UNIFY
atos collaboration solutions

Whitepaper
IPv6

Valid until December 2018

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1 Executive Summary

IPv6 is finding its way into communication networks. This trend is driven by the lack of public IPv4 addresses in the near future. Unify´s product portfolio will support IPv6.

Unify has recognized this challenge long before it really affects our customers. As a result, Unify has enabled - or is in the process of enabling - its product and solution portfolio for IPv6 readiness. This does not mean that in the near future only IPv6 deployments will be required. Transition from IPv4 to IPv6 will be a journey, during which IPv4 still will be required. However, current Telecom Service Provider´s ALL-IP initiatives will further drive demand for more IP addresses and thus for IPv6.

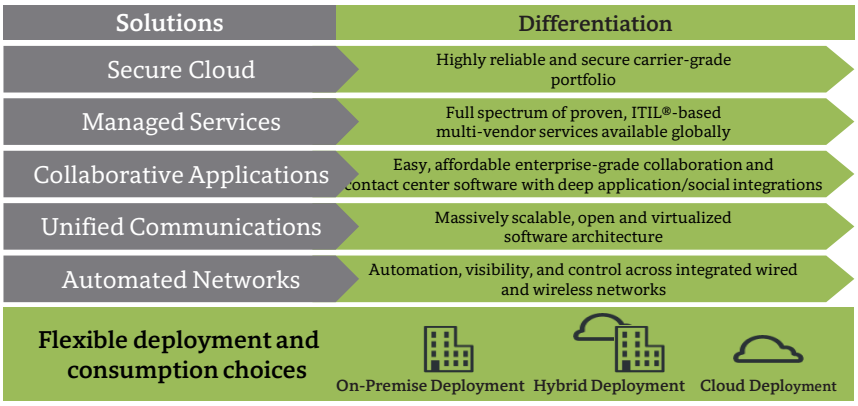
Unify´s approach to IPv6 is the implementation of both IP stack versions, IPv6 and IPv4 into our solution components, also called *Dual-Stack* implementations. With that we provide a maximum of flexibility and investment protection for our customers.

This Whitepaper provides

- a brief Introduction in Section 2,
- some Technical Basics in Section 3, and
- outlines typical customer IPv6 Solution Scenarios in Section 4.

Each of the Section 4 Solution Scenarios includes statements in terms of the Unify product suite that typically addresses the given scenario, as well as the timescale for the availability of the given product suite scenario IPv6 readiness.

Unify´s award-winning Open Communications Architecture enables organizations to improve productivity and reduce costs through easy-to-deploy solutions, which work within existing IT environments and deliver operational efficiencies.



2 Introduction

Currently we can observe an increasing deployment of communication networks using IPv6, being driven from the ISP space. This evolution is mainly due to the fact that the total pool of public IPv4 addresses is almost consumed.

All major Service Provider´s and Telco´s are currently moving to ALL-IP environments, leveraging all the advantages around software based communication solutions, such as added value solutions and services, standardization and optimized deployment costs as well as a better basis for innovation. Consequence / prerequisite will be an increased demand for public IP addresses, which can only be covered by IPv6. Refer also to Unify´s ALL-IP landing page in the References section.

Deployment scenarios involving many new IP devices in public WANs will be among the first which will perceive the lack of free IPv4 addresses. Voice over IP and Unified Communications (UC) is a good example: In both cases, 1) in case of installing an entirely new VoIP / UC system or 2) in case of replacing an existing legacy telephony system by an IP based system, the customer will require many new IP addresses and so VoIP and UC will become one of the drivers for IPv6.

From an IPv6 support timeline perspective, we can distinguish between the Public ISPs which are to transition to IPv6 first, followed by Very large enterprises. For SMBs, IPv6 transition will start from the WAN side, connecting to SIP Service Provider interfaces, but there is initially lower SMB demand for IPv6 within the LAN.

Transition to IPv6 inside enterprises typically starts with a network completely based on IPv4. The mission is to prepare the IT infrastructure for utilization with IPv6 and to upgrade the applications, one after another. Transition is finished if each application uses only IPv6 addresses and the entire data traffic throughout the whole network runs over IPv6 only.

The transition period may take a long time, especially if at least one legacy application must stay for whatever reason with IPv4 and can never be upgraded to IPv6. Such an application will have to co-exist for the rest of its life time with all the other applications using IPv6. Transition is strictly spoken not finished as long as this application is in operation.

After transition to IPv6 has begun, the network will usually no longer be a homogeneous IP network. It may contain devices having only an IPv4 address or only an IPv6 address or both. Consequently, a device will no longer be able to directly establish a connection to every other device in the network. To furthermore ensure overall connectivity requires deployment of additional techniques, e.g. IPv6⇔IPv4 translation or tunneling. Devices offering such services play a key role in moving a network to IPv6.

Transition to IPv6 cannot be done “along the way”! In order to avoid negative impact on the operation of the existing IPv4 network it has to be done in several steps:

1. Detailed planning
2. Implementation of the planned activities
3. Extensive test phase

Although all these steps above are important, this White Paper focuses around typical solution scenarios from the point of view of Unify´s OpenScape & Circuit Product suites and their IPv6 product readiness.

Note that the term *IPv6 readiness* in this document is not to be meant as “switching” all interfaces of all products of the solution at once. For most enterprise customers who are using private IPv4 addresses, the solution will just continue working based on private IPv4 addresses, even when the VoIP interface on the public side (SIP Service Provider trunk) adapts to IPv6.

3 Technical Basics

IPv6 is not just a plain replacement of IPv4. Understanding some basics and terms.

3.1 Dual Stack / Dual IP

Dual-Stack implementation means the capability of a device to interact with both IP versions, on all layers concerned. Dual-Stack implementations typically allow operation in Single-IP or Dual-IP mode. All Unify products that support IPv6 are, or will be, implemented in Dual-Stack technology.

Dual-IP is the operating mode of Dual-Stack node, in which IP addresses of both IP versions are actually configured and used in parallel. A node in Dual-IP mode will dynamically select the IP-version to be used for a specific connection.

Considering VoIP/UC servers, where many protocols are used in parallel, Dual-IP operation is preferred. This allows connectivity to both IPv4 and IPv6 endpoint devices and servers.

Single IP is a mode of operation in which only IPv4 or IPv6 addresses are configured. Single IP for example may be the preferred approach for mass elements such as IP Phones.

NOTE: While the term Dual-Stack is widely used in the community, the term Dual-IP may not be used that extensively out there. We have chosen to use both terms within this Whitepaper to express whether we are referring to the product capability (Dual-Stack) or to the operational mode (Dual-IP). A Dual-IP Entity always also has Dual-Stack capability.

Dual IP negotiation for VoIP media streams

Unify also supports Dual IP operation for its SIP Phones. This option can be used if the customer has demand for dynamic, on a per call basis, negotiation of the IP version for the RTP payload stream, which is sent directly between the Phones.

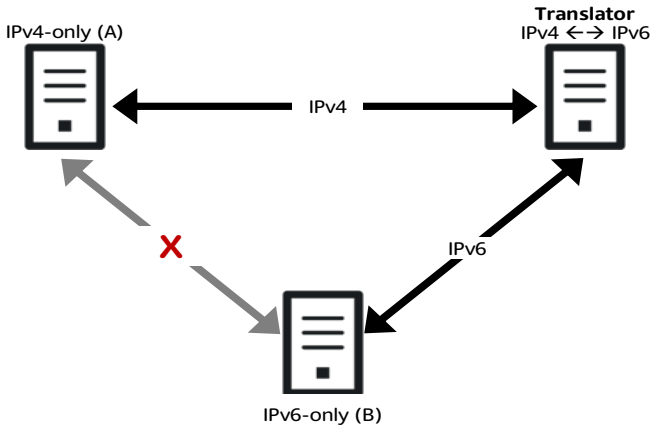
For this purpose, Unify SIP Phones support:

- ANAT (RFC4091, RFC4092) – Alternative Network Address Types

  Note: Although obsoleted by the IETF (when ICE was published), many customers are still requiring ANAT support. The support of ICE Interactive Connectivity Establishment (RFC5245) for Dual-IP on a solution wide basis is under consideration.

3.2 IPv4⇔IPv6 Translation

An IPv4-only and an IPv6-only device cannot directly communicate. Instead, both end devices have to use an IPv4⇔IPv6 address translation service, offered by an intermediate device relaying the transported data. Such a translation device is called Translator or Gateway (GWY) in this Whitepaper.



In general an IPv4⇔IPv6 translation service:

- processes IP address information within the application's data,
- manages the mapping of the IPv4/IPv6 address pairs,
- replaces the transport addresses (IPv4⇔IPv6).

The particular implementation of an IPv4⇔IPv6 translator depends on the protocol to be translated and may vary from simply translating IP addresses on IP level up to interpreting the application protocol data and modifying the contained IP addresses.

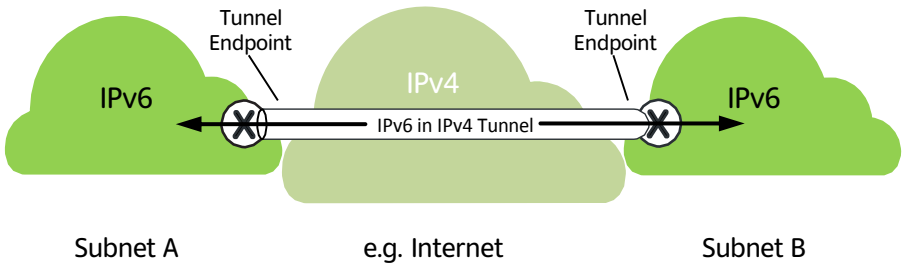
Example

Media transport over RTP (RFC 3550) uses IP addresses only on IP level (network layer), i.e. for giving the source and destination of the media data that are to be sent over the network. For this service, plain IP address translation on IP level, similar to the well-known NAT, is sufficient. However, the data required for setup of the address mapping has to be derived from (SIP, RFC 3261) signaling before.

Call signaling messages, such as SIP (application layer) carry among other things the IP addresses of the media streams within their SIP message body (SDP). In this case an IPv4⇔IPv6 translator has to find and translate IP addresses within the application data in addition to the address translation on IP level. The retrieved address information will also be used to control the translator for the media streams (see above).

3.3 IP-in-IP Tunneling

Data traffic between two IPv6-only subnets cannot directly reach its destination, if it has to be forwarded via an IPv4-only network segment. The same is true for IPv4-only subnets and an IPv6-only network segment. IP-in-IP tunneling allows routing of IP packets using one IP version over a network segment using the other IP version.



An IP-in-IP tunnel endpoint

- encapsulates packets received at the tunnel entrance side into IP packets of the IP version of the tunneled network,
- forwards the encapsulated packets,
- decapsulates the packets received at the tunnel exit side.

This way, an IP-in-IP tunnel achieves direct data transport transparently between the subnets.

In the context of this White Paper we focus on tunnels that are configured on IP router devices (e.g. Access Router). Tunnels created by the endpoints themselves are not considered here.

4 IPv6 Solution Scenarios

Unify is pro-actively - ahead of the broad market demand – communicating its IPv6 strategy and Product´s IPv6 Readiness. This Section provides a recommendation for the most common solution scenarios in an IPv6 context.

The wide variety of real solutions scenarios currently deployed with Unify technology is basically characterized by the combination of three main considerations:

- **Privacy Requirements:** On-premise vs. cloud infrastructure
- **Company Size:** Small/Medium up to Large/Very Large enterprises and organizations
- **Type of Assets:** Share between Legacy assets (e.g. TDM, Analog, DECT) and IP assets (e.g. VoIP Phones)

The most common combinations of these considerations lead to these eight typical solution scenarios:

1. Large TDM and/or DECT oriented enterprise, with IPv6 SIP Trunks
2. Large TDM and/or DECT oriented customer, with IPv6 branches / Devices
3. Large VoIP Only oriented Enterprise
4. Large Mixed Landscape (OpenScape Voice + OpenScape 4000)
5. Large Mixed Landscape – with on-prem UC
6. Large Mixed Landscape – with Circuit Cloud
7. Small Medium Enterprise (SME)
8. Native Cloud Voice and Collaboration, aka. OpenScape Cloud

For each scenario we provide

- A brief scenario description
- An example illustration including representative portfolio elements (non-exhaustive list)
- IPv6 wise readiness statement of the mentioned portfolio elements

4.1 Large TDM and/or DECT oriented customer, w. IPv6 SIP Trunks

This scenario is typically motivated by high privacy requirements leading to on-premise infrastructure, large company size, a large number of existing TDM, DECT or analog devices.

These enterprises are typically served by Unify´s converged OpenScape 4000 (OS4000) solution, which allows high scale TDM, Analog, DECT devices.

The OS4000 solution supports IP based communication for a number of interfaces. However, the IPv6 enablement is available on a number of OS4000 interfaces typically required, but not all. The OS4000 interfaces supporting IPv6 today are:

- SIP / SIP-Q (QSIG/CorNet-NQ over SIP) between networked OS4000 nodes and towards other Unify and 3rd party SIP Applications
- SIP Service Provider (SSP) Trunking connectivity
- OS4000 Remote Management

For IP based SSP Trunking or Networking (IPv4 and IPv6) , Unify offers or will offer product options for supporting IPv6 SIP Trunks based on either

- New Common Gateway STMIX
- SoftGate (SG) running on OS4000 EcoServer, OS4000 Branch or the EcoServer based Enterprise Gateway

The large number of devices are typically TDM, DECT, and analog endpoints and not thousands of IP devices. Hence these enterprises do not run out of local IP numbers that quickly and hesitate to adopt IPv6 in the LAN. A typical landscape looks like this:

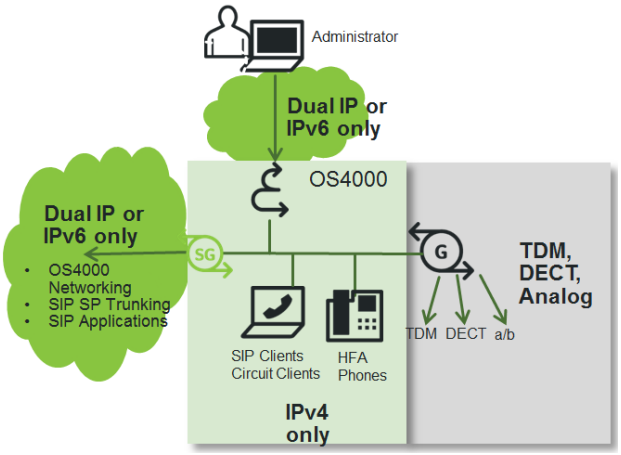


Figure: Large TDM and/or DECT oriented customer scenario w. IPv6 SIP Trunks

OS4000 Interfaces with IPv6 Plannings:

- IPv6 for SIP-Q / SIP Networking, SIP Applications and SIP Service Provider Connectivity is already supported.

  Remark: The option with SoftGate running on Enterprise Gateway is on the Roadmap for 2018.

- IPv6 for Management interfaces: Can be achieved today via IPv4 over IPv6 Tunneling. Further IPv6 support for OS4000 Management Interfaces is under consideration for End of 2019 Roadmap

4.2 Large TDM and/or DECT oriented customer, with IPv6 branches / Devices

This scenario is typically motivated by high privacy requirements leading to on-premise infrastructure, large company size, a large number of existing TDM, DECT or analog devices in the HQ of the enterprise, like in the previous scenario. Additionally, these enterprises add smaller remote offices or subsidiaries to their corporate PBX landscape.

Unify´s OS4000 solution will support distinct branches to be migrated to IPv6, without having to replace the whole communications system. This is specifically supporting the OS4000 investment protection.

The scenario is based on the previous scenario 4.1, but adds IPv6 branches. Within the IPv6 branches, we distinguish between

- Dual IP branches
- Single IPv6 branches

The following figure illustrates an example scenario.

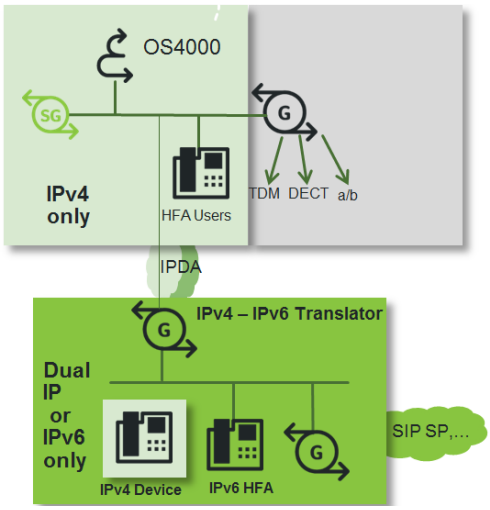


Figure: Large TDM and/or DECT oriented customer scenario, w. IPv6 branches / Devices

Via an IPv4/IPv6 Translator Gateway, interworking to the main IPv4 site is provided. This may include IPv4 IPDA interface (IP Distributed Architecture) tunneling over an IPv6 WAN, in which case the IPv6 Tunnel termination is to be provided by the IP Access Routers. As an alternative scenario, the OS4000 IPDA interface may support native IPv6 in Branch and Host system.

- **Dual IP branch**
  In case of a Dual IP branch, the branch infrastructure supports IPv6, but also still supports IPv4 in parallel. Provided that there are still enough IPv4 addresses available in the infrastructure, IPv4 Devices can still be operated. The VoIP GWY at the branch (IPv4 – IPv6 Translator) supports the mediation between IPv4 endpoints and IPv6 endpoints (for signaling and payload traffic).

- **IPv6-only branch**
  In case of an IPv6-only branch, all IP branch assets (including HFA Phones) have to be IPv6 enabled.

Interworking between IPv6 branch endpoints and IPv4 sites is done by the branch VoIP IPv4 / IPv6 Translator GWY.

OS4000 IPv6 branches and HFA Devices IPv6 Planning:

- IPv4-IPv6 Translator Gateway: IPv6 support via the IPv4-IPv6 Translator GWY, covering IPv4 – IPv6 Endpoint interworking and IPDA interworking is on the Roadmap for End of 2019.
- IPv6 support for DeskPhone CP HFA Phones is under consideration for Roadmap for End of 2019.

4.3 Large VoIP Only oriented Enterprise

This scenario is typically motivated by high privacy requirements leading to on-premise infrastructure, large company size, but modern IP infrastructure with mostly SIP devices.

Many modern enterprises build their communication systems fully IP based, which is typically served by Unify´s OpenScape Voice (OSV) solution. The OpenScape Voice solution and the majority of its solution components do already support or will fully support IPv6:

- **IPv6 is mainstream for OpenScape Voice Servers**
  IPv6 will be supported in the main sites - Datacenters (DC) / Headquarters (HQ) - but also for its OSV branches. Interfaces between DC and branches – e.g. for SIP including for Management – will be IPv6 enabled.
- **IPv6 is available for Devices**
  VoIP interfaces such as SIP, RTP, etc. are already IPv6 enabled. SIP Phones for OSV Solution are already IPv6 enabled. VoIP Soft clients are under consideration for IPv6 enablement.
- **IPv4 – IPv6 Translator to serve IPv4 Assets**
  IPv4 assets are still supported and can be deployed behind an IPv4 – IPv6 Translator GWY (OSSBC).
- **Management Interfaces have or will have Dual-Stack support**
  For Management and Applications interfaces, IPv6 is partly supported and is being completed.
- **Applications on top of OpenScape Voice will all be IPv6 compatible**
  Contact Center and Command & Control solutions will be IPv6 enabled.
- **DECT is working with OpenScape Voice**
  DECT will be supported by OSV Solution also for an IPv6 scenario. This is being addressed by means of IPv6 enabled DECT IP GWY solutions.
- **Legacy Assets can be connected**
  For TDM and Analog assets, OSV solution will offer IPv6 enabled VoIP Gateways and Terminal Adapters.

The following figure provides an example illustration.

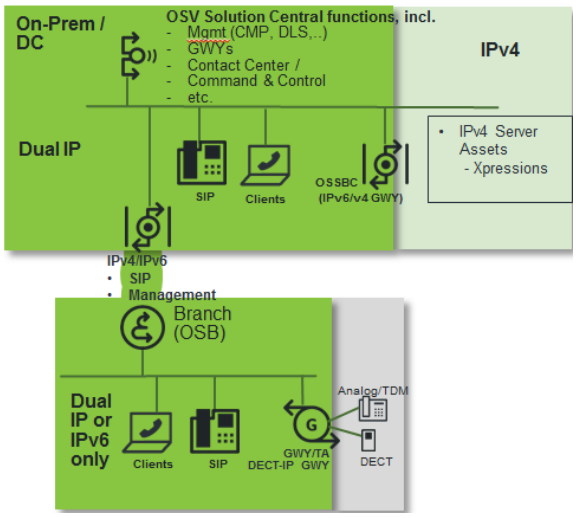


Figure: Large IPv6 scenario – VoIP only

OSV Solution IPv6 Availability:

- IPv6 support for SIP based OSV, OSSBC and OSB interfaces is available (SIP, RTP)
- IPv6 enabled SIP phones are available (Single IP, Dual IP ANAT based)
- OSSBC as IPv4/IPv6 SIP/RTP Translator GWY is available (e.g. for Xpressions)
- The following OSV Management interfaces and Management Applications are already IPv6 enabled:
    - CMP Server Web Interface
    - OSV/Assistant – CMP interface
    - OpenScape DLS
    - OpenScape ILA
    - OpenScape Fault Management
    - OpenScape Accounting
    - Trace Manager
    - CSTA Interface
    - SNMP Interface

IPv6 support for the following OSV Solution products is on the Roadmap for 2018:

- SIP Soft clients
- OpenScape Cordless IP v2 (DECT IP GWY)
- OpenScape Xpert
- OpenScape Concierge/OSCC-E (Attendant)

IPv6 support for the following OSV solution aspects is on the Roadmap for 2019:

- OpenScape Contact Center (OSCC)
- OSV IPv6 Enhancements Step 4, i.e. Separate IPv6 addresses for admin/billing/signaling interfaces, IPv6 for x-channel, DSCP support, Routing support (for different IPv6 subnets)
- OSSBC based NAT64 Translation for other interfaces besides SIP (e.g. Web based Services, such as Xpressions WebAssistent Client)

4.4 Large Mixed Landscape (OpenScape Voice + OpenScape 4000)

This scenario is typically motivated by high privacy requirements leading to on-premise infrastructure, large company size, and a heterogeneous endpoint landscape of both legacy devices and IP devices.

There are many Unify customers with mixed landscapes, i.e. combinations of OS4000 and OSV solutions, with a typical “function split” being

- Large TDM, Analog, Large DECT assets served by OS4000
- Large IP assets served by OSV

Often, a customer with existing OS4000 sites, adds an OpenScapeVoice (OSV) based in a central private Datacenter (DC), for central control of all OSV branches. Connectivity between OSV and OS4000 is provided via SIP-Q Interface, which is supported via IPv4 or IPv6.

- **Data centers and modern buildings are on IPv6 – Legacy can remain on IPv4**
  Many enterprises transform their infrastructure site by site, or building by building. While OpenScape 4000 addresses the legacy assets, OpenScape Branch hooks modern SIP based assets to the Dual-IP Open Scape Voice hub.

- **Central Management**
  Unify offers central management for a number of daily management use cases for such a mixed landscape, based on Common Management Portal (CMP). Both, OSV's and OS4000's Element Management Functions (OSV Assistant, OS4000 Manager/Assistant) are or will be IPv6 enabled.

In the following figure, we show a Mixed OSV + OS4000 landscape with some example portfolio elements illustrated.

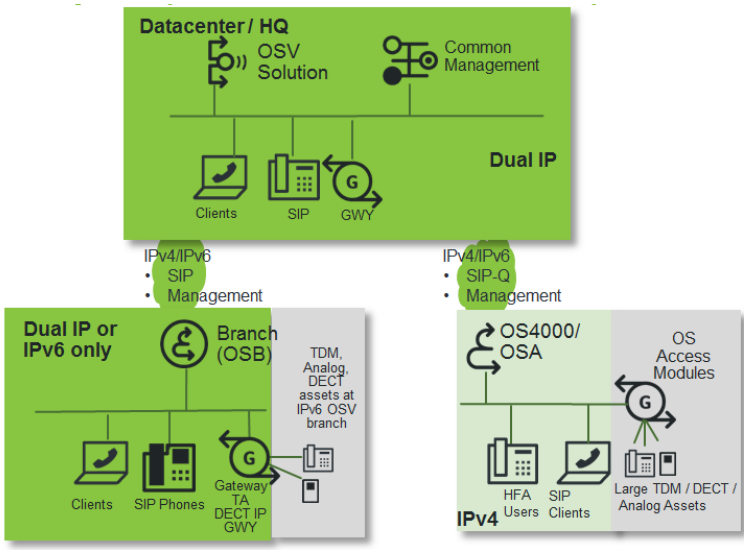


Figure: Large Mixed Landscape (OSV + OS4000)

Planned timeline:

- The IPv6 timelines of the previously shown scenarios for OSV VoIP and OS4000 solutions apply

4.5 Large Mixed Landscape – with on-prem UC

This scenario is very similar to the previous one, but adds Unified Communications to the solution.

This means, it's focused on enterprises with the demand for on-premise / Private Datacenter based Unified Communications. UNIFY already offers today Unified Communications solution for OSV, OS4000 as well as for Mixed Landscapes.

This scenario adds IPv6 capable UC Desktop Clients as well as IPv6 capable UC Mobile clients to be part of the solution. Unify is considering IPv6 compatibility of the UC functionality in a stepwise manner.

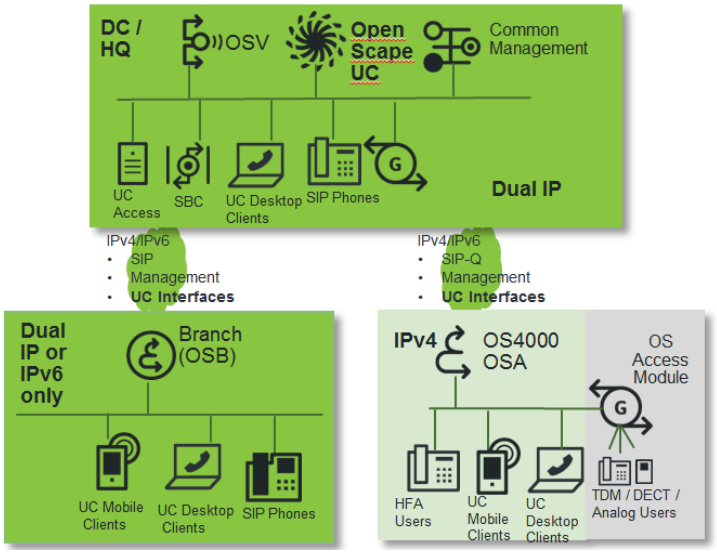


Figure: Large Mixed Landscape (OSV + OS4000) with On-Prem UC

Already IPv6 enabled:

- OpenScape UC MediaServer (Meet-Me Voice Conferencing) for Single IP or Dual IP
- IPv6 Clients support for OpenScape UC Server Access is IPv6 enabled
- UC Clients IPv6 enablement (CTI mode only)
  - OpenScape UC Web Client
  - OpenScape Fusion for Office Client
  - OpenScape UC Mobile Client (OSMO UC)
- Remark: UC Server services (including Backend) are IPv6 enabled in terms of using FQDN for address resolutions (DNS)

On Roadmap for 2018:

- SIP Softphone functionality for UC Clients:
  - OpenScape Fusion for Office Client
  - OpenScape UC Mobile Client (OSMO)

OpenScape UC integrations based on IPv6 with 3rd party systems, such as Skype for Business, can be considered based on project specific request.

4.6 Large Mixed Landscape – with Circuit Cloud

This scenario is typically motivated by high security, but medium privacy requirements leading to hybrid cloud infrastructure, medium or large company size, and a heterogeneous endpoint landscape of both legacy devices and IP devices.

For UNIFY it is key to offer its newest Cloud based Collaboration solutions (Circuit) also to its existing OpenScape customer base. While Circuit can be used as a lightweight team collaboration cloud, it unfolds its full capabilities, if Circuit becomes additionally the full unified communications client merged with persistent chat, file share and other typical team collaboration capabilities.

- **Hybrid Cloud**
  Typically OSV and/or OS4000 are residing on-prem / in private datacenters, with Circuit services being added from the Cloud. I.e. we are talking about a "hybrid" deployment type in this scenario. The integration between OpenScape Voice, OpenScape 4000 or Mixed Landscapes with Circuit is provided by Unify´s Advanced Telephony Connector (ATC).

- **IPv6 Browser based and Mobile clients**
  Enterprises will be able to leverage IPv6 enabled Circuit apps for their Browser (Chrome, Firefox, Internet Explorer / Edge), Desktop Application (DeskApp) and Mobile apps (iOS, Android).

- **Circuit connects to your PBX and turns into a full UC solution**
  The connection between a Circuit tenant in the public cloud and a local PBX is established by an IPv6 compliant software component called Circuit Telephony Connector. It comes in two flavors: Advanced Telephony Connector (ATC) which leverages a wide spectrum of the Unify OpenScape PBXes and, the Universal Telephony Connector (UTC) which allows an integration of Circuit with even 3rd party SIP PBXs.

The figure below illustrates an example scenario for this hybrid deployment offer. Portfolio elements shown are examples only and non-exhaustive.

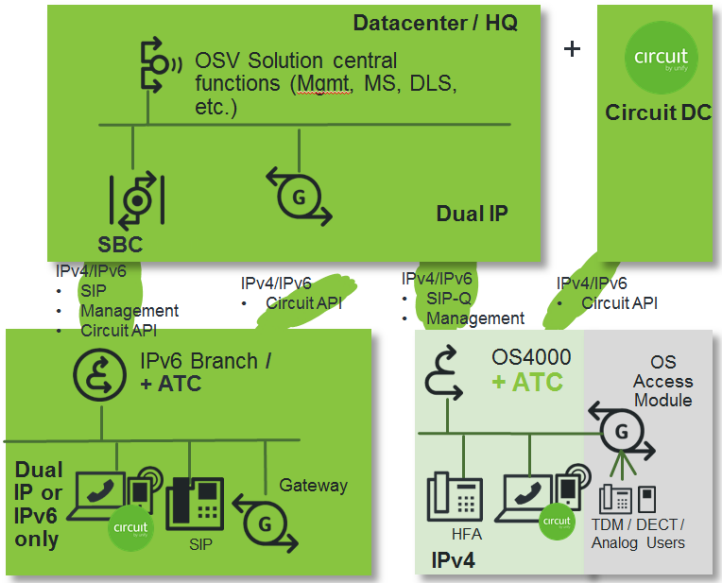


Figure: Large Mixed Landscape – with Circuit Cloud

Already supported:

Circuit Mobile Clients can already operate in IPv6, provided that the (IPv6) Mobile Network Operator provides an appropriate IPv6/v4 translation (signalling and media).

Circuit DeskApp and WebClients can already operate in IPv6 (e.g. IPv6-only site), provided an Enterprise proxy performs the appropriate IPv6/v4 translation (signalling and media).

Remark: In both scenarios Circuit TURN server would be used for RTC media.

Similar to above, for Telephony Connectivity, Circuit Telephony Connector (ATC, UTC) can act as on-prem IPv6 / IPv4 Translation function (Signalling and Media).

On Roadmap:

Circuit Backend has IPv6 support on its Roadmap for 2019+. This should only affect customers requiring dedicated Circuit deployments in an IPv6 environment. Depending on customer requirements and priorities it could be accelerated due to Circuit`s Agile Development process.

For other product`s IPv6 statements shown in this scenario (such as OpenScape Voice, OpenScape 4000), please refer to previous sections of this Whitepaper.

4.7 Small Medium Enterprise (SME)

This scenario is typically motivated by high privacy requirements leading to on-premise infrastructure, small and medium company size, and a heterogeneous endpoint landscape of both legacy devices and IP devices.

Unify´s SME offering is very much based on OpenScape Business (OSBiz) as our comprehensive offering for small and medium size customers. The OSBiz offering is a cost effective, embedded platform (OSBiz-X) or a standard server based, software-only offering (OSBiz-S). OSBiz also supports virtualization and is ready for private datacenter (DC) deployments.

Our OSBiz solution is being developed as Dual Stack approach. From an OSBiz operational point of view, this allows our SME customers to either run the solution in IPv4 or in IPv6 mode (Single IP).

From a UC applications point of view, OSBiz offers a complete Unified Communications applications suite, if the customer prefers on-prem / private datacenter UC. As an alternative, the Circuit Telephony Connector (TC) approach is available for OSBiz, offering a hybrid deployment model, with OSBiz on-prem and Circuit consumed from the Cloud (similar as for previous Large Enterprise hybrid scenario).

IPv6 enablement of our OSBiz offering will include the following aspects:

- SIP Service Provider Trunking IPv6 enablement
- Remote Management IPv6 enablement
- Server side OSBiz IPv6 enablement for SIP endpoints (Phones, DECT IP GWY, etc.)
- Server side OSBiz IPv6 enablement for HFA Phones
- IPv6 enabled HFA and SIP Phones
- SME UC Suite IPv6 enablement, including UC Desk clients and Mobile Clients
- Circuit Telephony Connector for OSBiz, for consuming Circuit services from the cloud, including IPv6 readiness for Circuit Desk clients and Circuit Mobile clients

The following two figures show example illustrations for the above two mentioned UC solution deployments (On-prem / DC and Cloud).

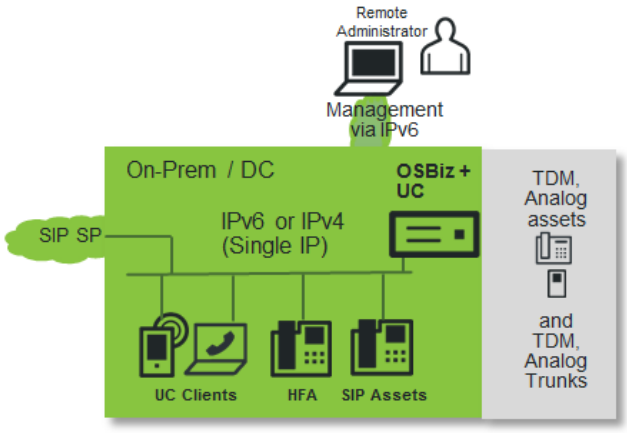


Figure: Small Medium Enterprise, with UC suite

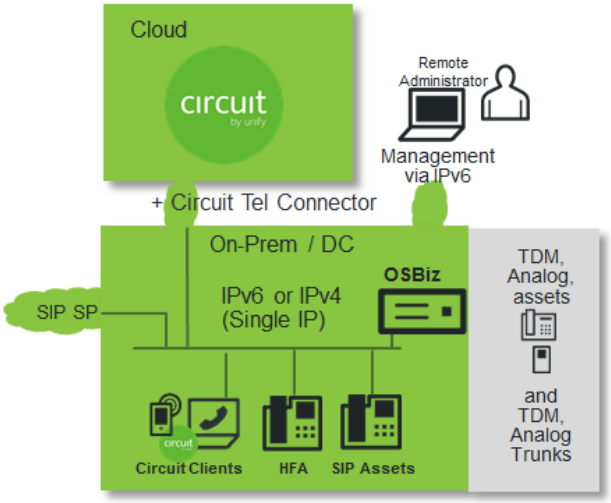


Figure: Small Medium Enterprise, with Circuit from Cloud

Planned IPv6 OSBiz solution enablement timeline:

OSBiz and all its solution components will support IPv6 (on Roadmap for 2018/19, focusing initially on SIP SP Trunking interface).

4.8 Native Cloud, aka. OpenScape Cloud

This scenario is typically motivated by high security, but medium privacy requirements, leading to pure cloud infrastructure, at any company size, and to a modern endpoint landscape of IP devices, PC Clients and Smartphones in a mixed IPv4 and IPv6 environment.

In this scenario, Unify´s Open Scape VoIP infrastructure, including all its central services such as Management, is residing in the cloud (OpenScape as a Service).

Collaboration Services such as Social media type of secure persistent textual communication, WebRtc based Audio, Video and Screen Share (Point to Point and Conferencing), are provided by Circuit Cloud platform.

For Integration of Circuit and OpenScape, our Circuit Telephony Connector builds the bridge and allows SIP <-> WebRtc interworking and integration. As a further level of Circuit & OpenScape integration, Unify´s IP Phones are not only connected to the OpenScape VoIP system via SIP, but may also be integrated with Circuit through Circuit API support.

Within the Enterprise basically only the IP Phones and Clients reside on prem. As an option, if SIP Survivability is a requirement, an OpenScape branch server can be deployed on prem. As a further option, dependent on enterprise size, the Circuit Telephony Connector can reside on prem.

Circuit Clients cover Browser based Desktop PC / Laptop Clients (with Google Chrome, Mozilla Firefox or Microsoft IE / Edge Browsers), DeskApp and iOS and Android Smartphone / Tablet based Mobile clients.

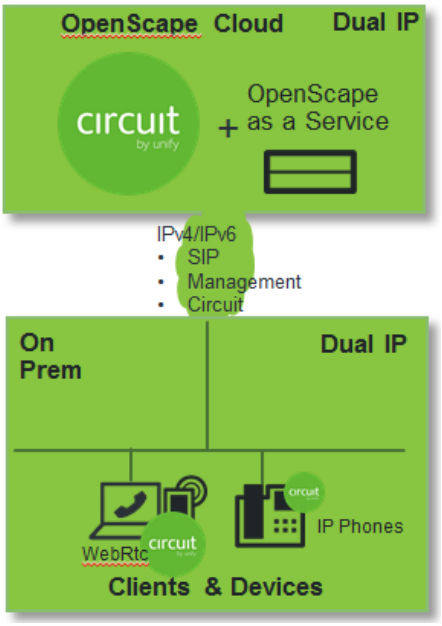


Figure: Native Cloud, aka. OpenScape Cloud

IPv6 Status and timeline:

- For IPv6 availability and for timeline statements, please refer to the corresponding base scenarios of Circuit and OpenScape Voice as provided in previous sections of this Whitepaper.

5 References

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https://tools.ietf.org/html/rfc4092

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6 Abbreviations

DC	Datacenter
HFA	HiPath Feature Access
IP	Internet Protocol
IPDA	IP Distributed Architecture
IT	Information Technology
LAN	Local Area Network
OS	OpenScape
OSBiz	OpenScape Business (SME UC system)
OS4000	OpenScape 4000 (Converged IP PBX)
OSV	OpenScape Voice (Softswitch)
SBC	Session Border Controller
SDP	Session Description Protocol
SG	SoftGate
SIP	Session Initiation Protocol
SSP	SIP Service Provider
SW	Software
TDM	Time Division Multiplexing
UC	Unified Communications
VoIP	Voice over IP
WAN	Wide Area Network

About Unify

Unify is the Atos brand for communication and collaboration solutions. At the core of the Atos Digital Workplace portfolio, Unify technology enables organizations of all sizes to transform the way they collaborate, creating a more connected and productive workforce which can dramatically improve team performance, individual engagement and business efficiency.

Unify products represent a strong heritage of technology innovation, reliability and flexibility. Their award-winning intuitive user experience can be delivered through almost any device and in any combination of cloud or on-premise deployment. Augmented by Atos' secure digital platforms, vertical solutions and transformation services, they set the global standard for a rich and reliable collaboration experience that empowers teams to deliver extraordinary results.

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