



WHITEPAPER

Keeping Video Conferencing Simple

**Business Quality
Collaboration without
the Complexity**

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Introduction

There was a time when things were simple. An alarm clock was just an alarm clock, a telephone was just a telephone, and a television was just a television. These devices were simple to use, performed a limited number of functions, and did the job very well.

But over time, things have changed, and mostly for the better. For example, the smart phone has truly revolutionized the way people communicate. Similarly, digital video recorders (DVRs) and smart TVs have changed the way people watch television.

In other cases, the so-called innovations were not by necessity or in response to user demand. Instead, these changes fall more into the category of, “it’s technically possible, so why not do it?” For example, one has to wonder about the need for an Internet-connected, remotely manageable refrigerator that includes a built-in computer, a touch-screen LCD display, and allows users to watch TV, listen to MP3 music, take and store digital photos, make a video phone call, surf the web, access an inventory of foods either as a list or a map, and receive updates via email when a food item needs to be restocked.¹ While this “smart fridge” certainly ranks high in cool factor and might actually be a necessity for some techno-starved millennials, most people would find this just plain silly.

The takeaway here is that sometimes making things more powerful, expensive, and complex isn't necessary and doesn't make sense. This applies to almost anything --- including video conferencing.

The basic video conferencing needs are common across all organizations, large and small, in every vertical market, and around the world.

Relax ... It's Just Video Conferencing

In concept, video conferencing is not that complicated. Each person or location needs a camera, a microphone, codec, speakers, and a display. One side calls the other side. They see and hear you, and you see and hear them. When you step above the bits and bytes, video conferencing is just a phone call with a camera, and it's been widely available for more than 25 years.

As is the case with any technology solution, there are certain features and functions that make good sense. In the video conferencing world, some of the most beneficial features include:

- The ability to add more people / locations to the discussion (a.k.a. a multipoint video call)
- The ability to share content (e.g. PowerPoint presentations) between locations
- The ability to connect to both internal locations and external locations (a.k.a. B2B calling)

These basic needs are common across small, medium, and large organizations, every vertical market from finance to healthcare to manufacturing, and in every country of the world. And these needs have not changed significantly over time. And while today's users also have access to PC software and mobile (tablet, smartphone) video conferencing solutions, the days of group video conferencing certainly aren't over – especially given the installed base of ~ 1.5 million systems worldwide.

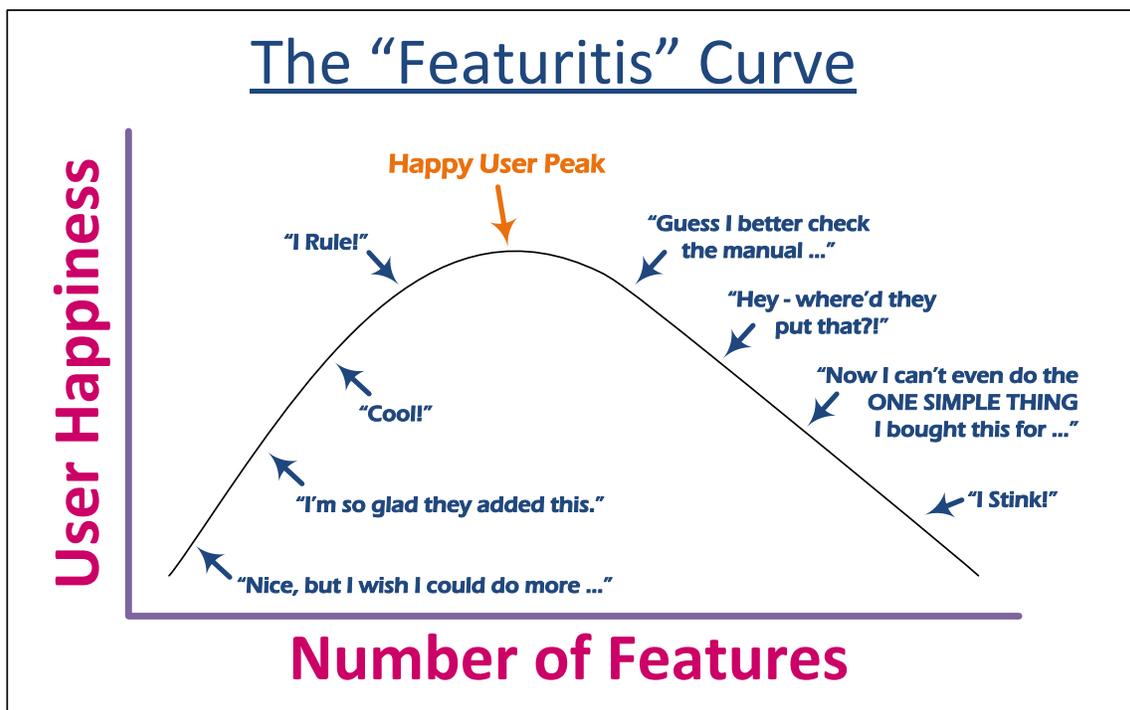
¹ LG Smart Fridge (source: <http://www.gizmag.com/lg-smart-fridge/18502/>)

The Rise of Complexity

Years ago, the typical video conferencing deployment was relatively straight forward. Due to the high cost and complexity of video conferencing bridges and gateways, very few enterprises had their own infrastructure. And due to the high cost of video endpoints, most organizations could afford only a limited number of systems. As a result, the typical video conferencing environment consisted of a small number of room video systems, each connected to the PSTN or IP network.

Today the situation is very different, and even relatively small video conferencing deployments have become complex. The primary reason for this challenge is that video conferencing vendors have (logically so) architected their solutions to address the needs of their key customers ... large enterprises.

The need to satisfy the largest, most demanding customers resulted in the addition of numerous power features including support for centralized monitoring and management, global address books, advanced dial plans, centralized scheduling, integration with enterprise directory and groupware systems, and more. And with each of these advanced capabilities came the need for more servers, software, configuration tasks, and integration skills. And so things became complex.



This situation is well illustrated by Kathy Sierra's "Featuritis Curve"² which correlates user happiness with a product or service and the number of features provided. As shown, early in the curve the addition of new features increases user happiness. At some point, however, the situation reverses itself and the new features decrease satisfaction by increasing complexity, cost, etc. Viewed another way – the features a user needs are valuable, and those he doesn't tend to get in the way.

² Source: <http://littlek.wordpress.com/2006/04/15/the-featuritis-curve/>

Ideally, vendors would create solutions that are 100% configurable, allowing customers to order exactly the solution they need with no unnecessary cost, functionality, or complexity. The reality, however, is that developing such a modular solution is cost prohibitive.

In addition, vendors and resellers are highly motivated to sell powerful, expensive solutions. The obvious reason is that they want to maximize revenue. However, these solution providers also want to provide their customers with the best possible experience. This often translates into complexity.

Many video conferencing deployments are more complex and use more technology than necessary.

As a result, even modest deployments are often laden with technology elements that far surpass their basic requirements. In addition, these organizations are then burdened with the need to provide rack space, power, network, management and support for these solutions. In terms of cost, the customer has to pay not only the purchase price for the solutions, but also the installation / configuration fees and ongoing maintenance charges.

The KISS Principle

Wainhouse Research (WR) believes that the video conferencing needs of many organizations – both large and small – can be met with relatively simple deployments. This is in line with the KISS (keep it simple, stupid) design principle noted by the U.S. Navy in 1960 that states that “most systems work best if they are kept simple rather than made complex.”³

In order to apply the KISS concept to video conferencing, organizations should consider what they need vs. what they want (or what 3rd parties say they need or should have). It is a matter of choosing simplicity and cost-control over advanced features and functions.

In truth, today’s video conferencing systems are sufficiently powerful and feature-rich to handle the basic requirements of many enterprises. For example, virtually all of the video conferencing systems available today support multipoint video calling – either as a standard feature or via an optional software license. Depending on the vendor, system, and installed options, embedded video bridges support calls with 4, 6, or even 9 different sites; a capacity that would easily support the vast majority of multipoint video calls.

The table below highlights the basic video conferencing features that a typical organization might require and ways that those features might be provided. As shown, many features (e.g. multipoint calling) can be addresses in multiple ways.

³ Source: http://en.wikipedia.org/wiki/KISS_principle

Video Conferencing Feature	KISS (features provided by the VC systems)	Infrastructure (features provided by buying VC infrastructure)	Outsourced (features provided via hosted / cloud services)
Internal video calling	X		
Multipoint calling	X	X	X
B2B calling (NAT/firewall traversal)	Limited	X	X
Interoperability	Limited	X	X
Content sharing	X	X	X
Recording	X	X	X
Streaming	X (limited scale)	X	X
Remote Management	X	X	X

Understanding the “KISS” Method

Organizations following the KISS method simply deploy video conferencing systems across the organization. Specifically, the KISS method does not include the deployment of infrastructure devices including external video bridges / MCUs, gateways, NAT firewall systems, centralized scheduling systems, remote management systems, and content recording / streaming solutions.

While best suited for limited deployments (e.g. 20 endpoints or less), even organizations with more systems may choose to adopt elements of the KISS concept. The obvious benefits of the KISS method include simplicity and cost-control. However, the lack of video conferencing infrastructure results in certain compromises including:

- the need to dial by IP address (simplified by using the system directory in each endpoint)
- inability to support large multipoint calls internally
- limited remote management of one system / endpoint at a time (via web browser)

The Hybrid Approach

In many cases, the best approach is a mixture of the various methods. For example:

- An organization might leverage the low cost, simple to use internal video bridging capabilities within its video endpoints for its day to day video calling, and the services of a hosted bridging provider for larger video calls.
- Another organization might use the internal capabilities within its video endpoints to stream conferences to a small number of viewers, and the services of an external content distribution network (CDN) or webcasting company for larger, high profile events.
- Yet another organization might pay a per system fee to a service provider for simplified dialing (via E.164 registrations) and B2B calling (via NAT / firewall traversal capabilities).

The table below highlights how the video conferencing needs for a small to medium organization might be met by three different approaches. Note that all costs below are estimates.

	KISS	Infrastructure	Hybrid
Technology Purchases			
Video Conferencing Systems	8 units @ \$6k each	8 units @ \$6k each	8 units @ \$6k each
Video Bridge / MCU	Internal within video systems	10 port MCU purchased (cost \$40k)	Via hosted / cloud video bridging service
Gatekeeper / SIP Server	None	SW-based gatekeeper (cost \$10k)	Via hosted / cloud service
NAT / Firewall Traversal	None ¹	NAT / FW solution (cost \$24k)	Via hosted / cloud service
Up-Front Cost (CapEx)	\$48,000	\$122,000	\$48,000
Monthly Cost (36 month lifespan)	\$1,330	\$3,390	\$1,330
Recurring Fees ²			
Maintenance – Monthly	\$600	\$1,525	\$600
Cloud Provider – Monthly	\$0	\$0	\$800
Total Cost of Ownership ³			
Total Cost of Ownership - Monthly	\$1,930	\$4,915	\$2,730
Complexity and Functionality			
Complexity - Initial	Medium	High	Very Low
Complexity – Ongoing	Low	High	Very Low
Ease of Use	Moderate	Strong	Strong

¹ NAT / Firewall traversal is likely to be an issue for KISS users. Customer will need to place video system systems in the network DMZ, register to a 3rd party H.460 server, or use dedicated, publicly-accessible IPs addresses for each system.

² Recurring (monthly) fee for maintenance is estimated at 15% of equipment purchase price per year. The recurring (monthly fee) for the hybrid model assumes that the customer will use a hosted / cloud service for registration, NAT / firewall traversal, and other services, but will use the video bridging capabilities within the installed endpoints for most of their multipoint video calls. If this is not the case, the monthly cost for the hosted service is likely to increase by \$100 or more per video system.

³ Total cost of ownership (TCO) does not include cost of financing, the cost of staff required to manage and maintain the deployed solution, and the cost of any additional bandwidth required for video calls to the hosted / cloud service provider.

The KISS method provides a combination of low cost and simplicity, with some functionality and ease-of-use compromises (e.g. the need to dial video calls by IP address, possible issues with B2B calling).

The Infrastructure method requires a significant up-front investment and involves significant complexity, but provides an exceptional call experience and strong ease of use.

The Hybrid model offers a compelling combination of relatively low monthly cost, simple installation, and strong usability (e.g. ability to traverse firewall, dial by E.164 / system name, etc.).

The message here is that organizations should consider their requirements and then architect a solution, involving the appropriate mixture of products and services, to address those requirements.

Solution Spotlight – ClearOne

The sponsor of this study, ClearOne, offers a range of software-based video conferencing and audio solutions. The video conferencing solutions, in particular, are well designed for stand-alone (KISS), infrastructure-powered, and/or hybrid (mixed product and hosted service) deployments. Key features of ClearOne’s video conferencing systems include:

Feature	Simplicity Benefit
Multipoint calling for up to nine (9) participants in either video switching or continuous presence	Supports multipoint video calling suitable for most situations without the need to purchase an expensive external video bridge / MCU.
Ability to daisy-chain two microphone arrays to provide 360 degree coverage for large meeting spaces	Provides strong microphone coverage without the need to purchase external mic mixers or DSPs in each meeting room. ¹
Integrated recording engine	Enables the archival of video, audio, and content ² (while in a call and not in a call) for on-demand playback without the need to purchase an external capture station.
Integrated streaming engine	Supports unicast and multicast streaming of video, audio, and content ² (while in a call and not in a call). Also supports streaming of archived content – without the need to purchase a content streaming engine

¹ ClearOne also offers a range of integrated audio solutions that support multiple microphones to support various room sizes, strong acoustic echo cancellation, and an optional phone interface.

² Content recording and streaming pending Q1 2014.

In addition, ClearOne’s video conferencing systems are standards-based and can natively interoperate with other video conferencing technology including ClearOne video systems and architecture products (MCUs, etc.), 3rd party systems and infrastructure, and hosted services (e.g. Blue Jeans Network, Vidtel, and more).

Conclusion

Whether by design or by accident, things have a way of becoming complicated. It is the natural order of things in both the home and the workplace. While in some cases complexity is a necessary evil (), in other situations complexity can – and should – be avoided.

The video conferencing industry has entered a phase with great potential complexity, presenting customers with a wide range of product, service, and hybrid offerings. In many cases, and for understandable reasons, the solutions ultimately deployed are unnecessarily complex.

WR believes that the basic video conferencing requirements of many organizations can be met by the capabilities inherent within today’s video conferencing endpoints.

The decision as to whether video infrastructure (e.g. video bridges, gateways, management servers, etc.) is required depends on an organization's willingness to compromise. If an organization seeks every possible function, video infrastructure is a must. However, for those willing to prioritize cost and simplicity, a simple deployment of leading-edge video systems, such as those offered by the sponsor of this study ClearOne, may more than suffice.

At the risk of committing video conferencing industry sacrilege, the reality is that business-quality video conferencing doesn't have to be that hard. So just **Keep It Simple** and start dialing!

About Wainhouse Research

Wainhouse Research, www.wainhouse.com, is an independent market research firm that focuses on critical issues in the Unified Communications and rich media conferencing fields, including applications like distance education and e-Learning. 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. Wainhouse Research publishes a variety of reports that cover all aspects of rich media conferencing, and the free newsletter, *The Wainhouse Research Bulletin*.

About the Author(s)

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About ClearOne

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ClearOne is a global company that designs, develops and sells conferencing, collaboration, streaming and digital signage solutions for audio and visual communications. The performance and simplicity of its advanced comprehensive solutions offer unprecedented levels of functionality, reliability and scalability.

As a market leader, ClearOne is focused on developing cutting edge conferencing and collaboration products. ClearOne is committed to incorporating the latest technologies into our new and existing product lines and are known for our industry innovation.

More information about the company can be found at www.clearone.com.