Technical Documentation

One‑X Agent × CRM × ACR Middleware

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# Project purpose

Provide a thin middleware that lets a CRM place an outbound call via Avaya one‑X Agent, capture the UCID, and later find/stream the matching ACR recording, optionally caching/transcoding to local WAV for reliable playback.

# At‑a‑Glance

* **Tech stack:** Node.js (Express), mssql, Swagger‑UI, FFmpeg
* **Targets:**
  + one‑X Agent local HTTP API (registerClient → makecall → nextnotification → unregisterClient)
  + Avaya Call Recorder (ACR) Search & Replay API
  + SQL Server for logging (UCID logs & ACR results)
* **Primary endpoints:**
  + GET /api/onex/startcall → dial number from the agent PC & fetch **UCID**
  + GET /api/acr/find → search ACR by **UCID** within a date window
  + GET /api/acr/replay/{inum} → proxy raw ACR stream (GET)
  + GET /api/acr/replayByUcid → search by **UCID** and **serve local WAV** by default (caching)
* **Observability:** console logs (errors/warnings), SQL inserts for traceability (AcrResults)

# High‑Level Architecture

**Call flow (outbound & recording lookup):**

1. CRM calls **/api/onex/startcall** with agent’s deviceIp, ticketNumber, clientPhone, agentUser.

2. Middleware **registers** a one‑X client, **places call**, then **polls** nextnotification to obtain **UCID**.

3. UCID is inserted into SQL (UCID log table) with CRM context (ticket, phone, agent, device).

4. For playback, CRM requests **/api/acr/replayByUcid** with ucid and startdate.

5. Middleware **searches ACR**, resolves the **INUM**, and by default **downloads → transcodes → caches** WAV via FFmpeg, then streams it.

# Environment Configuration

# Onex settings

ONEX\_SCHEME=http

ONEX\_PORT=60000

ONEX\_API\_PATH=/onexagent/api

UCID\_POLL\_INTERVAL\_MS=500

UCID\_POLL\_MAX=30

# Call Settings

CALL\_PREFIX=9

# DB settings

DB\_SERVER=192.168.0.102

DB\_USER=sa

DB\_PASS='Rainbow321#'

DB\_NAME=Najem

TABLE\_NAME=CallLogs

ACR\_TABLE\_NAME=AcrResults

#ACR settings

ACR\_SCHEME=http

ACR\_HOST=10.100.148.121

ACR\_PORT=8080

ACR\_PATH=/searchapi

ACR\_USER=Arteclo

ACR\_PASS=Arteclo

# default search window (days)

ACR\_WINDOW\_DAYS=2

MEDIA\_ROOT=./media\_cache

FFMPEG\_BIN=ffmpeg

USE\_LOCAL\_DEFAULT=true # prefer local WAV caching by default

CACHE\_TTL\_HOURS=72 # auto‑prune cache older than N hours

# server settings

PORT=4000

# Logging

LOG\_MAX\_FILES=14d

LOG\_LEVEL=info

LOG\_DIR=./logs

# Database Schema

## UCID Logs

CREATE TABLE dbo.UcidLogs (  
 id BIGINT IDENTITY PRIMARY KEY,  
 log\_date DATETIME2 NOT NULL DEFAULT SYSUTCDATETIME(),  
 ucid VARCHAR(100) NOT NULL,  
 ticket\_number VARCHAR(100) NULL,  
 client\_phone VARCHAR(50) NULL,  
 device\_ip VARCHAR(50) NULL,  
 agent\_user VARCHAR(100) NULL,  
 extra\_json NVARCHAR(MAX) NULL  
);

## ACR Results

CREATE TABLE dbo.AcrResults (  
 id BIGINT IDENTITY PRIMARY KEY,  
 ucid VARCHAR(40) NULL,  
 inum VARCHAR(32) NOT NULL,  
 started\_at DATETIME2 NULL,  
 duration\_sec INT NULL,  
 agents NVARCHAR(256) NULL,  
 other\_parties NVARCHAR(512) NULL,  
 services NVARCHAR(256) NULL,  
 skills NVARCHAR(256) NULL,  
 playback\_url NVARCHAR(512) NULL,  
 created\_at DATETIME2 NOT NULL DEFAULT SYSUTCDATETIME()

);

# Deployment & Ops

## Prereqs

* Node.js 18+ (LTS) on the middleware host
* **FFmpeg** installed and available in PATH (or set FFMPEG\_BIN to full path)
* Network access:
  + from Middleware → **ACR**: TCP 8080 (search & replay)
  + from Middleware → **SQL Server**: TCP 1433
  + from CRM → **Middleware**: TCP PORT
  + from Middleware → **Agent PCs** (one‑X): TCP ONEX\_PORT (e.g., 60000)
* **one‑X Agent registry** change (APIAllowRemoteAccess=1) on each agent PC

**one‑X Agent requirement (Windows registry, per agent PC):**

* HKCU\Software\Avaya\Avaya one-X Agent\Settings\APIAllowRemoteAccess = 1
* HKLM\SOFTWARE\WOW6432Node\Avaya\Avaya one-X Agent\Settings\Timers\MaxWaitToNotify1XAClient = 1200

# Error Handling & Troubleshooting

one‑X specific

* **Symptom:** Failed to obtain ClientId  
  **Cause:** registerclient didn’t return; check registry flag, local firewall on agent PC, wrong ONEX\_\* vars.
* **Symptom:** UCID not received within timeout  
  **Actions:** increase UCID\_POLL\_MAX or UCID\_POLL\_INTERVAL\_MS; confirm agent is actually dialing; inspect one‑X logs.

ACR specific

* **Symptom:** /replayByUcid 502 with ffmpeg errors  
  **Cause:** unsupported container/codec or missing ffmpeg  
  **Actions:** verify FFMPEG\_BIN, test ffmpeg -i <ACR\_URL> manually; use redirect=1 to bypass local transcode.
* **Symptom:** No recording found  
  **Actions:** widen the date window (windowDays), verify UCID and ACR time drift.

SQL

* **Symptom:** DB insert error logs  
  **Actions:** check credentials, networkand permissions (INSERT)

# Endpoint Reference

This Section lists each HTTP endpoint exposed by the middleware, with request parameters, response schemas, and real-world examples.

## Common Error Semantics:

* **400 Bad Request** → Missing/invalid client inputs
* **404 Not Found** → No matching ACR recording for the given UCID/date window
* **502 Bad Gateway** → Upstream product error or connection failure before a response is received (unless proxied status is forwarded)

## Common notes

* **deviceIp is the IP or host of the agent PC running Avaya one-X Agent (your env ONEX\_\* build the base URL).**
* **agentUser is optional and only used for logging to SQL.**
* **For voice actions, Avaya returns a ResponseCode:**
  + **0 = Success**
  + **1 = Client already registered**
  + **2 = Client not registered**
  + **3 = Missing client id**
  + **4 = Missing client name**

## One‑X Endpoints

### GET /api/onex/startcall

Initiate an outbound call via one-X Agent and poll for the first VoiceInteractionCreated to capture UCID & interaction id.

Query Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| ticketNumber | string | ✅ | Must be non‑empty after trimming spaces |
| clientPhone | string | ✅ | Dialed number; optional global CALL\_PREFIX may be prepended |
| deviceIp | string | ✅ | IP For Agent Device |
| agentUser | string | ❌ | Agent username used in the client name |

**Success Response (200)**

{

"success": true,

"ucid": "00555151171753820834",

"interactionId": "VI43:c964537c-8273-49c4-b384-de458a4d9794",

"clientId": "00555151171753820834",

"dialed": "0599826754",

"date": "2025-10-13",

"time": "14:22:05"

}

**Partial/Timed‑Out UCID (200)**

*(Call was placed, but UCID was not received within the polling window)*

{

"success": false,

"ucid": null,

"interactionId": null,

"clientId": "27988c23-b461-4462-bf60-7394aaefccf6",

"dialed": "2013"

}

**Client Errors (400)**

{

"success": false,

"missing": ["ticketNumber","clientPhone","deviceIp"],

"message": "Missing required parameters"

}

**Server/Upstream Errors (500)**

*(Any One‑X request failed or timed out; current code returns 500. You can optionally map timeouts to 504.)*

{

"success": false,

"message": "timeout of 10000ms exceeded"

}

### GET /api/onex/release

End a call (release a voice interaction) on the agent device.

**Query Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| deviceIp | string | ✅ | Agent PC IP / host. |
| interactionid | string | ✅ | Voice interaction id (e.g., VI24:3a23f7ba-...). |
| agentUser | string | ❌ | For logging. |

**Success (200)**

{ "success": true, "code": "0" }

Client error (400)

{ "success": false, "message": "deviceIp and interactionid are required" }

**Upstream error (500)**

{ "success": false, "message": "timeout of 15000ms exceeded" }

### GET /api/onex/hold

Place an active interaction on hold.

Query parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| deviceIp | string | ✅ | Agent PC IP / host. |
| interactionid | string | ✅ | Voice interaction id (e.g., VI24:3a23f7ba-...). |
| agentUser | string | ❌ | For logging. |

**Success (200)**

{ "success": true, "code": "0}

400 / 500 as above

.

### GET /api/onex/unhold

Resume a held interaction.

**Query parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| deviceIp | string | ✅ | Agent PC IP / host. |
| interactionid | string | ✅ | Voice interaction id (e.g., VI24:3a23f7ba-...). |
| agentUser | string | ❌ | For logging. |

**Success (200)**

{ "success": true, "code": "0}

400 / 500 as above.

### GET /api/onex/mute

Mute the phone on the agent device.

**Query parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| deviceIp | string | ✅ | Agent PC IP / host. |
| interactionid | string | ❌ | Not required by One-X; if present, it’s saved in DB to simplify searching |
| agentUser | string | ❌ | For logging. |

**Success (200)**

{ "success": true, "code": "0}

400 / 500 as above.

### GET /api/onex/unmute

Unmute the phone on the agent device.

**Query parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| deviceIp | string | ✅ | Agent PC IP / host. |
| interactionid | string | ❌ | Not required by One-X; if present, it’s saved in DB to simplify searching |
| agentUser | string | ❌ | For logging. |

**Success (200)**

{ "success": true, "code": "0}

400 / 500 as above.

### GET /api/lookup/ucidByTicket

Return UCID(s) for an exact ticket number. Results are newest-first by id.

**Query parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| **ticket** | string | ✅ | Exact ticket number to match (trimmed). |

**Success (200)**

{

"ok": true,

"found": 1,

"items": [

{

"ticket\_number": "try4553e35",

"ucid": "00001002741759989225",

"agent\_user": "test",

"log\_date": "2025-10-09T05:54:05.227Z"

}

]

}

**Client Error (400)**

{ "ok": false, "message": "Missing required query param: ticket" }

**Server Error (500)**

{ "ok": false, "message": "DB error" }

## ACR Endpoints

### GET /api/acr/find

Search ACR by UCID in a given date range. Returns the first match and a proxied playback URL.

Query Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Required | Notes |
| ucid | string | ✅ | UCID to search |
| startdate | YYYY-MM-DD | ✅ | Start date of search window |
| enddate | YYYY-MM-DD | ❌ | Inclusive end date |
| windowDays | integer | ❌ | Alternative to enddate; adds N days from startdate |

**Success (200)**

{

"ok": true,

"found": 1,

"item": {

"ucid": "00555151171753820834",

"inum": "833138011179509",

"started\_at": "2025-07-30T00:00:25.632",

"duration\_sec": 177,

"agents": "3269 (tariq Mansour)",

"other\_parties": "0599826754, 40020 (user20)",

"services": "200 (MainVDN)",

"skills": "48004 (Mobile Banking)",

"playback\_url": "/api/acr/replay/833138011179509",

"raw\_playback\_url": "http://<acr-host>/searchapi?command=replay&id=833138011179509"

},

"window": { "start": "2025-07-30T00:00:00.000Z", "end": "2025-07-30T00:00:00.000Z" }

}

**No Results (200)**

{ "ok": true, "found": 0, "items": [] }

**Client Errors (400)**

{

"ok": false,

"message": "Missing required parameters",

"missing": [

"startdate"

]

}

OR

{

"ok": false,

"message": "Invalid startdate (expected YYYY-MM-DD)",

"invalid": [

"startdate"

]

}

**Upstream/Parse Errors (502)**

{ "ok": false, "message": "ACR GET failed (500)" }

### GET /api/acr/replay/:inum

Proxy raw playback from ACR (streams audio; mirrors vendor status when available).

**Path Parameter**

* inum (string) – ACR recording identifier

**Success (200)**

* **200 OK** – full stream

**Client Error (400)**

missing inum

**Upstream Error (proxied)**

* If ACR responds 404/5xx → Response mirrors that status and headers.
* If network error before a response → **502 Bad Gateway** with text:

ACR replay error: <axios error message>

### GET /api/acr/replayByUcid

Search by UCID/date, then either serve a **local WAV** (via FFmpeg) or **proxy**/redirect to ACR.

**Query Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Required | Notes |
| ucid | string | ✅ | UCID to search |
| startdate | YYYY-MM-DD | ✅ | Search start date |
| enddate | YYYY-MM-DD | ❌ | Optional end date |
| windowDays | integer | ❌ | Alternative to end date |
| redirect | `1 | ❌ | If set, **302** redirect to ACR raw URL |
| local | `1 | ❌ | Prefer local WAV caching/transcoding; defaults to USE\_LOCAL\_DEFAULT |

**Success – Local WAV (200)**

(Binary WAV; supports Range.)

**Success – Redirect (302)**

Location: http://<acr-host>/searchapi?command=replay&id=<inum>

**Client Errors (400)**

* Missing/invalid dates or missing UCID → **400** with message text.

**No Results (404)**

No recording found for that UCID/date

**Upstream Errors (502)**

* ACR search or replay network error before a response.

### GET /api/acr/searchByNumber

Search ACR by calling number

**Query Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Required** | **Notes** |
| number | string | ✅ | Calling number / party name (substring match) |
| startdate | YYYY-MM-DD | ✅ | Start date of search window |
| enddate | YYYY-MM-DD | ❌ | Inclusive end date (if omitted, same day as startdate) |
| starttime | string (HH:mm:ss) | ❌ | Start time (default 00:00:00) |
| endtime | string (HH:mm:ss) | ❌ | End time (default 23:59:59) |
| limit | string | ❌ | Max number of Results |

**Success (200)**

{

"ok": true,

"found": 1,

"item": {

"ucid": "00001078491760000356",

"number": "0791234567",

"inum": "833138011179509",

"started\_at": "2025-10-08T10:15:32",

"duration\_sec": 210,

"agents": "3269 (Tariq Mansour)",

"other\_parties": "0791234567",

"services": "200 (MainVDN)",

"skills": "48004 (Mobile Banking)",

"playback\_url": "/api/acr/replay/833138011179509",

"raw\_playback\_url": "http://<acr-host>/searchapi?command=replay&id=833138011179509"

},

"window": { "start": "2025-10-08T00:00:00.000Z", "end": "2025-10-09T00:00:00.000Z" }

}

**No Results (200)**

{ "ok": true, "found": 0, "items": [] }