October 2015

Evaluation of the Logitech ConferenceCam CC3000e Solution

Hands-on testing of the leading USB audio / video add-on solution

Background

With 7,000 employees and generating $2.1B in revenue, Logitech is a leading PC peripheral manufacturer offering webcams, keyboards, standard and "gaming" computer mice, PC speakers, mobile speakers, tablet accessories, home control devices / remotes, and more.

Logitech is also a longstanding player in the video conferencing market.

- The company's webcams have been used for desktop video conferencing for many years.
- In 2008, Logitech acquired SightSpeed, a small video conferencing service provider, for $30M.
- In 2009, Logitech announced Logitech Vid, a video calling service based on SightSpeed technology and available free to Logitech webcam owners. Citing that other more widely used calling services (e.g. Skype) were available, Logitech shut down the Vid service in mid-2013.
- In 2009, Logitech acquired Lifesize, a Texas-based video conferencing vendor founded in 2003, for $405M. Today Lifesize operates as a division of Logitech and has ~ 350 employees.

In 2011, Logitech formed the "Logitech for Business" division offering a variety of products and accessories targeting business / enterprise users. Products within the "for Business" portfolio include keyboard and mouse combination devices, wireless mice, desktop PC speakers, mobile speakerphones, tablet accessories, business headsets (wired, wireless, noise cancelling, etc.), presentation devices with laser pointers, and more. In addition, the company offers solution-specific devices and peripherals such as keyboards optimized for Cisco Jabber and webcams optimized for Lync.

In early 2012, the Logitech for Business division released the ConferenceCam BCC950 – an all-in-one USB peripheral that connects to a user's notebook / desktop PC and enables that device to host video conferencing sessions for small groups.

The BCC950 (see image at right) includes a 1080p-capable webcam mounted on a 9 inch extender stem with motorized pan and tilt and digital zoom, an integrated speakerphone, and a remote control for a list price of US $249.99.

<u>Introducing the BYOD Group Conferencing Add-On Category</u>

The Logitech BCC950 was the debut product (or at least the first heavily promoted product) in a category of offerings that Wainhouse Research (WR) has dubbed, "BYOD group conferencing add-ons."

Solutions in this category are designed to solve a very specific challenge – the fact that most personal devices (e.g. notebook PCs, tablets, and smartphones) are designed to support the audio needs of a single person and NOT a group.

BYOD add-on solutions include microphone(s) and speaker(s) optimized for group situations that are used in place of the BYOD device's integrated mics and speakers. Note that some add-ons also include a video camera, and as a result provide both enhanced (group ready) audio and video functionality.

In January 2014, Logitech announced a new member of the ConferenceCam family – the CC3000e. Sporting a compelling combination of features, performance, and low price (MSRP of just under US $1,000), the CC3000e has enjoyed notable success within the enterprise over the last 18 months.

In early 2015, WR contacted Logitech and asked for a demo CC3000e for our use. A few months later, WR decided to evaluate this product. This document contains the results of our independent, third-party testing, and our overall opinions of the CC3000e BYOD add-on solution.

To be clear, Logitech did NOT pay WR to evaluate this product. After reviewing our final test results for accuracy, Logitech licensed this results document for public distribution.

The Logitech CC3000e

The ConferenceCam CC3000e provides both audio and video add-on functionality. The solution includes the following parts:

1) Camera – a 1080p-capable, motorized pan / tilt / zoom camera with 10x optical zoom and a 90 degree field of view.[1]

2) Base Unit – the "brains" of the solution includes two (2) microphones, one speaker, a control panel, and a small monochrome LCD display. The base unit also supports Bluetooth with NFC pairing.

3) Hub – a small, round, plastic puck-like device acting as the cable connection point between the camera, the base unit, and the user's device.

4) Accessories – a small IR remote control that fits neatly into the front of the base unit, various connection cables, a power supply, and a multi-purpose camera mount.

[1] For situations with an existing audio system, the same PTZ camera is available separately for US $799.99 (MSRP)

The CC3000e is designed to be permanently installed in a meeting room and supports two basic functions / use cases:

1) Bluetooth Speakerphone – the CC3000e uses Bluetooth with NFC pairing to connect to the user's BYOD device and become the external microphone and speaker for that BYOD device.

2) USB audio / video add-on – when connected to the USB port of a BYOD device, the CC3000e's microphones and speakers become available as audio input and output devices to the BYOD device. Similarly, the CC3000's camera becomes available as a video device / source to the BYOD device.

The CC3000e was designed with interoperability in mind. For example, the CC3000e works with any Bluetooth-capable BYOD device and is UVC 1.5 compliant which allows it to work with Windows systems, Mac systems, and many other devices (e.g. Chromebooks, etc.) without the need for proprietary audio and video drivers, plug-ins, or apps.

In addition, when used with some software applications (e.g. Microsoft Lync / Skype for Business, Cisco Jabber, etc.), the CC3000e provides additional features such as caller-ID on the LCD display, the ability to accept and hang-up calls using the control pad or IR remote, and far-end camera control.[2]

Hands-On Testing of the CC3000e

System Installation

The installation of the CC3000e took only a few minutes. In fact, it took longer to remove the pieces from the box than it took to connect the solution. No configuration was required (true plug-and-play).

The CC3000e's construction and build quality falls somewhere above consumer-level and below the professional grade devices we're used to seeing in enterprise meeting rooms. To be clear --- WR does not view this as a problem. The CC3000e's build quality sits right in the "good enough for the requirement" range, and is more than acceptable given its low purchase price.

As shown in the image above, the hub acts as the connection point for, 1) the speakerphone (base unit), 2) the camera, 3) system power, and 4) the USB connection to the user's BYOD device. The hub offers several benefits including:

- Reducing the number of cable connections at the speakerphone and camera
- Extending the maximum distance between the camera and speakerphone to 32 feet (2x the normal maximum cable length for USB 2.0 devices)
- Passing control commands between the camera and speakerphone so that a user can point the remote at the speakerphone and control the camera

[2] Platform-specific features depend on the platform and version in use and may require the installation of plug-ins or other applications.

We appreciate that Logitech saved time and money by leveraging USB connections throughout the system, but we also suggest the addition of a USB connection for the user's BYOD device on the base unit / speakerphone. This would eliminate the need to situate the hub near the users, or the alternative of having to run a long USB cable between the hub and the user's PC.

We also noticed that Logitech chose to use 6-pin mini-din (a.k.a. PS/2 connectors) on the camera and base unit cables. While functional, we question why the solution doesn't use standard CAT-5 or USB connections which are not only more rugged, but also easily replaced if necessary. Whenever possible, we recommend the use of standard vs. custom cabling.

Function #1 – Bluetooth Speakerphone Testing

WR tested the CC3000e's Bluetooth speakerphone functionality using the following BYOD devices:

- iPhone 6 smartphone (iOS device)
- HTC One smartphone (Android device)
- MacBook Air notebook

The Bluetooth pairing between the BYOD devices and the CC3000e worked as expected. For the NFC-capable Android device, the automatic NFC pairing worked fine. For the non-NFC-capable Apple devices, standard Bluetooth pairing also worked properly.

After pairing with each device, we tested the ability to conduct audio calls over Bluetooth using the CC3000e.

- When used with the two test mobile devices, the audio performance of the CC3000e was strong in both directions (microphone and speaker).
- When used with the MacBook Air, however, the audio coming out of the CC3000e's speaker was distorted and garbled. We repeated this test with a different MacBook and a different CC3000e base unit with the same results. This leads us to believe that there is some type of Bluetooth compatibility problem between MacBook and the CC3000e.

  Note that we expect that most users will use a USB connection between their notebooks and the CC3000e, which means they would not even encounter this issue. Either way, this issue should be resolved.

Overall, we believe that this device would meet and exceed the expectations of the typical enterprise seeking a Bluetooth speakerphone for mobile devices for use within small to medium meeting rooms.[3]

[3] While not the intended purpose of the device, we also tested the playback of music via Bluetooth through the CC3000e. In this area, we'd categorize the CC3000e's performance as good enough for background music playback. The 3000e, however, was not designed for music playback and thus does not provide the dynamic range needed for natural music reproduction.

Function #2 – USB Audio / Video Add-On

We then tested the CC3000e's USB add-on functionality with a Windows PC and a Mac notebook using several conferencing clients including Lync 2013 / Skype for Business, Lync 2011 (Mac), Blue Jeans Network (app and Browser client), Zoom, and Skype.

Our testing confirmed that the CC3000e uses standard audio and video drivers. A few seconds after connecting the USB cable, both the Windows and Mac test machines properly identified the CC3000e's audio and video components and made them available to the various software clients.

In all cases, the core functionality (meaning replacing the integrated mics, speakers, and camera with the CC3000e's mics, speaker, and camera) worked as expected. The audio quality – including the integrated echo cancellation functionality - was quite strong. In addition, the video quality was good.

We found the CC3000e's user interface – both on the base unit and on the IR remote – to be simple enough to use without training or a user's guide. This is a rarity in the video conferencing market. But the reality is that under the USB add-on model, most of the control functions reside within the software client on the BYOD device and NOT on the USB add-on device.

The test team also appreciated that the CC3000e supports audio in/out and video in over a single USB cable. This makes the CC3000e easy to connect compared to DIY or multi-vendor solutions requiring one audio in/out cable and one video in cable.

Testing with Lync, Skype for Business, Jabber, and Skype

We then tested some of the special features available for specific software clients for Microsoft Lync and Skype for Business, Cisco Jabber, and Skype. This involved installing plug-ins and extensions available free on the Logitech support website on our test notebooks / desktop PCs. Without exception, the additional features worked as expected. For example …

- the Lync 2013 Far End Control plug-in provided both near and far-end camera control functionality (pan, tilt, zoom) during Lync calls. Note that this same software plug-in also provided near-end / local camera control while not in a call, and also digital pan / tilt / zoom for standard Logitech webcams.
- the Cisco Jabber plug-in enabled the call answer / hang-up buttons on the CC3000e base unit and remote, the in-call LED on the base unit, and the display of caller ID on the base unit during Jabber calls. [4]

We believe these convenience features will be very interesting to many users.[5]

---

[4] Caller ID on the base unit's LCD display is enabled by default (without the need for a plug-in) during Lync and Skype for Business calls.

[5] The specific features provided depends on the software client in use. Some plug-ins (e.g. the Lync 21013 far end control plug-in) can be installed with a standard user account. In other cases, admin access on the user's notebook/ desktop PC may be required.

Testing with Zoom Rooms Solution

In addition, we tested the CC3000e with a Zoom Rooms system. As described within our Zoom Rooms evaluation report, Zoom Rooms is a software-based group video conferencing client designed for installation on a customer-provided Mac OSX computer. The image below (courtesy of Zoom) shows the CC3000e camera in use with a 3-screen Zoom Rooms setup.

The installation of the CC3000e on the Zoom Rooms system took 30 seconds to complete. Immediately after connecting the USB cable, Zoom Rooms detected the CC3000e's camera, mic, and speakers. Throughout our testing, the call experience using the CC3000e's camera and speakerphone was strong. We also appreciated the ability to control pan / tilt / zoom of the CC3000e's camera via the Zoom Rooms' iPad UI. The entire process was plug and play, requiring no advanced configuration or setup.

Testing with Vidyo Room System

We then tested the CC3000e with a Vidyo Room system. Once again, the installation was pure simplicity, requiring only that we connect the CC3000e's USB cable to a USB port on the Vidyo Room device. Almost immediately, the CC3000e's camera, mic, and speaker became selectable audio and video devices within the Vidyo Room's setup menu. A few seconds later, we were up and running with a Vidyo Room / CC3000e combination, and the pan / tilt / zoom controls within the Vidyo UI were controlling the CC3000e's camera.

Additional Notes / Commentary

During the testing we also stumbled across a few noteworthy items. For example, at times the auto focus on the CC3000e's camera did not work properly, forcing us to zoom in/out or move the camera until the image cleaned up. In addition, the camera's pan / tilt motors are a bit loud and slow, which we noted but don't consider particularly important for two reasons; i) we do not expect users in small / medium conference rooms to move the camera frequently, and ii) the camera offers a wide 90 degree field of view (FOV), which reduces the need to pan the camera to capture people in the room.

All in all, based on our testing with seven (7) different solutions as described above, we expect that the CC3000e would meet or exceed the USB audio / video add-on expectations for the typical enterprise.

Analysis and Opinions

The Logitech CC3000e is a shining star within the BYOD group conferencing add-on market category. It is easy to install, ease to use, and provides a strong audio and video user experience that leverages the user's mobile device or notebook / desktop PC.

But the real story around the CC3000e is not around bits and bytes, frame rates and video resolution, audio quality or cable management. The headline here is in the price --- and specifically what you get for the CC3000e's sub-$1k price. It is in the "bang for the buck" area that the CC3000e really shines.

Smaller meeting rooms have always presented a challenge for the audio-visual and video conferencing industry. Solutions designed for larger meeting rooms were too expensive, complex, or physically large for the smaller rooms. And lower-end solutions often forced unacceptable compromises in ease of use, performance, security, or other key areas. The CC3000e is a winner because despite its relatively low cost, it requires users to make only "acceptable" compromises.

At WR, we refer to the making of acceptable compromises in AV as the "good enough" syndrome which means that in small meeting rooms and huddle / teaming spaces, good enough performance is the ultimate goal. Anything beyond good enough is certainly interesting, but only if it doesn't introduce unacceptable compromises (e.g. increased cost, complexity, etc.). For example, the CC3000e's fit and finish is acceptable, but not superb. While improvements here would be welcomed, a resulting price increase would not be. Thus we should stick with a good-enough fit and finish.

The CC3000e fits right in the "good enough" category in many areas including …

- **Cost -** at less than $1,000, the CC3000e sits above the consumer-grade solutions one might use at home and below the professional (and expensive) grade solutions typically installed in enterprise meeting rooms. As a point of reference, the entire CC3000e package (camera, base unit, etc.) costs a fraction of what a professional pan / tilt / zoom cameras found in professional video conferencing systems alone might cost.
- **Audio Performance** – the CC3000e provides good-enough audio performance to support the needs within a small to medium sized meeting room in the typical enterprise.
    - The CC3000e's microphone coverage is omni-directional (360 degrees) and picks up speech up to 20 feet from the base unit. However, as one moves away from the device, the quality declines and the person sounds tinny and hollow.
    - The CC3000e's speaker performance is more than adequate for a small to medium sized room, but it does not have the drivers to provide good bass. As a result the incoming audio is a bit tinny and unnatural sounding.
    - In addition, the CC3000e does not provide end-to-end wideband audio. The mics capture from 100 Hz to 7.75 KHz audio, and the speaker range is between 120 Hz and 10 KHz. And the noise cancellation within the system is good, but not exceptional.

- **Video Performance** – the CC3000e's camera works quite well and is more than good-enough for most applications. And in fact, the CC3000e offers not just H.264 encoding, but also H.264 SVC encoding which decreases the processing burden on host devices running Lync 2013 / Skype for Business. However, the pan / tilt / zoom is a bit slow and noisy, and the low light performance and auto focus could be better.

In addition, the CC3000e is missing some of the key features and capabilities that end-users expect in small meeting rooms. For example, the CC3000e does not include / support for…

- **Stand-alone audio conferencing** – the CC3000e does not include a SIP stack or dialer, and as a result cannot act as a stand-alone speakerphone. Only as a Bluetooth or USB add-on. Over time, as users become more accustomed to using their mobile devices in meeting rooms, this will become less of an issue. But the stand-alone speaker concept is well understood and convenient. And the need to pair your phone with each CC3000e you use takes time and effort.

- **Wireless presentation** – this is the #1 most commonly requested feature within small meeting rooms today, yet it is not provided by the CC3000e. As a result, organizations wishing to offer this capability need to install a wireless presentation system (e.g. the AMX Enzo, Barco ClickShare, Crestron AirMedia, Kramer Via Collage, Mersive Solstice, etc. – see our comparison matrix for more information) next to the CC3000e in each room. This means more expense, additional cabling, and more user interfaces for the user to deal with.

- **Routing of the video output** – the CC3000e doesn't deal with the video from the user's notebook at all. Instead, the routing of the video from the user's notebook to the room display is left to the integrator or user to deal with. Given that the user already has to connect his computer to the CC3000e hub, why not add an HDMI input? This would be more convenient for the user, and would neaten up the cabling in the space.

So what's the takeaway here? The CC3000e is not perfect. It does not cover every single feature, function, and capability that a user might want in a small to medium meeting room. But what the CC3000e does, it does quite well, in a neat and tidy form factor, and at a price low enough for use in thousands of meeting rooms.

The CC3000e is not the only solution in this group conferencing add-on category (e.g. Vaddio offers a range of high performance cameras, Logitech also offers the ConferenceCam BCC950 and the recently released ConferenceCam Connect, AVer just announced the VC520, and many others offer low cost USB / Bluetooth speakerphones or USB cameras). But the CC3000e offers the right combination of good-enough performance at a more than good-enough price.

If the CC3000e had a price point of $3,000 or more, our position would be quite different. But all things considered, the CC3000e is an enterprise conferencing no-brainer.

About the Authors

Ira M. Weinstein is a Senior Analyst & Partner at Wainhouse Research and a 20-year veteran of the conferencing, collaboration and audio-visual industries. Ira has authored and contributed to dozens of articles, white papers, studies, reports, and evaluations on rich media communications, video conferencing, streaming and webcasting, audio-visual design and integration, business strategy, and general business practices. Ira specializes in providing strategic advisory services to vendors, resellers, and end-users within the collaboration space. Ira can be reached at iweinstein@wainhouse.com.

Saar Litman is a Senior Researcher & Consultant at Wainhouse Research and has 15 years' of experience in the audio-visual and video conferencing industry. Saar's primary focus is the products, services, and companies within the audio-visual space. In addition, Saar provides AV design services, helps enterprise organizations define and implement global AV standard systems and designs, and manages the WR test lab in Coral Springs, Florida. Saar can be reached at slitman@wainhouse.com.

About Wainhouse Research

Wainhouse Research, www.wainhouse.com, is an independent analyst firm that focuses on critical issues in the Unified Communications and Collaboration (UC&C). The company conducts multi-client and custom research studies, consults with end users on key implementation issues, publishes white papers and market statistics, and delivers public and private seminars as well as speaker presentations at industry group meetings.

About Logitech

(Copy provided by Logitech)

Logitech designs products that have an everyday place in people's lives, connecting them to the digital experiences they care about. Over 30 years ago Logitech started connecting people through computers, and now it's designing products that bring people together through music, gaming, video and computing. Founded in 1981, Logitech International is a Swiss public company listed on the SIX Swiss Exchange (LOGN) and on the Nasdaq Global Select Market (LOGI). Find Logitech at www.logitech.com, the company blog or @Logitech.