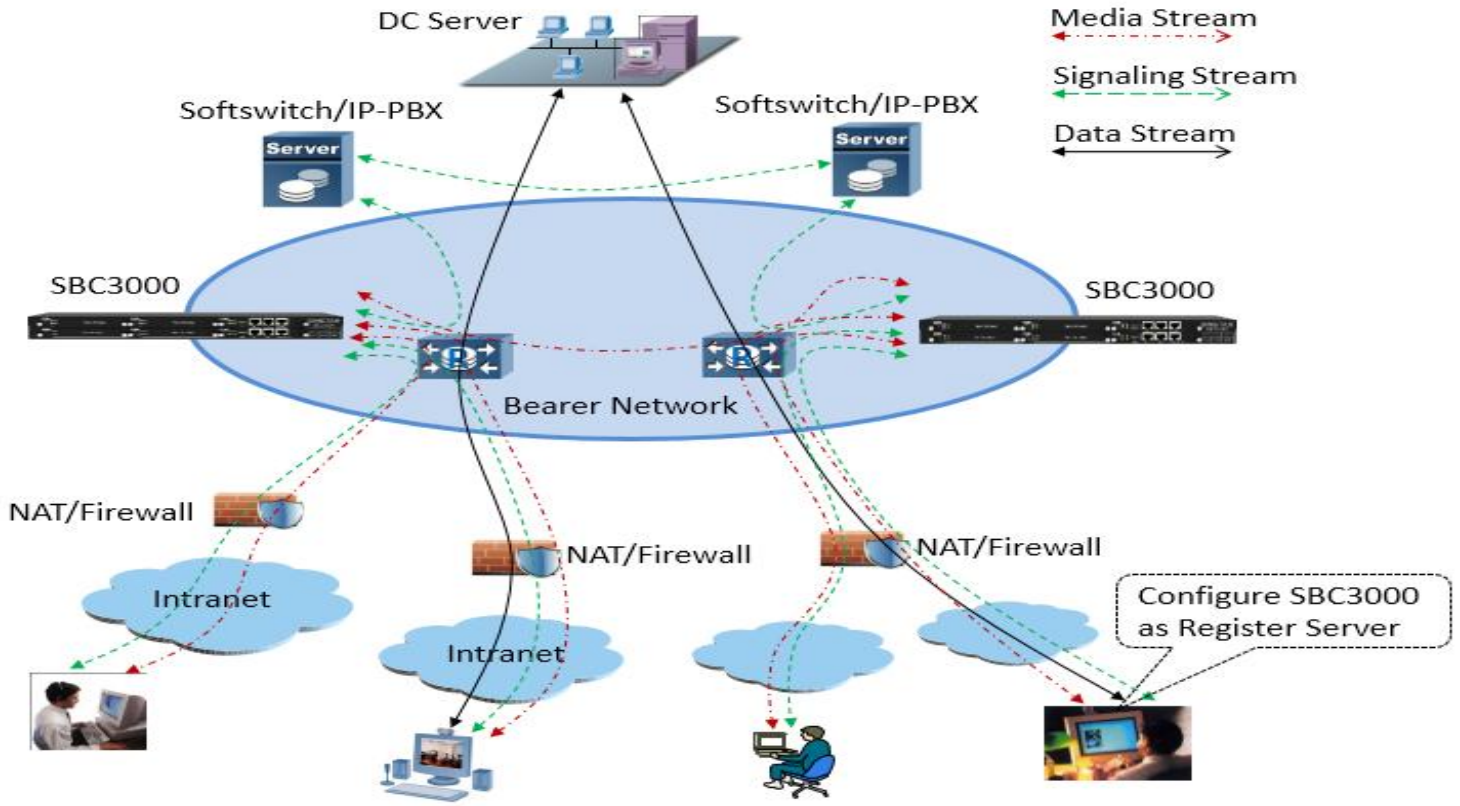
SBC Position

- SBC Position in Network
  - SBC, as an interconnecting device at the edge of the carrier's VoIP network, can realize communication and policy control.
  - SBC has gradually become a standard configuration product for NGN and IMS networks



SBC Position (continue)

- With the rapid development of unified communication and All-IP network, more and more enterprises begin to construct their own IP-based communication system by using IP-PBX and software to improve internal communication efficiency.
- SBC is deployed in network as shown in the figure.



Why need SBC

- To ensure the quality of voice and video in the network, we will face the following problem:

Safety and Reliability

QoS Intelligent Control

SBC

NAT Topology hiding

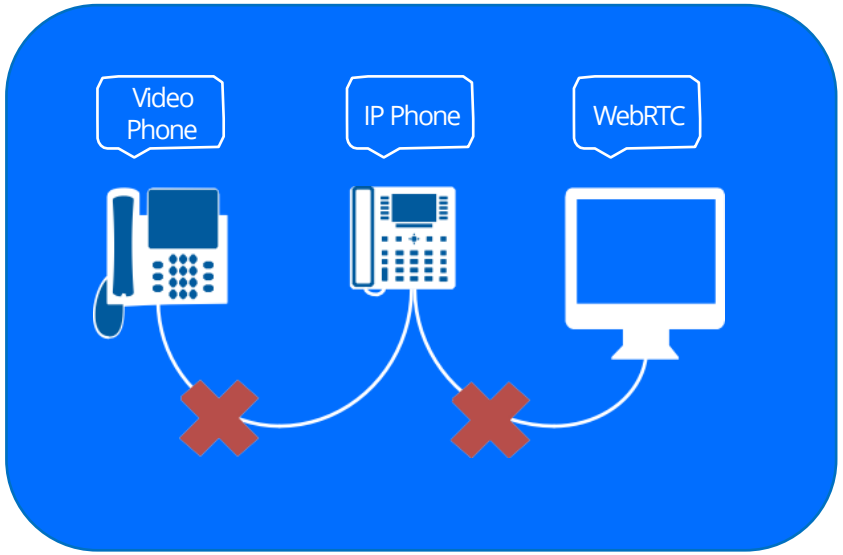
NAT

SIP interoperability

Interoperability

- Incompatibility Problem

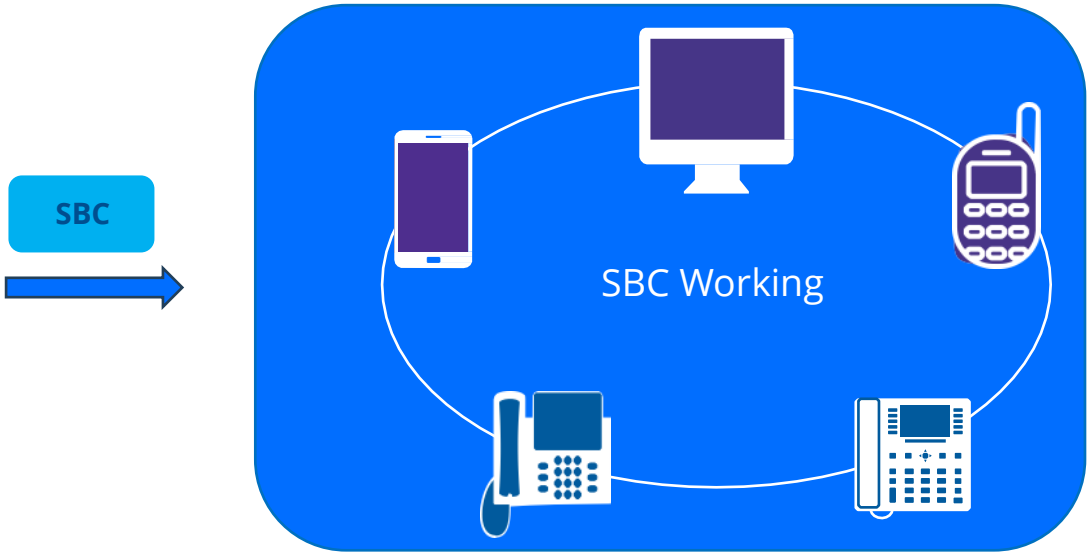
Different manufacturer equipment protocol is the same but incompatible



Q：Why cannot devices with the same protocol be connected successfully?

A：SIP is open protocol and supports user-defined parameters. The interface will not work if private parameters are wrong.

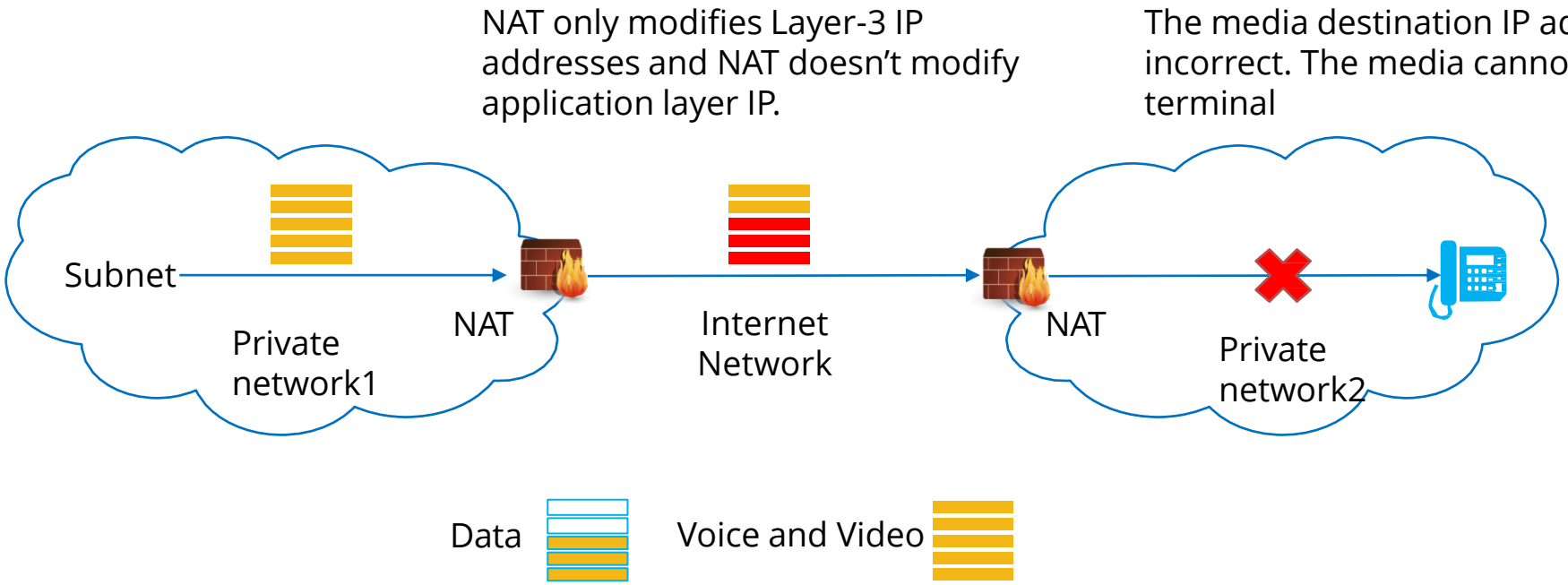
Multiple systems in the network are incompatible with each other



SBC supports programming and regular expressions and can be modified in any way you can think of such as adding, modifying, deleting, storing, batch execution, etc.

NAT

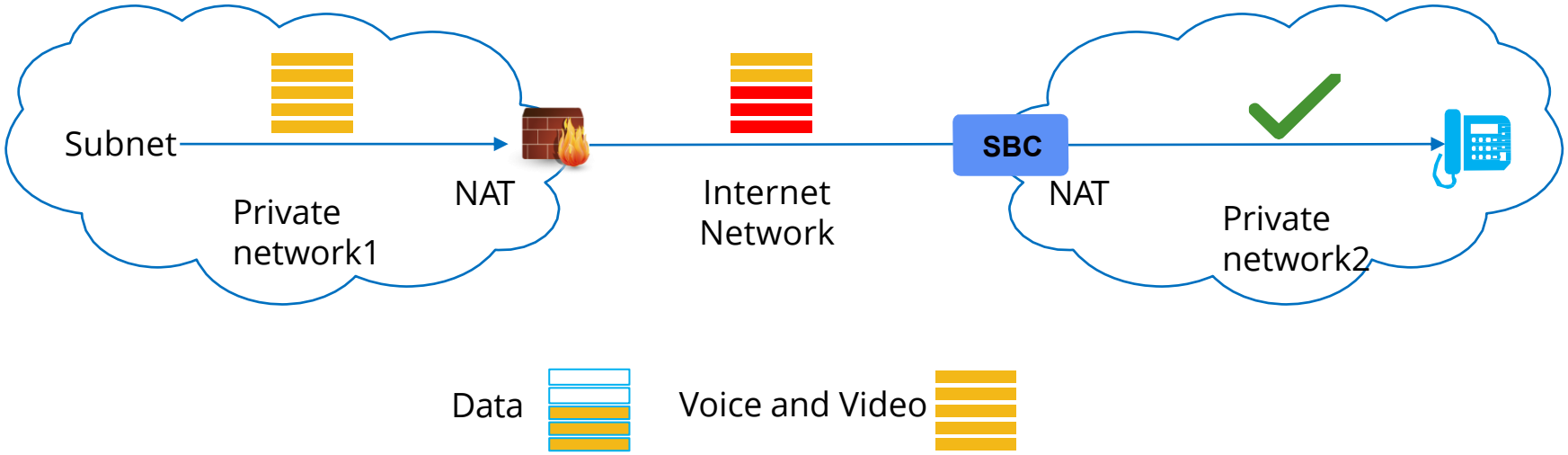
- NAT sometime will cause media IP abnormal



NAT (continue)

- SBC is working under NAT

- SBC can automatically identify NAT and change the IP address of the SDP address.
- IP address can be correctly obtained and RTP can reach the terminal.

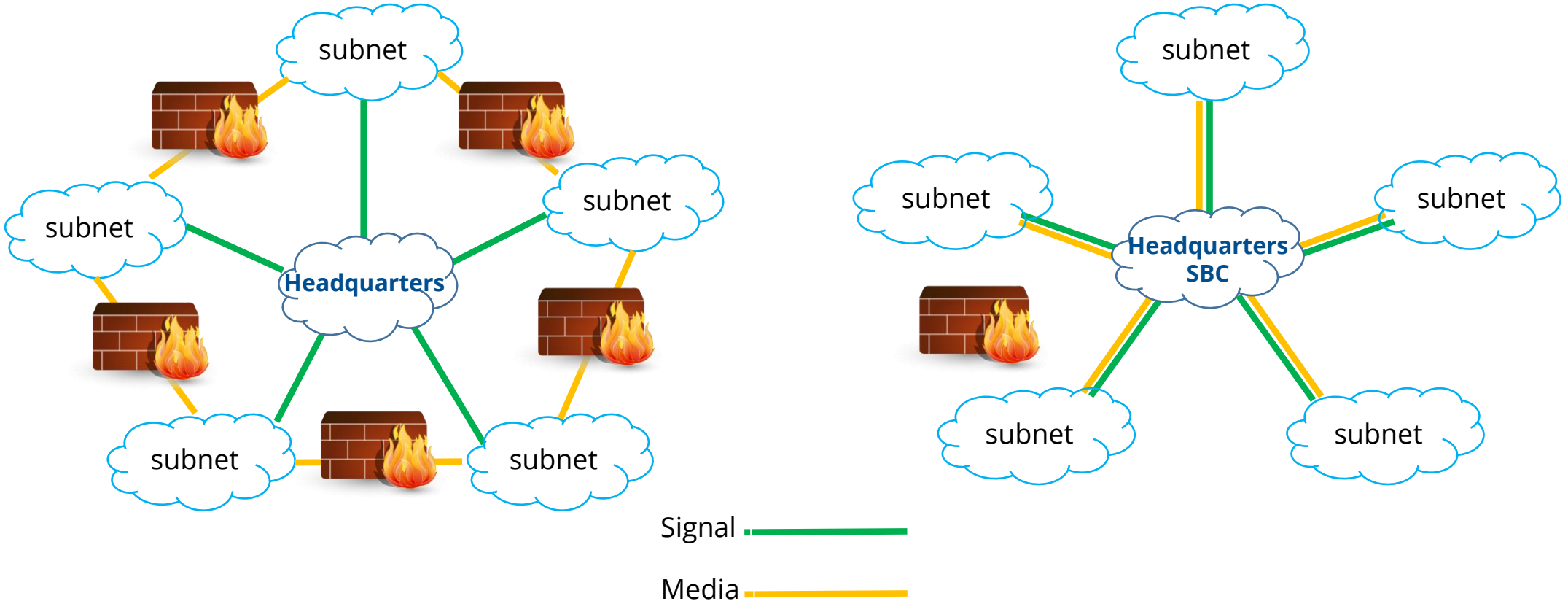


Q: Why is the voice and video abnormal for VoIP but data is normal by NAT?

A: The data layer hasn't any more IP information, but the voice and video layer still has IP information after NAT

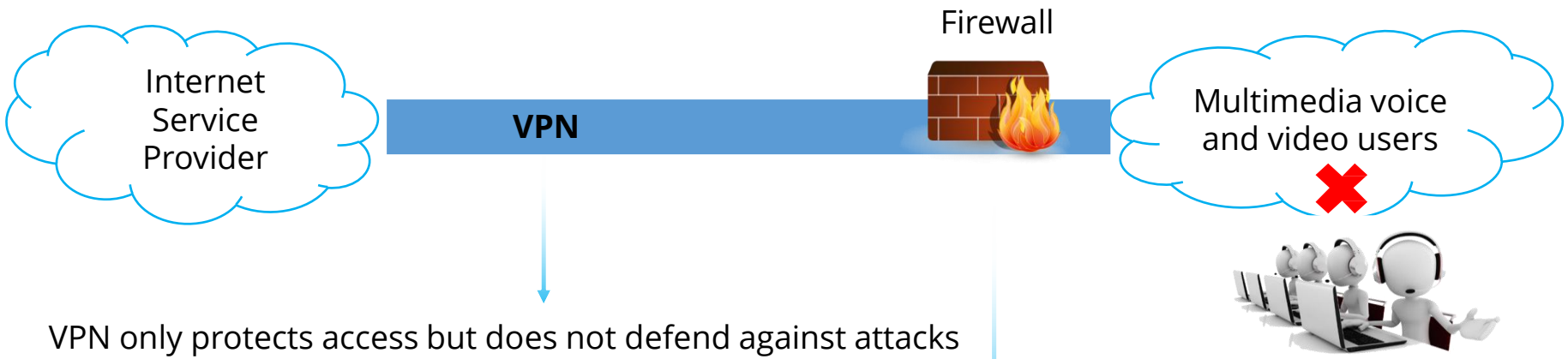
NAT (continue)

- In multi-NAT scenarios, the SBC is used as the media agent.
- The SBC proxy enables media to bypass NAT



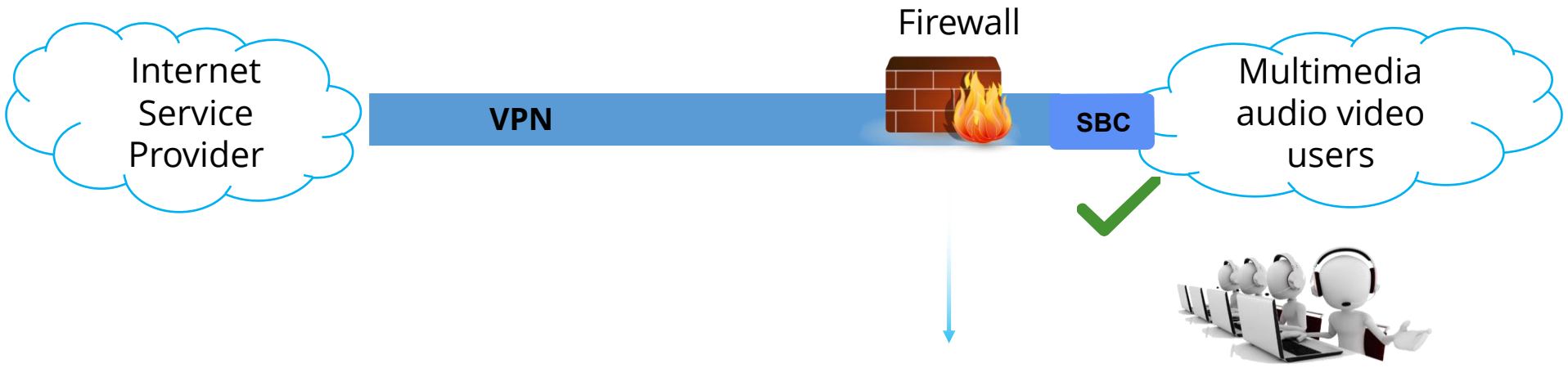
Security

- Various attacks emerge with all IP.



Security (continue)

- SBC ensure system security

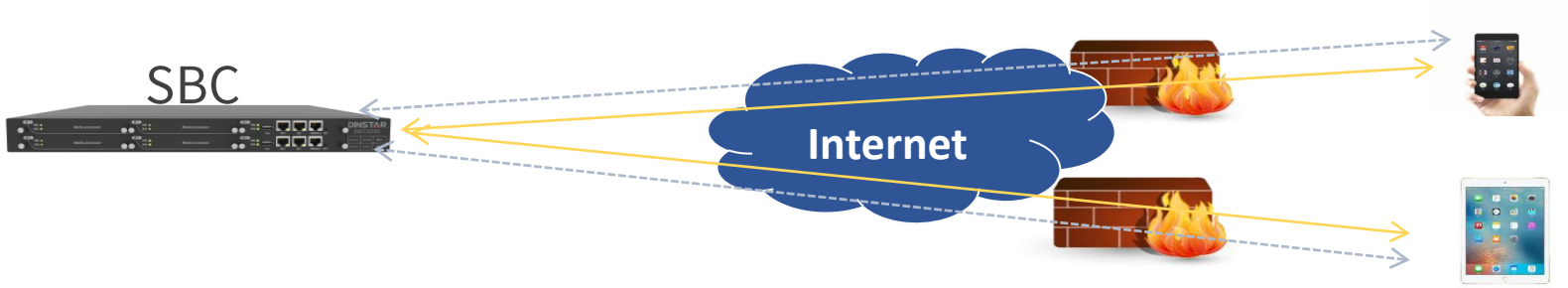


Policy:

- Voice and video intelligent attack defense
- Packet identification
- Behavior analysis
- Traffic control

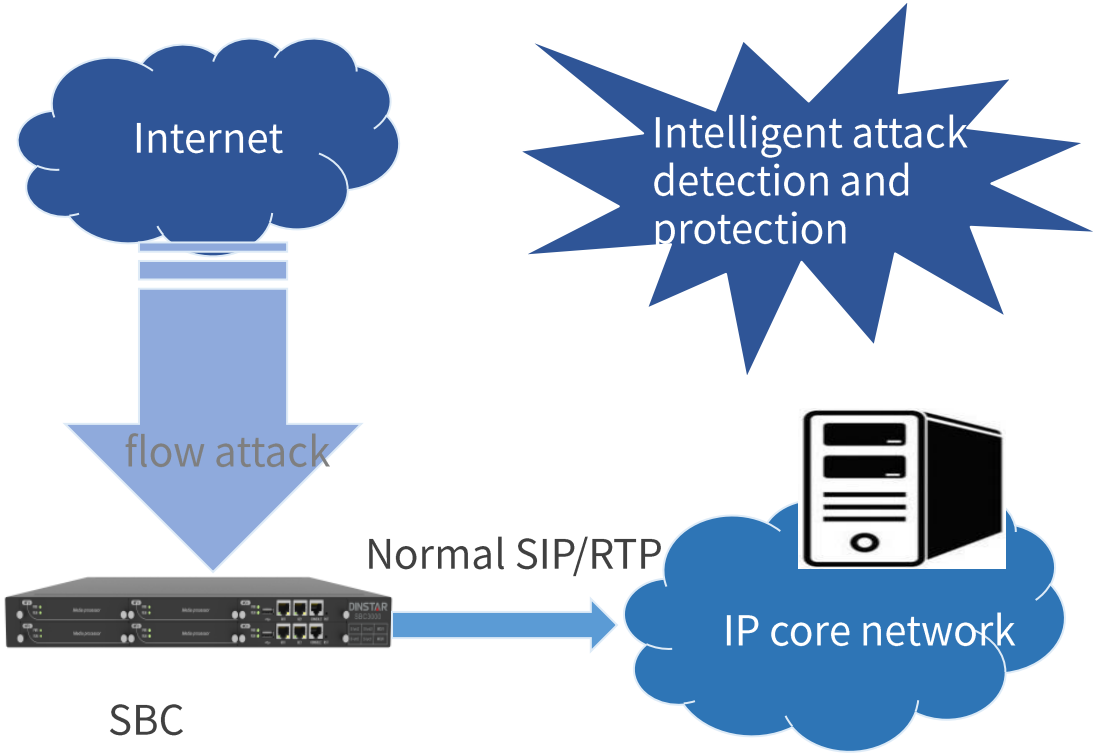
Dinstar SBC-NAT Traversal

- Topology Hiding
  - SBC is deployed to isolate the core server from the external network to realize topology hiding.
- Signaling Traversal
  - Packets pass through the public network and connect to services on the private network
  - Users can correctly modify the IP address information in SIP signaling through the SBC to implement NAT traversal for SIP signaling.
- Media Traversal
  - Intelligent identification of NAT environment
  - Voice media streams can be recognized and processed normally between public and private networks.



Dinstar SBC-Anti-attacking

- Problem & Solution



IP voice communication faces problems:

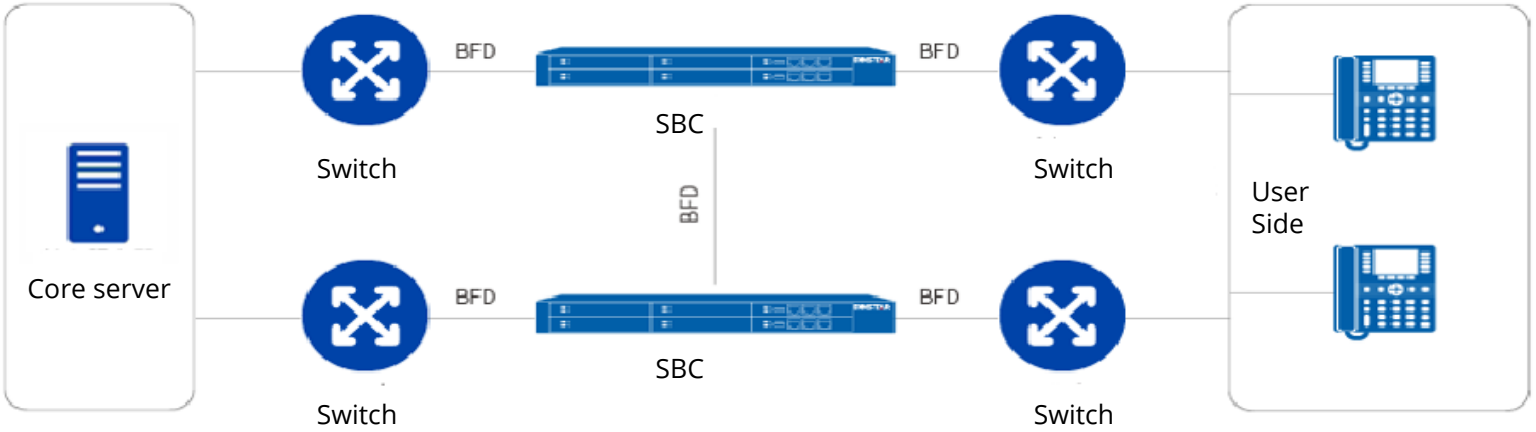
- Denial-of-service attacks (DoS/DDoS)
- Attacks against media streams
- TCP/TLS connection not available
- Resource overload processing capacity

solution:

- ✓ The SBC is deployed at the network edge to provide a voice firewall and defense against DOS/DDOS attacks.
- ✓ The SBC set security policies, intelligent traffic identification, traffic monitoring, and malformed packet detection to ensure the security of enterprise communications services.

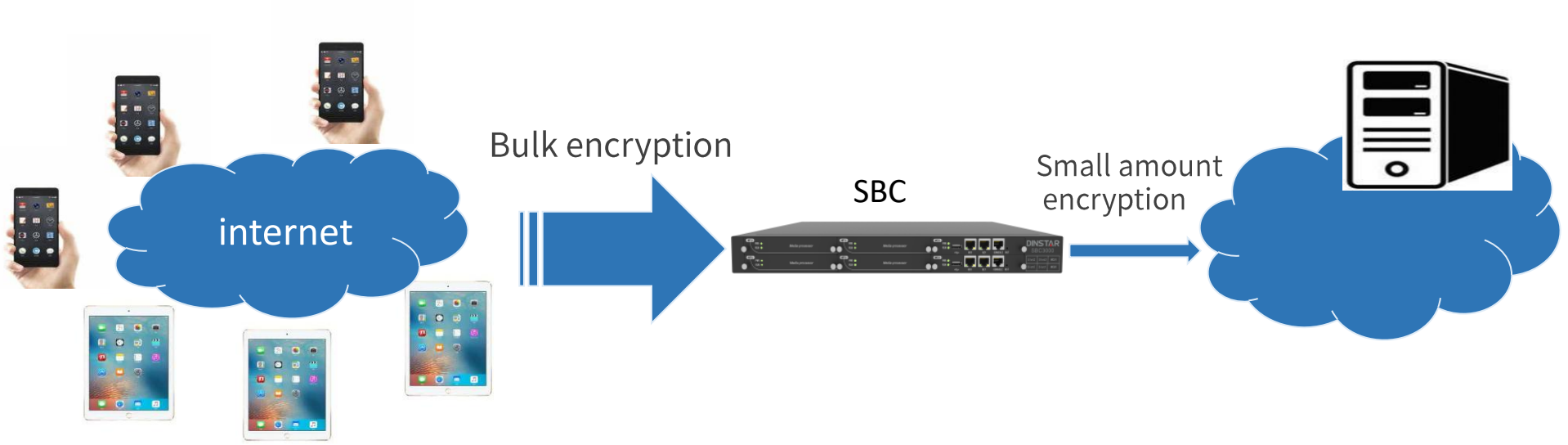
Dinstar SBC-High Availability

- Hot Standby
  - Adopt BFD heartbeat detection technology
  - Detection time 30ms-100ms and high sensitivity
  - Sharing the same service IP address /MAC and convenient networking connection
  - Real-time synchronization of configuration data and registration information as well call information
  - The active/standby switchover does not affect new call connections
  - The call is not interrupted during the active/standby device switchover and the customer is unaware of the switchover in milliseconds



Dinstar SBC-Encryption Communication

- TLS/SRTP encryption and decryption will consume a lot of system processing capacity
- SBC of Encryption and decryption can make the core network more focused on business processing and improve system stability and reliability.



Dinstar SBC-Transcoding

- Feature for Transcoding
  - SBC can be converted for different protocols such as UDP/TCP/TLS.
  - Provide webRTC2sip gateway service to solve the interoperability problem between WebRTC and SIP.
  - Voice transcoding is typical application such as g. 711 / g. 729 / iLBC/Opus/AMR.
  - SBC can easily achieve compatible between different networks devices
  - It is easily to achieve interoperability between IPv4 and IPv6 network.

Dinstar SBC- Intelligent Routing

- Routing
  - The SBC has flexible call routing policies
  - It can schedule routes based on policies such as calling and called numbers, SIP URL, time ranges, trunk sources and types etc.
  - The SBC supports call blacklist and whitelist restriction, ACL control based on the IP address and port of the SIP request source.

Contents

SBC Introduce

02

2.1 Dinstar SBC Overview

2.2 SBC Serial Introduce

DINSTAR

Dinstar SBC Overview

- Key Feature

Security

SIP Firewall
SIP TLS/SRTP
Anti DDoS Attack
Access Control
Topology Hiding
Endpoint Authentication
SIP Intrusion Prevention
SIP Malformed Packet Protection

Interoperability

SIP Header Manipulation
SIP Message Manipulation
B2BUA
IPv4 – IPv6
Transcoding

Session Control

Traffic Control
Registration / Call Rate Limiting
Flexible Routing
QoS

Resiliency

High Availability
SIP Trunk Load Balancing
Alternative Routing

WebRTC

Microsoft Teams & Zoom Integration

SBC300

- Enterprise SBC

1000
SIP Registrations

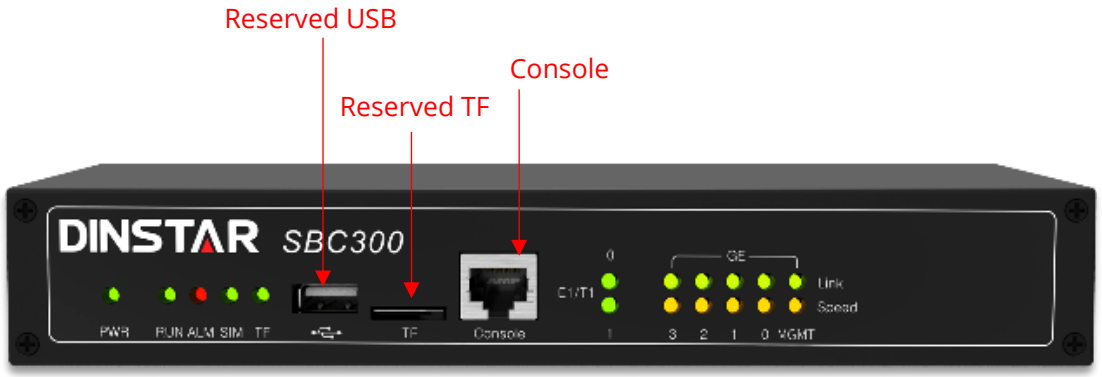
5 to 50
Concurrent Calls

50
Transcoding Sessions

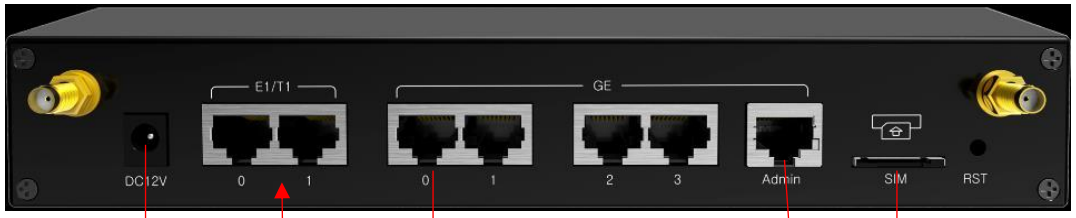
NAT
NAT Traversal

WebRTC

SIP Firewall



Front View

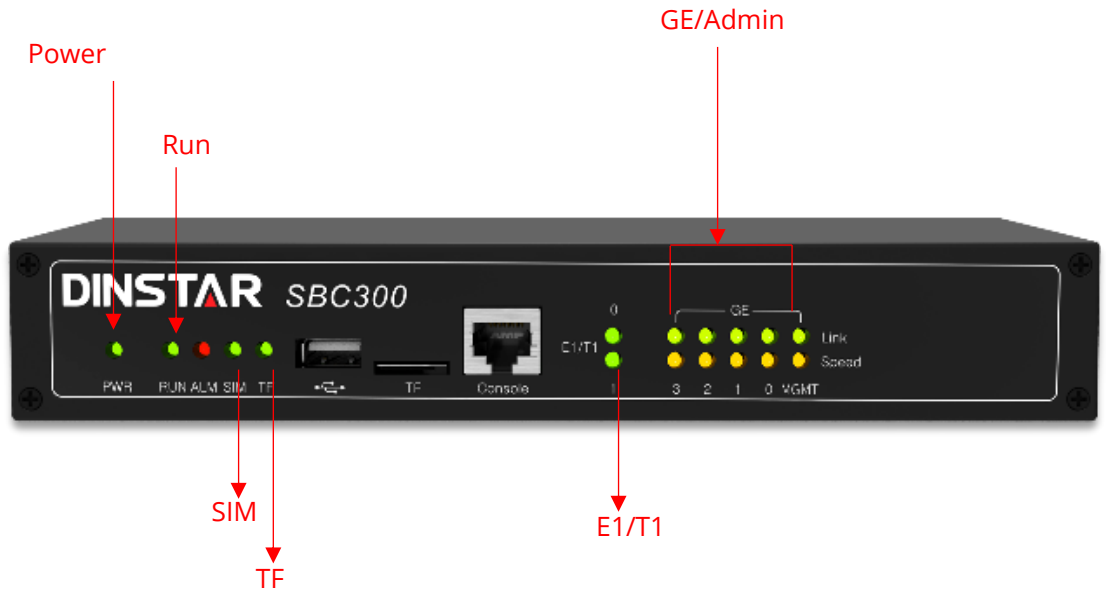


Back View

SBC300

- Desciption of LED Indicators

Indicator	Definition	Status	Description
PWR	Power Indicator	Off	There is no power supply or power supply is abnormal
		On	The device is powered on
RUN	Running Indicator	Slow Flashing（1s）	The device is initialized successfully and is running normally
		Fast flash for two times, with interval of 1s	Image file is upgraded successfully
		Fast Flashing（200ms）	Image file fails to be upgraded
		Other Statuses	The device is in abnormal running
GE/Admin	Link indicator (Green)	Fast Flashing	The network port is connected normally
		Off	The network port is not connected, or is connected abnormally
	Speed Indicator (Yellow)	On	Network port works at 1000Mbps
		Off	Network port works 10/100Mbps
E1/T1	E1/T1 Status Indicator	Reserved	Reserved
SIM	SIM Card Indicator	Reserved	Reserved
TF	TF Card Indicator	Reserved	Reserved



SBC1000

- Enterprise SBC

5,000
SIP Registrations

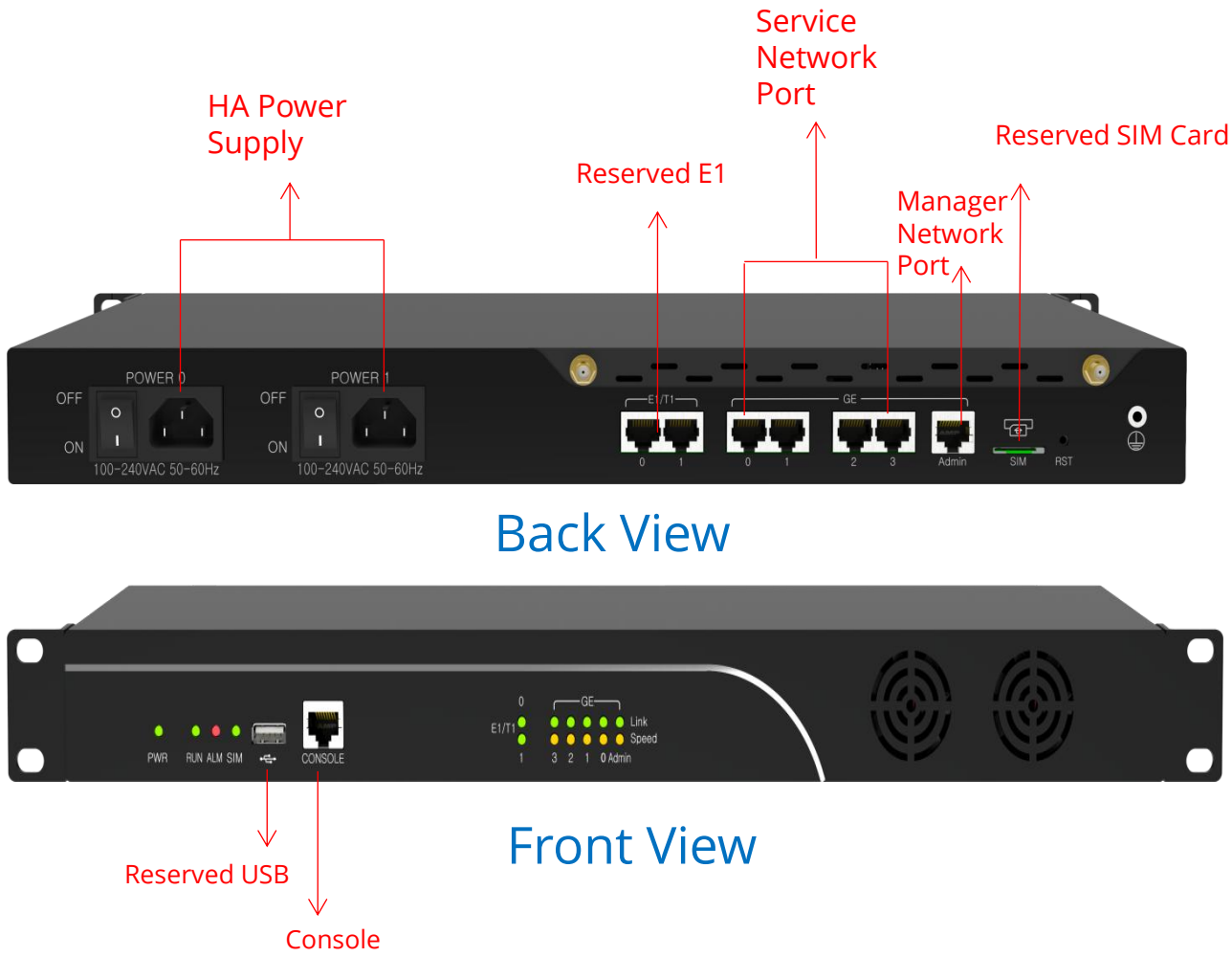
50 to 500
Concurrent Calls

200
Transcoding Sessions

SIP Firewall

NAT Traversal

WebRTC



SBC1000

DINSTAR

- Desciption of LED Indicators

Indicator	Definition	Status	Description
PWR	Power Indicator	Off	There is no power supply or power supply is abnormal
		On	The device is powered on
RUN	Running Indicator	Slow Flashing（1s）	The device is initialized successfully and is running normally
		Fast flash for two times, with interval of 1s	Image file is upgraded successfully
		Fast Flashing (200ms)	Image file fails to be upgraded
		Other Statuses	The device is in abnormal running
GE/Admin	Link indicator (Green)	Fast Flashing	The network port is connected normally
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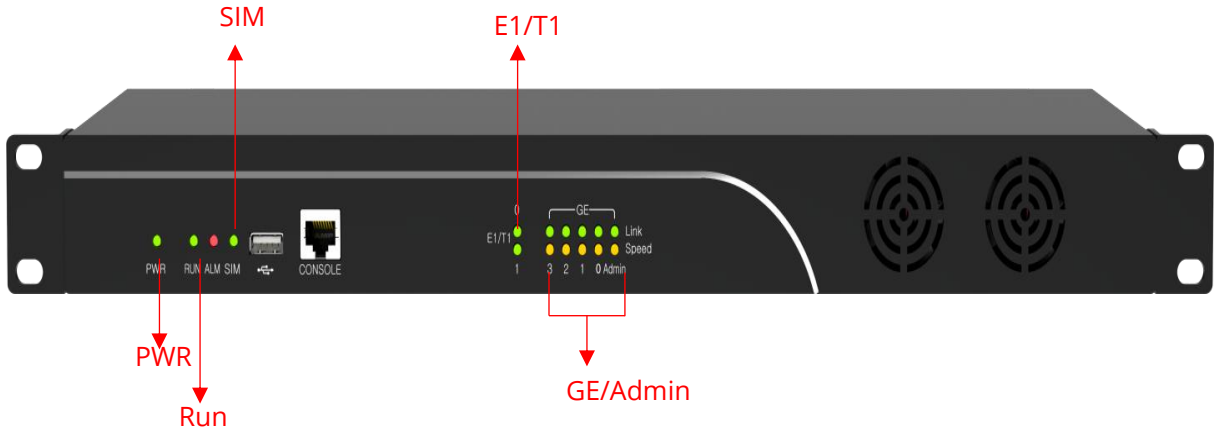
E1/T1	E1/T1 Status Indicator	Reserved	Reserved
SIM	SIM Card Indicator	Reserved	Reserved



SBC3000

- Carrier SBC

10,000
SIP Registrations

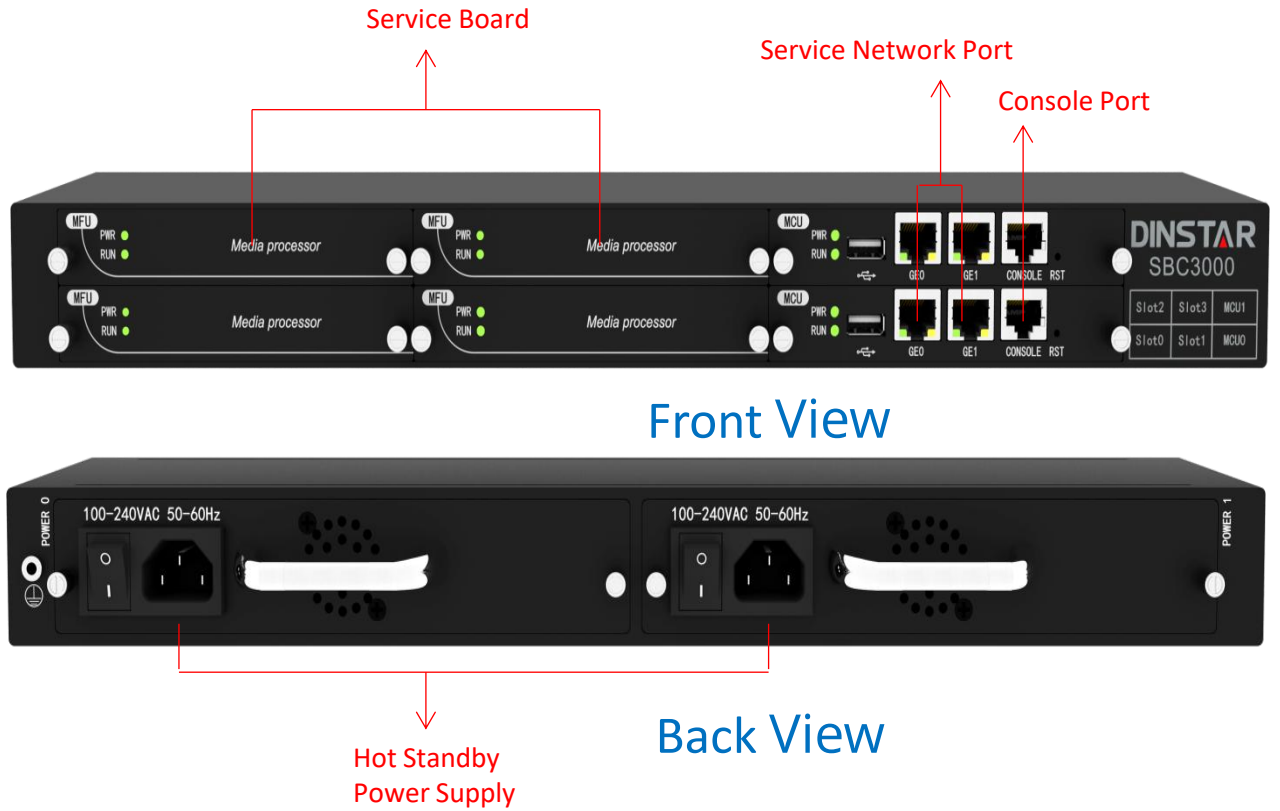
500 to 2,000
Concurrent Calls

1,200
Transcoding Sessions

SIP Firewall

NAT Traversal

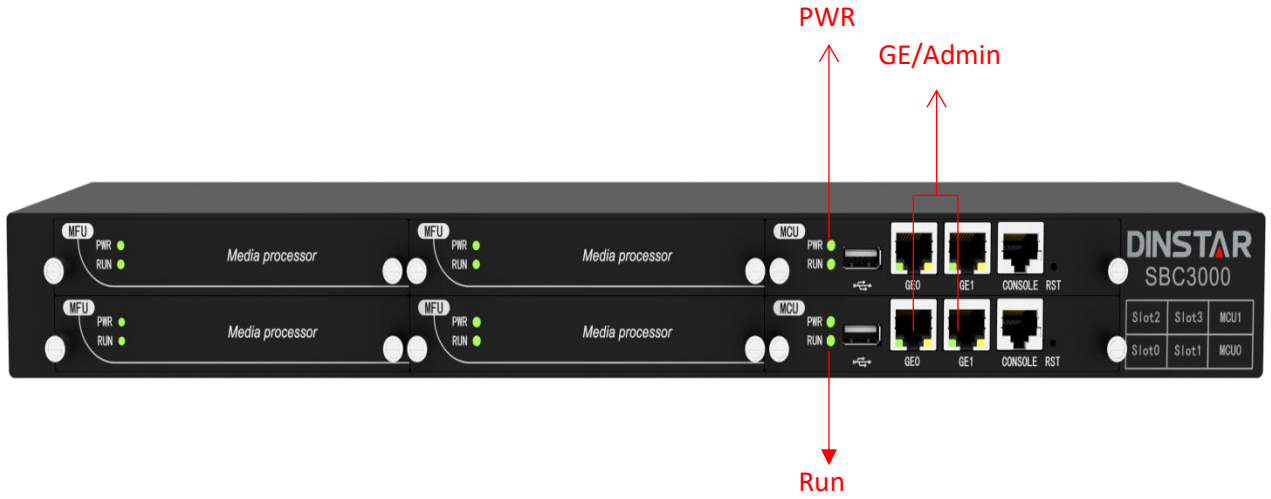
WebRTC



SBC3000

- Desciption of LED Indicators

Indicator	Definition	Status	Description
PWR	Power Indicator	Off	There is no power supply or power supply is abnormal
		On	The device is powered on
RUN	Running Indicator	Slow Flashing (1s)	The device is initialized successfully and is running normally
		Fast flash for two times, with interval of 1s	Image(mirror) file is upgraded successfully
		Fast Flashing (200ms)	Image(mirror) file fails to be upgraded
		Other Statuses	The device is in abnormal running
GE (0-3) /Admin	Link indicator (Green)	Fast Flashing	The network port is connected normally
		Off	The network port is not connected, or is connected abnormally
	Speed Indicator (Yellow)	On	Network port works at 1000Mbps
		Off	Network port works at 10/100Mbps



SBC3000Pro

DINSTAR

- Carrier SBC

20,000
SIP Registrations

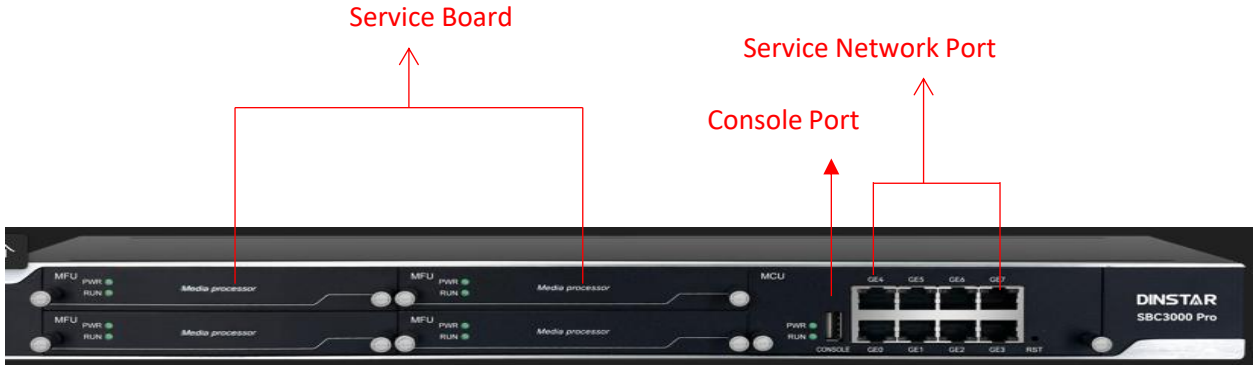
5000 Concurrent
Calls

1,500
Transcoding Sessions

SIP Firewall

NAT Traversal

WebRTC



Front View

Hot Standby
Power Supply

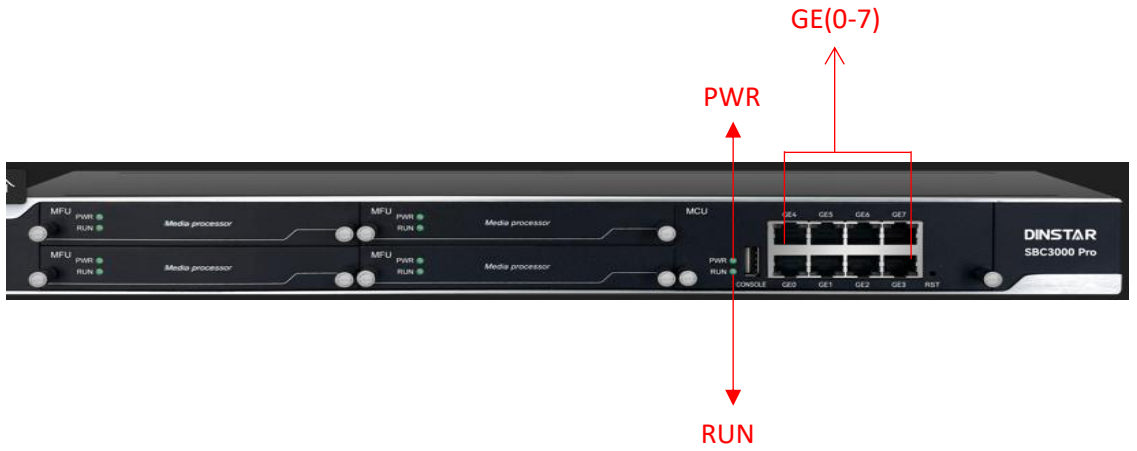
Back View

SBC3000Pro

DINSTAR

- Desciption of LED Indicators

Indicator	Definition	Status	Description
PWR	Power Indicator	Off	There is no power supply or power supply is abnormal
		On	The device is powered on
RUN	Running Indicator	Slow Flashing (1s)	The device is initialized successfully and is running normally
		Fast flash for two times, with interval of 1s	Image(mirror) file is upgraded successfully
		Fast Flashing (200ms)	Image(mirror) file fails to be upgraded
		Other Statuses	The device is in abnormal running
GE (0-7)	Link indicator (Green)	Fast Flashing	Message interaction is available.
		On	The network port is connected normally
		Off	The network port is not connected, or is connected abnormally
	Speed Indicator (Yellow)	On	Network port works at 1000Mbps
		Off	Network port works at 10/100Mbps



SBC8000

- Software SBC for your own hardware or virtual server

100,000
SIP Registrations

50,000
Concurrent Calls

5,000
Transcoding Sessions

1,024
Call Routing

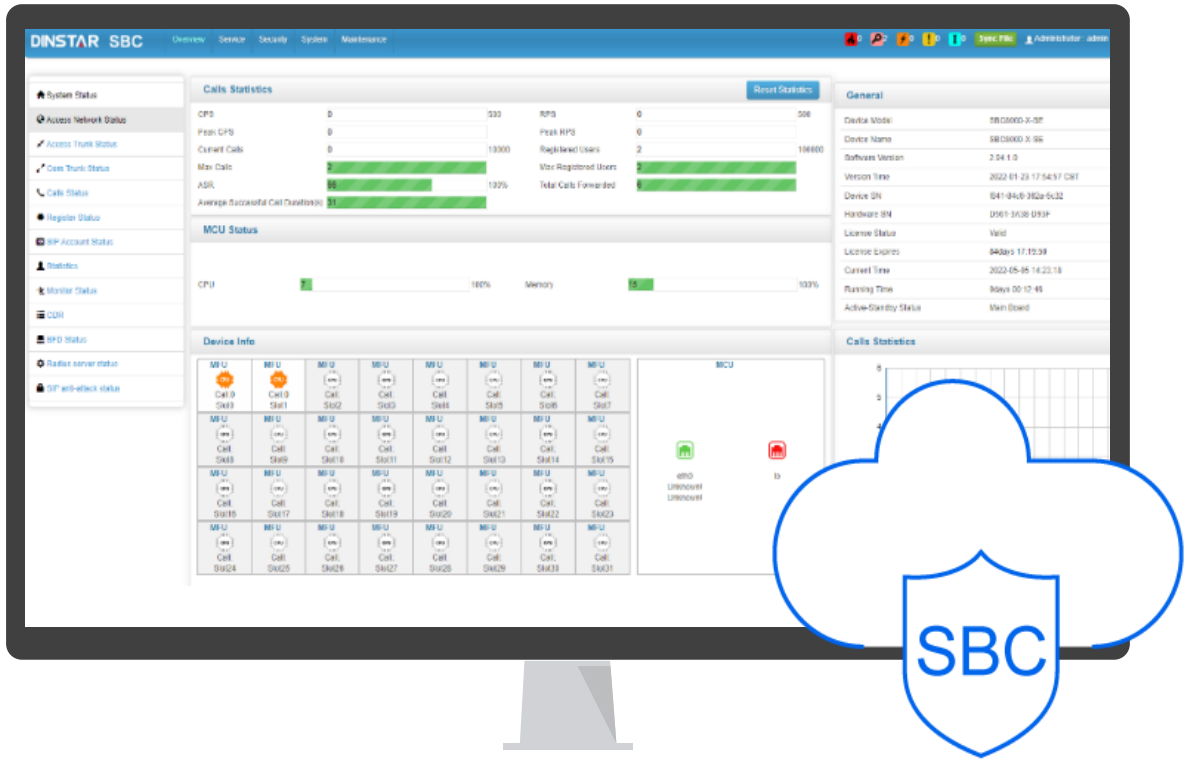
WebRTC

IPv6/IPv4

High
Availability

NAT Traversal

SIP Firewall



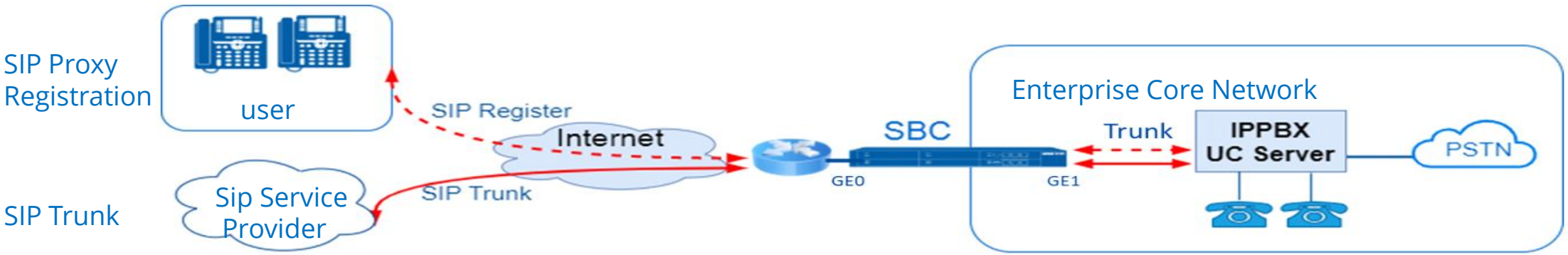
Contents

SBC Application Scenarios

03

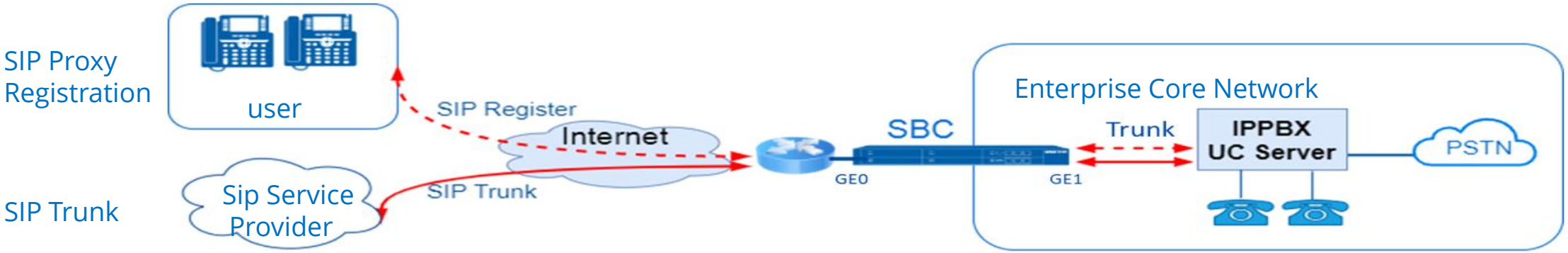
SBC Application Scenarios (1)

- SIP Proxy Register
  - SBC function is as the core network border proxy server (B2BUA).
  - Users register with the SBC’ s listening IP address on the access network by using clients such as IP phones/ softphones /IAD.
  - SBC transfers the registration information to the core network server.
  - Note: Accounts are provided by the core network server and SBC is registered by back-to-back proxy



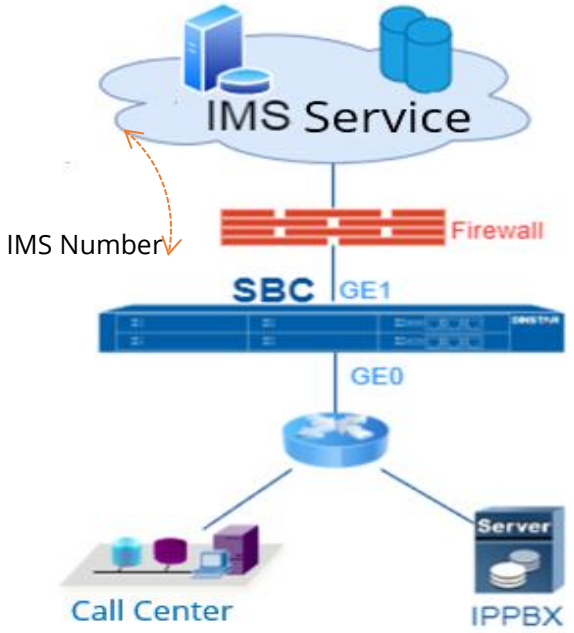
SBC Application Scenarios (2)

- SIP Trunk
  - The SBC connect a SIP trunk to an external SIP service provider through an access trunk.
  - The SBC connects to the Intranet server through SIP trunk on the LAN and core trunk is configured on the SBC.
- **Key Point:**
  - Sip Proxy registration and SIP Trunk interconnection are typical networking applications of SBC.



SBC Application Scenarios (3)

- SBC Register To IMS
  - SBC supports adding SIP accounts to register with the IMS core network as outgoing landing lines (by adding access trunk and binding IMS account registration).
  - Call center system such as the IPPBX create SIP trunk to SBC
  - Call center sends an outbound call to the SBC and SBC selects IMS account to make an outbound call.
- **Key Points:**
  - A maximum of 3000 IMS numbers can be registered
  - Multiple IMS lines can be accessed
  - Compatible with IMS signaling special fields
  - Manage outbound call services in a centralized manner



Abbreviation

- TLS： Transport Layer Security
- SRTP: Secure Real-time Transport Protocol
- DDoS: Distributed Denial of Service
- QoS: Quality of Service
- HA: High Availability
- B2BUA: Back-to-Back User Agent

DINSTAR

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