



# Cisco Unified Border Element Configuration Guide

# About this Document

The supplied user guide delivers exhaustive directives aimed at configuring and optimizing Wocom SIP services in tandem with a Cisco router. It provides intricate steps and settings essential for achieving a smooth integration and effective utilization of Wocom SIP services within the Cisco router environment.

Users will encounter a comprehensive walkthrough that covers all pivotal configurations, empowering them to establish and fine-tune their SIP services seamlessly. The primary objective of this guide is to simplify the process, ensuring accessibility for users to fully leverage the capabilities of Wocom SIP services when used in conjunction with Cisco routers.



## SIP Registration Method

To establish the SIP Trunk, WOCOM necessitates the utilization of a SIP REGISTER request featuring digest authentication. WOCOM provides the customer with specific credentials, including a username and password, which must be incorporated into the configuration of the Cisco CUBE (Cisco Unified Border Element). Comprehensive instructions for this configuration are available in the latter part of this guide.

Additionally, WOCOM implements Digest Authentication for outgoing calls. This authentication mechanism, aligned with the specifications outlined in SIP RFC 3261, fortifies the security and integrity of SIP signaling during outbound calls. It acts as a robust measure to ensure the authenticity of communication and guard against potential security threats.

## Cisco Hardware Compatible Devices

The compatibility of Cisco hardware with CUBE (Cisco Unified Border Element) configurations can depend on various factors, including the specific features and capabilities required for your deployment. Below is a generalized list of Cisco hardware that is commonly compatible with CUBE configurations

All CUBE features from release 11.5.0 (Cisco IOS XE Release 3.17) and features introduced in CUBE 11.5.1 on Cisco Integrated Services Generation 2 Routers (ISR G2) are included in CUBE release 11.5.2 for the Cisco IOS XE based platforms from Cisco IOS XE Denali 16.3.1 onwards.

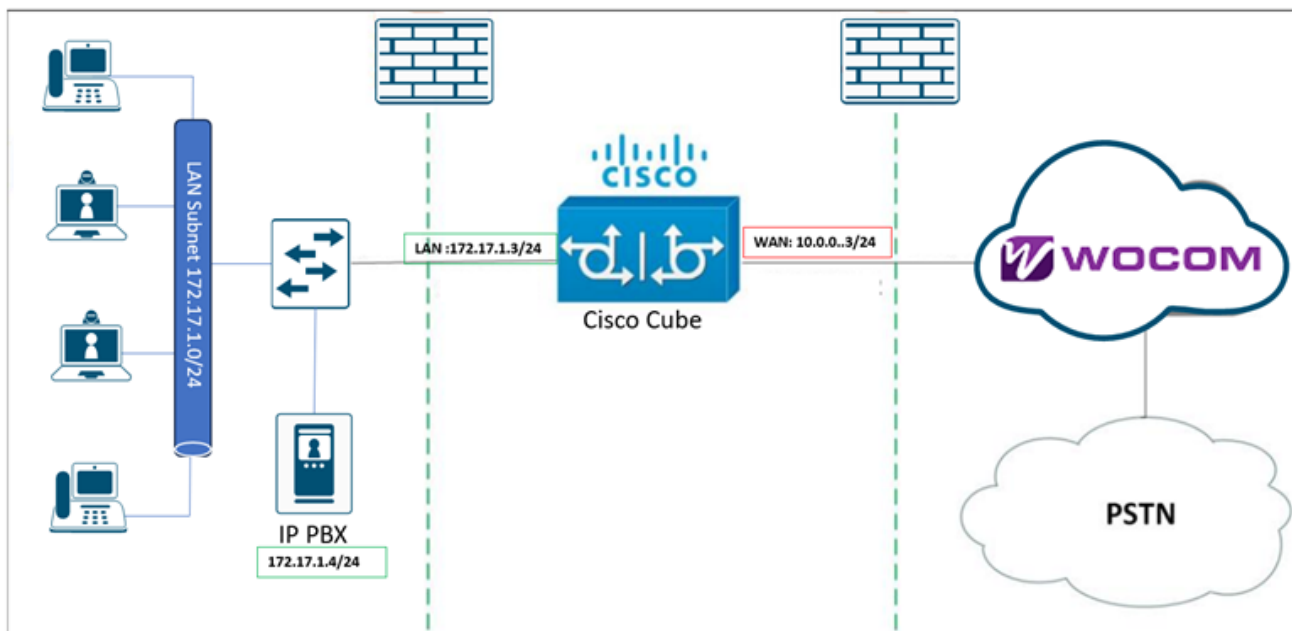
Cisco Router Platforms	Cisco Router Models	Cisco IOS Software Releases
Cisco Integrated Services Generation 2 Routers (ISR G2) Cisco 4000 Series Integrated Services Routers (ISR G3)	Cisco 2900 Series Integrated Services Routers Cisco 3900 Series Integrated Services Routers	Cisco IOS 12 M and T Cisco IOS 15 M and T <sup>1</sup>
Cisco 4000 Series Integrated Services Routers (ISR G3)	Cisco 4321 Integrated Services Routers Cisco 4331 Integrated Services Routers Cisco 4351 Integrated Services Routers Cisco 4431 Integrated Services Routers Cisco 4451 Integrated Services Routers Cisco 3900 Series Integrated Services Routers Cisco 4461 Integrated Services Routers	Cisco IOS XE 3S Cisco IOS XE Denali 16.3.1 onwards <sup>2</sup> Cisco IOS XE Amsterdam 17.2.1r onwards
Cisco 1000 Series Integrated Services Routers (ISR)	All router models belonging to Cisco 1100 Integrated Services Routers	Cisco IOS XE Gibraltar 16.12.1a onwards
Cisco Aggregated Services Routers (ASR)	Cisco ASR1001-X Aggregated Services Routers Cisco ASR1002-X Aggregated Services Routers Cisco ASR1004 Aggregated Services Routers with RP2 Cisco ASR1006 Aggregated Services Routers with RP2 and ESP40	Cisco IOS XE 3S Cisco IOS XE Denali 16.3.1 onwards
	Cisco ASR1006-X Aggregated Services Routers with RP2 and ESP40	Cisco IOS XE Everest 16.6.1 onwards
	Cisco ASR1006-X Aggregated Services Routers with RP3 and ESP40/ESP100	Cisco IOS XE Everest 16.6.1 onwards
	Cisco ASR1006-X Aggregated Services Routers with RP3 and ESP100X	Cisco IOS XE Amsterdam 17.3.2 onwards
Cisco Cloud Services Routers (CSR)	Cisco Cloud Services Router 1000V series	Cisco IOS XE 3.15 onwards Cisco IOS XE Denali 16.3.1 onwards
Cisco Catalyst 8000V Edge Software (Catalyst 8000V)	Cisco Catalyst 8000V Edge Software (Catalyst 8000V)	Cisco IOS XE Bengaluru 17.4.1a onwards
Cisco 8300 Catalyst Edge Series Platforms	C8300-1N1S-6T C8300-1N1S-4T2X C8300-2N2S-6T C8300-2N2S-4T2X	Cisco IOS XE Amsterdam 17.3.2
Cisco 8200 Catalyst Edge Series Platform	C8200-1N-4T	Cisco IOS XE Bengaluru 17.4.1a
Cisco 8200L Catalyst Edge Series Platform	C8200L-1N-4T	Cisco IOS XE Bengaluru 17.5.1a

# Network Configuration Overview

In the network topology, the infrastructure incorporates a Cisco CUBE device, which serves as a crucial component for facilitating communication between the internal PBX System and WOCOM SIP Network.. The setup involves establishing a connection with the WOCOM SBC (Session Border Controller) through a SIP trunk. The call initiation process commences from an endpoint registered to the local IP PBX. Subsequently, these calls are directed to the Cisco CUBE device, acting as an intermediary in the communication flow.

The primary objective is to route the calls seamlessly from the local IP PBX to the Cisco CUBE and, ultimately, to the WOCOM SIP Network. The WOCOM SIP Network plays a pivotal role in terminating the calls and facilitating connectivity with the PSTN (Public Switched Telephone Network).

This comprehensive architecture ensures efficient communication routing, leveraging the capabilities of the Cisco CUBE, WOCOM SBC, and the WOCOM SIP Network to enable successful connections to the external PSTN network.



# Device Role

## Cisco CUBE

Cisco Unified Communications Manager version 12.5.1 is specified as the recommended release; however, any currently supported version is permissible for use.

## IP PBX

An IP PBX is a private telephone network used within an organization that switches calls between VoIP (Voice over Internet Protocol) users on local lines while allowing all users to share a certain number of external phone lines. It combines traditional PBX functionality with IP technology, enabling voice communication over the data network.

## Firewall

The role of firewalls is to monitor and control incoming and outgoing network traffic based on predetermined security rules, serving as a critical barrier between a trusted internal network and untrusted external networks.

## Cisco CUBE Configurations

The provided configuration serves as a guide for setting up and testing your Cisco CUBE device with WOCOM Limited's Flexible SIP Trunk Service, offering step-by-step instructions to ensure proper configuration and functionality testing.



```
!  
service timestamps debug datetime msec  
service timestamps log datetime msec  
!  
hostname WOCOM-CUBE  
!  
boot-start-marker  
boot-end-marker  
!  
!  
logging buffered 51200 warnings  
enable secret "yoursecretpassword"  
!  
no aaa new-model  
!  
no ipv6 cef  
ip source-route  
ip cef  
!  
!  
!  
ip domain name wocomja.com  
ip host iadvoip1.wocomja.com 50.62.141.178  
ip name-server 50.62.141.121  
ip name-server 50.62.14.122  
multilink bundle-name authenticated  
!  
!  
crypto pki token default removal timeout 0  
!  
  
voice-card 0  
!  
!  
!  
voice service voip  
no ip address trusted authenticate  
allow-connections h323 to h323  
allow-connections h323 to sip  
allow-connections sip to h323  
allow-connections sip to sip  
no supplementary-service sip moved-temporarily  
no supplementary-service sip refer  
fax protocol t38 version 0 ls-redundancy 0 hs-redundancy 0 fallback  
none  
sip  
outbound-proxy dns:iadvoip1.wocomja.com  
!  
voice class codec 300  
codec preference 1 g729r8  
codec preference 9 g711ulaw  
codec preference 10 g711alaw  
!
```

```
voice class codec 301
codec preference 1 g729br8
codec preference 2 g729r8
codec preference 9 g711ulaw
codec preference 10 g711alaw
!
!!
!
username yourusername password yoursecretpassord
!
redundancy
!
!!
interface GigabitEthernet0/0
description WAN-Interface-Internet
ip address 10.0.0.3 255.255.255.252
duplex auto
speed auto
!
interface GigabitEthernet0/1
description LAN-Interface-PBX-Network
ip address 172.17.1.3 255.255.255.0
duplex auto
speed auto
!
ip forward-protocol nd
!
no ip http server
ip http access-class 23
ip http authentication local
no ip http secure-server
ip http timeout-policy idle 60 life 86400 requests 10000
!
ip route 0.0.0.0 0.0.0.0 10.0.0.1 name Default GW
!
!!
!!
!!
!
control-plane
!!
voice-port 0/0/0
!
voice-port 0/0/1
!
voice-port 0/0/2
!
voice-port 0/0/3
!
!
mgcp profile default
!
!
dial-peer voice 300 voip
translation-profile outgoing JM/USA/CAN Calling
destination-pattern .T
session protocol sipv2
session target sip-server
voice-class codec 300
dtmf-relay rtp-nte
!
```

```
dial-peer voice 301 voip
description WOCOM Assigned DID #2
incoming called-number 8760000001
voice-class codec 301
dtmf-relay rtp-nte
!
dial-peer voice 500 voip
description WOCOM Assigned DID #2
destination-pattern 8760000001
session protocol sipv2
session target ipv4:172.17.1.4
voice-class codec 300
voice-class sip outbound-proxy ipv4:172.17.1.4
dtmf-relay rtp-nte
!
!
dial-peer voice 302 voip
description WOCOM Assigned DID #1
incoming called-number 8760000000
voice-class codec 301
dtmf-relay rtp-nte
!
dial-peer voice 8238 voip
description WOCOM Assigned DID #1
destination-pattern 8760000000
session protocol sipv2
session target ipv4:172.17.1.4
dtmf-relay rtp-nte
codec g711ulaw
!
!
sip-ua
credentials username 8760000000 password yourewocompassword realm
iadvoipl.wocomja.com
hookflash-info
authentication username 8760000000 password yourwocompassord
no remote-party-id
set pstn-cause 47 sip-status 486
retry invite 2
retry response 3
retry bye 3
retry prack 6
timers expires 300000
!
!
registrar dns:iadvoipl.wocomja.com expires 3600
sip-server dns:iadvoipl.wocomja.com
connection-reuse
!
!
gatekeeper
shutdown
!
!
line vty 0 4
access-class 23 in
privilege level 15
login local
transport input telnet ssh
!
scheduler allocate 20000 1000
end
```



The information provided in WOCOM user guide is subject to change without notice. The configurations, technical data, and recommendations provided are believed to be accurate and dependable but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes. [www.wocomja.com](http://www.wocomja.com)

For any questions or comments related to the user guide please send an email to [cloudsupport@wocomja.com](mailto:cloudsupport@wocomja.com)



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