



Redcentric Teams Calling SD100v1.0

redcentric

AGILE • AVAILABLE • ASSURED

SERVICE OVERVIEW

INTRODUCTION

Redcentric's Teams Calling is part of Redcentric's Carrier Connect services, providing customers with access to a cost effective PSTN calling capability, enabling users to make and receive calls on any Microsoft Teams enabled device. The service provides customers with choice on how they consume PSTN calling services, removing the need to subscribe to Microsoft calling plans.

Key features and benefits:

- Flexibility – The “Teams Calling” service can be deployed on a user-by-user basis providing customers with the ability to easily manage their transition to the cloud.
- Service Adoption - customers can be added to the service on a user by users basis, greatly reducing any risk during a service transition period
- Number Management - Redcentric can provide a customer with a complete service be that the allocation of new telephone numbers or the porting of existing numbers to enable a smooth service setup or transition.
- Flexible Tariff - Options to meet customers' requirements (PAYU, or Per Enterprise Bundles). No need to subscribe to Microsoft Calling Plans - All call traffic routes via Redcentric's resilient PSTN Interconnects.

SERVICE DESCRIPTION

FUNCTIONAL SOLUTION OVERVIEW

Figure 1. Below provides a high-level overview of the Teams Calling service architecture.

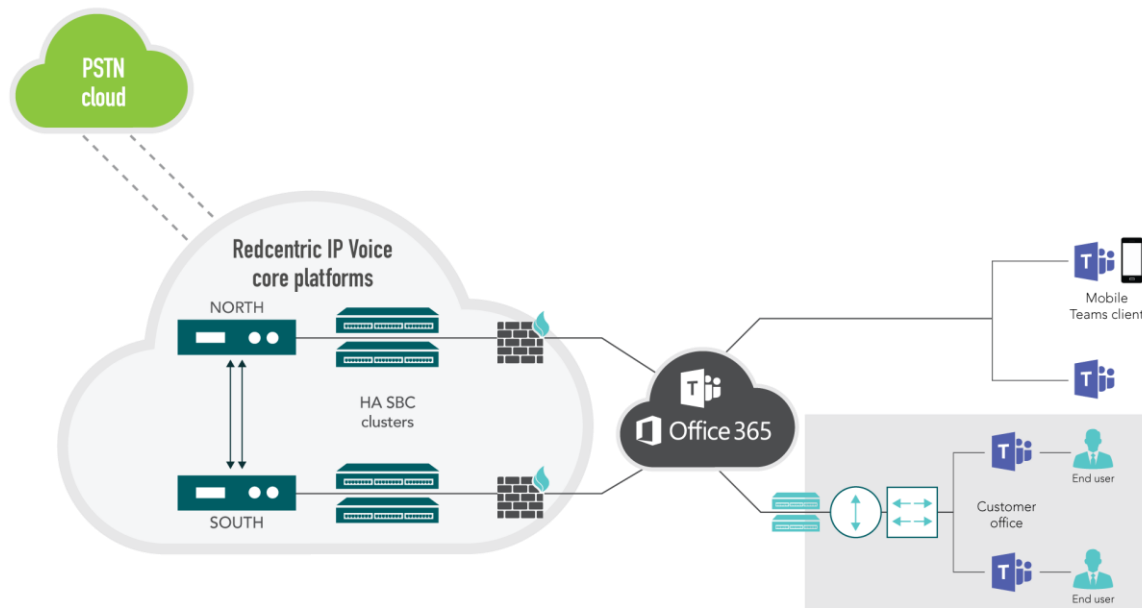


FIGURE1: TEAMS CALLING ARCHITECTURE OVERVIEW

REDCENTRIC CORE VOICE INFRASTRUCTURE

Redcentric's Teams Calling service is delivered from Redcentric core voice infrastructure hosted within Redcentric's highly secure and resilient DC (Data Centre) environment.

Redcentric's core voice infrastructure has been deployed in a geographically distributed highly available configuration across the North and the South of the country. London.

SESSION BORDER CONTROLLERS (SBCs)

Redcentric have deployed clusters of high availability "Edge" Session Border Controllers (SBCs) to act as the points of service interconnect between the customers Microsoft Office365 (O365) environment and Redcentric's Teams Calling service. The SBCs act as a point of network demarcation between the two networks.

NETWORK CONNECTIVITY

The Teams Calling service is delivered into a customer's O365 environment via secure, resilient internet connections.

Note: Redcentric does not offer any Quality of Service (QoS) guarantees for traffic delivered across the Internet.

NETWORK FAILOVER

The Teams Calling service is always deployed in a resilient configuration, connecting to multiple SBCs in an Active:Active configuration into to Microsoft O365 Edge servers.

For external calls, the Teams Calling service utilises Redcentric's high speed Tier -1 PSTN interconnects enabling callers to make and receive PSTN calls to and from their Microsoft Teams desktop and mobile clients.

EMERGENCY CALLS

Calls to the Emergency services can be made using the Teams Calling service, subject to the service being available. Site location information is held by Redcentric, which defines the physical location address associated with each telephone number. This address information may be provided to the emergency services if they are contacted to direct them to the source of the call. As such the accuracy of this information is critical. The Customer is responsible for notifying Redcentric of any change address where voice services are provisioned. Moving services to a new location without providing updated site location information is in breach of the General Condition 4 of the General conditions of Entitlement enforced by OFCOM. As the Teams Calling service includes functionality to facilitate mobile and remote working, all telephone numbers are registered with the Emergency services as 'nomadic'. This means that during an emergency services call, the geographical location of the caller will be confirmed.

CODEC SUPPORT

The Teams Calling service supports G.711 A-law voice encoding with a sampling period of 20msecs. The encoding algorithm results in a per call bandwidth usage of between 50 – 100kbs.

PSTN CALLING BANDWIDTH REQUIREMENTS

As part of the Teams Calling service design, the overall bandwidth requirements need to be considered.

Table 1 provides an estimate of the bandwidth requirements for VoIP calls using G.711, and G.729a, and the corresponding Mean Opinion Score (MOS). By comparison, GSM has a MOS of 4.1. The scores range from 1 (worst) to 5 (best).

Network	Codec	Sample period	Encoded sound bandwidth	IP/UDP/RTP overhead	Network overhead	Total bandwidth*	MOS†
Ethernet	G.711	20 ms	64 kbps	16 kbps	15.2 kbps	95.2 kbps	4.4

TABLE 1: PSTN BANDWIDTH CALCULATIONS

MICROSOFT TEAMS BANDWIDTH REQUIREMENTS

Microsoft Teams is always conservative on bandwidth utilization and can deliver HD video quality in under 1.2Mbps. The actual bandwidth consumption in each audio/video call or meeting will vary based on several factors, such as video layout, video resolution, and video frames per second. When more bandwidth is available, quality and usage will increase to deliver the best experience.

Bandwidth(up/down)	Scenarios
30 kbps	Peer-to-peer audio calling
130 kbps	Peer-to-peer audio calling and screen sharing
500 kbps	Peer-to-peer quality video calling 360p at 30fps
1.2 Mbps	Peer-to-peer HD quality video calling with resolution of HD 720p at 30fps
1.5 Mbps	Peer-to-peer HD quality video calling with resolution of HD 1080p at 30fps
500kbps/1Mbps	Group Video calling
1Mbps/2Mbps	HD Group video calling (540p videos on 1080p screen)

TABLE 2: MICROSOFT TEAMS BANDWIDTH CALCULATIONS

NETWORK CLASS OF SERVICE (NCOS)

Redcentric will provision a default NCOS. This is configured as below in the interests of security. Customers requiring the ability to call destinations prohibited by the default NCOS will need their group administrator to enable the required destinations.

NCOS Level	NCOS Policy
NCOS-1	Allow Extn. & Emergency Calls Only.
NCOS-2 (Default)	Block International, 118 Services, Personal Numbering Services & Premium Rate Services.
NCOS-3	Block International, 118 And PRS
NCOS-4	Block PRS And 118 Services
NCOS-5	Block 118 services
NCOS-6	Allow all Calls

TABLE 4: NETWORK CLASS OF SERVICE

NOTE: Currently there is no option to bar mobile calls which are permitted.

Restricted International Destinations

In the interests of minimising the risk of fraudulent calls, Redcentric has barred access to the following high-risk international destinations.

Country Code	Destination	Country Code	Destination
0020	Egypt	00509	Haiti
00211	South Sudan	0051	Peru
00212	Morocco	0052	Mexico
00213	Algeria	0053	Cuba and Guantanamo
00216	Tunisia	0054	Argentina
00218	Libya	0055	Brazil
00220	Gambia	0056	Chile
00221	Senegal	0057	Colombia
00222	Mauritania	0058	Venezuela
00223	Mali	00590	Guadeloupe
00224	Guinea	00591	Bolivia
00225	Ivory Coast	00592	Guyana
00226	Burkina Faso	00593	Ecuador
00227	Niger	00594	French Guiana
00228	Togo	00595	Paraguay
00229	Benin	00596	Martinique
00231	Liberia	00597	Suriname
00232	Sierra Leone	00598	Uruguay
00233	Ghana	00599	Netherlands Antilles
00234	Nigeria	0060	Malaysia
00235	Chad	0062	Indonesia
00236	Central African Republic	0063	Philippines
00237	Cameroon	0065	Singapore
00239	Sao Tome and Principe	0066	Thailand
00240	Equatorial Guinea	00670	East-Timor
00241	Gabon	00672	Australian External Territories
00242	Congo	006721	Antarctic
00243	Republic of Congo	006723	Norfolk Island

Country Code	Destination	Country Code	Destination
00244	Angola	00673	Brunei Darussalam
00245	Guinea-Bissau	00674	Nauru
00246	Diego Garcia	00675	Papua New Guinea
00248	Seychelles	00676	Tonga
00249	Sudan	00677	Solomon Islands
00250	Rwanda	00678	Vanuatu
00251	Ethiopia	00679	Fiji
00252	Somalia	00680	Palau
00253	Djibouti	00681	Wallis and Futuna
00254	Kenya	00682	Cook Islands
00255	Tanzania	00683	Niue
00256	Uganda	00684	American Samoa
00257	Burundi	00685	Western Samoa
00258	Mozambique	00686	Kiribati Republic
00260	Zambia	00688	Tuvalu
00261	Madagascar	00689	Tahiti
00262	Reunion	00690	Tokelau
00263	Zimbabwe	00691	Micronesia
00264	Namibia	00692	Marshall Islands
00265	Malawi	0081	Japan
00266	Lesotho	0082	Korea Republic
00267	Botswana	0084	Vietnam
00268	Swaziland	00850	Korea
00269	Comoros and Mayotte	00853	Macao
0027	South Africa	00855	Cambodia
00290	St. Helena	00856	Laos
00291	Eritrea	00880	Bangladesh
00297	Aruba	00886	China-Taiwan
00298	Faroe	0092	Pakistan
00354	Iceland	0093	Afghanistan

Country Code	Destination	Country Code	Destination
00355	Albania	0094	Sri Lanka
00370	Lithuania	0095	Myanmar
00371	Latvia	00960	Maldives
00372	Estonia	00961	Lebanon
00375	Belarus	00962	Jordan
00377	Monaco	00963	Syrian Arab Republic
00380	Ukraine	00964	Iraq
00381	Serbia	00965	Kuwait
00382	Montenegro	00966	Saudi Arabia
00383	Kosovo	00967	Yemen
00385	Croatia	00968	Oman
00386	Slovenia	00970	Palestine
00387	Bosnia and Hercegovina	00972	Israel
00389	Macedonia	00974	Qatar
00420	Czech Republic	00975	Bhutan
00421	Slovakia	00976	Mongolia
00500	Falkland Islands	00977	Nepal
00501	Belize	0098	Iran
00502	Guatemala	00992	Tajikistan
00503	El Salvador	00993	Turkmenistan
00504	Honduras	00994	Azerbaijan
00505	Nicaragua	00995	Georgia
00506	Costa Rica	00996	Kyrgyz Republic
00507	Panama	00998	Uzbekistan
00508	St. Pierre		

TABLE 5: RESTRICTED INTERNATIONAL DESTINATIONS

NOTE: The restricted international destinations are barred at system level. Even with international calls permitted by the group administrator on the NCOS level these destinations will still be barred.

If the customer needs to make calls to any of these high-risk international destinations, barring can be removed by submitting a request to Redcentric support.

NOTE: that this will remove barring to all high-risk international destinations as defined above. It is not possible to permit / bar individual high-risk international destinations.

SERVICE NUMBERING & PORTING

To facilitate inbound telephone calls, the service may be specified with geographic or non-geographic telephone numbers (DDIs). Redcentric can provide new number(s). to use with the service, as well as porting in numbers from an existing service provider.

Redcentric pre-sales consultants will gather the necessary information to complete any required number porting requests, but will need the Customer's assistance to identify their current Service Provider and Range Holder of the numbers, the registered site information including postcode and any associated direct dial inwards (DDI) numbers attached to main billing number. This information will then be included in the management summary of the contract so both parties have full visibility of the porting scope.

The installation price a customer is quoted includes any required number porting providing the port is scheduled to take place during normal working hours (Monday-Friday/9-4), porting requests outside of the stated hours will incur additional out of hours costs (bank and public holidays will be treated as an out of hours request).

NOTE: If Customer provided numbering information results in a subsequent port rejection, Redcentric may charge the Customer for porting resubmission.

SERVICE ORDERING

The Teams Calling service is ordered by way of Redcentric standard contract process. Subsequently, orders can be placed by authorised person completing the online information via Redcentric's "Inform" portal.

Orders can be placed using the following part code(s):

CORE SERVICES

Part code	Description
N-MSTv2-001(S)	Microsoft Teams Calling Service Establishment
N-MSTv2-002	Microsoft Teams Calling service User
N-MSTv2-003	Microsoft Teams Calling service Trial User
N-MSTv2-004	Microsoft Teams Calling Channel

TABLE 8: CORE SERVICES

SERVICE DEPLOYMENT

The service is delivered by default in based on the following configuration:

- **Numbering:** - All users will be built with a full E.164 telephone number
- **Call Concurrency:** Customers deployments will be built on a basis of 10:1 (Users : Concurrent PSTN Calls).
- **Network Class of Service:** All users will be built by default with NCOS-2
- **Calling Line ID:** All users will be built by default to present their individual CLI.

NOTE: Customers utilising the Teams Calling service, should consider the use of appropriate headsets. Redcentric can provide options for Teams certified headsets.

SERVICE CAPABILITIES & LIMITATIONS

- The Teams Calling service can be deployed with a minimum of 1 user. Additional users can be added individually.
- The service can be deployed with a minimum of 1 user/channel. Subsequently users and/or channels can be added individually.
- The maximum number of simultaneous PSTN calls that can be made using the service is limited to the amount of available bandwidth on the Customer WAN connection
- Fax is not supported; this includes analogue or ISDN fax machines connected via the Microsoft Phone System.
- Analogue devices such as modems, bank machines and franking machines are not supported

NOTE: Customers who have users accessing the corporate network from remote locations should consider utilising an alternate path that bypasses the VPN for Teams traffic. This is commonly known as split-tunnel VPN. Split tunnelling means that traffic for Office 365 won't traverse the customers corporate VPN but will go directly to Office 365. This change will have a positive impact on quality, but also provides the secondary benefit of reducing load from the VPN devices and the organization's network.

REDCENTRIC RESPONSIBILITIES

Redcentric is responsible for:

Configuration, Deployment & Ongoing Management of the Service Components. Including:

- Configuration of the core network components
- Configuration & Management of the Redcentric Firewall(s)
- Management of the Edge SBCs
- Daily Configuration Backups
- Fault Management & Investigation

CUSTOMER RESPONSIBILITIES

It's the Customer's responsibility to:

- Provide all required information to allow Redcentric to submit appropriate porting requests.
- Provide signed LOA (Letter of Authority) to facilitate number porting requests where required.
- The accurate reporting of any service-related faults
- All LAN configuration, operation, and maintenance (unless equipment is provided and covered by Redcentric maintenance agreement).
- Implementation of suitable security policies to prevent fraudulent use of the Teams Calling service.
- Provision of required Microsoft O365 licensing to enable the use of the Teams Calling service
- Provision of Internet access
- O365 Tenancy Administration

IMPLEMENTATION AND ACCEPTANCE

ON-BOARDING PROCESS

Redcentric's On-Boarding process comprises of a project managed, five phase technical and business consultative process.

Phase 1 - Redcentric presales will engage with the customer to clearly capture, document and agree the customers Teams Calling service requirement(s). The agreed design output will be stored under version control and used as the master service delivery document that the Teams Calling service will be delivered against.

NOTE: All changes to this document post phase 1 will be managed via formal change control process.

Phase 2 –Teams Calling service build as per the agreed output of phase 1.

Phase 3 - If required, porting requests will be submitted to the Losing Communications Providers (LCPs).

Phase 4 - On the day of the port/go live, Redcentric will create the Customer's service account and assign either ported, or new numbers into the customer's account. Redcentric will the work with the customer to enable the Teams Calling users.

Phase 5 – Redcentric will execute a standard service test plan that will include the testing of the agreed calling and overlay services. The results of the test plan will be documented and included as part of the Ready for Service (RFS) handover to the customer.

ACCEPTANCE CRITERIA

The following are the Acceptance Criteria applicable to the Teams Calling service:

- Email notification that numbers porting in have successfully been ported into Redcentric network.
- Where customers are porting numbers into Redcentric, several inbound and outbound test calls will be made to pre-defined DDIs to confirm numbers are live on the Redcentric network prior to final customer handover to live service.
- Emergency services/999 test call will be made as part of the service acceptance process.

DECOMMISSIONING PROCESS

Upon expiration of the Service contract where the Customer chooses not to renew with Redcentric, the following steps will be followed as part of the decommissioning process:

Phase 1 - Contractual

Expiration of the service contract or the Customer decides not to renew. This may also include early termination by the Customer, subject to payment of early termination fees.

Phase 2 - Service Decommissioning

Cessation of the Teams Calling service and associated optional features. Plus, the removal of user accounts from the core platforms.

Phase 3 – Number Export

Porting out of any telephone numbers out from Redcentric to the gaining party where this party has an existing porting agreement with Redcentric.

SERVICE LEVELS AND SERVICE CREDITS

SERVICE LEVELS

The Service Levels applicable to the Teams Calling service are as follows:

Service Level: Availability Measurement Period: Month	
Service Level	Not less than 99.99%

EXCLUSIONS FROM AVAILABILITY

In calculating Availability, in addition to the exclusions listed in clause 6.7 of the General Terms the following shall be excluded:

Call completion not possible due to busy signal – fully utilised Trunk line or network capacity for example.

Microsoft Phone System – not available.

FLOOR SERVICE LEVEL

The Floor Service Level applicable to the Teams Calling service in respect of Availability shall be 85% in any given Month.

SERVICE CREDITS

The Service Credits applicable to the Teams Calling service shall be calculated as follows:

In the following table:

“≥” means “greater than or equal to”

< means “less than”

“MS” means the total Charges payable in respect of the Service for the same Month

Applicable Teams Calling Service	Service Availability	Service Credit
	99.99%	None
	≥<99.95% but <99.98%	10% of MS
	≥<99.75% but <99.94%	15% of MS
	<99.75%	25% of MS

DATA PROCESSING

DATA PROCESSING SCOPE

- Redcentric does not access, alter or use any application data that is running on the Teams Calling service except as specifically stated below.
- In terms of operating the Teams Calling service, API commands are passed into the associated supporting servers to orchestrate the build/management of identified users that have subscribed to the Service.
- Users that have the appropriate role/privileges assigned to them can access the Service components via a secure web portal to manage their individual user configuration* and Microsoft Teams user configuration**.
- The agreed roles and responsibilities are provisioned based on documented Customer requirements.

* - If setup with Group Admin on Unity Service

** - Requires O365 Admin account.

DATA STORAGE AND UNENCRYPTED DATA

- All Teams Calling service associated data is stored within Redcentric's privately owned and managed data centre facilities.
- All access to data within the Teams Calling service is via secure portal.
- All access to data is restricted to Customer identified users.

DATA PROCESSING DECISIONS

- In the normal course of business Redcentric does not make any data processing decisions in relation to the Teams Calling service. Processing is automated and instigated by the Customer.
- Redcentric Support can be asked by the Customer to intervene in the event of an issue with the Service. In such a case Redcentric may make decisions that can affect data processing, but such actions will only be undertaken at the request of and in conjunction with the Customer.

SERVICE CONFIGURATION WITH RESPECT TO DATA

- The initial Service configuration is built using a combination of Redcentric and Customer provided information.
- As data controller, Redcentric holds the following information on Users on Redcentric's BroadWorks telephony service delivery platform:
 - **Company Information:** Company Name, Associated Site Address, Postcode
 - **SIP User Data:** Telephone Number on Users:
 - **UserID:** User ID, email address, first, last name

DATA BACKUP

- Redcentric performs daily database data backups.
- Backup data is encrypted during transit.
- Backup data is encrypted whilst in storage.

SUB-PROCESSORS

The following party is involved in the delivery of the Teams Calling service:

- SIPPIO: Provide a secure API to provision Azure hosted SBC service.

No other parties are involved in delivering the Teams Calling service.

CUSTOMER ACCESS TO DATA

- The Customer has login rights to Redcentric's core voice platform via secure web portal.
- Access is based on roles and responsibilities defined by the Customer as part of the service setup.
- Redcentric can access reporting data but would only do this after a formal support request by the Customer/authorised user.

SECURITY ARRANGEMENTS AND OPTIONS

- Customers have access via a secure portal to manage their own DDI allocation, but they are unable to interact directly with the back-end systems to modify any service wide configurations.
- Customer access to the portal uses role-based access controls (RBAC), integrated with Redcentric core voice platform
- All locations meet physical security standard ISO27002 section 11.1 or equivalent.

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