Mobilizing Real Time Communications

Transformation of business communications

The adoption of IP underlies the intersection of Real Time Communications between mobile and fixed carriers and today's connected enterprise.

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Abstract

Mitel is executing on its vision of communications industry convergence and providing business critical voice and high value business collaboration services across Mobile and Enterprise networks.

The company represents a new global force in Real Time communications (RTC) with a unique value proposition that capitalizes on two trends that are driving change in the communications industry today, convergence of fixed, mobile and enterprise communication and cloud.

The collective innovation and leadership experience across the mobile and fixed domains and the enterprise and consumer service areas makes Mitel's mobile business best equipped in the market to execute on these trends. The common, pioneering approach of software based, all-IP network products and services in their respective industries provides the foundation for accelerating the transformation to all-IP networks for all types of operators and enterprises alike. Experience in delivering end-to-end customized solutions and commitment for open, standards driven products bring the necessary efficiency and flexibility to guide this transition. This white paper highlights how Mitel's cloud-based enterprise offer, Telepo, combined with Mitel Mobile's IMS-compliant, core networking and telephony products creates one of the most compelling and rich portfolios in the industry.

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Introduction

A significant transformation of the communications industry is underway. The pace of disruption in how we communicate, the connectivity available to us, and the accelerated adoption of IT architectures and practices by the telecom industry is forcing carriers and enterprises to rethink their operating models. Basic Real Time communications (RTC) and connectivity services are under pressure as the market demands richer, higher value services available on any device across any network.

Carriers of all types, including wireless, wireline operators and cable providers, are seeking to simplify their network and operations while expanding their service delivery capabilities into adjacent markets and new revenue opportunities. This transformation is being driven by an underlying theme of IP convergence. As converged, software-based, all-IP networks with common enablers across consumer and enterprise services and organizational realignments are eliminating process barriers. This is all to provide new services while driving the cost and inefficiency out of the system.

In a similar way, business organizations of all sizes – micro-, small-to-medium business to large-, very large enterprises – are going through a transition adopting cloud services for many business functions (e.g., Real Time communications such as voice, Human Resources tools, CRM) and promoting and managing BYOD (Bring Your Own Device). The aim of business leaders is to maximize the use of technology advancements with service customization and ubiquity across their workforce's access points to improve their overall productivity, service experience and fundamental cost model.

The Operator Perspective

The communication service provider landscape is changing. Driven by the pervasive broadband all-IP access and smarter device ecosystem, a new breed of purely cloud and OTT service providers is bringing price pressure on traditional operators and commoditizing their core communication services. Traditionally, operators have been constrained by the access technology and big iron platforms dictating their service offering. Typically, they have delivered consumer and enterprise services and fixed and mobile offers in silos. This has not only increased their cost model and operational overhead but also stifled service innovation.

While the advent of 4G LTE, all-IP wireless networks and the proliferation of Wi-Fi hotspots makes fixed and mobile convergence practically feasible, traditional carriers still must optimize their service delivery supply chain to effectively motivate that transition. In this highly competitive environment, they can achieve economies of scale only with a single, unified, software-based core network serving consumer and business customers across all access types. Mitel's leadership in cloud telephony combined with mobile expertise in NFV/SDN based IMS solutions for 4G LTE and Wi-Fi networks, uniquely addresses these convergence objectives. The core network creates an environment for very efficient and fast rollout of network services and enhancements.

As traditional voice and messaging are becoming commoditized, both consumer and business customers are demanding added value from their communication services. Users expect rich and contextual services across all of their endpoints – both SIM -enabled and SIM-less user endpoints; they desire multi-modal communications channels held together by a single context – for example, using instant messaging to chat about a business topic, then adding additional participants, then promoting to a full multi-leg multimedia collaboration session. Carriers have the opportunity to be the source of these services, instead of the user finding and adopting services and applications on their own.

[1] Subscriber Identity Module

While the initial evolution to VoIP and IP-based communications occurred in the fixed network, recent events in the wireless domain – such as the launch of 4G, Voice over LTE (VoLTE), Voice over Wi-Fi (VoWiFi), RCS, and IP Multimedia Subsystem (IMS) – have ushered in an evolution of services based on all-IP mobile networks.

Mitel Mobile's software-based VoLTE/VoWiFi and RCS solutions (voice and messaging services) target the device and the rich user experience and service mobility for the next generation IP communication services. Mitel's proven enterprise solution, Telepo for service providers, is a pure software solution that enables flexible deployment and go-to-market options as a white-label and multi-tenant cloud communication solution. Telepo delivers a cloud-based Real Time communication and collaboration solution for all enterprise segments with configurable feature selection and service packaging.

Coupled together, these solutions become the catalyst for service innovation and new revenue streams for carriers across their customer base of consumers and enterprises. Also, as the solutions are cloud-based, they simplify new service launches or scaling with minimal disruption based upon service packaging or demand. Service providers can deploy these solutions in their IMS, legacy telecom networks (over the Circuit Switched domain), Telco-clouds, or hosted from Mitel via MiCloud. For example, cable or Mobile Virtual Network Operators (MVNOs) can deliver end-to-end "Wi-Fi First" solutions for voice and messaging. Similarly any service provider can deliver end-to-end business communication as a service for small-office/home-office (SOHO), small-mid size business (SMB) and larger enterprise market segments.

The Enterprise Value

The business communications landscape has evolved significantly over the past decade, and continues to do so. Voice over IP (VoIP) has evolved to become Unified Communication and Collaboration (UCC) and now Real Time communications (RTC). Deployment models have changed from communications software installed on premise to software purchased on demand from the cloud. With cloud-based services offering a diverse set of voice features, unified communication and collaboration applications, enterprises have a wide range of choices and flexible deployment models to meet their bespoke communication requirements. At the same time, demand for increased productivity, the growing adoption of a BYOD work culture and fragmentation of unified communication capabilities create complex scenarios.

The availability of end-to-end IP networks for both fixed and mobile applications is changing the way enterprise users and IT systems interact. Enterprises are increasingly allowing/encouraging users to bring their own mobile devices (phone/tablet) to work (BYOD), supporting more of their enterprise functions on mobile devices, and enabling simpler and more embedded communications solutions into their apps and websites. This applies to almost any vertical segment of the market: automotive, healthcare, education, energy, financial services, hospitality, etc.

Along with this movement within the enterprise itself, carriers such as Mobile Network Operators, Fixed/Cable Operators, and MVNOs are evolving their network capabilities to support a variety of mobile services and RTC and reaching out to some of these same segments (small-medium business (SMB) and SOHO/micro-SMB markets (< 10 users)) to generate additional revenue/loyalty in a market where per-line revenues continue to decline. These operators may use their own private clouds or a vendor's cloud such as Mitel's MiCloud, to deliver these services. The combination of Mitel's Telepo offering and its mobile IMS portfolio is deployable in both those models.

With the acceptance of cloud-based communication services, carriers have an opportunity to tap into the enterprise communication market previously served by on premise PBX systems and related communication and collaboration services. In addition to an increase in direct revenue, these services add revenue from associated services such as subscriptions and data plans. Another benefit is reduced customer churn as enterprises with higher value services tend to be more loyal to their carrier.

[2] A Wi-Fi first strategy by an MVNO is to make Wi-Fi the default connectivity option with 2G/3G Circuit Switched and 4G Packet Switched domains used only when there is no Wi-Fi coverage or to make an emergency call.

Figure 1 Mitel Mobile RTC Solution Offer

Solution Offer

Mitel provides a solution for fixed and mobile carriers built from a best-in-breed product portfolio. This comprehensive offer provides deployment flexibility and maximizes return on investment by enabling customizable service packaging across all segments of business customers. The solution is brought to market with carrier environments in mind: highly functional, secure, regulatory and standards-compliant mobile services delivered at carrier level scale and performance.

THE END-TO-END MOBILE UC SOLUTION MAY BE DEPLOYED ACROSS A VARIETY OF OPERATOR ENVIRONMENTS AND ARCHITECTURES:

- *Mobile service architectures where Voice over LTE (VoLTE) has been or is in the process of being deployed. In these environments IMS has been necessarily implemented.*

- *Fixed line and cable MSO service architectures where IMS may or may not be implemented. In these environments there are a number of offers that include VoWiFi and Wi-Fi-first approaches to mobility.*

- *MVNOs that desire a service set that they can bring to their business customers.*

WITH THE COMBINED EXPERIENCE AND PRODUCT PORTFOLIO, MITEL MOBILE OFFERS THE FOLLOWING OPPORTUNITIES FOR CARRIERS:

- *Mobile Real-Time communication services with single number*

- *Multi device support, including non-SIM devices*

- *Mobile VPN and direct access services*

- *SIP trunking services to on premise PBX systems*

- *Microsoft Lync/Skype for Business integration with line state support*

- *Upsell of high ARPU services such as IVR, ACD, collaboration and switchboard services*

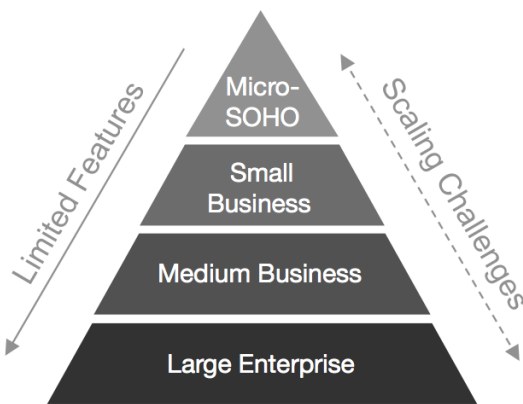- *IMS capable desk and conference phone*

Deployment Options

Operators now have options. They can quickly rollout enterprise services by integrating with a white-labeled hosted enterprise solution that they can bring it in-house as an IMS service, or they can integrate to already deployed enterprise IP PBXs.

The end-to-end solution is entirely software-based, capable of being deployed on bare metal or in virtualized cloud environments. Users access mobile UC features and services via their mobile handset (natively or with downloadable clients), desktop phone sets, tablets, or computers. Essential network functions are enabled ranging from Session Border Controller (SBC) to IMS core infrastructure to sophisticated service nodes (i.e., application servers) for business, consumer, and messaging functions.

Packaging and Product Fit

Many combinations of features and capabilities are possible and operators will blend service options to craft the best offer for their target market segments. The solution is designed to provide this flexibility from the same platform. This is made possible by the definition of different customer profiles that control end-to-end visibility of services and web portal interfaces. Services previously only available for large or medium sized companies can now be offered to smaller companies.

Primary Use Cases

Hosted Unified Communications (or Hosted UC) is an expansive category of functionality and capabilities and encompasses a wide spectrum of use cases. The capabilities provided by the Hosted UC offer will vary based on the targeted segment. In all cases, a portal is provided to administer policy, manage subscriber seats (moves/adds/changes), and track usage. Usually, a portal is also provided for the end user to configure specific behaviors (e.g., manipulating Call Forwarding logic) and capture call logging.

Businesses are motivated to use Hosted UC for PBX replacement as a cost savings measure and productivity enhancement. Capital expense is reduced (it removes the PBX from the communications equation) as well as reduction of operations expense (no need to have technical resources that manage and administer the PBX), all without loss of functionality.

Note that a baseline requirement in today's enterprise environment is support for multi-device and associated communication applications. Overlaid on each of the following use cases can be additional devices (e.g., tablets) from which services may be accessed and managed, providing service ubiquity and continuity. More sophisticated offers support the movement of services mid-stream from one device to the next.

Traditional Offer Limitations
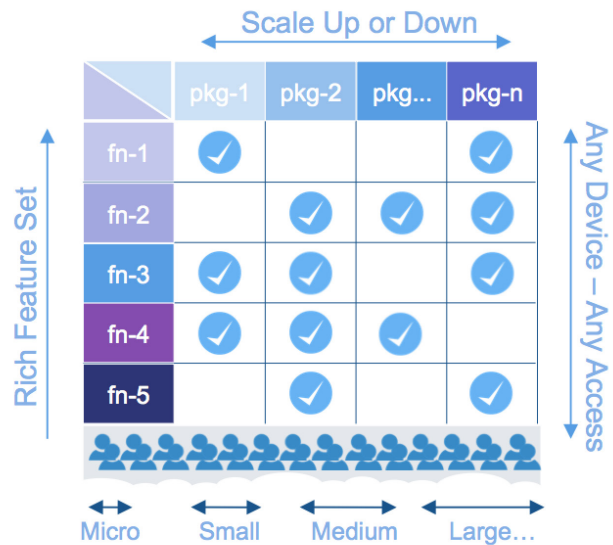
Mitel: Flexible, Customizable UC Choices

Figure 2 Mitel Mobile RTC Offer Packaging Options

USE CASE 1: HOSTED RTC FOR PBX REPLACEMENT

The PBX (TDM-based or IP-based) at customer site is replaced by a service provider offer who provides all of the feature functions normally provided by the PBX. SIP desk phones securely connect across an IP interface into the service provider's network. In its simplest form, this use case narrowly addresses fundamental voice-related business communications.

This use case is not limited to desk phones only: the service provider integration with the mobile network also offers the users PBX services provided to the mobile phone or via an application running on their computer or tablet. For example, the 3GPP IMS Multimedia Telephony Service (MMTel) capability set can be used, along with essential regulatory features (e.g., emergency calling, lawful intercept).

USE CASE 2: HOSTED RTC FOR MICRO- TO SMALLER BUSINESS

With the micro- to small business use case, the number of employees may range from 1 to 20. Employees may work from home some or all of the time and usually there would not be more than one or two sites for the business. This business services market segment typically will have lighter weight requirements on feature functionality compared to the PBX replacement use case, but is heavily dependent on mobile devices, and depending on the business vertical, may draw from some of the more sophisticated service set. For example, a small attorney practice will need to carefully track call duration for each of their clients so that they may bill appropriately; accounting codes are the usual method for this requirement. A small travel agency might make frequent use of call hunting groups and call park functionality. A distributed group of software developers or a small consulting firm might make heavy use of web/mobile collaboration functions.

Thanks to hosted RTC services, this customer segment can access services previously only available for medium to large customer due to the cost of installation and operation. This allows these customers to provide better communication tools for their employees and improve customer interaction.

USE CASE 3: HOSTED RTC FOR MEDIUM BUSINESS

With medium businesses (those with employees of up to 500 employees), the needs include those of the previous use cases with more defined communities of interest within the organization. For example, the sales teams may have need for a set of features and functions that are unique across the organization such as voice and messaging integration into customer relationship management (CRM) systems. As this type of business can span multiple sites, abbreviated private dialing (e.g., 4/5-digit private dialing) is frequently used. The demands on auto-attendant are greater. Customer support teams make increased use of hunt groups, call routing, and queuing. Sites distributed across time zones often make use of time-of-day routing of calls into the business (e.g., via auto-attendant). Voice mail functionality is also an essential component of the offer. Web collaboration and meet-me conferencing (including mobile focused one-click access and SMS based join requests) are very frequently used and for some business categories may represent the majority of voice communications.

USE CASE 4: HOSTED RTC FOR ENTERPRISE

Supporting the Enterprise (greater than 500 seats) includes support for the capabilities of the previous use cases, but layers on more complexity for large department functions and their needs. For this market segment, there are often multiple sites often spanning multiple countries. Generally, this use case involves a large amount of web collaboration and meet-me conferencing. SIP-enabled IP PBXs (for SIP trunking) are often part of the communications infrastructure and can represent a hybrid model for some time.
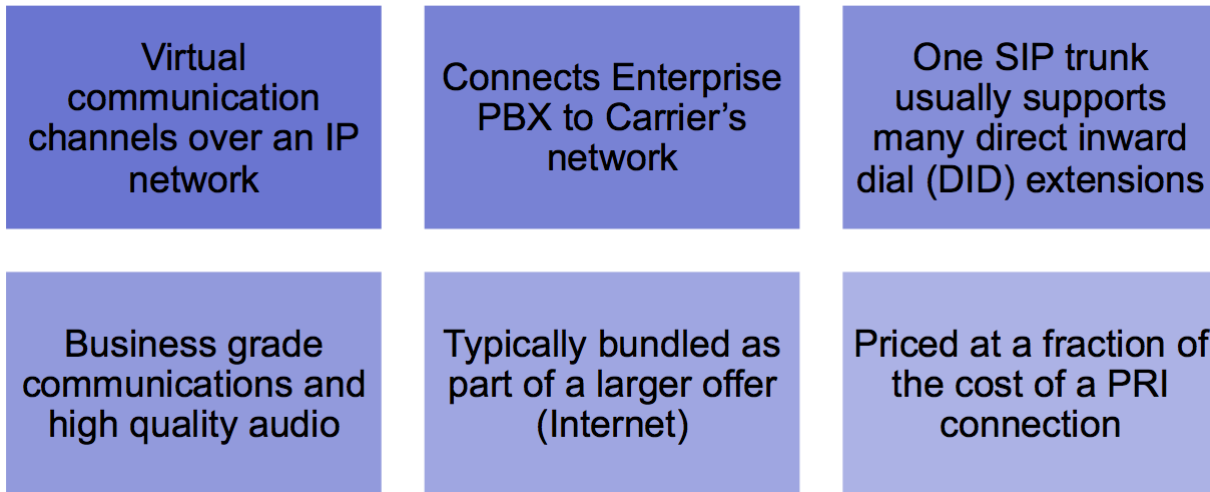
| Virtual communication channels over an IP network | Connects Enterprise PBX to Carrier's network | One SIP trunk usually supports many direct inward dial (DID) extensions |
| Business grade communications and high quality audio | Typically bundled as part of a larger offer (Internet) | Priced at a fraction of the cost of a PRI connection |

Figure 3 SIP Trunking Description

USE CASE 5: SIP TRUNKING

In the SIP trunking use case, the business desires to have a greater degree of local control over the voice services provided to the organization. The SIP-enabled IP PBX provides calling features and capabilities locally on the business premise. The SIP trunking service provider offers connectivity, security, and various additional network-based services (e.g., dial-plan management for multi-premise configurations, business continuity, mobile extensions, unified communications, conferencing, etc.). Frequently, service providers offer SIP trunking support as part of a larger bundled service that can include Internet connectivity (MPLS), hosted email, Direct Inward Dial services and number management, and additional network based services.

The solution offers a built-in SIP trunking service to allow hybrid service offering and mobility service integration for the PBX users, such as parallel ringing on the mobile phone with the PBX extension. The solution also offers upsell opportunities of more advanced functionality in conjunction with the trunking service, for example IVR, auto-attendant, and call center functionality.

USE CASE 6: MICROSOFT LYNC/SKYPE FOR BUSINESS INTEGRATION

For environments where Microsoft Lync/Skype for Business is used, hosted UC may be incorporated to create a hybrid deployment. Here, the operator can augment the service with intelligent routing, secure voice trunking, and the upsell of additional services like auto attendant, IVR, ACD, enhanced mobile experience, and Microsoft Lync state/presence visible to users as well as attendants.
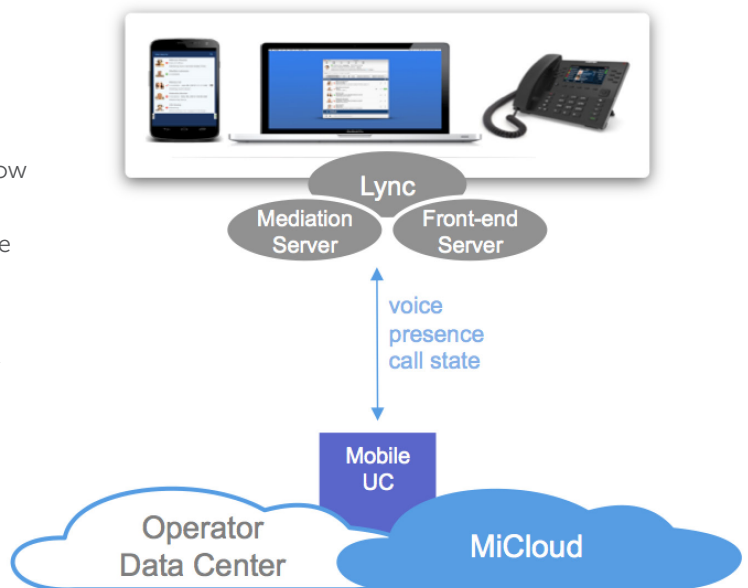

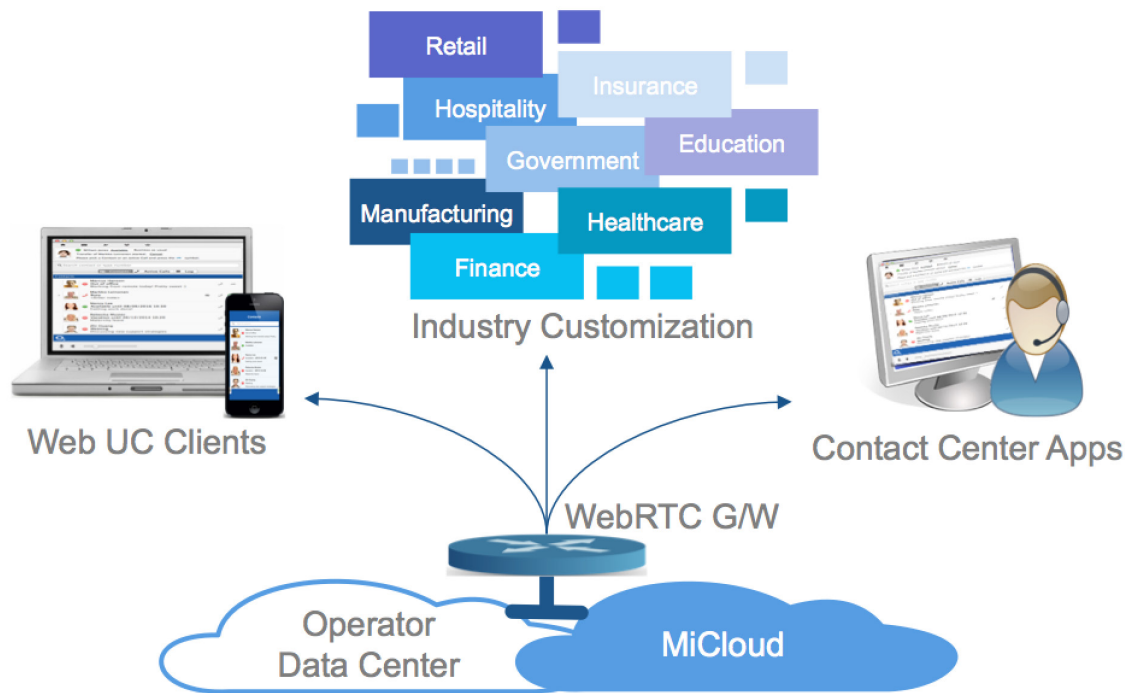*Figure 4 Mitel Mobile RTC with Microsoft Lync Integration*

Figure 5 Mitel Mobile RTC with WebRTC Enablement

USE CASE 7: WEBRTC ENABLEMENT

Using the WebRTC gateway, operators can extend the mobile identity of a user to browser-equipped endpoints. Mobile extension enabled by WebRTC is primarily targeting the hosted UC use cases, but may be useful in combination with the SIP trunking use case (e.g., business continuity).

To better address specific needs of vertical segments (e.g., manufacturing, finance, higher education, healthcare, hospitality, government), WebRTC can be used to increase functional value and utility of Real Time communications services:

1. *Communication enabled enterprise sites, kiosks/ POS for CRM*

2. *Contact center applications*

3. *Enterprise workflow integration*

4. *Web conferencing, collaboration*

5. *Corporate event specific activity coordination, participation management*

6. *Industry specific applications for various use-cases that require remote consultation (banking, health), virtual engagements such as classrooms (education/training), live helpdesks (insurance, professional services) etc.*

Solution Description

The mobile UC solution is an end-to-end converged solution, consisting of the full complement of IMS and EPC network elements that enable IP-based voice, video, and messaging services. Operators deploying this solution are able to offer hosted UC, hosted PBX, and SIP trunking capabilities along with value added functions for consumer and enterprise applications.
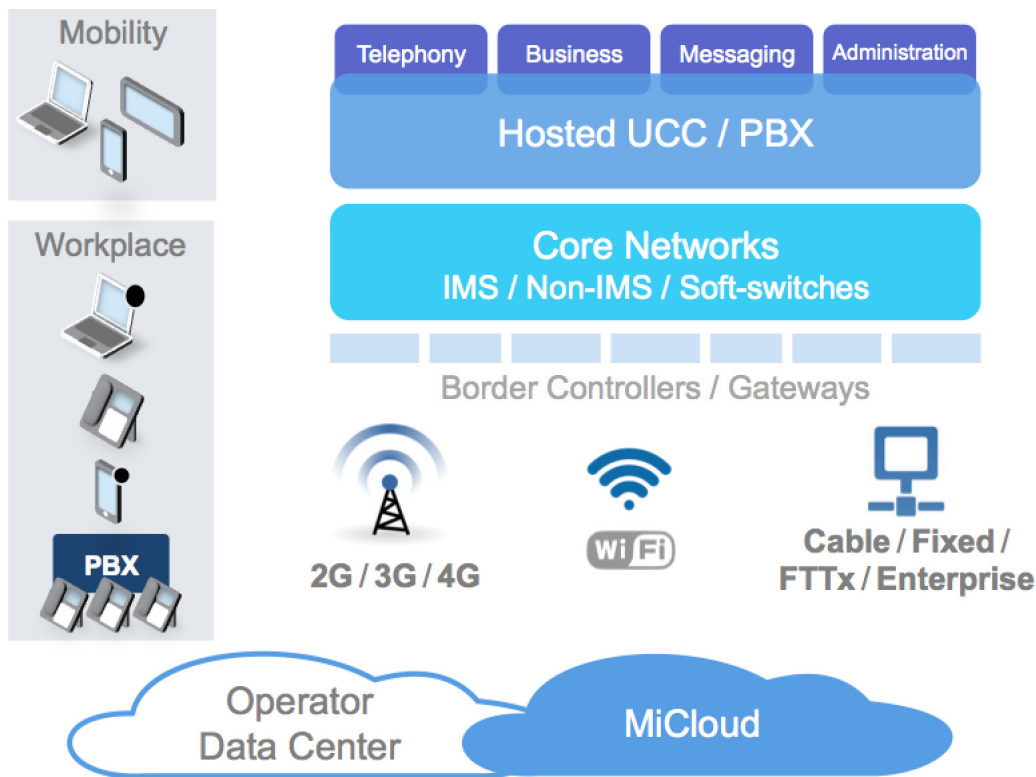
Figure 6 Mitel Mobile RTC Solution Overview

MOBILE CORE INFRASTRUCTURE

The Mitel Mobile suite of IP core products covers EPC, IMS core network domains, Session Border Controllers (SBC), Diameter Signaling Controllers (DSC), and Security Gateways. The SBC, when acting as an access SBC and interfacing with the users of the service, manages access security, service load balancing, registration, network address translation (NAT) and firewall traversal. When acting as an interconnect SBC and interfacing with other network peers, the SBC manages the inbound and outbound SIP/RTP traffic to and from the solution.

APPLICATION PORTFOLIO

Mitel Mobile's suite of IMS application servers is not limited to a single service domain (i.e. voice or messaging), but includes also Telephony Application Server (TAS), Business Services AS, Rich Messaging Server (RMS), Session Continuity & Centralization (SCC), Converged Messaging and Presence products, along with several enabling Interworking Functions.

Included in the solution is an IMS MMTEL application server, providing 3GPP compliant multimedia voice and video telephony and supplementary services. It comes with integrated support for Intelligent Network (IN) features, Service Centralization and Continuity (SCC) function and integrated Service Broker to manage and execute the interactions of consumer and business services and functions.

The Business Services Application Server has self-contained functional modules encapsulated for each organization to simplify dimensioning and provisioning of tenants and organizational settings. The fully virtualized and redundant node enables a practical and highly scalable model for operators to serve various configurations of enterprises. Key functional areas include business calling functions, IVR, ACD, voicemail, fax, conferencing (ad hoc and meet-me), and collaboration.

Carrier grade messaging application servers provide real-time 3GPP compliant peer-to-peer and group multimedia messaging and archival, enabling seamless converged messaging and interworking with SMS/MMS/RCS services.

CLIENT SOLUTIONS

The client solutions available as part of the solution is built for a variety of usage targets: mobile handsets, tablets, desk phones, and desktop computers. Automatic provisioning is supported for desk phones and mobile phones to deliver an optimal user experience. The solution provides an open interface for support of any SIP phone, SIP-based application, and WebRTC application and contains software lifecycle management for devices and applications to manage large-scale deployments with numerous client versions.

DEVICE MOBILITY

In addition to client support of VoWiFi, the solution includes the mobile infrastructure to enable seamless mobility across LTE, Wi-Fi, HSPA+, and circuit switched (CS) domains preserving operator legacy service continuity. The mobile and tablet clients can support VoWiFi with seamless mobility, should an operator choose to provide.

MANAGEMENT FRAMEWORK

The management framework provides a single unified view for the entire solution and externalizes the provisioning, BSS and OSS interfaces to simplify the integration and management of solution-wide platforms and services. Diagnostic tools, deep-level analytics, and instrumentation are also part of the management framework.

CUSTOMIZATION FRAMEWORK FOR VERTICAL SEGMENTS

Using WebRTC and a toolkit of RESTful APIs, operators can provide more value to vertical business segments and enhance the user experience. The operator (or partner to the operator) can "web-enable" communications, and anchor on a single identity. With the WebRTC gateway, there are standard interfaces that have already been proven in and dissolve into the fabric of the IMS core. Operators totally insulate the VoLTE/IMS network from the web-nature of the actual communications context; it simply looks like ordinary SIP traffic.

Figure 7 Mitel Mobile RTC Device Portfolio

Virtualization, NFV/SDN, and the Cloud

Without question, the networks built today look nothing like the networks of the recent past. Increasingly, operators look to deploy solutions in a virtualized environment for ease of management, flexibility in network design, and as a way to reduce cost. The RTC solution from Mitel Mobile is software based and fully virtualized, helping many operators to fulfill their future cloud architecture strategies.

Due to the modularity of the mobile RTC solution architecture and key design decisions made very early on, flexible network deployment options of the solution are available. Products can be deployed as very tightly integrated running in a single virtual machine instance, or with a decomposed and distributed approach with each software module running in its own virtual machine instance.

Few telecommunications suppliers have the experience of deploying advanced, 4G/LTE solutions in virtualized environments. Mitel is one such company — while others are working out how to transition from legacy product delivery approaches and attempt to reconcile their product roadmaps and eventually bring their support teams on line, Mitel gained valuable deployment experience in these new environments that our competitors simply do not have. Our customers are able to benefit from our experience and core strengths and ascend the learning curve much more quickly. By selecting Mitel as a partner, they can avoid their supplier "learning as they go" and can circumvent design mistakes as they roll their networks out. As customers are ready to step into virtualization and cloud architectures, Mitel provides guidance every step of the way.

Conclusion

The way people fundamentally communicate in today's business setting is increasingly mobile centric. Voice is no longer the dominant mode of day-to-day business communications: messaging, IM, video, web collaboration are all significant forms of realtime communications that are genuinely disrupting how we get things done in our business lives.

There's no question: the communications market environment is changing. Fixed line approaches are making way for mobile-centric approaches. Monolithic, integrated designs are making way for distributed designs. Step-function scaling profiles are making way for elastic scaling profiles. Where service models once were static and predictable, today they are more dynamic and more random. Users demand and seek out multi-modal communications.

Bringing together enterprise expertise, broad channel network, and industry leading Telepo-enabled cloud solution, combined with an award-winning 4G VoLTE/IMS portfolio and operator experience, mobile operators and service providers have a unique opportunity to offer competitive, tightly integrated, differentiated, high value services to business customers of all types and sizes. With Mitel, you can confidently mobilize Real Time communications and transform business.

Note: The term 'Real-Time communications' (RTC for short), helps explain and bridge what we do at an overall level.

There are of course, opportunities where it is more appropriate to use more specific terms like UC or VoLTE.

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