

NICE CXone WebRTC Redirection

Citrix UCSDK Policy Guide

Audience: Citrix / VDI administrators, browser-policy owners

Status: Draft

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1. Purpose

This guide describes the Citrix Virtual Apps and Desktops (CVAD) policies, VDA registry settings, endpoint software, and Chrome/Edge enterprise policies required for **NICE CXone WebRTC Redirection** over the **Citrix Unified Communications SDK (UCSDK)**.

With UCSDK:

- The CXone Agent UI remains rendered in the browser on the **VDA** (hosted desktop).
- WebRTC media is offloaded to Citrix Workspace App on the **endpoint** via `HdxRtcEngine`.
- VDA-side screen recording of the agent UI continues to work.
- No pairing code or NICE Receiver App is required for this path.

This is **UCSDK / HDX WebRTC optimization**, not Browser Content Redirection (BCR). BCR moves the browser viewport to the client and would break server-side screen recording of the agent UI. Do **not** enable BCR for CXone Agent.

For network readiness (STUN, CXone media ports), see the [Customer Readiness and Validation Guide](#). For the Omnisia Horizon path, see the [Omnissa Horizon Policy Guide](#). For the NICE Receiver App path, see the [Receiver App Deployment Guide](#).

2. Architecture

CXone Agent UI + NICE extension (offscreen softphone) → VDA browser
CtxHdxWebSocketService (loopback wss://127.0.0.1:9002)
Citrix Workspace App → HdxRtcEngine → endpoint mic/speaker + RTP to CXone

Piece	Where it runs
CXone Agent UI	Browser on the VDA
NICE browser extension (offscreen WebRTC)	Same VDA browser

Piece	Where it runs
Microphone / speaker / RTP media	Endpoint via Citrix UCSDK → HdxRtcEngine
Screen recording of the agent UI	VDA (UI stays server-side)

The extension loads Citrix Bootstrap UCSDK into its offscreen document, patches WebRTC globals when redirection is available, and falls back to native browser WebRTC (generic HDX audio) if UCSDK cannot initialize.

3. Version floors

Component	Required / recommended
UCSDK bundled in the extension	Bootstrap UCSDK 4.0.x (<code>initBootstrap("CXoneWebRTC")</code>)
VDA	CVAD 2407 CR or later (browser-based Bootstrap UCSDK)
Citrix Workspace App (Windows)	2402 LTSR latest CU / 2311 CR or later
Citrix Workspace App (Linux)	2311 or later
Citrix Workspace App (Mac)	2311 or later
Hosted browser on VDA	Google Chrome or Microsoft Edge (Chromium)
Teams policy decoupling	CVAD 2603+ may allow Teams redirection OFF without breaking Bootstrap UCSDK apps — treat as documented, not fully validated for this extension; keep Teams redirection Allowed unless your estate has confirmed decoupling

Notes:

- UCSDK **5.0.0** compatibility is an open question. Do **not** require or upgrade to UCSDK 5.0 for this deployment until NICE confirms compatibility.
- ChromeOS as a Citrix UCSDK endpoint is **not** a NICE-supported path in this guide. Use Windows or Linux thin-client endpoints with a supported Workspace App, or use the Receiver App path where documented.

Confirm exact CWA/VDA pairings against [Citrix Unified Communications SDK Optimization](#) for your CVAD release.

4. Policy inventory

Setting	Location	Required value
Microsoft Teams redirection	Citrix Web Studio → ICA → Multimedia	Allowed (default ON; required below CVAD 2603)
Browser Content Redirection	Citrix policies	Do not enable for CXone Agent URLs
ProcessWhitelist	VDA registry (not Web Studio) — see §6	<code>chrome.exe</code> and/or <code>msedge.exe</code> (<code>REG_MULTI_SZ</code> , one per line)
CtxHdxWebSocketService	Windows service on VDA	Running
Citrix Workspace App	Endpoint	Supported build with HDX WebRTC / UCSDK
NICE extension	Chrome/Edge enterprise policy on VDA	Force-install one channel ID — see §9
MediaProviderPreference	Extension managed policy	Unset or Auto (do not set <code>MindfireRedirector</code> for UCSDK)
AudioCaptureAllowedUrls	Chrome/Edge enterprise policy	Recommended: microphone origin for the installed NICE extension ID

Important: `ProcessWhitelist` is **not** a Citrix Web Studio policy. It is a **VDA registry** value under `HKLM\SOFTWARE\WOW6432Node\Citrix\WebSocketService` . Missing this entry is the most common cause of silent fallback to native WebRTC (toolbar badge **n** instead of **c**).

5. Citrix Web Studio policies

5.1 Microsoft Teams redirection

In Citrix Web Studio (or equivalent policy editor):

ICA → Multimedia → Microsoft Teams redirection → Allowed

This policy is **ON by default**. On CVAD versions **below 2603**, it remains the master switch for HDX WebRTC / UCSDK optimization and must stay **Allowed**.

On **CVAD 2603+**, Citrix documents that Bootstrap UCSDK apps (UCSDK 4.0+) can remain optimized even when Teams redirection is disabled. This extension uses Bootstrap, but NICE has not fully validated that decoupling for every CWA/VDA combination. **Keep Teams redirection Allowed** unless your operations

team has confirmed decoupling on your build.

5.2 Browser Content Redirection — leave off for CXone

Do **not** enable Browser Content Redirection for CXone Agent URLs.

Feature	What it does	Fit for CXone + screen recording
UCSDK	Offloads WebRTC media; UI stays on VDA	Correct path
BCR	Moves browser viewport to the client	Breaks VDA screen recording of the agent UI

6. VDA registry — ProcessWhitelist (hard prerequisite)

On each Citrix VDA image that hosts Chrome or Edge for CXone:

```
Key:    HKLM\SOFTWARE\WOW6432Node\Citrix\WebSocketService
Name:   ProcessWhitelist
Type:   REG_MULTI_SZ
Data:   chrome.exe
        msedge.exe
```

The key is usually missing — create it

Citrix **does not** create `HKLM\...\WebSocketService` on a default VDA install. Opening Registry Editor and finding no `WebSocketService` node is normal. You **add** the key and the `ProcessWhitelist` value.

PowerShell (elevated, on the VDA):

```
$path = "HKLM:\SOFTWARE\WOW6432Node\Citrix\WebSocketService"
New-Item -Path $path -Force | Out-Null
New-ItemProperty -Path $path -Name ProcessWhitelist -PropertyType MultiString `
    -Value @("chrome.exe", "msedge.exe") -Force | Out-Null
Restart-Service -Name CtxHdxWebSocketService -ErrorAction SilentlyContinue
# If the service name differs on your build, restart "Citrix HTML5 Video Redirection Service"
in services.msc
```

Verify:

```
Get-ItemProperty -Path "HKLM:\SOFTWARE\WOW6432Node\Citrix\WebSocketService" |
    Select-Object -ExpandProperty ProcessWhitelist
```

Rules

- Allowlist the **browser** executable that loads CXone and the NICE extension (`chrome.exe` and/or `msedge.exe`), not a custom application `.exe` .
- Enter **one executable name per line**. Do not use commas or paste from a text file that introduces hidden separators.
- The value is **not** case-sensitive.
- Allowlisting is by **executable name**, not by URL (unlike BCR and unlike Omnissa URL allow lists).
- After editing, **restart** `CtxHdxWebSocketService` (display name: **Citrix HTML5 Video Redirection Service**) or reboot the VDA.

Scale-out

Bake the key into the golden image, or deploy via Group Policy Computer Preferences / Workspace Environment Management. Because the path is under **HKLM**, it survives non-persistent MCS/PVS sessions when applied at image or computer-policy time.

A missing or incorrect `ProcessWhitelist` presents as **total UCSDK failure**: the extension falls back to native browser WebRTC and the toolbar shows badge **N** .

7. VDA services

Confirm the following on the VDA:

Service	Role
Citrix HTML5 Video Redirection Service (<code>CtxHdxWebSocketService</code> / <code>WebSocketService.exe</code>)	Accepts UCSDK Bootstrap connections from allowlisted browser processes over loopback (<code>wss://127.0.0.1:9002</code>)

Typical binary location on current VDAs:

```
C:\Program Files (x86)\Citrix\System32\WebSocketService.exe
```

(older layouts may use `C:\Program Files (x86)\Citrix\HDX\bin\WebSocketService.exe`)

This binary is installed with the VDA **Browser Content Redirection** *component*. That does **not** mean you enable the BCR *policy* for CXone Agent — leave BCR policy off for CXone URLs (§5.2). You only need the WebSocket service that ships in that component.

From CVAD **2603**, the Citrix HDX Teams Redirection Service declares an explicit dependency on this WebSocket service. Ensure both start successfully after image boot and after registry changes.

Quick checks (inside an **HDX** session — see §12.1):

```
Get-CimInstance Win32_Service |  
    Where-Object { $_.PathName -match "WebSocketService" } |  
    Select-Object Name, State, StartMode, PathName  
  
netstat -ano -p tcp | findstr "127.0.0.1:9002"
```

Expect the service **Running** and a **LISTENING** socket on `127.0.0.1:9002`.

8. Endpoint (Citrix Workspace App)

On the physical endpoint (or thin client):

- Install a Citrix Workspace App build that supports browser Bootstrap UCSDK / HDX WebRTC for your platform (see §3).
- **No additional client-side registry** is typically required beyond a supported Workspace App install. `HdxRtcEngine` is embedded in Workspace App.
- Microphone and speakers must be available to Workspace App.
- Network path for voice media originates from the **endpoint**, not the VDA.

Endpoint network (summary)

When UCSDK redirection is active, the endpoint must reach:

Destination	Protocol / port	Purpose
NICE STUN — <code>stun.nice-receiver-app.com</code> (resolved A/AAAA; rotates)	UDP 19302	ICE / NAT discovery
NICE CXone WebRTC infrastructure	UDP 1024–65535	Real-time voice media
NICE CXone (HTTPS)	TCP 443	Softphone / WebRTC control as documented for the customer's cluster

FQDNs and IP ranges for CXone depend on the customer's environment. STUN destination IPs change; prefer FQDN-based allowlisting. Full readiness detail (including matchmaker `liaison.nice-receiver-app.com` / `135.237.20.87`) is in the [Customer Readiness and Validation Guide](#).

A working CXone call over generic HDX audio does **not** prove UCSDK redirection. Media must leave the endpoint via `HdxRtcEngine` (see §11).

9. Chrome / Edge enterprise policy on the VDA

The NICE extension runs in the hosted browser on the VDA. Force-install **one** distribution channel per browser profile.

Channel	Hosted-session extension ID	Update URL
Enterprise host	oaaajlhoicikoedhcdcpaplhjfmnkdlm	https://extensions.nice-receiver-app.com/cxone-preview/updates.xml
Chrome Web Store	hmfcdoeekoabipnapelhpdlgioeae	https://clients2.google.com/service/update2/crx

Block the channel you are not using, and block the public NICE store listing
gcfjbjldfomnopndjajjfpldkkdmmoi .

Example — enterprise channel:

```
{
  "oaaajlhoicikoedhcdcpaplhjfmnkdlm": {
    "installation_mode": "force_installed",
    "update_url": "https://extensions.nice-receiver-app.com/cxone-
preview/updates.xml",
    "override_update_url": true
  },
  "hmfcdoeekoabipnapelhpdlgioeae": {
    "installation_mode": "blocked"
  },
  "gcfjbjldfomnopndjajjfpldkkdmmoi": {
    "installation_mode": "blocked"
  }
}
```

Prefer force-install for production so agents cannot remove the softphone host.

9.1 Extension managed policy — keep Auto for UCSDK

Policy key	Value for Citrix UCSDK
MediaProviderPreference	Unset or Auto

With **Auto**, the extension tries Citrix UCSDK first, then Omnisia Horizon (if present), then native browser WebRTC.

Do **not** set `MediaProviderPreference` to `MindfireRedirector` when Citrix UCSDK is the intended path. That string forces the NICE Receiver App pairing path and skips UCSDK auto-selection.

Matchmaker / pairing policies (`MatchmakerUrl`, `PairingCode`, etc.) apply only to the Receiver path and are not required for UCSDK.

9.2 Microphone grant (recommended)

Pre-grant microphone access to the **installed** extension origin:

Channel	AudioCaptureAllowedUrls entry
Enterprise host	<code>chrome-extension://oaaajlhoicikoedhcdcpaplhjfmnkdlm/</code>
Chrome Web Store	<code>chrome-extension://hmfcadoeekoabipnapelhpdlgioeab/</code>

9.3 Non-persistent VDAs

Extension force-install and managed policies must apply on **every** session creation. Do not rely on a one-time manual install in production.

10. Mutually exclusive redirection

Only **one** WebRTC redirection or optimization technology should control a given CXone session.

Do **not** combine on the same session:

- Citrix UCSDK (this guide)
- Browser Content Redirection for CXone Agent
- Omnisia Horizon Web App Support / WebRTC Redirection for the same softphone session
- NICE Receiver App path (`MediaProviderPreference` = `MindfireRedirector`)

Conflicting stacks that intercept `RTCPeerConnection` or media devices can cause silent fallback, device contention, or broken audio. Identify and disable competing technologies before production rollout.

11. Verification

Do not treat a completed CXone call alone as proof of UCSDK. Confirm redirection with multiple signals:

1. After softphone initialize, the extension toolbar badge shows **C** (Citrix), not **N** (native fallback).
2. During an active call, `HdxRtcEngine.exe` is running on the **endpoint**.
3. Audio is heard and spoken on endpoint devices.

4. The agent UI remains fully visible and **screen-recordable on the VDA** throughout the call.

Badge	Meaning
C	Citrix UCSDK redirection active (expected)
H	Omnissa Horizon path
N	Native browser WebRTC — media stays on the VDA (generic HDX audio); UCSDK did not initialize
!	Error (device, login, or call failure)

A call that works with badge **N** is **not** UCSDK success.

12. Failure symptoms and live diagnostics

Symptom	Likely cause
Badge N instead of C	Browser missing from <code>ProcessWhitelist</code> ; <code>WebSocketService</code> key never created; Teams redirection disabled (pre-2603); <code>CtxHdxWebSocketService</code> stopped / binary missing; unsupported CWA/VDA; session is Console/RDP instead of HDX; or <code>MediaProviderPreference</code> forced away from Auto
Audio on VDA speakers only / high VDA CPU on call	Native fallback; fix §4–§7 and reload the extension / softphone
Red icon / ! badge; call fails immediately	Microphone denied for the extension origin (<code>MediaDeviceAccessDenied</code>), missing devices, or SIP login failure — grant mic (§9.2) and open extension options for the installed ID
Toolbar shows C (Citrix active) but agent-leg call still fails	Softphone stalled on mic permission or device access — pre-grant <code>AudioCaptureAllowedUrls</code> and confirm speakers/mic work in Workspace App on the endpoint
Gray idle forever	CXone never sent softphone initialize; wrong extension ID; public store listing still installed alongside enterprise build
Options page: "Can't read this site's data" / wrong settings	Opening options for a blocked or different extension ID (for example public store <code>gcfjbjldfomnopndjajjfpldkkdmmoi</code> while enterprise <code>oaaajlhoicikoedhcdcpaplhjfmnkdlm</code> is force-installed)
UI blacked out or not recordable	Browser Content Redirection or similar viewport offload enabled — disable BCR for CXone
Call works but no <code>HdxRtcEngine.exe</code> on endpoint	Not UCSDK; media is on the VDA path
One-way audio (caller hears agent; agent silent)	Endpoint speaker/device selection in Workspace App; confirm <code>HdxRtcEngine.exe</code> and endpoint volume; reload softphone after UCSDK is confirmed active

Citrix also publishes [Troubleshooting Guidance for Apps Optimized with Citrix Unified Communications SDK](#) (CTX692313).

12.1 Diagnostic sequence (run inside the VDA session)

UCSDK only reports active after Bootstrap reaches `wss://127.0.0.1:9002` and redirection state **1**. Work through these in order.

1. Confirm the session is HDX (not console / RDP)

```
query session
```

The current session should be **ICA-TCP** (or similar), not **Console** or **RDP-Tcp**. A console or RDP login to the same VM will always fall back to badge **N**. Disconnect and reconnect through Citrix Workspace App on the endpoint.

2. Confirm the WebSocket service and loopback port

```
Get-CimInstance Win32_Service |  
    Where-Object { $_.PathName -match "WebSocketService" } |  
    Select-Object Name, State, StartMode, PathName  
  
netstat -ano -p tcp | findstr "127.0.0.1:9002"
```

3. Confirm ProcessWhitelist

```
reg query "HKLM\SOFTWARE\WOW6432Node\Citrix\WebSocketService" /v ProcessWhitelist
```

If the key is missing, create it (§6) and restart the service.

4. Confirm Teams redirection still Allowed (pre-2603)

In Web Studio: **ICA** → **Multimedia** → **Microsoft Teams redirection** → **Allowed**.

"Unconfigured" / default is Allowed on most estates — that is correct. Explicitly **Prohibited** breaks UCSDK below CVAD 2603.

5. Confirm the installed extension ID

In `chrome://extensions` (or Edge equivalent) on the VDA, note the force-installed ID. It must match the channel in §9. Block competing IDs including the public NICE store listing.

6. Softphone / mic

Grant microphone to `chrome-extension://<installed-id>/` (§9.2). Reload the extension, re-open CXone Agent, and confirm toolbar badge **c** before placing a call.

13. Production checklist

- ☐ VDA **2407 CR+** (or later supported CR/LTSR with Bootstrap UCSDK)
 - ☐ Supported Citrix Workspace App on the endpoint; mic/speakers work in Workspace App
 - ☐ Web Studio: **Microsoft Teams redirection** → **Allowed** (unless CVAD 2603+ decoupling confirmed)
 - ☐ Web Studio / policy: **BCR not enabled** for CXone Agent
 - ☐ VDA: `WebSocketService.exe` present; **Citrix HTML5 Video Redirection Service** running; `127.0.0.1:9002` listening
 - ☐ VDA: `chrome.exe` and/or `msedge.exe` on `ProcessWhitelist` (**create** the key if absent); service restarted
 - ☐ Chrome/Edge: NICE extension force-installed (**one** channel); competing IDs and public store ID blocked
 - ☐ Extension managed policy: `MediaProviderPreference` unset or `Auto` (not `MindfireRedirector`)
 - ☐ Recommended: `AudioCaptureAllowedUrls` for the installed extension origin
 - ☐ Non-persistent: policies reapplied every session
 - ☐ Agents connect via Workspace App (HDX), not console/RDP to the VDA
 - ☐ Endpoint network: STUN UDP 19302; CXone WebRTC UDP/HTTPS per readiness guide
 - ☐ Validation: toolbar `C`; `HdxRtcEngine.exe` on endpoint; UI screen-recordable on VDA
-

14. FAQ / Q&A

Business leaders

What does Citrix UCSDK buy us vs the Receiver App?

WebRTC media is offloaded through Citrix Workspace App / `HdxRtcEngine` on the endpoint. Agents do not use a NICE pairing code for this path. Agent UI remains on the VDA so screen recording of the softphone UI continues to work.

Will this affect Microsoft Teams optimization?

UCSDK for CXone historically depends on Teams redirection being Allowed on older CVAD builds. Confirm your CVAD version and Citrix guidance (including 2603+ decoupling where applicable) before change windows.

Is UCSDK being deprecated for SlimCore in October 2026?

No. The October 1, 2026 date is Microsoft/Citrix ending support for **legacy Teams WebRTC optimization on Windows endpoints**. SlimCore is the **new Teams VDI** path. Third-party UCSDK apps (including this CXone extension) continue to use the UC SDK / `HdxRtcEngine` path and are not replaced by SlimCore. Treat Teams SlimCore rollout as a separate change window from CXone UCSDK.

IT administrators

Which browser policy matters most on the VDA?

Force-install **one** NICE extension channel. Leave `MediaProviderPreference` unset or `Auto` — do **not** set `MindfireRedirector` on the UCSDK path. Pre-grant microphone for that extension origin.

Why is Browser Content Redirection (BCR) called out?

BCR moves viewport/content off the VDA and can break UI recording and conflict with UCSDK. Do not enable BCR for CXone Agent when using this path. The VDA may still *install* the BCR component (it ships `WebSocketService.exe`) without enabling BCR policy for CXone.

We force-installed the enterprise extension — why do options / “site data” errors mention another ID?

Chrome options and permission pages are per extension ID. The public NICE store listing (`gcfjbjldfomnopndjajjfpldkkdmmoi`) is a different ID from the enterprise host (`oaaajlhoicikoedhcdcpaplhjfmnkdlm`). Block unused IDs (§9) and open options only for the force-installed channel.

Badge is **C** but the first call fails or never hears audio.

Confirm microphone is granted to the **installed** extension origin and that endpoint speakers are selected in Workspace App. Reload the extension after policy changes so the offscreen softphone re-initializes UCSDK. With badge **C**, use the extension toolbar → **Microphone / Speaker Settings** to pick endpoint devices (speaker applies immediately; microphone usually on the next call).

VDI administrators

What is the single most common total-failure cause?

The browser executable (`chrome.exe` / `msedge.exe`) missing from the HDX WebSocket service `ProcessWhitelist` — including the case where the entire `WebSocketService` registry key was never created. Symptom: provider badge **N** instead of **C**.

I don't see `WebSocketService` under `HKLM\SOFTWARE...\Citrix` at all.

Expected. Create the key and `ProcessWhitelist` yourself (§6), then restart **Citrix HTML5 Video Redirection Service**.

Teams redirection shows “Unconfigured” — is that a problem?

No. Unconfigured means the Studio default applies, which is **Allowed**. Only an explicit **Prohibited** / disabled setting is a problem on CVAD builds below 2603.

How do we prove UCSDK is active?

Toolbar badge **C**, Bootstrap connected to `127.0.0.1:9002`, and `HdxRtcEngine.exe` running on the **endpoint** during a call. Audio on VDA speakers only usually means native fallback.

We remoted to the VDA with RDP / console and still see badge N.

UCSDK requires an HDX session from Workspace App. Use `query session` (§12.1); reconnect via Citrix Workspace.

Where is `WebSocketService.exe` if the service is missing?

Usually `C:\Program Files (x86)\Citrix\System32\WebSocketService.exe`. If the file is absent, repair/add the VDA Browser Content Redirection component from the matching CVAD media — still leave BCR *policy* off for CXone.

Minimum versions?

VDA **2407 CR+** (or later supported CR/LTSR with Bootstrap UCSDK) and a supported Citrix Workspace App on the endpoint with working mic/speakers.

Non-persistent VDAs?

Reapply registry whitelist and browser policies every session (image, GPO, or WEM).

Network administrators

Where does media leave the network?

From the physical endpoint (via `HdxRtcEngine`), not the VDA. Endpoint networks need STUN (`stun.nice-receiver-app.com`, UDP 19302) and this tenant's CXone HTTPS/UDP WebRTC paths.

Does the VDA still need matchmaker access?

UCSDK does not use NICE Receiver pairing. Follow this guide's VDA/endpoint requirements; use the readiness guide for CXone media and STUN from the endpoint.

15. References

Citrix

- [Unified Communications SDK Optimization](#)
- [HDX Optimization / HdxRtcEngine](#)
- [Browser content redirection \(contrast\)](#)
- [Troubleshooting Guidance for Apps Optimized with Citrix UCSDK \(CTX692313\)](#)

NICE

- [Customer Readiness and Validation Guide](#) — network, STUN, validation layers
- [OmniSSA Horizon Policy Guide](#) — alternate connection style
- [Receiver App Deployment Guide](#) — Receiver pairing path
- [Customer Readiness Executive Brief](#) — leadership checklist