CTL: Contact Technology Labs

Interaction Routing System

White Paper

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Version 0.6

Executive Summary

Contemporary contact centers are multi-channeled, operate in computing cloud and provide very sophisticated routing capabilities increasing customer satisfaction and reducing operational cost. In this paper we consider a sophisticated routing system allowing distributing interactions of any media type to agents using different routing strategies. The system could be deployed as cloud services and accessible via REST interface. Web browser based user desktop is presented allowing agents to communicate with the system and process customer interactions.

Introduction: Contemporary contact centers

Contemporary contact centers (CC) are sophisticated systems comprising hardware and communication environment, software, organizational structure, personnel such as agents who process customer interactions. The main important features of contemporary CC are the following:

- Contemporary CC are multi channeled embracing all existing media channels including traditional ones such as voice, web, chat, email as well as new and emerging ones such as mobile, SMS, social.
- Contemporary CC operates in computing cloud freeing users from having expensive environment and personnel and providing CC services on-demand with agents located anywhere.
- The main intelligence in contemporary CC is within sophisticated routing logic enabling distribution of interactions to the most optimal agents increasing customer satisfaction while reducing operational cost of operation.

Structure of contact center is depicted in Figure below. Contact center services operate in computing cloud (private or public) and therefore accessible via Internet by using HTTP protocol.

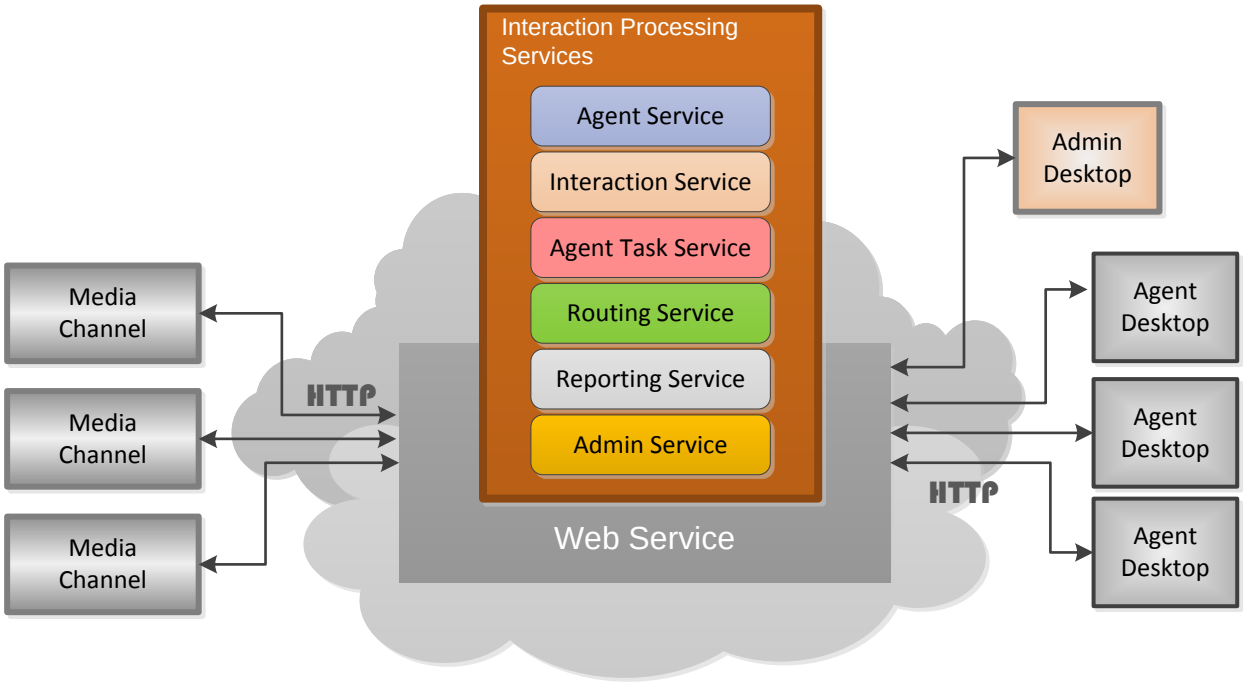

Figure 1: Contact Center in Cloud

Interactions of different media types enter the contact center by submitting them by corresponding media channels. Interaction submission is executed by REST API over HTTP to Web service. Contact center personnel such as agents and administrators are also connected to CC via Internet using their browser-based desktops. Submitted interactions are processed as agent tasks in accordance with some workflow scenario. When the scenario requires an agent involvement a routing service is invoked that executes some routing strategy that determines the most appropriate agent to process the interaction.

The interaction is assigned to the chosen agent and distributed to her desktop for actual processing. All this functionality are monitored and reported by a reporting service. Administrative service helps users to configure the system by creation or choosing of out-of-box routing strategies and interaction workflows.

Routing service is the most intelligent part of contact centers comprising sophisticated mechanisms of distribution interactions to agents taking into consideration myriad of factors such as agents' availability, their skills and experience, location, interaction properties, etc. Right routing results in increasing customer satisfaction, optimizing usage resources, and overall performance of CC

Routing Environment Services

Routing service operates in surrounding other services forming routing environment services, see Figure below.

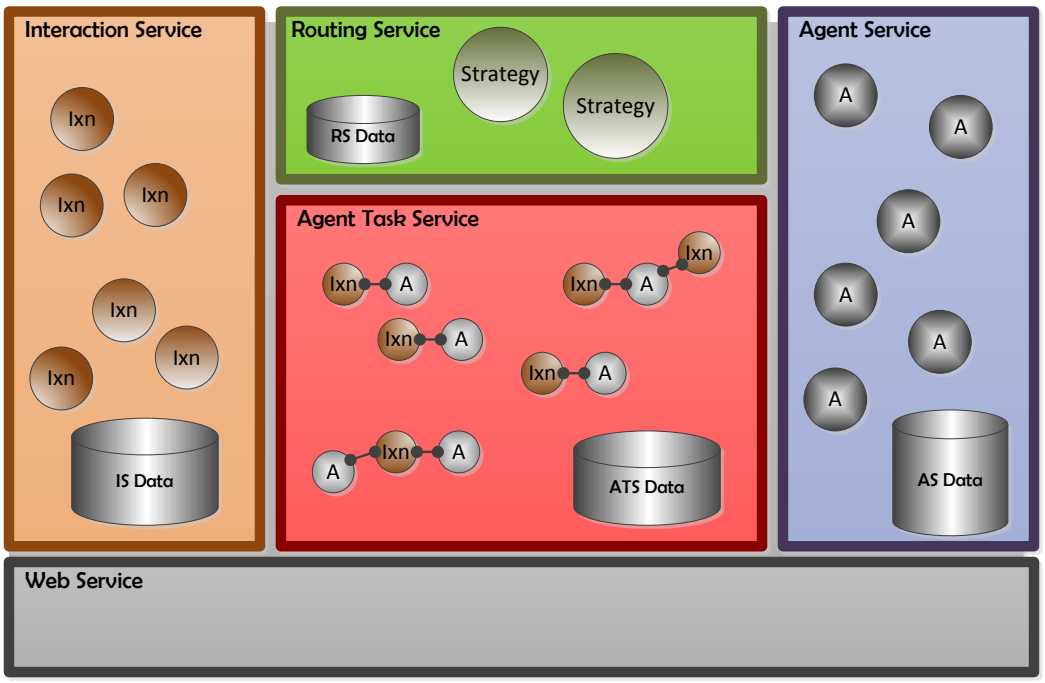

Figure 2: Routing environment

Interaction and agent services serve as object containers keeping interaction and agent objects along with their metadata. An agent object (A) is created in Agent service when a corresponding agent logs in into the system. An agent object operates in accordance with agent state machine comprising login and ready states.

Interaction service contains interaction objects that appear in the system as a result of interaction submission from the web service. Interactions are processed in accordance with interaction workflow – a sequence of operations on interactions.

When the interaction workflow requires processing of the interaction by an agent it invokes agent task service that is responsible for finding an appropriate agent for the interaction and managing interaction processing by the agent. To find an appropriate agent for some interaction Agent task service uses Routing service that executes a corresponding routing strategy. Notice Agent task service may assign several agents to one interaction and one agent may process several different interactions simultaneously.

Routing Strategies

Routing services operates in accordance with some routing strategies, each being composed of a set of procedures aimed at determining the most appropriates agents for interactions. A routing strategy is typically composed of a one or a set of routing steps, each step being a procedure for reducing number of considered agents. The following Figure represents an example of tree-step routing strategy composing of three routing steps A, B, and C.

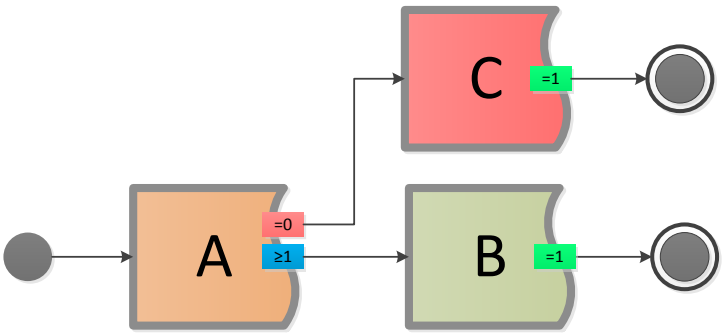

Figure 3: Multistep routing strategy

The procedure A takes all set of available agents and reduces them to a subset by applying some routing procedure, say skill-based routing. The procedure takes all agents and determines its subset of agents having some skills. If such set is not empty the second routing step B is applied to determine only one agent. Let us assume the step is statistical based routing applying agent statistic “Long Available Agent” choosing an agent who waits longer than the others. When such an agent is determined she is returned to Agent Task service for assignment her to the interaction. If however the routing step A does not find any agents (a resulting set is empty) the interaction is escalated to the step C with less discriminative routing procedure (e.g. statistical-based routing on all agents).

So a routing strategy designer may compose the strategy as a workflow of routing steps, each step being defined as an out-of-box routing procedure or procedure created from the scratch.

The system allows using the following types of routing procedures:

- Skill-based routing;
- Statistic-based routing;
- Cost- and value-based routing;
- Organization structure-based routing;

- Agent presence-based routing;
- Interaction content – based routing;
- Knowledge-based routing;
- Others including customized routing procedure.

Each routing procedure is based on usage of metadata belonging both to agents and interactions. The metadata is a part of whole configuration created by administrator.

User Desktop

All users of the contact center can access the services by universal user desktop – a web browser application communication with CC via HTTP. A user may login into the system in a role of agent, supervisor (super-agent) and/or administrator. The snapshot of the user desktop is presented in Figure below.

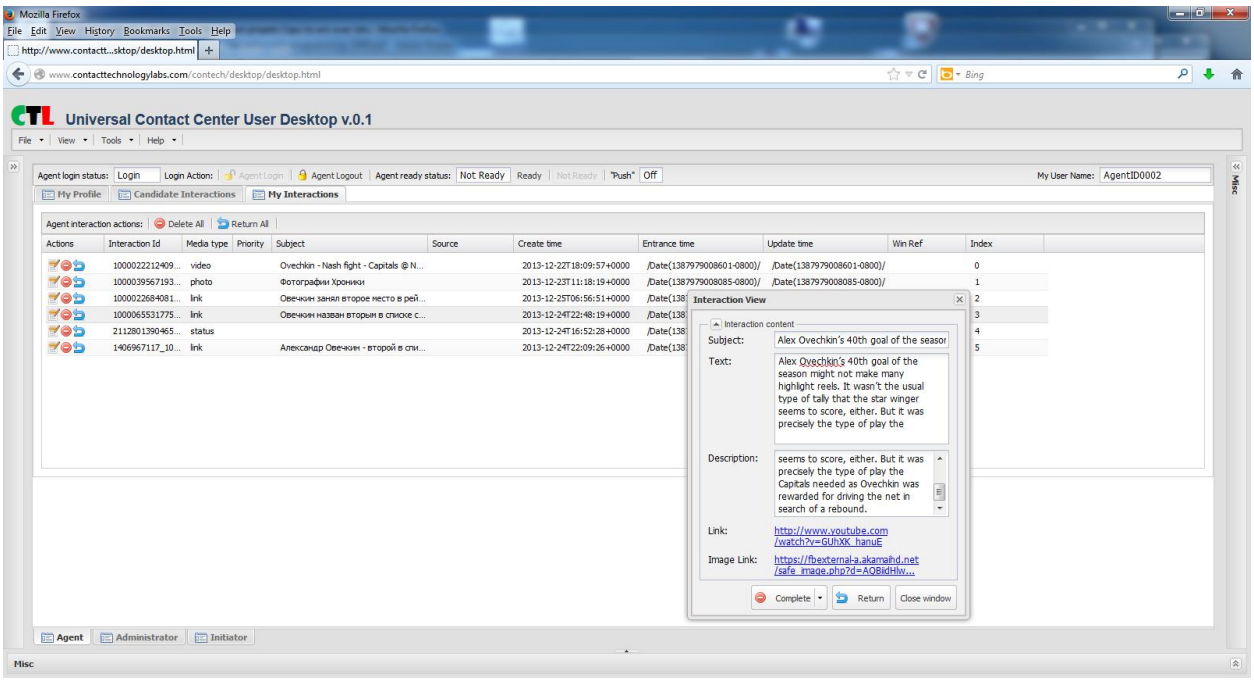

Figure 4: Unified user desktop

Unified user desktop allows agents working with several interactions of different media types simultaneously.

