

## What is Session Border Controller (SBC)

A session border controller (SBC) is a network element deployed to protect SIP based voice over Internet Protocol (VoIP) networks.

SBC has become the de-facto standard for telephony and multimedia services of NGN / IMS.



### Session

A communication between two parties. This would be a call's signaling message, audio, video, or other data along with information of call statistics and quality.



Application

### Border

A point of demarcation between one part of a network and another.



Topology

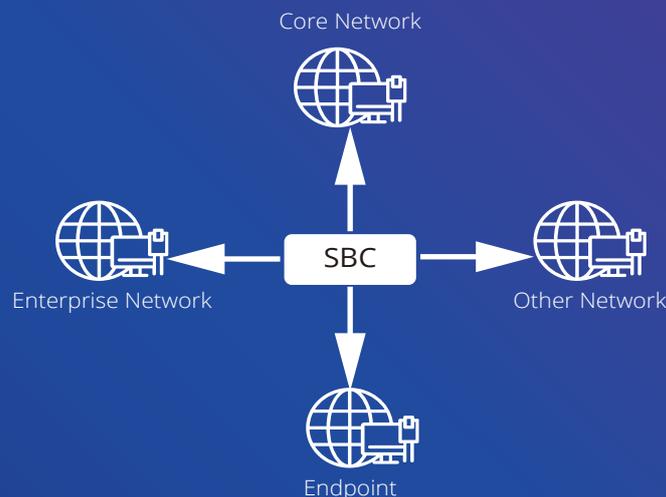
### Controller

The influence that session border controllers have on the data streams that comprise sessions like security, measurement, access control, routing, strategy, signaling, media, QoS and data conversion facilities for the calls they control.



Function

## DINSTAR Session Border Controllers (SBCs) Protect Your VoIP Environment

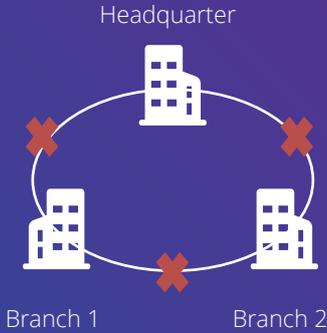


# Why you need an SBC ?

## Challenges of IP Telephony

### Connectivity Issues

No voice / one-way voice caused by NAT between different sub-networks.



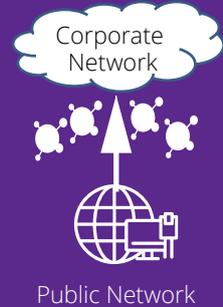
### Compatibility Issues

Interoperability between SIP products of different vendors is unfortunately not always guaranteed.



### Security Issues

Intrusion of services, eavesdropping, denial of service attacks, data interceptions, toll frauds, SIP malformed packets would cause big losses on you.



## Connectivity Issues

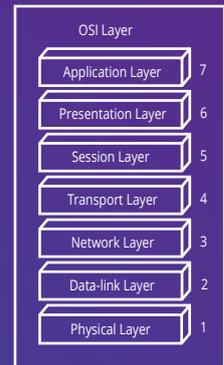
NAT modify private IP to external IP but can't modify application layer IP.

Destination IP address of media is wrong, therefore can't communicate with endpoints.



Q: Why is NAT normal, but audio and video are abnormal?  
A: There is no IP address in application layer of data, but audio and video packets carry IP address in upper layer.

Data  Voice Video 



## NAT Transversal

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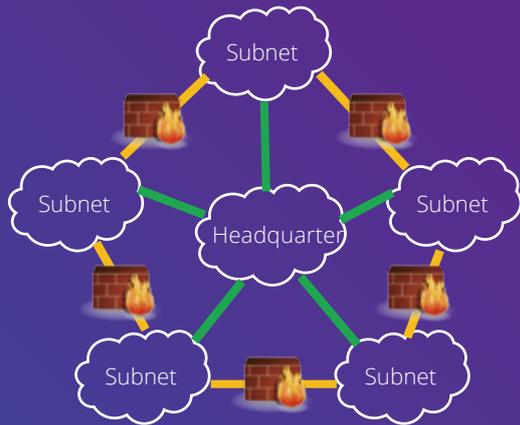
SBC can identify NAT, modify IP address of SDP. Therefore obtain correct IP address and RTP can reach endpoints.



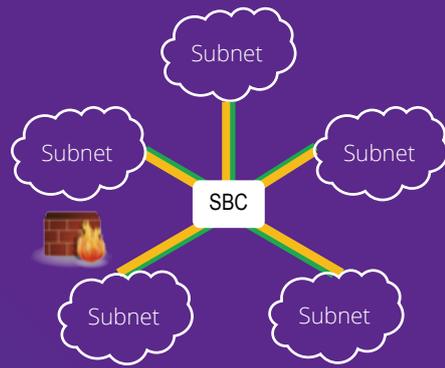
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## SBC acts as a proxy for VoIP traffics



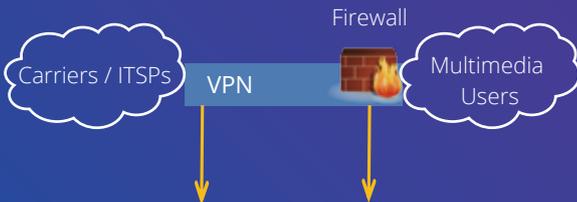
Signaling —  
Media —



SBC acts as a proxy to overcome the hurdles of NATs.

## Security Issues

All kind of attacks



VPN only protects access but can't protect against attacks.

Firewall only protects your data network, is unable to protect against application layer attacks, account theft, overload traffic, smart sniffing etc.

### SBCs Offer Extra Protections besides your Firewall



Encryption: An effective supplement of VPN, easy access without VPN also.

Defense: Specialized attack protection on audio and video including packets identify, behavior analysis, traffic control.

## Attack Protection



High frequency calling with different numbers



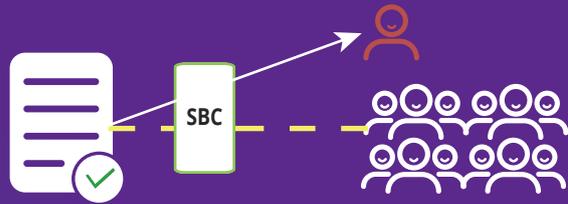
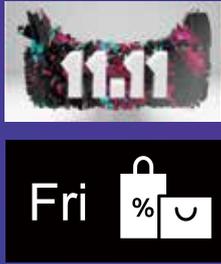
This IP address is abnormal, add in blacklist and block the traffic.

High frequency calling with different numbers

Q: Why SBC is needed for VoIP attacks?

A: All behaviors of some VoIP attacks conform to the protocol, but the behaviors are abnormal. For example, if the call frequency is too high, it will cause damage to your VoIP infrastructure. SBCs can analyze the application layer and identify user behaviors.

## Overload Protection



Q: What causes traffic overload?

A: Hot events are the most common trigger sources, such as double 11 shopping in China (like Black Friday in USA), mass events, or attacks caused by negative news. A sudden surge of registration caused by data center power failure, network failure is also a common trigger source.

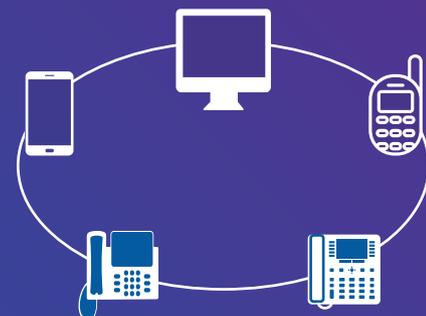
Q: how does SBC prevent traffic overload?

A: SBC can sort traffics intelligently according to user level and business priority, with high overload resistance: 3 times overload, business won't be interrupted. Functions like traffic limitation/control, dynamic blacklist, registration/call rate limiting etc. are available.

## Compatibility Issues



Interoperability between SIP products of different vendors is unfortunately not always guaranteed.



SBCs make the interconnection seamless.

Q: Why do interoperability issues occur when all devices support SIP?

A: SIP is an open standard, different vendors often have different interpretations and implementations, which can cause connection and/or audio issues.

SBCs support SIP normalization via SIP message and header manipulation. Regular expression and programmable adding/deleting/modifying are available in Dinstar SBCs.

## Differences between Firewall and SBC

	Firewall	SBC
General	Firewall is a low (Layer 2-4) but wide (all data) "wall"	SBC is a high (Layer 5-7) but narrow (only voice and video) "wall"
Objective	Large data traffics in Mega GB, regardless of data contents	Voice and video stream in GB, analyzing all VoIP traffics that pass through.
NAT Traversal	Layer 2-4 NAT (May cause no voice issues)	Layer 2-7 (firewall traversal)
Attacks Protection	DDoS attacks and their variants of Layer 2-4	Attacks of Layer 5-7 and overload protection
Capability	Some firewalls can enable the application layer analysis, but it will cause geometric consumption of performance. When there is large VoIP traffics, the system will crash.	Professional capability to handle mass voice / video streams
Other Functions	—	Flexible routing, SIP interoperability, media transcoding, hardware redundancy

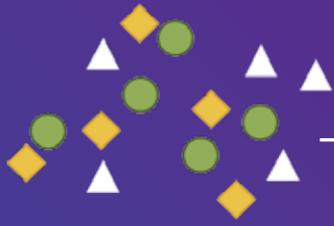
Firewall and SBC are complementary, SBC is an essential network element of IP Telephony System.

### Do you still need an SBC in additional of VPN ?

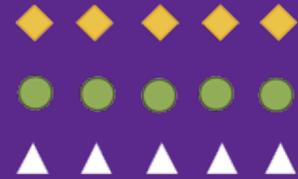


Yes, an extra SBC is still needed for security, traffic control and SIP user access.

## SBCs ensure Quality of Service (QoS)



Management of multiple systems and multimedia is complex. Normal routing is difficult to deal with multimedia traffic, resulting in congestion.



Analyze audio and video calls, based on user behaviors.  
Call control management (CAC): Intelligent routing based on caller/callee, SIP parameters, time, QoS etc.



When IP network is unstable, packet loss and jitter delay cause bad quality of service.



SBCs monitor the quality of each call in real time and take immediate actions to ensure QoS.

## DINSTAR Session Border Controller Family

### SMB SBC



#### SBC300

- 5 to 50 SIP sessions
- Up to 50 transcoding calls
- Maximum SIP registrations: 1000
- 20 Registration per second
- Unlimited SIP Trunks
- SIP TLS/SRTP

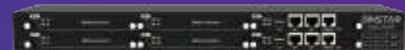
### Enterprise SBC



#### SBC1000

- 50 to 500 SIP sessions
- Up to 200 transcoding calls
- 25 calls per second at maximum
- Maximum SIP registrations: 5000
- 25 Registration per second
- Unlimited SIP Trunks
- SIP TLS/SRTP

### Carrier grade SBC



#### SBC3000

- 500 - 2000 SIP sessions
- Up to 1200 transcoding calls
- 200 calls per second at maximum
- Maximum SIP registrations: 10000
- 200 Registration per second
- Unlimited SIP trunks
- SIP TLS/SRTP
- CDRs/WebRTC



### Transcoding

- G.711
- G.723
- G.729
- G.726
- G.722
- iLBC
- AMR



### Interoperability

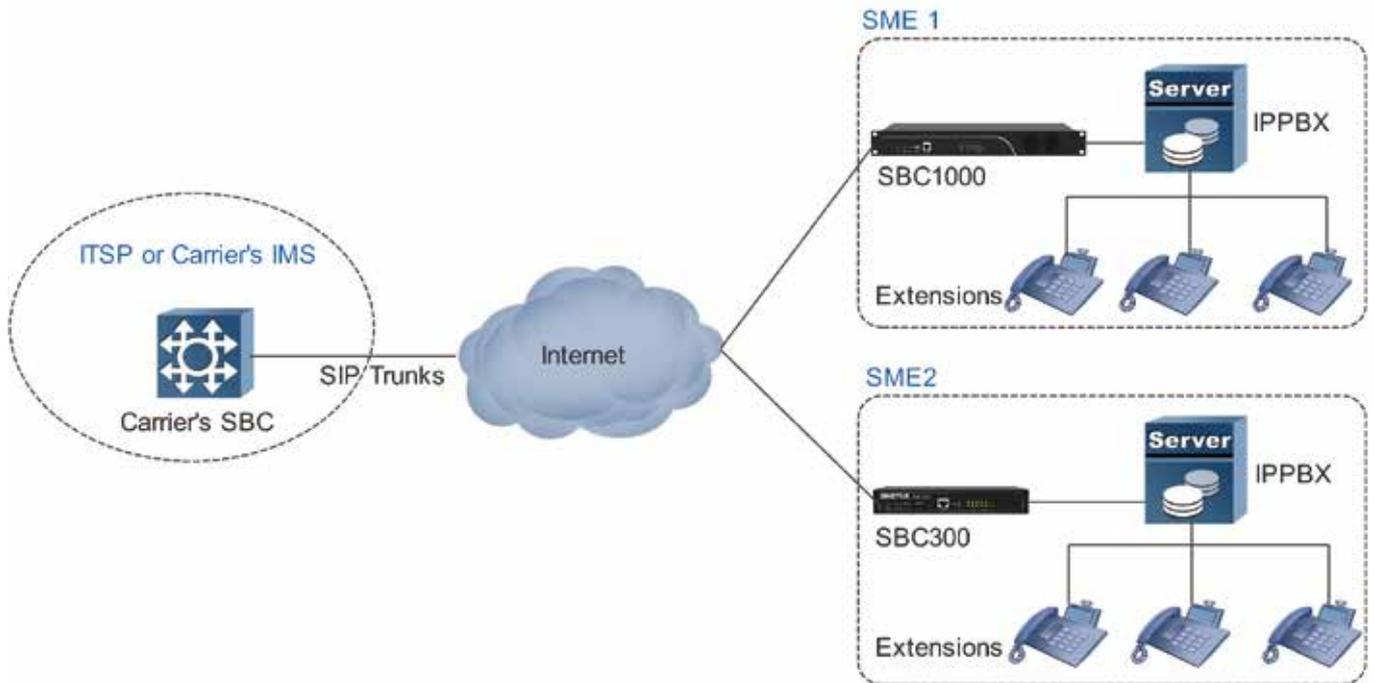
- Interconnect Different SIP networks
- Multiple SIP Trunks
- SIP header normalization
- SIP message manipulation
- NAT traversal
- 1+1 active/standby hardware redundancy



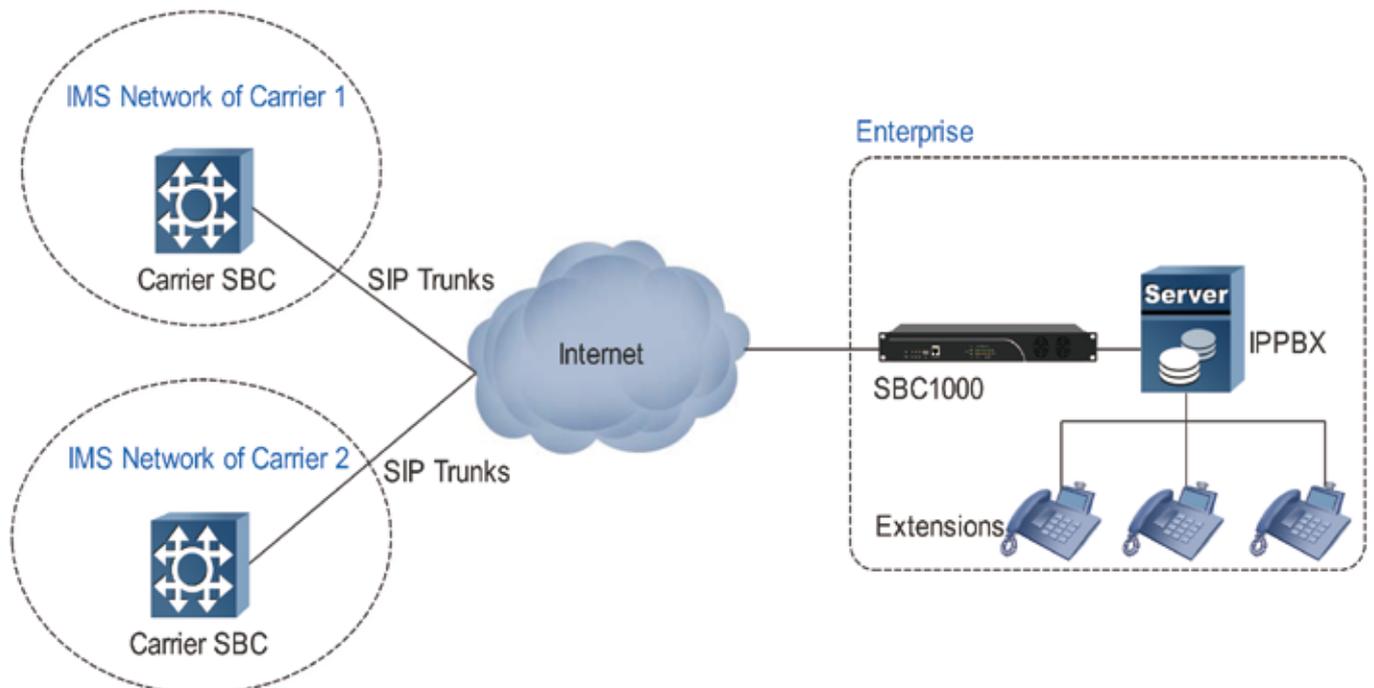
### Security

- SIP Firewall
- SIP TLS/SRTP
- Anti-attack
- Traffic Control
- ACL
- Topology Hiding
- SIP intrusion prevention
- Registration / Call Rate Limiting
- SIP malformed packet protection
- Endpoint authentication

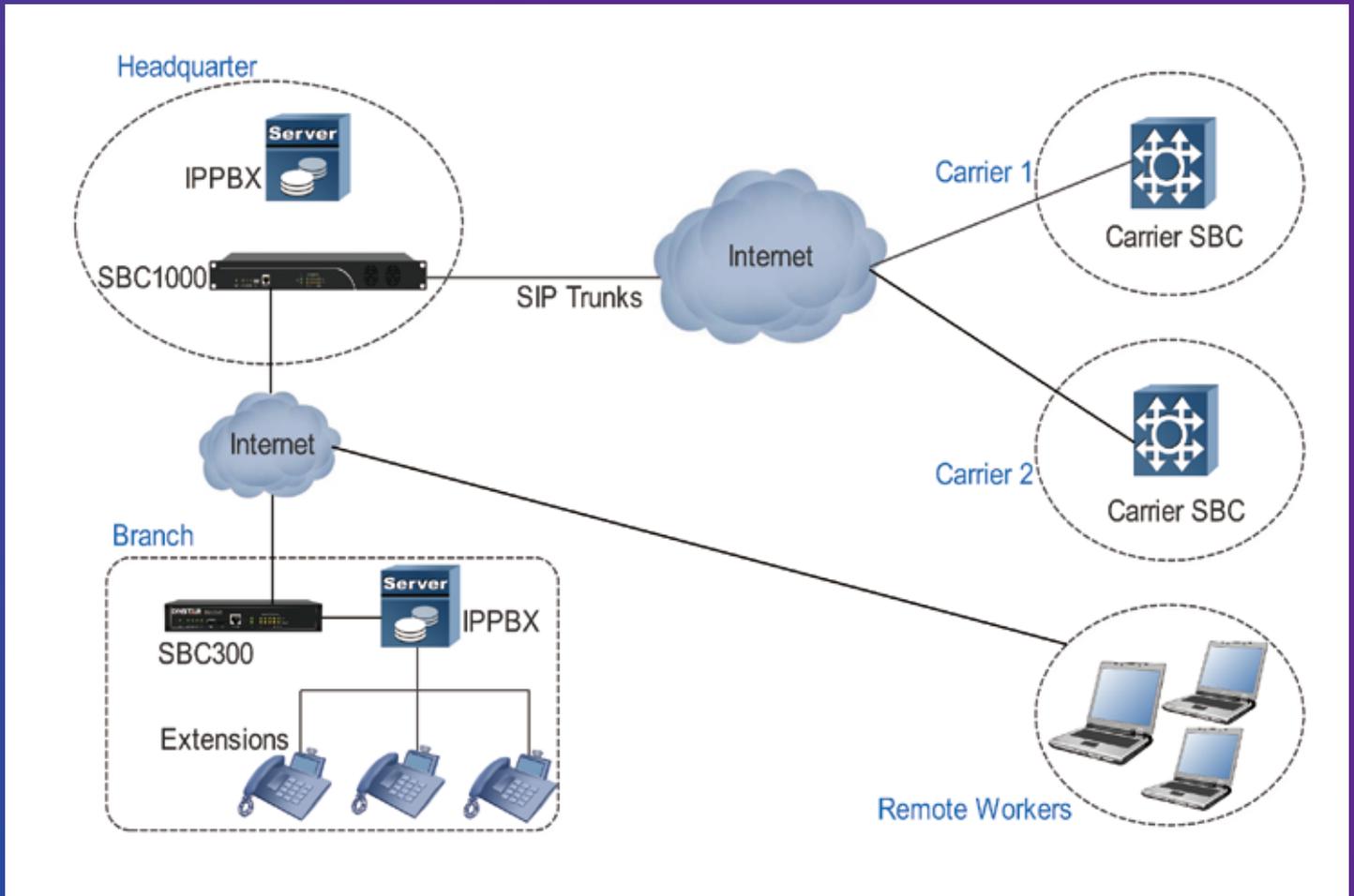
## SIP Trunking for SMEs Access to ITSP / Carrier



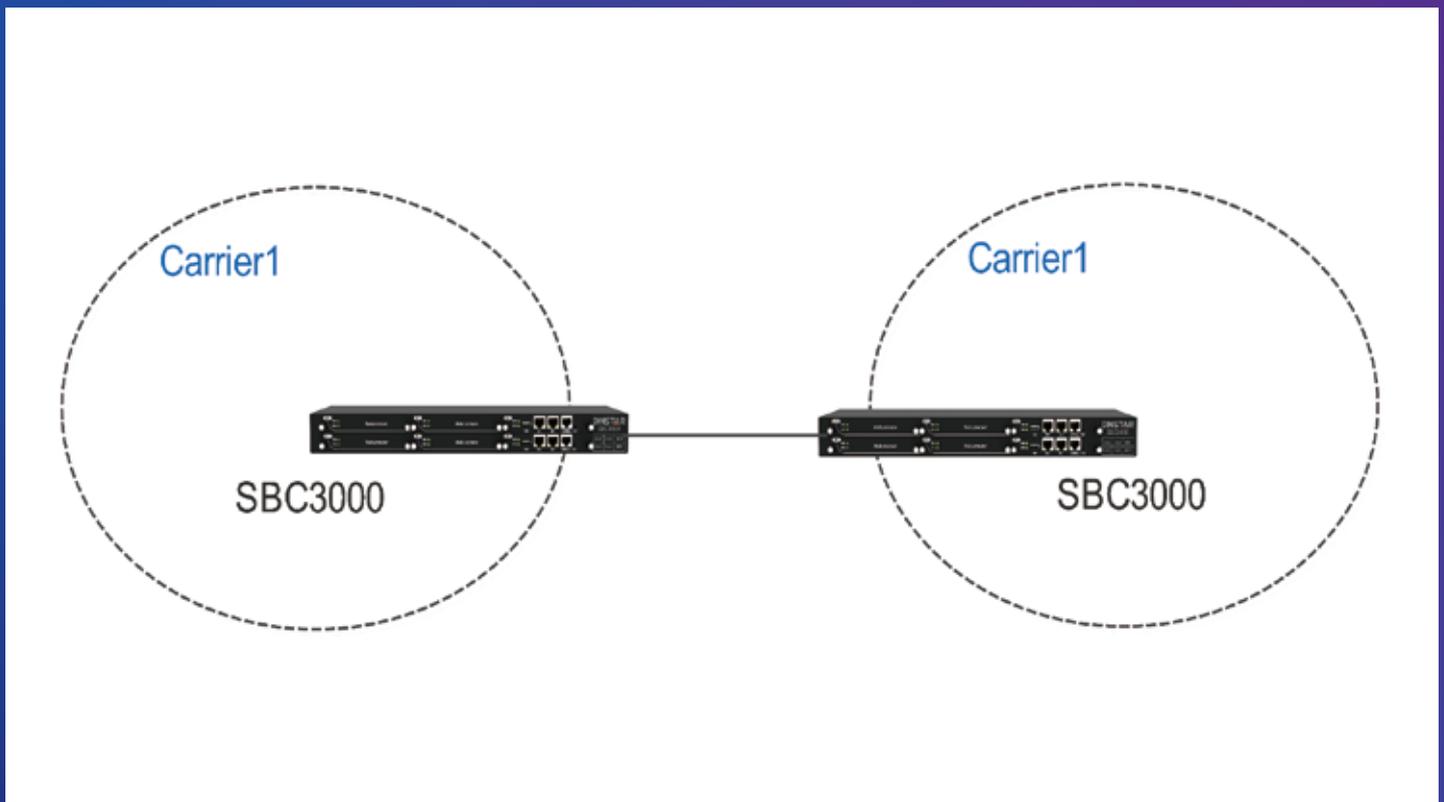
## SIP Trunking for Enterprise Access to Multiple Carriers



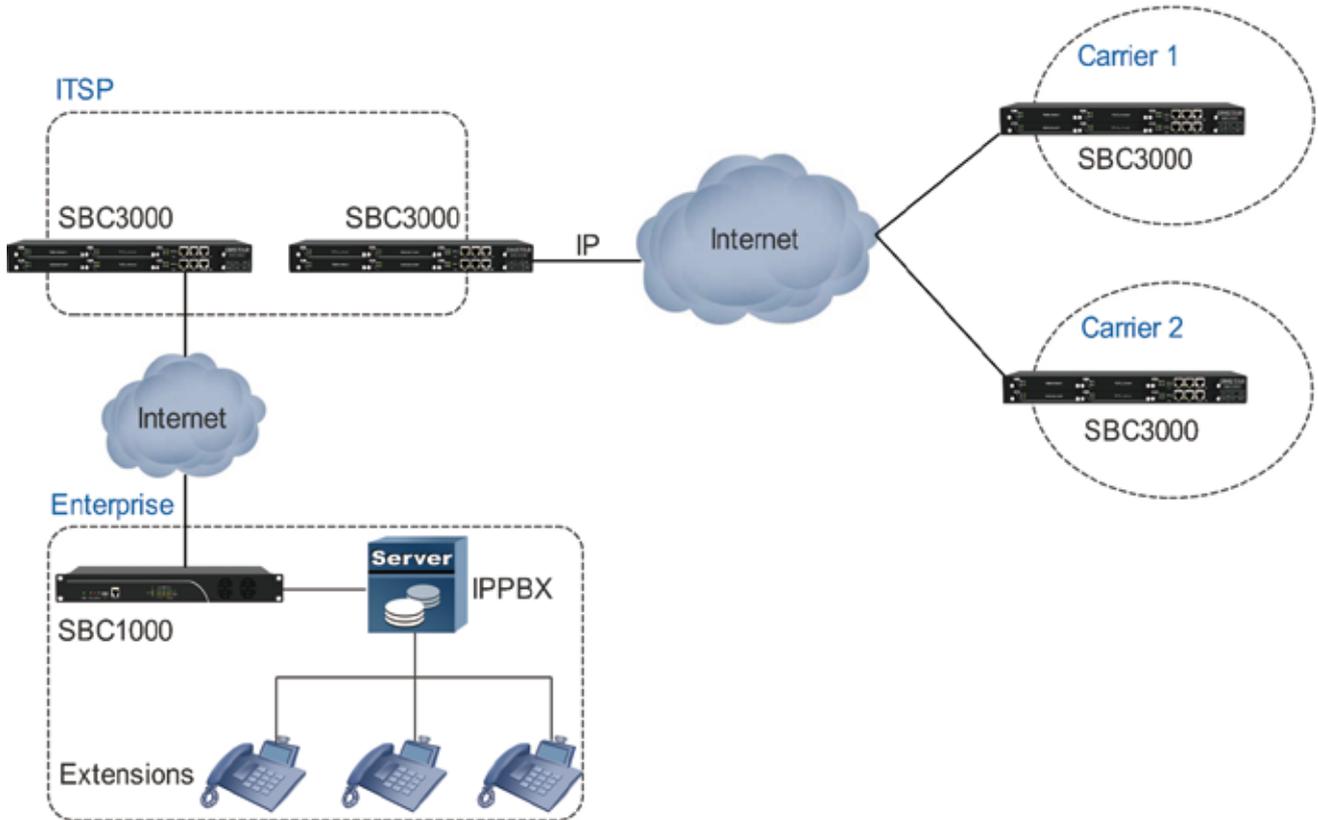
## Secure Communication of Remote Offices



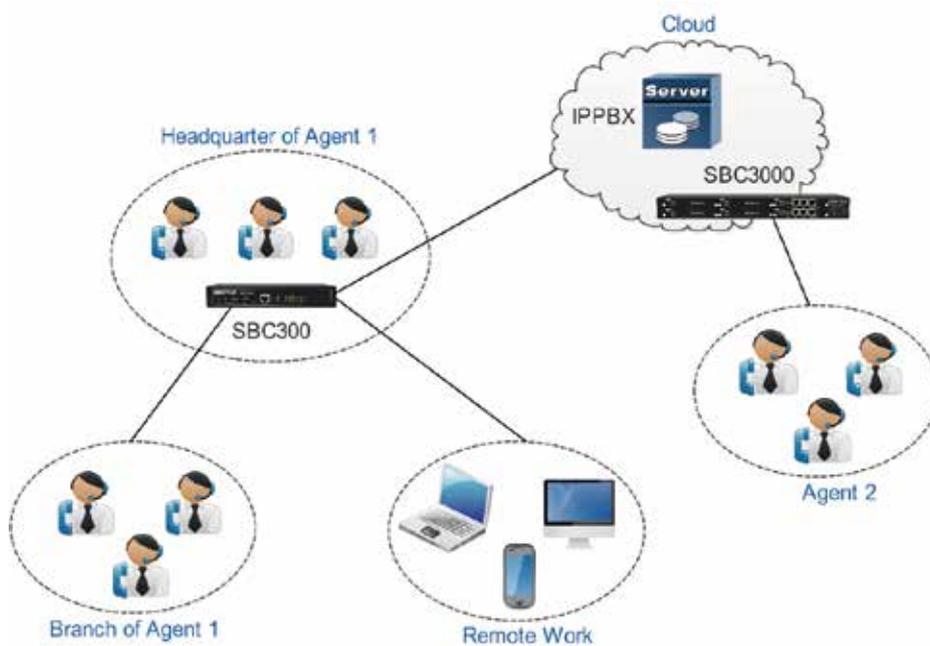
## Carrier Interconnect



## ITSP Access to Carriers



## Hosted /Cloud IPPBX / Call Center



## Top 6 Reasons to Choose Dinstar SBCs

### Small Investment

Entry Level start from 5 sessions, small budget on micro & small organizations.

### Reliable Design

Designed by experts in Canada and China who have been worked in telecommunication for more than 15 years.

### Full Protection

Complete protection on VoIP traffics, preventing frauds and attacks.

### Fast Support

A professional support team is ready to help you on deployment, maintenance and debugging.

### Simple License

No additional license on any features, no additional cost.

### Flexible Scalability

Increasing SBCs capacity via simply upgrading the license when your business grows. No downtime.

# DINSTAR

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