SECURITY PAPER 2018

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Introduction

CloudCTI is a service which provides a link between business telecommunications systems and databases or applications containing data of customers and relations of the service's user. CloudCTI is partly hosted in a datacenter. This document describes how third-party data are handled and how the security of the data and the service is given shape.

Scope and purpose of security

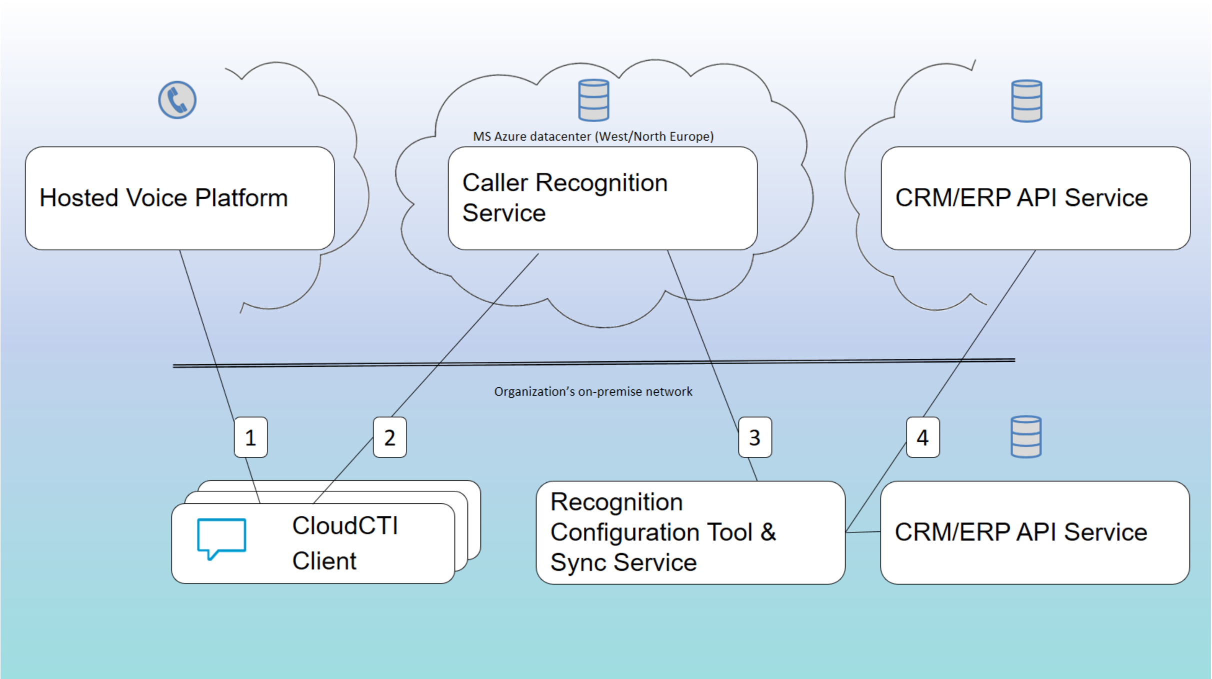
CloudCTI endeavors to take adequate technical and organizational measures to protect the personal data which are being processed against loss or any kind of wrongful processing (such as unauthorized examination, impairment, change or provision of the personal data).

A duty of confidentiality to third parties applies to all personal data that CloudCTI receives from its resellers or end-customers and/or that it collects in connection with providing the CloudCTI service. CloudCTI will not use this information for any purpose other than that for which it was obtained, even if the information has been put in a form that makes it impossible to trace it back to the persons concerned.

Functionality of CloudCTI

- Click-to-dial:
  The user can start a call command in any application via numerous supporting protocols and methods. This is generally a CRM package that contains contact persons and telephone numbers, but the same is also possible via a web page that displays a telephone number. When the command is processed it is put through to the telephony platform on the basis of the settings of the logged-in user. This results in the user's telephone calling the number concerned.
- Caller recognition:
  If an inbound call is received on the user's telephone, the caller's number is indicated. Recognition of the number is requested and, if recognized, a notification displays the available information.
- ScreenPop
  The available scripts based on the caller's number are retrieved when an inbound call is received; these scripts are set up at the user's organization. If the number is recognized, the scripts generally activate the caller's data in the user's CRM application. But even if the caller is not recognized, scripts can be set up to display the CRM package with the field for the telephone number already filled in so that a new contact can be entered.

Architecture


Hosted Voice Platform
MS Azure datacenter (West/North Europe)
Caller Recognition Service
CRM/ERP API Service
Organization's on-premise network
1
2
3
4
CloudCTI Client
Recognition Configuration Tool & Sync Service
CRM/ERP API Service

User's environment

The CloudCTI Client (CC), the Recognition Configuration Tool (RCT) and the Synchronization Service (SS) are installed in the customer organization's environment (network). The CC is installed at every workspace that uses the service. The RCT and SS only need to be installed at one place in the organization. The SS has to be able to retrieve the contact data from there to synchronize to CloudCTI. If the organization has its CRM/ERP data on the premises the SS usually runs on the same machine.

CloudCTI datacenter's environment

The CloudCTI datacenter runs on the Microsoft Azure platform, at the locations Western Europe and Northern Europe. The Azure platform is ISO 27001 certified. The Caller Recognition Service (CRS) is in the CloudCTI datacenter. This service serves the CloudCTI clients with the duplicated contact data from the CRM/ERP database of the user's organization ("Recognition data"). These data are retrieved from the back-end database which is in the same datacenter and is always only available for the organization's own users.

Connections and authentication

The CloudCTI Client sends call commands to the Hosted Voice Platform and receives indications for inbound calls via connection 1. Although each platform manufacturer's API is different, the connections are secured on the basis of TLS. The CloudCTI Client retrieves the information relating to the caller's number via connection 2. This is done via JSON messages which are sent by means of HTTPS secured by TLS 1.2. The information sent via connection 3 also uses HTTPS secured by TLS 1.2. The recognition data's retrieval by the Synchronization Service is also done via a connection secured by

TLS, if the data are made available from an online source. If the data come from within the customer organization's network, connection 4 may be secured or unsecured. But if the Synchronization Service retrieves the data locally, the service will be installed on the same machine and, in that case too, the data will not pass through an unsecured network connection.

Messages specifically intended for users and organizations can only be sent if the users have authenticated themselves with a user name and password ("Account data"). Users can set and change their own passwords. The passwords must be at least eight characters long and must include at least an upper case letter, a lower case letter, a digit and a special character (#?!@$%^&*-).

Storage and management of data, personal details and source code

Users with the appropriate authorization set up the link to one or more CRM/ERP applications in the Recognition Configuration Tool. These settings are stored in the CloudCTI datacenter and are only available to those users. The Synchronization Service uses these settings to export all the telephone numbers from the sources that have been set, plus all the fields that (1) have been set to be displayed in the notification (such as caller's name, company's name, etc.) and (2) fields that have been set as a parameter for scripts (such as customer numbers). No other field whatsoever is processed by the Synchronization Service, stored or sent to the CloudCTI datacenter. A hash is stored locally for each telephone number plus associated relevant information, so that changes can be detected efficiently in subsequent synchronizations and the Synchronization Services only need to forward the changes concerned to the CloudCTI datacenter.

The data that the Synchronization Service sends to the CloudCTI datacenter (Recognition data) contain information that can be traced back to individual persons. These data are only stored within the European Union and the data storage is therefore not geographically redundant storage (only Azure location for Western Europe). However, to ensure reliability and availability, three copies of the data are stored, but only in the same local unit (locally redundant storage). The databases are not accessible from the public Internet, nor is there an API link that provides direct access to the data concerned. CloudCTI stores these personal data in accordance with European and/or Dutch privacy legislation.

If a user discards the link to his CRM/ERP application in the Recognition Configuration Tool, the recognition data are immediately deleted too. All recognition data are also immediately deleted if the relationship with the customer organization is ended. Administrative data relating to the user are also deleted after seven years.

If a user reports a problem, the user's activities may be temporarily logged. These logs may also contain personal data and are only stored in the CloudCTI datacenter. These logs are only accessible to appropriately designated Keylink employees with a contract that includes a duty of confidentiality clause. When the ticket for the report is closed these logs are deleted.

Lastly, the source code is stored locally and partly by Microsoft's Visual Studio Team Services. This is only accessible to appropriately designated Keylink employees with a contract that includes a duty of confidentiality clause.

Hard- and software security measures

Physical security, hardening, registration and cleaning

All systems used to deliver the service are hosted by Microsoft Azure, West and North Europe which complies with ISO 27001 to ensure physical security.
CloudCTI configures equipment according to the security guidelines of the manufacturer. CloudCTI uses the benchmarks for security and compliance centre from Microsoft Azure and only allows essential functionality on all systems.
Microsoft does not disclose exact physical locations, but complies with ample standards and regulations such as HITRUST, ISO27001 and ISO27018 etc.
All media carrying information are completely and irrecoverably cleaned or destroyed before re-use or disposal.

Business Continuity: management, plans and back up

A Business Continuity Management (BCM) process is implemented (MSAzure, ISO 22301:2012, Certificate: BCMS659501) that identifies continuity risks for the service delivered and determines the mitigating measures (a.o. continuity plans).
Continuity plans are available, updated regularly and exercised on a regular basis and report any shortcoming. All systems used to deliver the CloudCTI service are planned and implemented according to Microsoft Azure's High Availability *) guidelines to ensure delivery according to the SLA.

Customers are notified when these exercises are planned if the exercise could have impact on the service delivered. If shortcomings are noted, an improvement plan or updated continuity plan with clearly defined actions with agreed solution terms will be drafted.

*) https://docs.microsoft.com/en-us/azure/architecture/resiliency/high-availability-azure-applications

Backups of system and application data are performed periodically and are securely stored at a different location as specified in the SLA(s). Restore are tested periodically. For security reasons, cached caller recognition data is never backed up. If this would be lost (e.g. through hardware disaster) it would simply be 're-cached' from the end user's data source.

Internal identity and access management

The following requirements regarding identity and access management of CloudCTI employees are applicable:
- For functional accounts a responsible natural person is assigned who is responsible for the use of the account
- Default accounts are disabled.

- Systems authenticate users based on username and password. Systems connected to the internet also authenticate users based on two-factor authentication, except when only public information is accessed.
- Access to systems is granted to an individual based on his role only.
- Authorizations on a system are based on an individual's role.
- Authorizations within a system are defined and documented.
- A line manager evaluates the authorization requests of his/her direct reports.
- Each application, system and network element has an up to date administration of the current granted accounts and authorizations.
- It is verified at least annually if the granted authorizations of each employee are still needed to do their work (attestation by manager for direct reports).
- In the case of change of a position, accounts and authorizations are revoked.
- When a user account is no longer necessary it is removed or disabled.

Security roles and responsibilities of each employee are addressed prior to employment and are defined and documented. Specific security roles and responsibilities are included in job descriptions and job performance cycles. During employment employees are made aware of rules and procedures concerning security and regulatory requirements.

Roles and responsibilities are defined in addenda to job descriptions, agreed upon by employees

All new employees are subject to background verification. This procedure is part of the recruitment protocol and potential employees will be made aware of this verification in advance.