

Solution Architecture

This chapter discusses typical architectures used with CBA elements.

Existing Enterprise Architecture

As an example, the following diagram shows the architecture of an existing business-to-consumer (B2C) application:

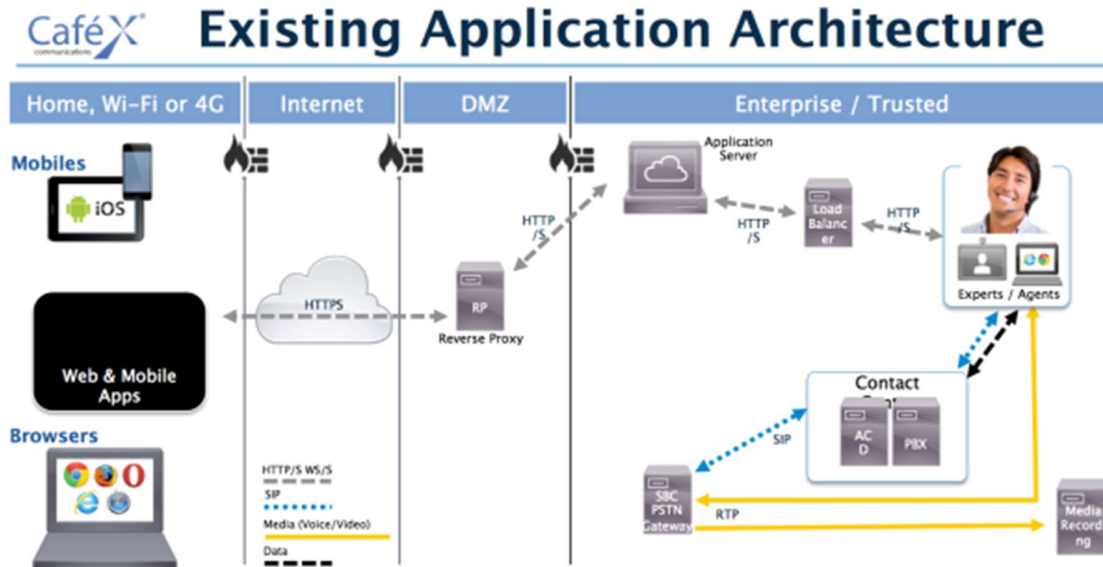


Figure 2: Existing Architecture

There is a description of the business-to-consumer model at <https://www.techopedia.com/definition/1424/business-to-consumer-b2c>.

The existing application architecture contains:

Application Server

The enterprise's application server is the central processing element for the existing consumer application. In a production system, the application server may be a cluster of hosts running application server software, providing a highly available service. Consumers interact with the application server using native mobile applications, or browser based web applications, connected to the application server through the reverse proxy.

Contact Center

Consumers may call the contact center using either mobile or fixed line phones.

The reference architecture shows a contact center based on Cisco equipment, but a CBA Fusion based solution can integrate with an architecture containing any standards based SIP RFC 3261 contact center for voice and video calling.

Load Balancer

A trusted agent or expert console runs in the enterprise, and integrates with the application, which it may do through a load balancer. The load balancer connects the agent or expert

console to the agent side application running on the application servers, and distributes calls among the connected consoles.

Consumer Application

Consumers interact with the business using an existing B2C application on a mobile or browser platform. The existing application interacts with the application server, without having voice and video integrated.

Reverse Proxy

A reverse proxy:

- Acts as an application firewall to protect against attacks originating from the internet.
- Terminates secure connections from consumer applications (SSL offloading).
- Hides the internal topology.
- Balances the load across servers delivering application content.
- Detects server failure and avoids sending traffic to failed servers.
- Provides network segregation using multiple NICs.
- Prohibits access to administrative URLs on the Web Gateway.

We recommend using a reverse proxy in a CBA-enabled deployment, whether or not the original architecture includes one.

To support a CBA Fusion solution, the reverse proxy must support the WebSocket protocol defined in RFC 6455.

CBA Fusion Enabled Application Architecture

If the existing architecture already contains these components, a CBA Fusion based solution reuses as much of the existing infrastructure as possible; it adds only a few CBA components, though some existing components (such as the firewall and the reverse proxy)

may need reconfiguring. The following diagram shows how the previous architecture could become CBA-enabled:

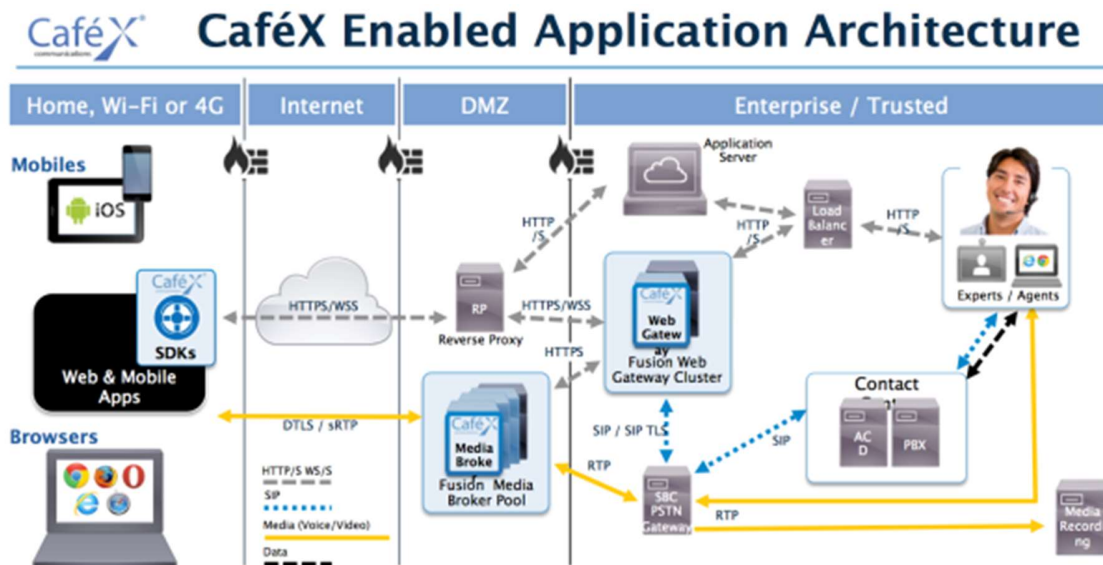


Figure 3: CBA Enabled Architecture

It adds the following components:

Web Gateway Cluster

The Web Gateway (running on a **Fusion Application Server** cluster) is the central signaling element that handles either FCSDK signaling (with the consumer application over WebSockets), or SIP signaling (with, for instance, a Cisco UCCE). It:

- Establishes the media session between clients and the SIP infrastructure.
- Handles the CBA Live Assist session between consumer and agent or expert.

For more information, see the *FAS Architecture Guide*.

Media Broker Pool

Media Brokers are deployed in the DMZ, and:

- Manage the voice and video media between the clients and the SIP endpoints.
- Transcode video and audio media streams when required.
- Decrypt and encrypt secure media from WebRTC.
- Handle RTCP, adapting bitrates to the current network conditions.

Media Brokers use 5 ports each by default, and all of them must be allowed through the firewall.

Consumer Side Client SDKs

For each supported platform, FCSDK provides a WebSocket interface with the Web Gateway, which integrates a conventional web application with SIP-based voice, video, and

co-browsing. Each SDK provides local media management (camera and microphone), signaling, connectivity through a reverse proxy or NAT, and support functions such as link health indication. It adds features such as desktop sharing and co-browsing to basic WebRTC applications.

For more information see the *FCSDK Architecture Guide*.

CBA provides consumer side application SDKs for the following platforms:

Web Browsers

Browser	Version	Co-browse	WebRTC	Plugin	Audio	Video	Platform
Google Chrome	50+	Yes	Yes	No	G.711 Opus	VP8 H.264	Windows (7.x, 8.x, 10.x) OSX Android Linux ChromeOS
Mozilla Firefox	47+	Yes	Yes	No	G.711 Opus	VP8 H.264	Windows (7.x, 8.x, 10.x) OSX Linux
Opera	37+	Yes	Yes	No	G.711 Opus	VP8	Windows (7.x, 8.x, 10.x) OSX Linux
Apple Safari	8+	Yes	No (Yes for 11+)	Yes (No for 11+)	G.711 Opus	VP8 (not in 11) H.264	OSX 10.9+ (Mavericks, Yosemite, El Capitan) iOS (co-browse only)
Microsoft Internet Explorer	11	Yes	No	Yes	G.711 Opus	VP8 H.264	Windows 7, 8.1, 10 (32 and 64 bit)
Microsoft Edge	15+	Yes	Yes	No	G.711	VP8	Windows 10 (32 and 64 bit)

Browser	Version	Co-browse	WebRTC	Plugin	Audio	Video	Platform
					Opus	H.264	

Voice and video calling is supported in Edge for FCSDK only, not in CBA Live Assist.

Limitations of Specific Browsers

- Microsoft Edge on Windows - Voice and video support in v.15; co-browse only in 14 and below.
- Opera - Will negotiate H.264 but will not decode it. Only VP8 should be used if Opera is to be supported (otherwise calls will be transcoded, which reduces throughput).
- Safari - version 11 and later does not require a plugin; version 11 only supports H.264.

Mobile Operating Systems

Device	Version	Co-browse	WebRTC	Plugin	Audio	Video	Platform
iOS	8+	Yes	Yes	No	G.711 Opus	VP8 H.264	iPad Pro (12-inch/9-inch) iPad Air 2, iPad Air iPad 4th/3rd Generation. iPad 2 iPad mini, iPad mini with Retina display; iPad mini 3, iPad mini 4 iPhone 7, 7Plus, 6S, 6S plus, 6, SE, 5s, 5c, 5, 4S iPod touch (5th generation)
Android	4.1.2+ (API v.11)	Yes	Yes	No	G.711 Opus	VP8 H.264	Samsung Galaxy S4, S4 mini, S5, S5 mini, S6, S7 (or newer) Samsung Galaxy Note 3, 4, 5 (or newer)

Device	Version	Co-browse	WebRTC	Plugin	Audio	Video	Platform
							Google Nexus 5, 6, 7, 9 and 10 (or newer) Samsung Galaxy Tab S, Tab 4 (or newer) LG G2, Optimus G3 (or newer) Motorola Moto G (or newer) HTC One (M7, M8, One max) HP Slate 7, 8, 10 (or newer)

- There are too many Android devices to list all that are supported. The listed devices have been tested, and should be considered typical.
- An Android device should have at least the CPU and memory equivalent to a Samsung Galaxy 4:
 - 1.9 GHz Quad core Snapdragon GS4
 - 4G or WiFi a/b/g/n/ac
 - 2 MP front facing camera