

Interactive Intelligence, Inc.

A New Approach to Communications as a Service (CaaS)

CaaS with Local Control

Overview

Software as a service (SaaS) is exploding in popularity. Organizations of all types love the ability to treat software much as they do electricity – a service that they plug into and pay for monthly. In recent years, the SaaS model has been applied to all sorts of software – CRM, HR applications, sales force automation, etc. The advantages of SaaS are obvious and include,

- Little or no capital expenditure
- Predictable monthly costs instead of a large up-front payment
- Less information technology overhead

CaaS

With the advent of voice over IP, this same delivery model can be applied to various communication services including contact center automation. This utility-like model for communications is often referred to as Communications as a Service (CaaS).

Unlike data services such as CRM, communications services have special considerations. Communications services are often considered even more mission critical because they involve personal contact with customers. Temporary loss of access to CRM can be a major inconvenience, but inability to take calls from customers can threaten the very existence of a business. This is why many organizations have been hesitant to trust any CaaS provider with their critical communications. The many disadvantages of CaaS for communications services include

- Extreme business disruption in the event of a service outage
- Variable call quality that can make customers think they're dealing with a shoddy off-shore operation
- Loss of control over valuable data
- Lack of security for both voice and data

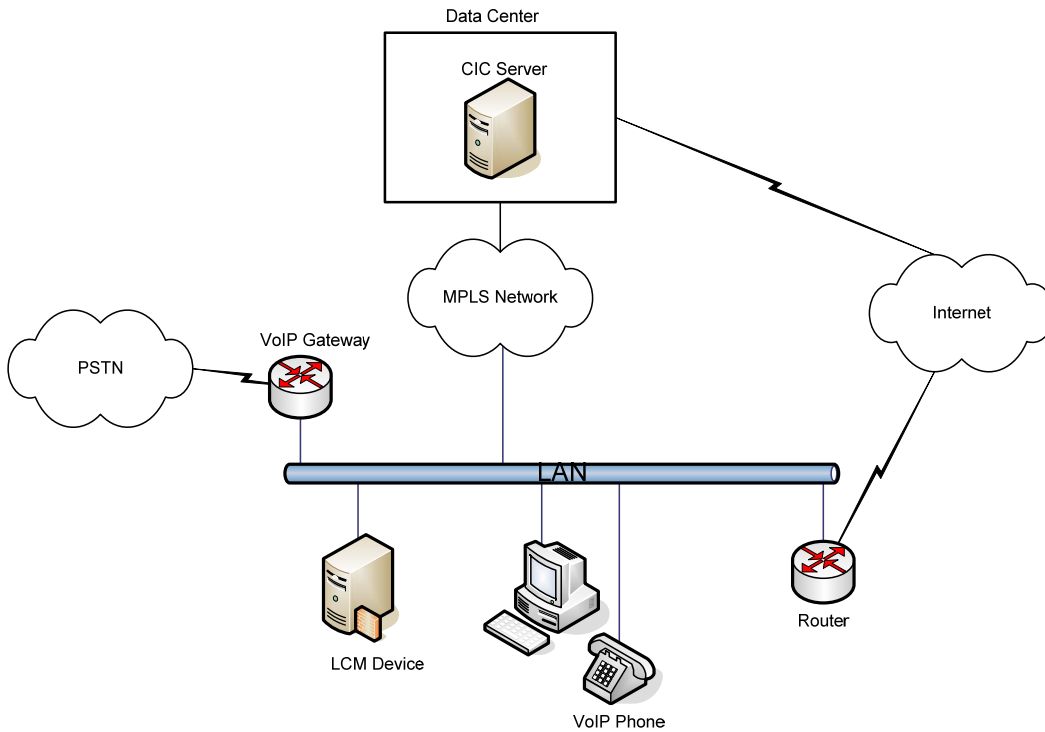
Even the public power grid has disadvantages with its variable quality, intermittent spikes, and occasional blackouts, some of them severe enough to last for hours or even days. Organizations have learned to mitigate these problems with surge protectors, uninterruptible power supplies, and emergency generators. Clearly what's needed is a similar hybrid model for communications services – one that combines the best of remote service delivery with local control.

CaaS with Local Control

Interactive Intelligence has found a way to offer organizations the advantages of Communications as a Service while providing the functionality of an in-house communications system. The approach is simple

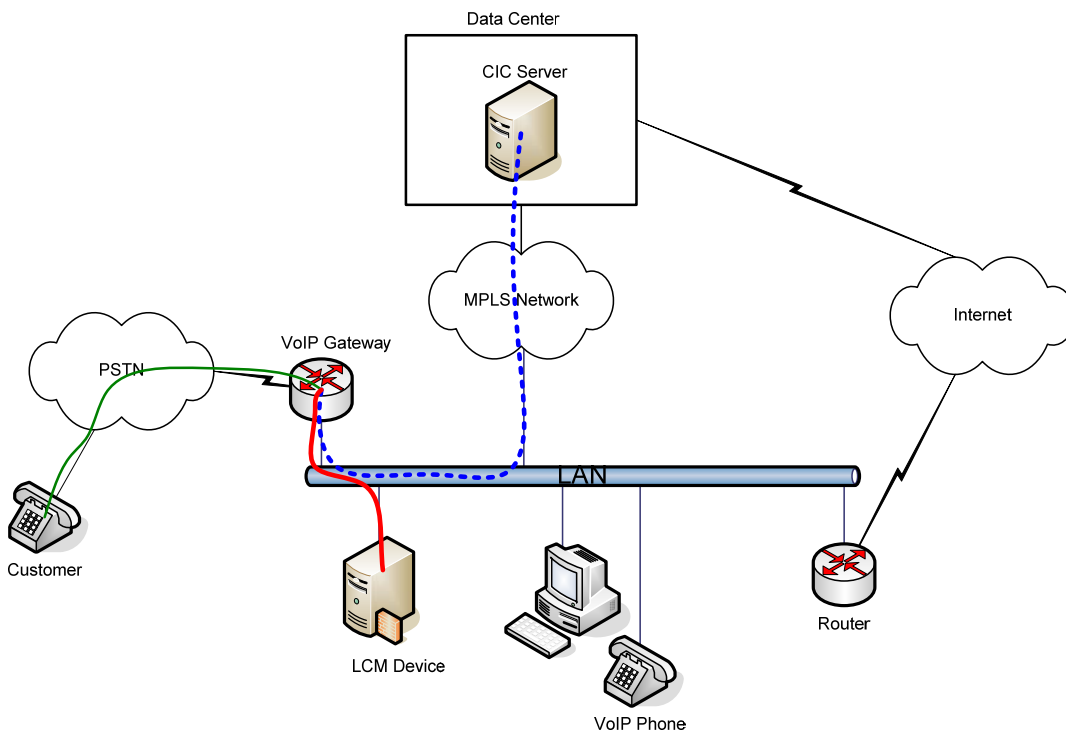
- Keep your current telecommunications vendor
- Attach your phone lines to a voice over IP gateway that sits on your network
- Connect a local call management device to your network
- Install an MPLS connection between your network and an Interactive Intelligence CaaS data center
- Deploy VoIP phones

The configuration is illustrated in the following diagram.



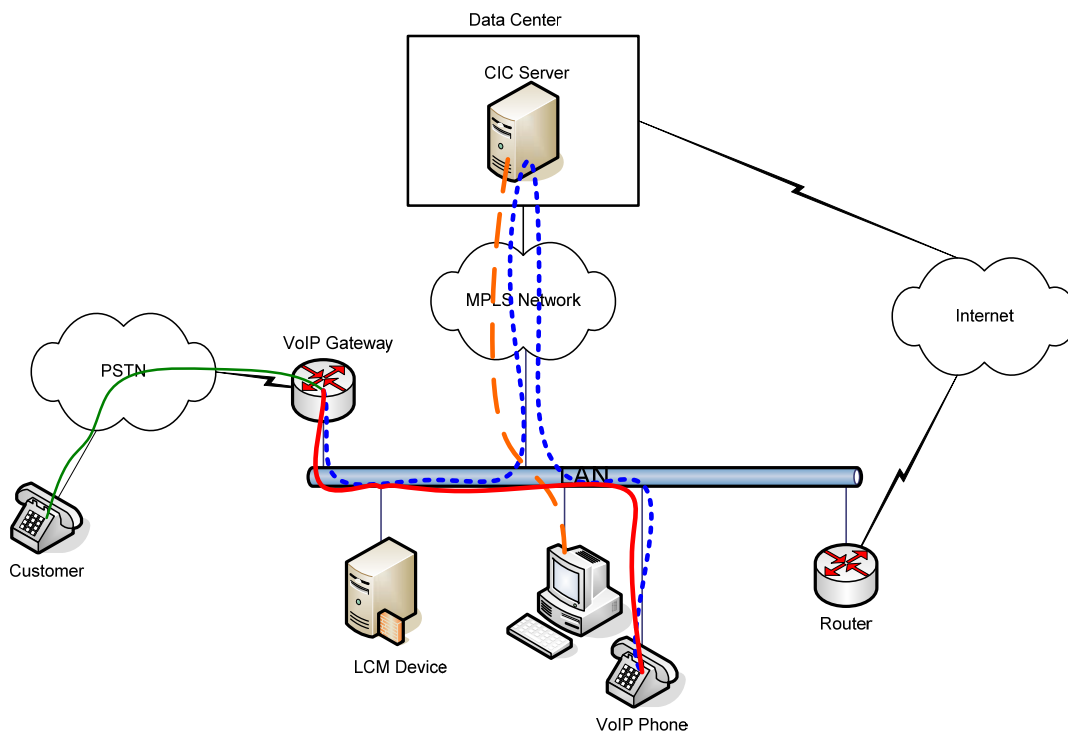
Notice how simple this configuration is. The VoIP gateway is a type of router that simply connects traditional phone lines (T1, E1, ISDN PRI, analog) to your network and converts phone calls to voice over IP using the international SIP (session initiation protocol) standard. Similarly, the LCM is a simple device that provides local call management as we'll describe in a moment. It's easily configured through a simple Web interface. The VoIP phones typically come from experienced vendors such as Polycom that manufacture a variety of models that adhere to the SIP standard – everything from basic desk phones to advanced executive phones with touch screens and other features.

To see how this architecture works, let's look at an incoming customer call as in the following diagram.



The customer call (solid green) goes through the public telephone network and comes into a telecommunications trunk into your company. That trunk connects to the gateway where the call is converted to voice over IP using the SIP standard. Notice that at this point, the call splits into two streams. The first, represented by the dotted blue line, is the SIP signaling stream. This is a low-bandwidth stream used to control the call – to transfer it, disconnect it, etc. The second stream, represented by the solid red line, is the actual voice traffic often referred to as RTP (for real-time protocol). It contains the actual audio of the call (i.e. the customer’s voice). Notice how the SIP signaling stream travels over the MPLS connection to an Interactive Intelligence CaaS data center. That’s where a powerful application server running Customer Interaction Center (CIC) software executes the complex call routing logic that has been defined for your organization. In a contact center application, the customer’s call may be queued until a suitable agent becomes available.

Unlike the SIP signaling stream, the audio stream stays on your network where it terminates on the Local Call Management (LCM) device. This device contains software that performs various audio operations such as playing greetings, prompts, music on hold, etc. In the current example, let’s say the customer goes through an interactive voice response (IVR) menu (“Press 1 for sales, 2 for customer service, ...”). The LCM device handles these operations by playing audio and detecting the telephone keys the customer presses. Eventually, let’s assume the customer is placed in a queue. When a suitable agent becomes available, the customer’s call is connected to that agent and the situation looks like this.



Notice how a second SIP signaling stream has been connected to the original one. This second “leg” flows from the CIC server in the data center to the phone of the agent selected to handle the call. By staying in the loop of the SIP signaling stream, the CIC server retains control of the call. It can take the call back if the agent doesn’t answer or transfer the call to another user if the agent clicks the Transfer button on his or her screen.

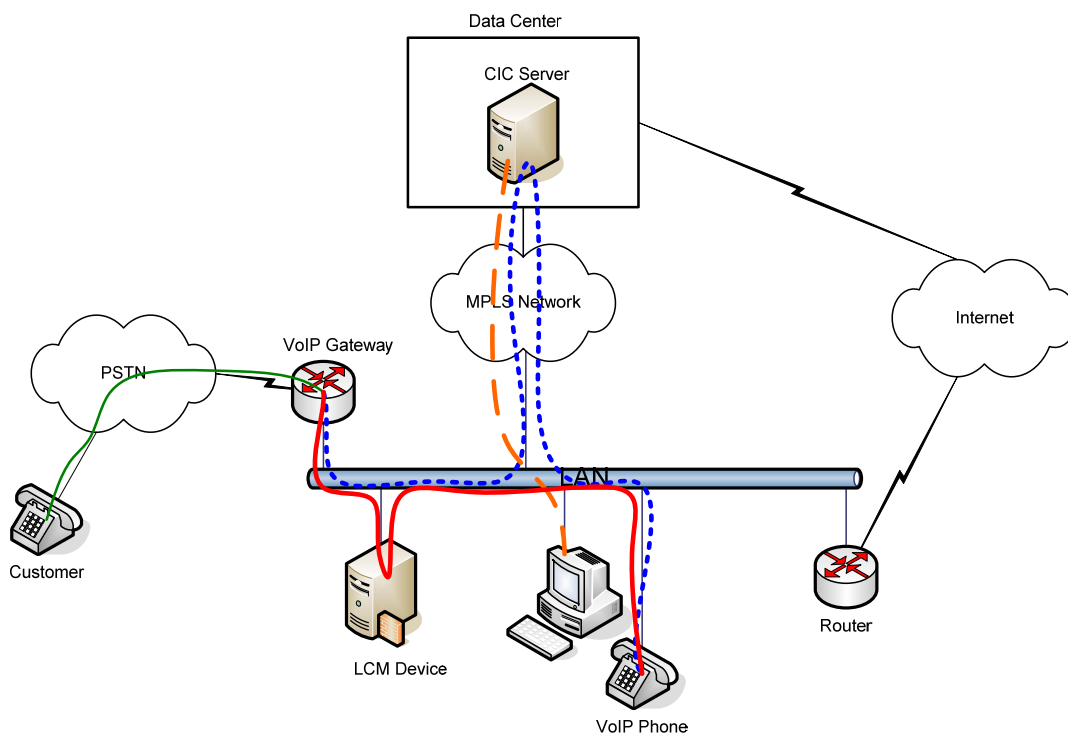
Speaking of the agent’s screen, notice a new IP stream that has been created. This stream (represented by the orange dashed line) flows from the CIC server to the agent’s computer and is used to perform screen pops and other operations. The Interactive Intelligence CaaS service includes a graphical application called Interaction Client that runs

on the agent's computer, allowing the agent to transfer the call, conference in another user, record the call, etc. We'll discuss Interaction Client more later.

Next, look at the audio stream. Unlike the SIP signaling stream, the audio stream **never leaves your network!** It flows directly between the gateway and the end-user's phone. As mentioned previously, the SIP signaling stream is very low bandwidth and consists only of an occasional command (e.g. TRANSFER). For that reason, it really doesn't matter if it's delayed for a bit by network congestion or just the time it takes the signal to travel from your location to the data center. However, the audio stream is relatively high bandwidth and extremely sensitive to delay. Even relatively short delays of a few hundred milliseconds can make a call almost unbearable and seem like a satellite or old intercontinental connection where the two parties talk over each other. Such call quality can seriously harm a customer's impression of your organization. By leaving the audio stream on your network and providing local processing with the LCM device, the Interactive Intelligence approach assures the highest possible call quality.

Recording, Monitoring, and Advanced Capabilities

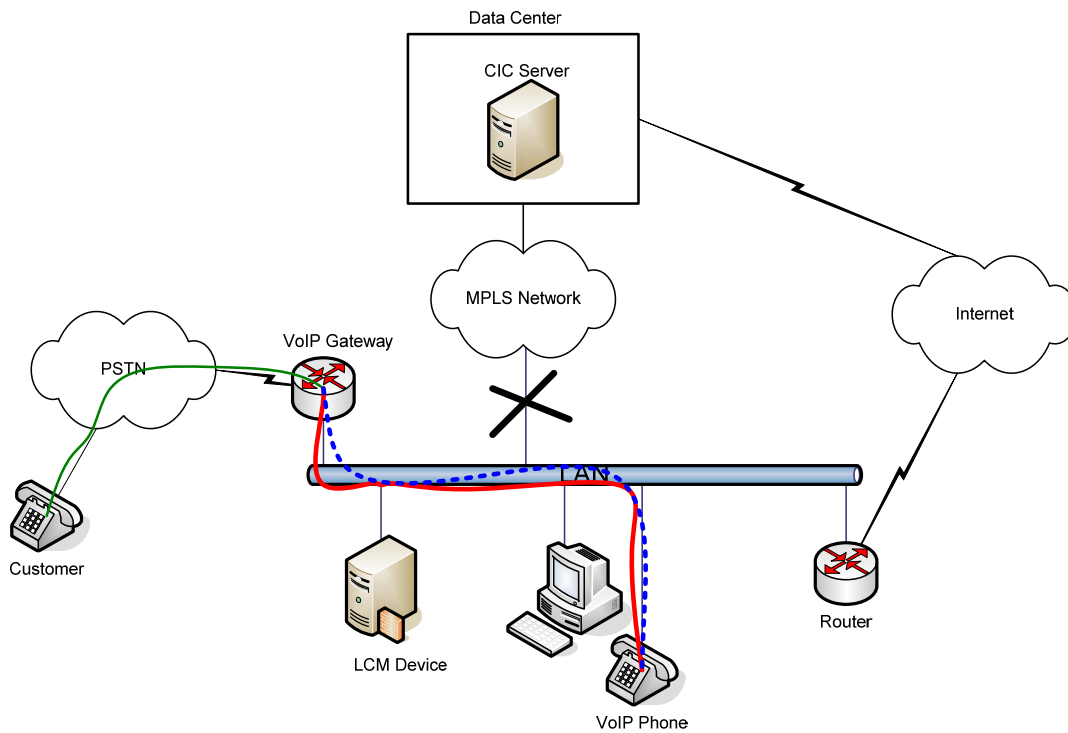
In the diagram above, the audio traffic flows directly between the gateway and the agent's phone. However, what if you want to record the call or allow a supervisor to listen in on it? Audio can be made to flow through the LCM device, as shown below.



With this audio flow, the LCM device can record the call and save the recording to a disk file or stream a copy of the audio to a supervisor for monitoring. The CIC server is able to use its control of the SIP signaling session to dynamically route the audio stream through the LCM device as needed – for example, when a supervisor clicks the “Record” button on his or her screen. Future versions of the LCM will provide additional functionality such as emotion detection and word-spotting to give you greater insight into what's happening with your customers and agents.

Survivability

The Interactive Intelligence CaaS with Local Control model gives you the best of all worlds – a professional, centrally managed set of communications services with high quality audio that stays on your network. Additionally, the Local Call Management (LCM) device acts like an emergency generator during a power outage. If for any reason (MPLS outage, for example) the CIC server in the data center becomes unavailable, your organization can still make and take calls. In fact, you can even continue to queue incoming calls and route them to agents, albeit in a less sophisticated manner than you can with the CIC server. Thus just as an emergency generator keeps the electricity on, although perhaps in a degraded manner, the LCM device allows you to keep communicating with the world. This emergency capability is illustrated below.



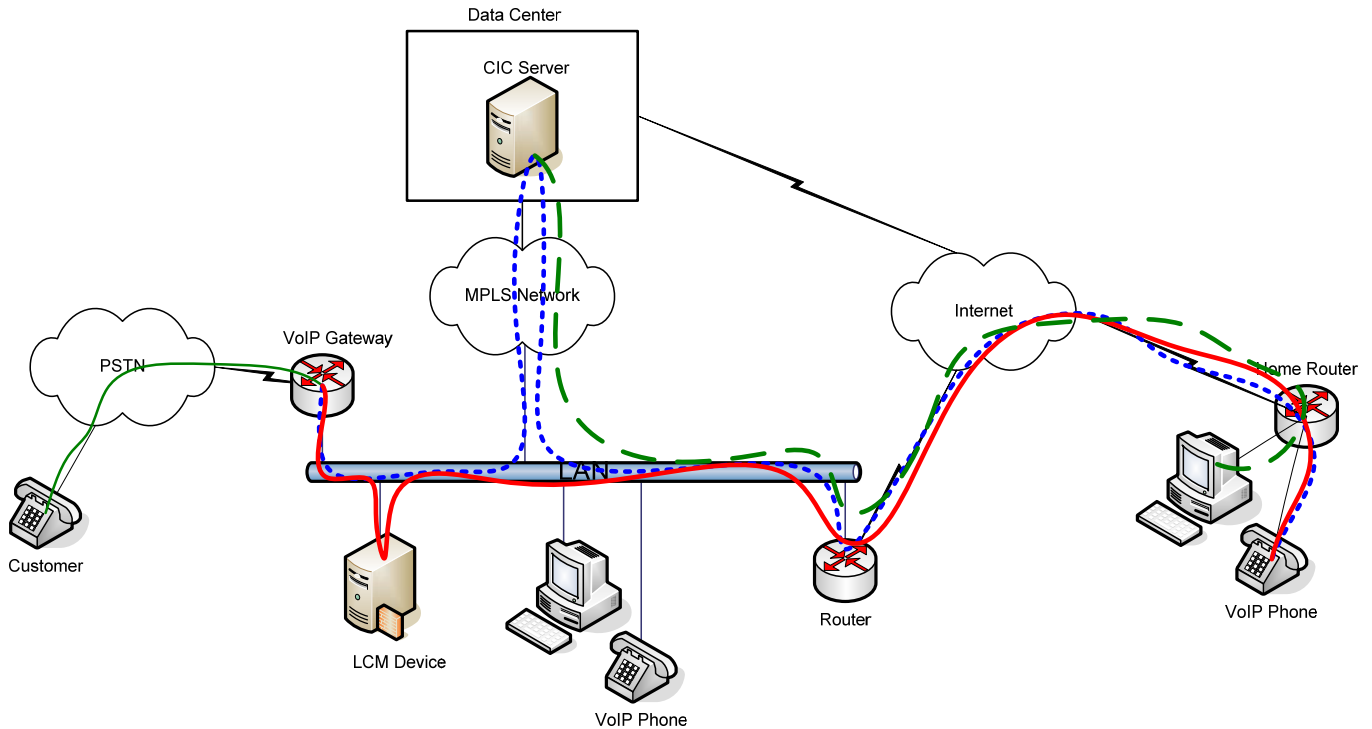
As you can see, the major difference is that SIP signaling now flows directly between the gateway and the end-user phone instead of going through the data center. When the CIC server becomes unavailable, the LCM device automatically senses it and begins providing basic communications services, including

- DID (direct inward dialing), allowing callers to continue to reach employees with direct-dial numbers
- Outbound dialing, including emergency services
- Queuing of incoming calls with round-robin routing
- In-queue audio (music, announcements, etc.)
- Recording of selected calls

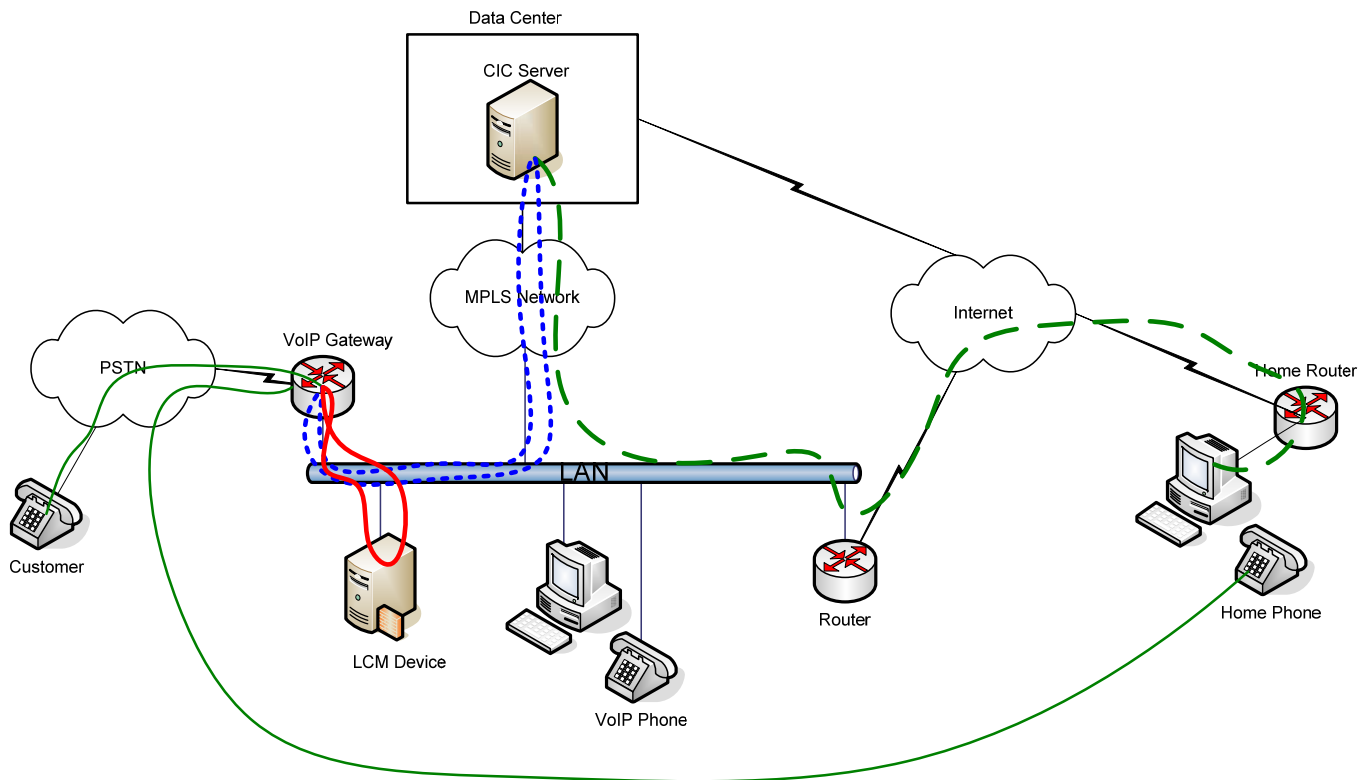
When the CIC server becomes available again, the LCM automatically resumes its normal operation. What's more, you can have multiple LCM devices and use them in a cluster to avoid a single point of failure.

Remote Agents and Sites

The CaaS with Local Control architecture easily handles remote agents, mobile workers, and remote sites. Consider the following illustration of a contact center agent working at home.



In this particular example, the agent has a computer and a voice over IP phone at home connected to a router which connects to the Internet, probably by means of a cable modem or DSL. Both the SIP signaling stream as well as the audio (RTP) stream travel from your network to the agent by means of the Internet. The functionality is exactly the same as for an agent sitting directly on the local network. Calls can still be recorded or monitored since the audio flows through the LCM device just like it does for local agents. The work-at-home agent even has desktop call control and screen pop because of the data connection (green dashed line) between the agent's computer and the CIC server in the data center. And the VoIP phone in the agent's home isn't a requirement. An alternative is to use a regular phone with voice that travels over the public telephone network as shown in the following diagram.

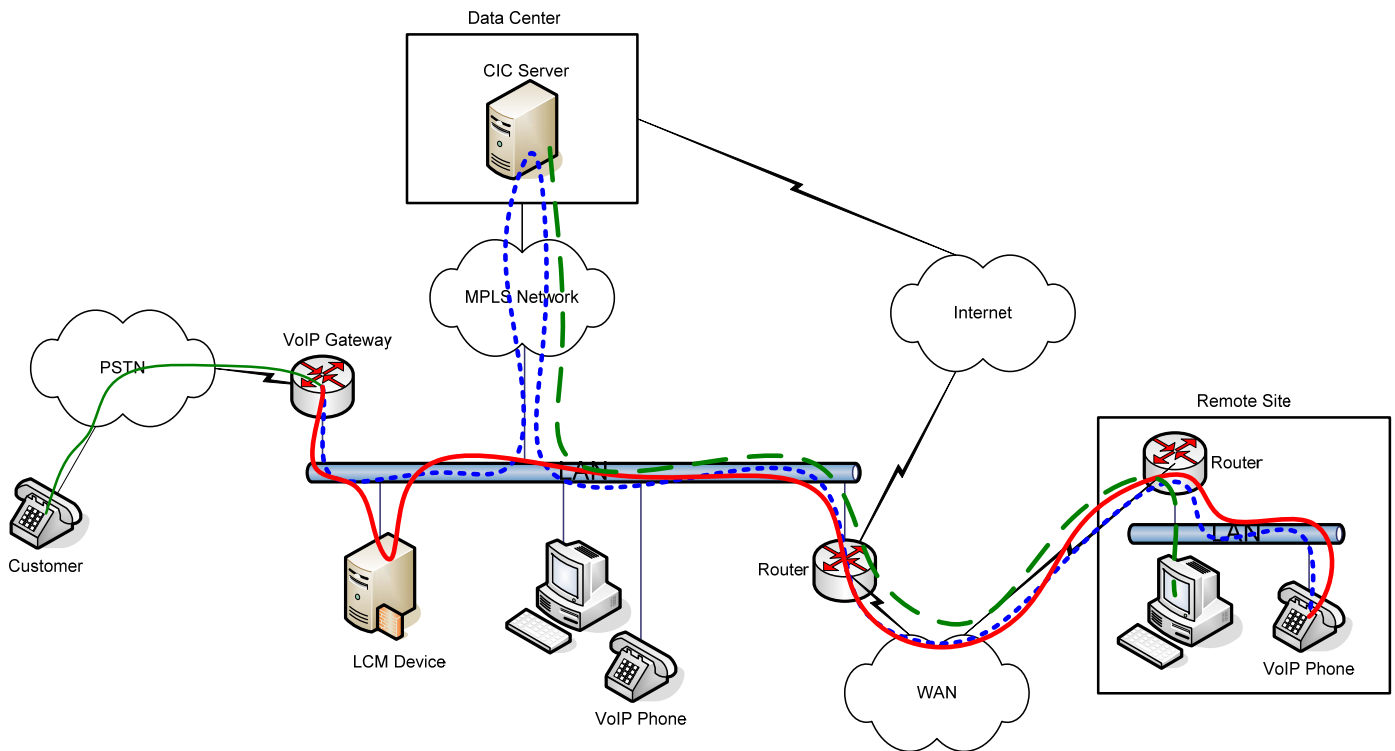


Here's how the call flows work:

1. The customer's call (solid green) arrives at the gateway on your network, just like before.
2. The gateway converts the call to voice over IP using the SIP protocol, splitting the call into the SIP signaling (dotted blue) stream and the RTP audio (solid red) stream.
3. Once the CIC server has finished all IVR (with audio handled by the LCM device) and queue processing and decides to send the call to the work-at-home agent, an outbound call is made via the gateway. This call travels over the public telephone network (PSTN) to the agent's phone.
4. The SIP signaling streams of the original customer call and the outbound call to the work-at-home agent loop through the CIC server in the data center, allowing it to maintain control of the call.
5. The RTP audio streams of the original customer call and the outbound call to the work-at-home agent loop through the LCM device on your network, allowing it to record the call, monitor it, play audio to it, etc.

So once again, the work-at-home agent has exactly the same capability as local agents including desktop call control and screen pop. Supervisors can record and monitor the agent's calls, just as they do for local agents.

Note that these same capabilities can be supplied to mobile workers – sales people, executives, and others who are on the road, often with laptops and cell phones. Like the work-at-home agent above, they can remain connected to the communications system no matter where they are in the world. And remote sites are handled in much the same way as illustrated below.

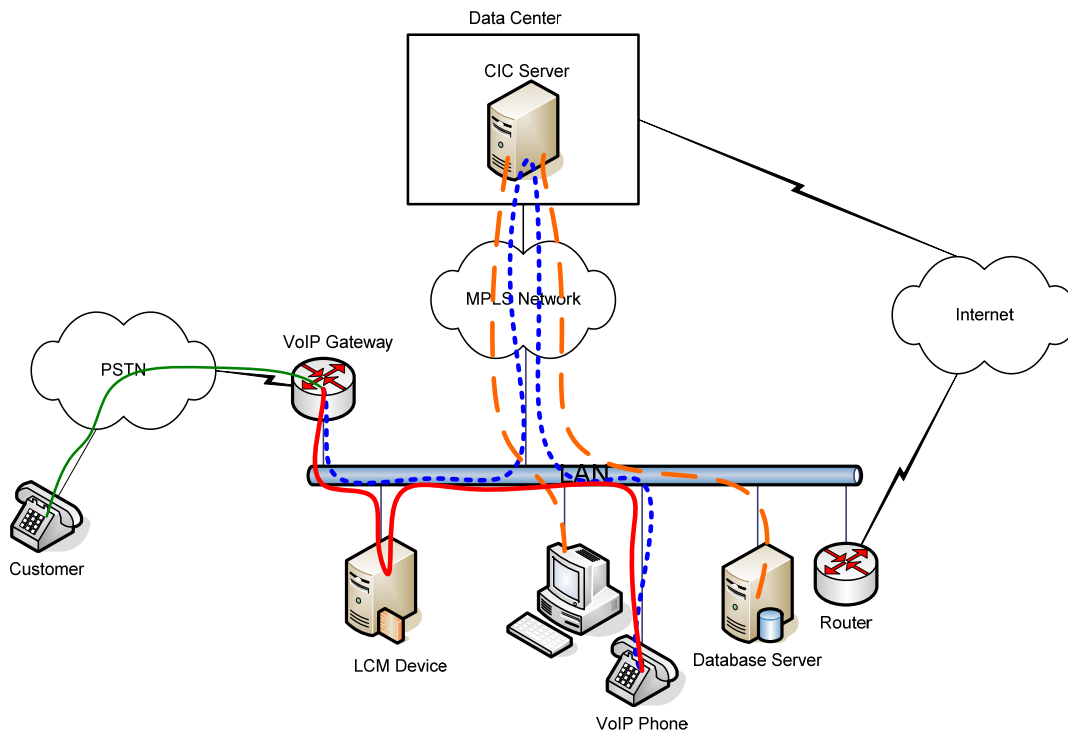


We assume here that the remote site is connected to the main office via a wide area network (WAN), ideally with quality of service (QoS) and adequate bandwidth. Actually, the ideal would be for the remote site to be connected to the same MPLS network used to connect the main office with the Interactive Intelligence data center. In any event, the call flows are very straightforward. The SIP signaling and RTP audio streams still loop through the CIC server and LCM device, respectively, but then flow over the WAN to the VoIP phone of the user destined to receive the call. As in the situations we've examined previously, the CIC server in the data center retains control of the call and audio still passes through the local LCM device, allowing the call to be recorded or monitored. Note that the remote site can have dozens or even hundreds of employees and phones.

The Interactive Intelligence CaaS with Local Control architecture gives you tremendous flexibility for incorporating stay-at-home workers, mobile employees, and remote sites into your organizational communications infrastructure.

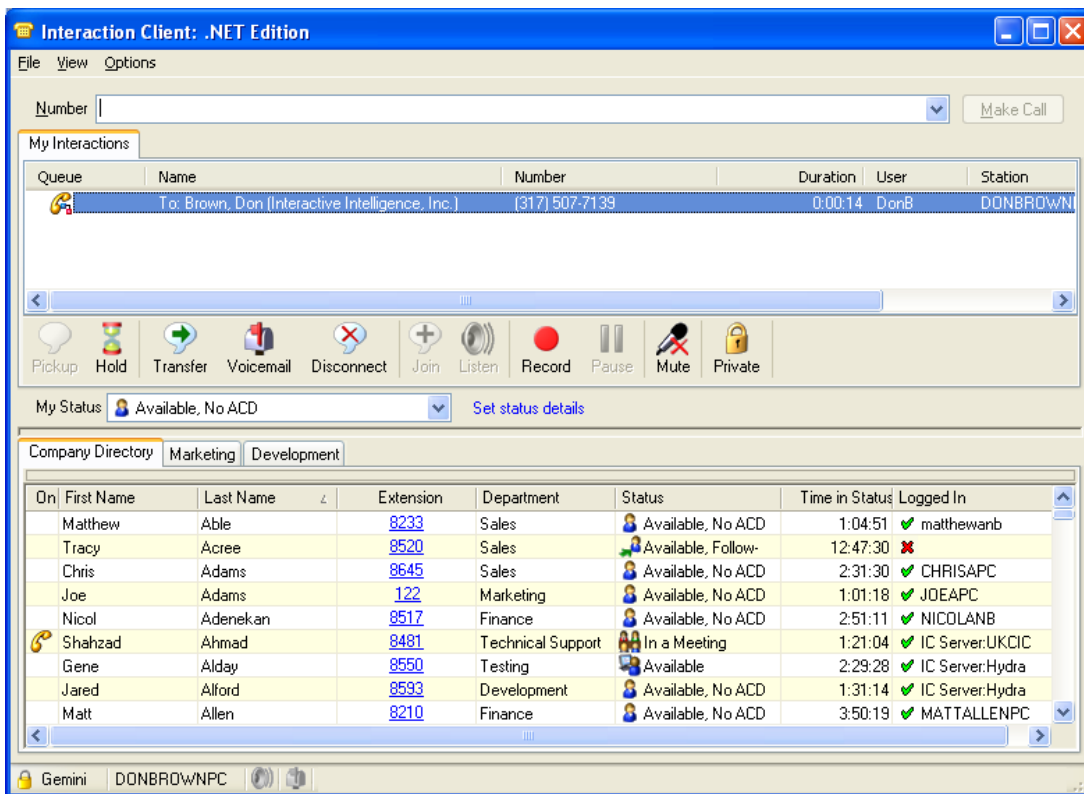
Local Control of Data

One of the major disadvantages of other CaaS offerings is loss of control over your valuable data. You are asked to have faith that it is handled properly and kept secure from tampering. It is often difficult for you to access your own data. The Interactive Intelligence CaaS with Local Control model eliminates this problem by giving you the option to store all your data in your own database server sitting right on your network. This makes it easy for you to run reports, perform backups, and do whatever you'd like to do with your data. Also, mandates such as PCI (payment card industry) compliance and HIPAA (Health Insurance Portability and Accountability Act) may make it illegal for sensitive data to be stored outside your organization. The Interactive CaaS with Local Control architecture allows you to enjoy the advantages of CaaS while still maintaining strong control over your customer data. Data flows from the CIC server in the data center to your database server via a TCP/IP link as illustrated below.



Agent Interface

The most-common end-user manifestation of the Interactive Intelligence communications service is an application we've mentioned previously - Interaction Client. A screen capture is reproduced below.



First and foremost, Interaction Client is a ready-to-use application from which users can perform a myriad of communications tasks, including

- Make outbound calls. Users can type a number into the text box near the top of the form and click the “Make Call” button. Alternatively, they can simply click on an entry in any of the directory pages at the bottom of the form to dial the corresponding individual.
- View incoming calls. New calls appear in the “My Interactions” tab along with any information available about the caller.
- Perform operations on calls. From the “My Interactions” tab, the user can transfer calls, initiate recordings, send calls to voice mail, conference multiple calls together, and otherwise manage them.
- Manage presence. A user can change his or her status by selecting the appropriate value from the “My Status” dropdown list just below the “My Interactions” tab. Note that presence information such as “on the phone” is set automatically by the system. Presence values can be completely customized and different ones can be configured for different groups of users.
- Access company and workgroup directories. The bottom third of the Interaction Client shown above is devoted to various directory tabs. These tabs are completely configurable and allow the user to see the status of other employees and to quickly reach them at the office, on their cell phones, at home, etc.
- Participate in ACD queues. A user of Interaction Client can log into and out of various ACD queues. When logged in, new interactions – whether phone calls, e-mails, text chats, or others – show up in the “My Interactions” tab and can be picked up in exactly the same way.

All Interaction Client needs is a TCP/IP connection back to the server running CIC in the data center.

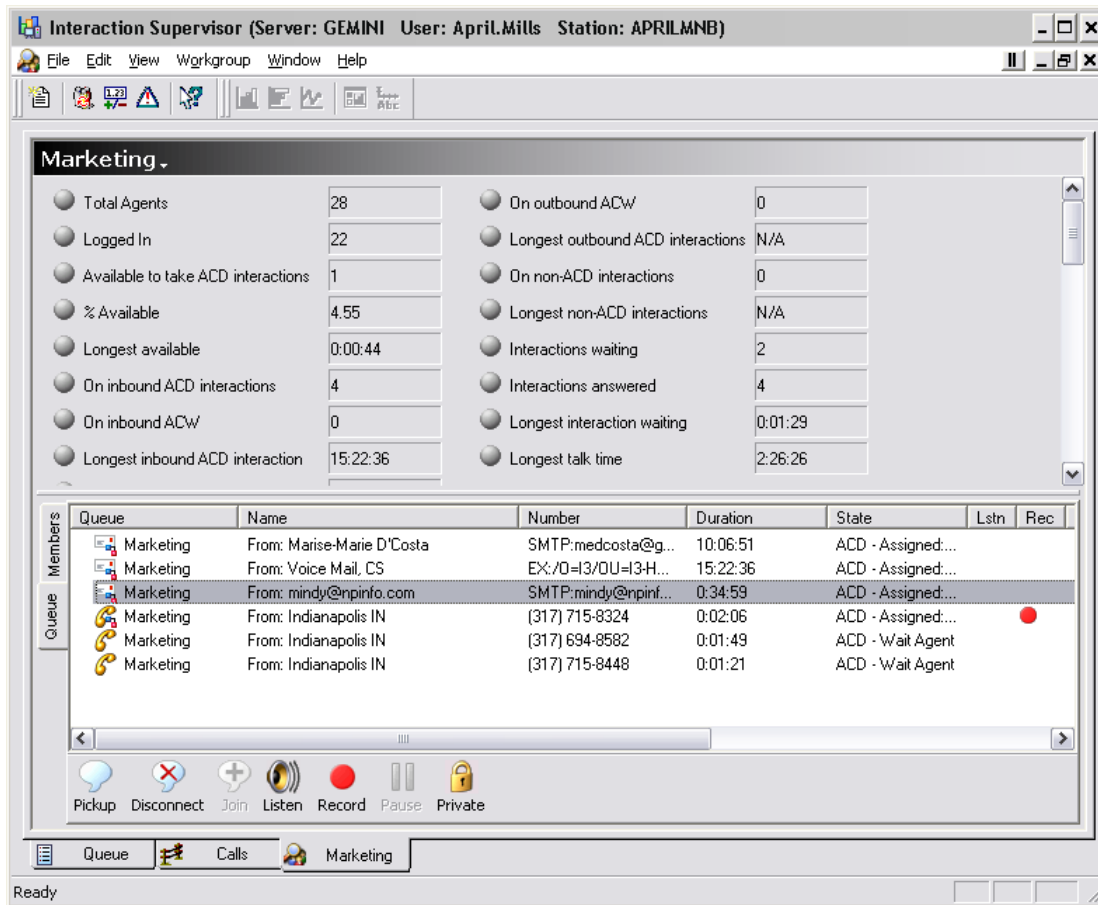
There are actually multiple versions of Interaction Client:

- Interaction Client .NET Edition. This is the full Windows application shown in the earlier screen capture. It can be used on any PC or laptop running Windows XP or Windows Vista.
- Interaction Client Outlook Edition. This version of Interaction Client runs within the Microsoft Outlook e-mail client. It essentially turns Outlook into a full VoIP communications client.
- Interaction Client Web Edition. This version can be run from most major Web browsers including Internet Explorer, Firefox, and Safari. Using the Web Edition, nothing at all needs to be installed on the user’s machine.
- Interaction Client Mobile Edition. This version can be used on mobile devices running Microsoft’s Windows Mobile (Pocket PC) operating system.

Only the .NET and Outlook Editions of Interaction Client incorporate a full soft phone, allowing a PC or laptop with a headset to function as an actual IP phone. All four versions can operate in conjunction with a desktop phone or mobile phone.

Supervisory Interface

Interaction Supervisor is an application from which supervisors and managers can keep track of what’s going on in a contact center or other organization. A screen capture of Interaction Supervisor is reproduced below.



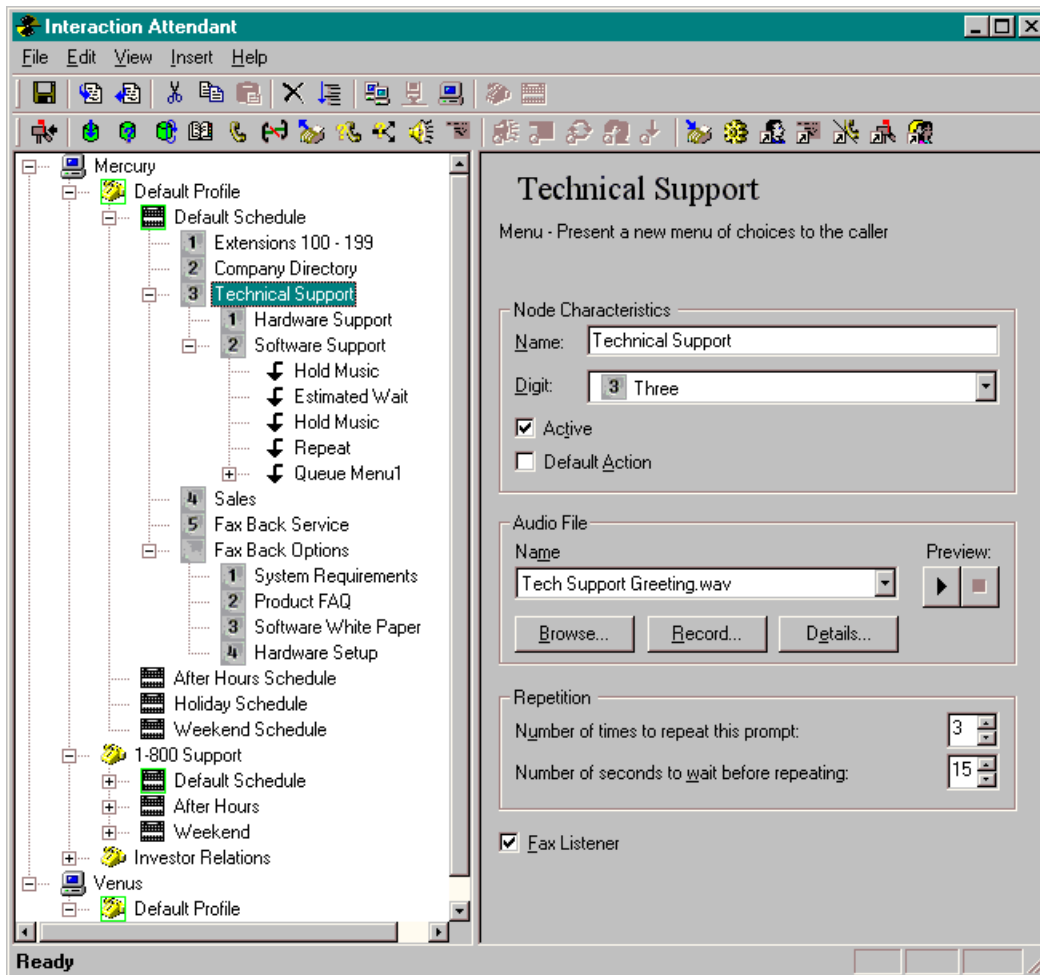
Interaction Supervisor provides a set of configurable views into many different aspects of communications and business processes. In addition to being able to display various real-time information, Interaction Supervisor allows users to set alerts on different quantities (e.g. calls longer than a certain duration, average hold time greater than a given value, etc.) and be notified in selected ways (phone calls, e-mails, etc.). Although a full description of Interaction Supervisor is beyond the scope of this document, suffice to say that it allows supervisors to keep track of various objects, including:

- People. With sufficient access privileges, a supervisor can click on a given person and see his or her interactions, current status, etc.
- Interactions. A supervisor can highlight a given phone call and listen in, initiate a recording, whisper into the agent's ear, join the call, take the call away, etc. Similar operations are provided for non-telephonic interactions such as queued e-mails, text chats, etc.
- Queues. Interaction Supervisor provides real-time information regarding the performance of various workgroups and their associated queues, including average wait times, talk times, calls currently in queue, etc.
- Processes. Interaction Supervisor has been extended to allow process managers to see work making its way through various process flows. It can display where a process object is along its execution path, how long it has been in transit, where it's currently held up, who's supposed to be working on it, etc.

In addition, Interaction Supervisor can be used by IT personnel to monitor the system itself – SIP connections, PSTN trunks, etc.

Administrative Interfaces

As its name implies, the Interaction CaaS with Local Control allows you to exert complete control over your communications system. We provide you a graphical application called Interaction Attendant that allows you to determine how calls are handled in your organization. A screen capture is reproduced below.



Using Interaction Attendant, you can set up various call handling “trees” for different situations (e.g. normal business hours, after hours, weekends, holidays, etc.). For example, you can determine as in the screen shot above that when the caller presses “3”, the caller will be asked if they want hardware support or software support. Interactive Administrator makes it easy for you to configure call handling including simple interactive voice response (IVR) applications, automatic call distribution (ACD) for call center operations, and even the routing and queuing of incoming customer e-mails.

In addition, Interactive Intelligence provides a Web interface from which you can configure users, define workgroups, change passwords, and perform many other administrative tasks. A screen capture is shown below.

Delete Refresh Apply Save Cancel

Login

Log In
Log Out
Log Out All

User Actions

Collapse Sections
Expand Sections
Change Password
Apply Template
User Information
Other Information
Licensing
Personal Info
ACD
Options

User List Actions

New
Delete
Advanced

People

- Home
- People
 - Default User
 - Roles
 - Users
 - Workgroups
 - Password Policies

User Information

Name:

Extension: Auto

Workstation:

Mailbox

Use Interaction Store Mailbox

DisplayName: Assign

Roles

Roles: Add Create...

Selected Roles: Administrator Business User Supervisor Remove this role from the user

Workgroups

Workgroups: Add Create...

Selected Workgroups: Marketing Support

Back to top

Other Information

Back to top

Advantages

The Interactive Intelligence CaaS with Local Control offering provides you the best of all possible worlds:

- A powerful communications system based on the SIP standard for voice over IP
- A utility-like model that allows you to pay monthly and leave most of the complexity in the Interactive Intelligence data center
- Standards-based gateways, phones, and local call management devices that you own and that stay on your site, offering the power of an in-house phone system with a fraction of the hassle and IT overhead
- The ability to keep all call traffic on your network instead of sending it thousands of miles to a data center
- The ability to perform advanced functions including call recording and supervisory monitoring
- Survivability that allows you to continue operating even if the CaaS is temporarily unavailable
- Local control and ownership of your data
- The ability to incorporate mobile workers, stay-at-home agents, and remote sites
- Powerful graphical interfaces for contact center agents, business users, and supervisors
- The ability to configure your system as you like by setting up your own IVR and call flows
- The ability to avoid lock-in by buying your own phones from supported vendors such as Polycom

Summary

Only the Interactive Intelligence CaaS with Local Control offering is able to provide you the benefits listed above. Unlike less sophisticated services that must stream your audio over their network, the Interactive Intelligence approach guarantees unmatched call quality, reliability, security, data access, and flexibility. And perhaps best of all, if you should ever desire to move from a monthly CaaS service to a full in-house deployment, Interactive Intelligence allows you to purchase the full CIC system and move your existing server from our data center to your location. This allows you to transition from Communications as a Service to full-blown premise-based communications in one easy step. Interactive Intelligence even credits a portion of your subscription payments toward the purchase of your in-house system. And with Interactive Intelligence, you're dealing with the 196th largest software company in the world, one that has been around for more than thirteen years and now has over 700 employees and 3,000 customers all around the globe.