

# ***The Business Case for Internal Video Bridging***

***Understanding the Benefits of  
Owning a Multipoint Video  
Bridge***



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*Understanding the Benefits of Owning a Multipoint Video Bridge*

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## Executive Summary

Today's business climate is more competitive than ever before. For this reason, companies continue to depend upon communications technologies to allow them to more effectively utilize and leverage their employees for the benefit of the firm.

Not surprisingly, the deployment and use of videoconferencing within the enterprise continues to increase. Our research indicates that almost 120,000 group videoconferencing systems and more than 225,000 desktop videoconferencing systems were shipped in 2004<sup>1</sup>. As more locations and people become "video ready," it is reasonable to conclude that the demand for multipoint video meetings (i.e. meetings involving three or more locations) will continue to rise.

The most common way to conduct a multipoint video meeting is for each participating video system (meeting room, desktop, etc.) to connect to a single bridging device called a multipoint video bridge or MCU. Video bridges are available in two basic form factors; embedded within the video endpoint itself, and as a stand-alone hardware device. While MCUs embedded within video endpoints can provide a cost-effective means to host high-quality multipoint meetings, they support only a limited number of participants (typically four) and provide a limited feature set. For these reasons, most enterprise organizations host at least a portion of their multipoint video meetings on dedicated video bridges.

*Until recently, owning and operating a multipoint video bridge has been out of reach of most organizations.*

Until recently, owning and operating a multipoint video bridge was too expensive to justify and technically too complex to manage for many organizations. For these reasons, most firms utilized external conferencing service providers (CSPs) to host their multipoint video meetings. While these service providers did shoulder the majority of the burden related to hosting multipoint video meetings, they did so at extremely high hourly rates. In fact, between bridging fees, long-distance (ISDN transport) charges, and ancillary services (scheduling, meeting recording, etc.) it wasn't uncommon for a single, relatively small and short multipoint video meeting to cost several thousands of dollars.

In the last few years, several manufacturers have released video bridges designed specifically for the enterprise market at price points low enough to yield an extremely high ROI for many organizations. In addition to cost savings from saved hourly bridging fees, deploying an internal MCU allows organizations to manage and control their own meetings, utilize their own data lines (and their own long distance carriers and rates), and eventually leverage their IP data network for multipoint video meetings.

For organizations seeking a cost-effective way to securely host their multipoint video traffic, the time has never been better to research and consider the deployment of an internal video bridge / MCU.

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<sup>1</sup> Source: Wainhouse Research 2004 Q4 VC SpotCheck Report, <http://www.wainhouse.com>

## Introduction to Multipoint Videoconferencing

Videoconferencing allows people in different physical locations to meet “face-to-face” without the need to leave their office or home. Much like a standard telephone, most videoconferencing systems are designed to communicate with only one other video system at a time. This type of call involving only two locations (a call originator and a call recipient) is called a point-to-point call as illustrated below.

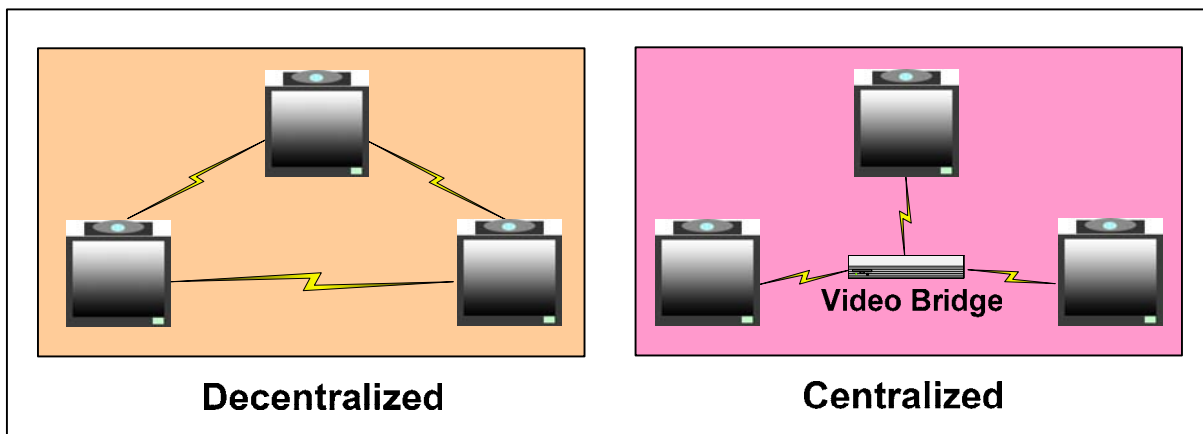


**Figure 1: Point-to-Point Video Call**

Once an organization starts using videoconferencing, sooner or later the need for meetings involving three or more locations arises. In the conferencing world, such a meeting is called a multipoint conference or multipoint. Depending upon the meeting requirements and the method utilized, hosting a multipoint can range from easy and inexpensive to complex and amazingly costly.

### *Decentralized vs. Centralized Multipoint Options*

In theory, there are two basic approaches for hosting a multipoint meeting; the decentralized approach and the centralized approach as illustrated below.



**Figure 2: Decentralized vs. Centralized Bridging Methods**

## The Decentralized Approach

As shown above, the decentralized approach requires that each video system participate in multiple video calls simultaneously (three per system in the above 4-location multipoint call). Note that this is quite different than a typical multipoint call in which each endpoint places a single, point-to-point call to a centralized multipoint video bridge. It should come as no surprise that in today's cost-conscious market, the average group video system (without optional upgrades) is not multi-call ready.

In addition, in the decentralized approach, each endpoint must have adequate bandwidth to conduct several video calls at one time. In the example above, and assuming a per-site connection speed of 384 kbps, each system must have access to more than 1 mbps of bandwidth.

While not common for hardware-based group video solutions, the decentralized approach is in use by several *desktop* videoconferencing vendors, such as BNI Solutions, Marconi, Marratech, and Collabworx.

## The Centralized Approach

To keep endpoint costs down and minimize bandwidth requirements at each location, most organizations use the centralized multipoint approach. Using this method, each video system calls into a centrally located device, called a video bridge or MCU (multipoint control unit), that is specifically designed to host multipoint video meetings.

As highlighted in the prior diagram, video systems participating in a multipoint call using this approach actually connect to the video bridge instead of to the other endpoints directly.

***To minimize costs and bandwidth requirements, most organizations use the centralized multipoint approach.***

There are several advantages to this method including:

- Limited burden on each video system (the processing is performed centrally by the video bridge)
- Minimal bandwidth requirements at each video system
- Various processing, inter-operability, feature, and security benefits

In the past, video bridging required the use of expensive, complicated, and often quirky hardware under the management of a team of highly trained, dedicated support resources. Purchasing and managing a video bridge internally was beyond the financial means and level of technical expertise of most enterprises. In recent years a new crop of cost-effective, easy-to-manage video bridges have emerged on the market.

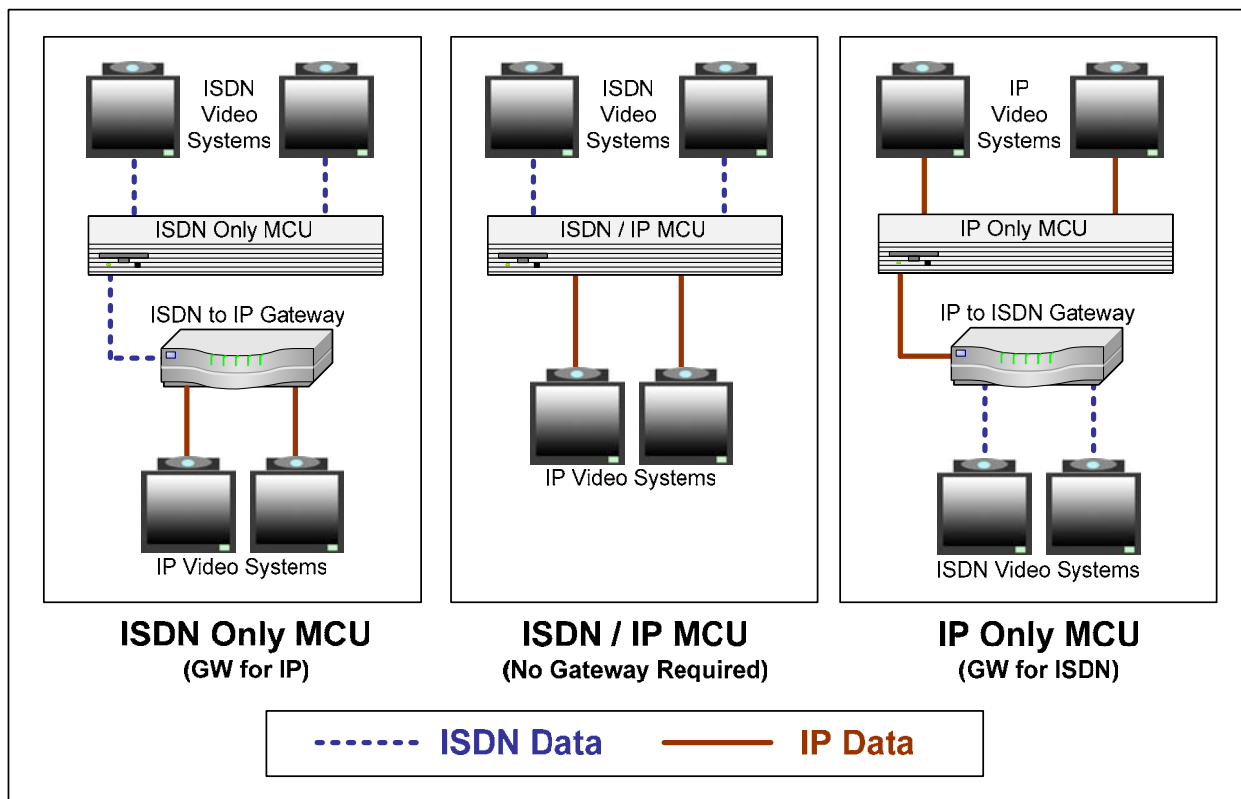
This white paper compares and contrasts the three most common methods for hosting multipoint video meetings (using an embedded video bridge, using an external service provider, and purchasing an internal video bridge), and provides insight into the costs, benefits, and justification for internal video bridging within the enterprise.

## Network Considerations

Traditionally, and thanks in part to the widespread availability of ISDN, virtually all business quality videoconferencing was conducted over ISDN networks. For this reason, infrastructure devices (including multipoint video bridges / MCUs) were primarily ISDN-based.

In recent years, the buzz around the videoconferencing industry has been the migration from ISDN to IP networks. But, while the majority of videoconferencing calls today are still conducted over ISDN (mainly due to the legacy ISDN install base), our research indicates that more than 50% of the new video systems sold today are running over IP networks. As such, many infrastructure device vendors have shifted from an ISDN to a hybrid ISDN / IP or strictly IP-centric equipment platform.

Those seeking video bridges today can choose between three different platform options: ISDN-centric, IP-centric, and hybrid platforms as shown below.



**Figure 3: Three Common Bridging Platforms: ISDN-Centric, Hybrid, and IP-Centric**

In general, the decision regarding which platform makes the most sense for an organization depends upon the realistic and expected timeline for the firm's migration from ISDN to IP for videoconferencing.

### ISDN-Only Platform

ISDN-based video bridges are most suitable for organizations that currently use and expect to continue to use ISDN as their primary video network. ISDN's low fixed monthly cost makes ISDN-only videoconferencing (both point to point and multipoint) especially interesting for small organizations and those with relatively limited usage (perhaps a few calls per week or month). In this situation, an ISDN to IP gateway must be used to include IP-based video systems in multipoint calls.

### ISDN / IP Hybrid Platform

The hybrid ISDN / IP platform products are suitable for organizations that anticipate an equal need for both ISDN and IP video in the near future. Note, however, that this dual-functionality often results in a higher cost per port when compared to dedicated ISDN or IP-centric devices.

### IP-Only Platform

IP-based video bridges are well-suited for organizations conducting mostly IP-based videoconferencing and those expecting to migrate most of their traffic to IP in the near future. With these devices, an IP to ISDN gateway must be used to access ISDN-only video systems.

***When choosing between an ISDN, IP, or hybrid MCU platform, organizations should consider their expected timeline for migrating video over to IP.***

As a part of the decision-making process, organizations should consider the following:

- Interest in IP-based desktop conferencing continues to increase
- The percent of IP networks offering Quality of Service (QoS) for IP video is growing
- Hardware (CPE) gateway solutions are relatively inexpensive and allow ISDN platforms to access IP endpoints and IP platforms to access ISDN endpoints
- Gateway service offerings, from companies like AT&T, Global Crossing, IPV Gateways, and Sprint, can be used to provide IP to ISDN gateway capabilities on a "pay-per-use" basis

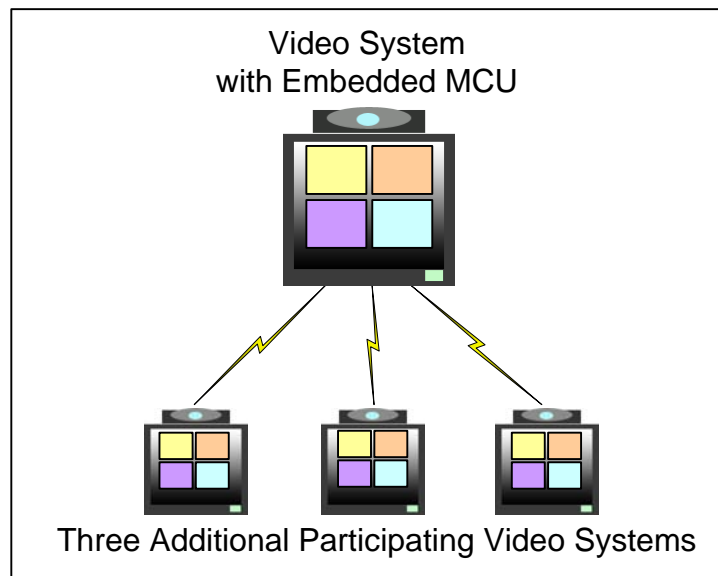
Based on the above, Wainhouse Research recommends that organizations planning to create an internal video bridging service should deploy IP-based platforms (or at least ISDN / IP hybrid platforms) to the extent possible and use gateways (CPE or service offerings) to access endpoints on other types of network.

## Using Embedded Video Bridges

As described earlier, some videoconferencing endpoints from leading vendors (Aethra, Polycom, Sony, TANDBERG, VCON, and more) have the optional ability of hosting multipoint video meetings. Video systems with this capability are said to include an embedded video bridge (typically software-key enabled), and the endpoint with the video bridge is often called the “host” endpoint.

For many different reasons, embedded video bridges are commonly used within the enterprise. In fact, our research indicates that roughly 23% of the video endpoints shipped today include an activated embedded video bridge.<sup>2</sup>

The picture below illustrates a multipoint video call hosted by an embedded MCU.



**Figure 4: Multipoint Video Call Using Embedded MCU**

The pros and cons of the embedded video bridge approach are as follows:

### Pros / Advantages

- Relatively low cost (currently ranging from \$1,500 to \$4,000 per endpoint)
- Strong ease of use since the video bridge uses the same graphical user interface (GUI) as the host endpoint
- Support provided by the endpoint manufacturer and /or video reseller
- Strong support for vendor-specific endpoint features (ex. MPEG audio, etc.)

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<sup>2</sup> Source: Wainhouse Research 2004 Q3 VC SpotCheck Report, Page 11, <http://www.wainhouse.com>

- Ability to leverage the bandwidth already provided to the host endpoint
- Potential to avoid IP firewall / NAT issues since the MCU is located within the enterprise

#### Cons / Disadvantages

- Limited number of sites per call (typically three plus the host endpoint, though a few manufacturers support up to eight), making it better suited for small conferences.
- Limited performance and feature set (frame rate limitations, screen layouts, protocol support, dual-stream support, picture quality, audio quality, etc.)
- Limited transcoding and speed matching capabilities (often sites must downgrade to the lowest common denominator for protocols and connection speeds)
- Inability to use the embedded multipoint bridge without involving the host endpoint
- Inefficient use of network resources due to the need to equip the host endpoint with adequate bandwidth to connect to multiple endpoints
- Limited or no redundancy for the multipoint capabilities (if the endpoint or network feeding the endpoint experiences problems, the multipoint capabilities will be impacted)

While the pros are fairly self-explanatory, the fourth con bullet point above warrants additional discussion. The issue is that whenever a system's embedded MCU is used, that system itself must be a part of the video call. For organizations with shared conference facilities, this may require that the conference room itself be closed off, even though none of the meeting participants are physically located in that room.

Using an embedded bridge can be equated to using the 3-way calling feature on many telephones; it's well suited for small meetings, but inadequate for large scale conferences.

Assuming one can accept the performance, capability, and efficiency limitations listed above, embedded bridging offers a cost-effective way to host multipoint meetings. But most enterprises find that because of functionality, capacity, and bandwidth limitations, they cannot host the majority of their multipoint meetings on embedded MCUs. For this reason, we will focus on options involving dedicated (non-embedded) video bridges for the remainder of this document.

## Using External Service Providers

As described earlier, legacy video bridges were both expensive to own and difficult to operate. These unfortunate traits meant that service providers were typically better equipped than enterprise end users to own and operate MCUs. As a result, the video bridging service provider industry was born.

Even today, notwithstanding the availability of inexpensive and easy-to-manage video bridges, a significant portion of multipoint video calls are hosted on service provider MCUs.

The pros and cons of using a conferencing service provider (CSP) for video bridging are as follows:

### Pros / Advantages

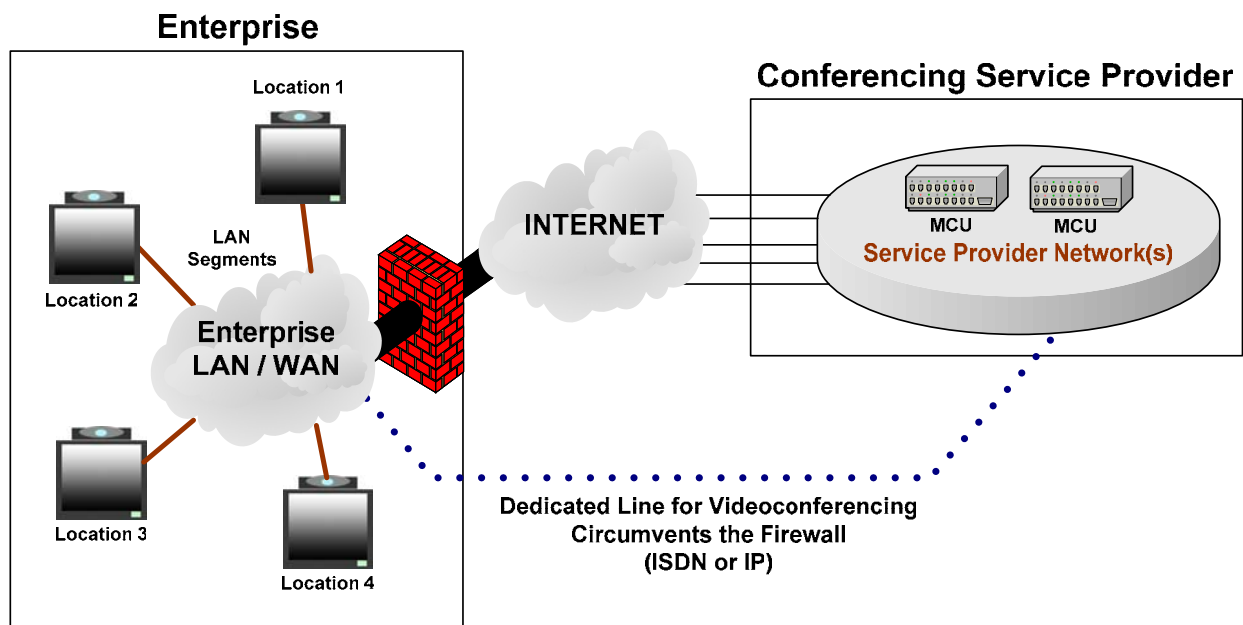
- Turnkey operation because the service provider shoulders most of the burden of managing the video calls
- Ability to avoid purchasing, maintaining, upgrading, managing, and operating video bridging equipment
- Strong feature support since most service providers own multiple bridges from various vendors
- Excellent redundancy (both video bridges and network)
- Access to meeting scheduling and testing services (in most cases)
- Access to highly trained and experienced video professionals for troubleshooting / problem resolution
- Service-level agreements that may include limited performance guarantees (if the service provider's equipment fails, the end user may not have to pay for the meeting)

### Cons / Disadvantages

- Relatively high cost (compared to using an internal or embedded video bridge)
- Limited accountability (if the service provider causes a problem, only the fees will be waived)
- Additional fees for ancillary services (meeting recording, streaming and playback, testing) that can add up quickly
- Limited control over equipment used and support staff deployed (the CSP typically determines the equipment used and staff assigned to each account)
- Slow deployment of new features (CSPs must ensure that deploying new software releases does not impact other customers)
- Firewall / NAT problems when using CSPs for IP-based video bridging
- Potential security issues related to the sharing of bridging equipment and staff with other customers

The primary reason an organization would use a CSP is to avoid having to purchase, maintain, and operate video bridges themselves. Basically, the end-user organization is paying the CSP for the use of their equipment and their trained, experienced staff. The negative is that depending upon the end user's usage pattern (number of calls per month, bridging and support requirements, and transport fees), the costs can be extremely high – especially when compared to the cost of hosting those multipoint calls using embedded or internal video bridges.

In addition, because many video CSPs generate significant revenue by reselling ISDN long distance services (often at extremely high per-minute rates), end users are often pressured into using the CSP's data lines and staying on ISDN to avoid the IP-related NAT / firewall issues as highlighted below.



**Figure 5: Firewall Problems Associated With Using Service Provider Bridges**

For the most part there are three ways to avoid the NAT / firewall problem when using an external service provider for video bridging:

- 1) Continue using ISDN for all multipoint calls
- 2) Deploy dedicated lines between the end-user organization's wide area network and the service provider's bridging facility (as shown above)
- 3) Attempt to route the IP video traffic between the end-user organization and the service provider through an intermediary network (or even the public network)

For organizations seeking (and willing to pay the per-minute cost of) turnkey ISDN video bridging, CSP bridging services may be a reasonable option.

## Deploying an Internal Video Bridge

The third alternative for end-user organizations is to purchase and deploy their own video MCU. While not a new option, recent advances in usability and manageability, combined with significant price decreases, have made this option feasible for virtually any size enterprise.

The pros and cons of purchasing and using an internal video bridge are as follows:

### Pros / Advantages

- Significant potential cost savings
- Elimination of per-hour bridging fees
- The ability for an organization to control its own meetings
- Full control of bridging equipment used and features available / deployed
- Potential to avoid IP firewall / NAT issues since the MCU is located within the enterprise
- Decreased security risk compared to using external resources
- 24 / 7 access to bridging services – without incurring additional fees often associated with off-hour meetings hosted by service providers
- Ability to shift some of the meeting management burden to the end-user participants themselves (via browser-based user interfaces and scheduling systems)
- More efficient use of bandwidth
- Ability to utilize dedicated T1s / E1s and leverage the corporate network

### Cons / Disadvantages

- Need to purchase the video bridge (CAPEX or lease commitment)
- Need to enter into various financial commitments (recurring network fees for ISDN and/or IP, yearly maintenance fees, and potential future upgrades)
- Need to train end users and support staff to utilize and manage the video bridge

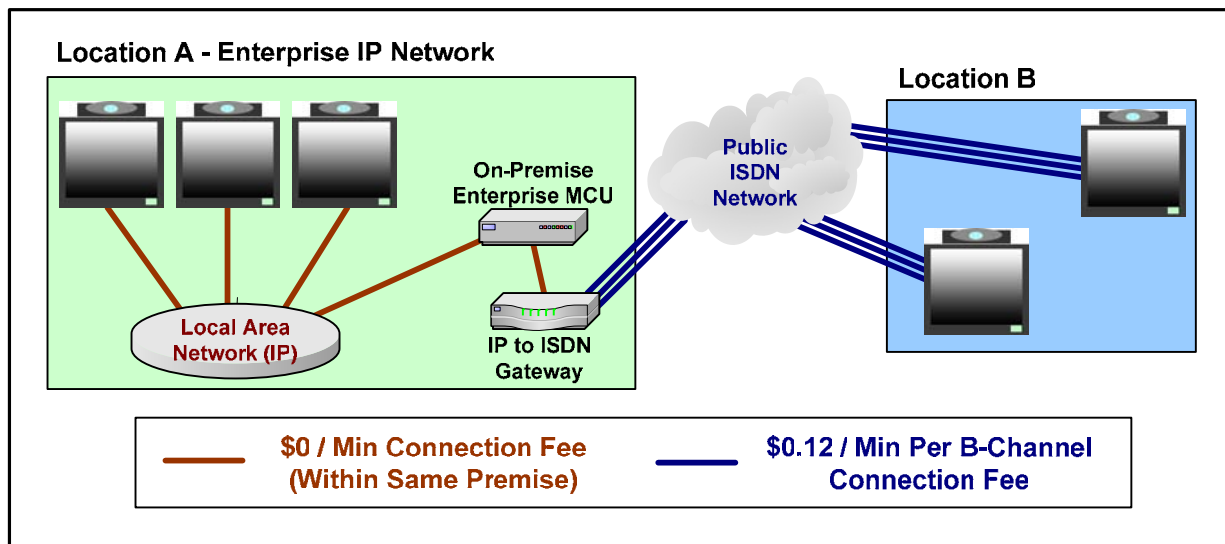
In reality, organizations conducting a reasonable volume of video bridging per month that are willing to make an initial capital expenditure can enjoy significant cost savings and other benefits by using an internal MCU.

## Selecting the Installation Location

After deciding to purchase a video bridge, the organization must select the appropriate location to host the device; this is a decision that can significantly impact monthly costs and potential savings.

### Option 1 – Primary VC Location

One obvious choice is to install the MCU in the location involved in the largest number of video meetings. The benefit here is that, in most cases, the video systems in that facility will be able to connect to the MCU without incurring any transport fees, as shown in the diagram below.



**Figure 6: No-Cost Video Bridging Within the Same Facility**

This may sound trivial, but the savings can be significant. For example, if the endpoints in a certain location participate in 4 multipoint calls of one hour duration a day, and the firm pays \$0.12 per minute per B channel for ISDN transport, the transport savings approach almost \$4,000 per month.

Another noteworthy point is that locations with many videoconferencing users tend to be main offices with existing IT resources onsite. In most cases, those resources can easily support the video MCU.

### Option 2 – Low Transport Cost Location

Organizations that conduct high volumes of ISDN videoconferencing, especially involving international locations, know just how expensive ISDN long distance calls can be. The reality is that ISDN transport rates vary tremendously by country. For example, ISDN rates in the Netherlands and Switzerland are much less expensive than rates in the US and the UK. Depending upon usage patterns, deploying the video bridge in a low-transport-cost country could yield significant savings for the host organization.

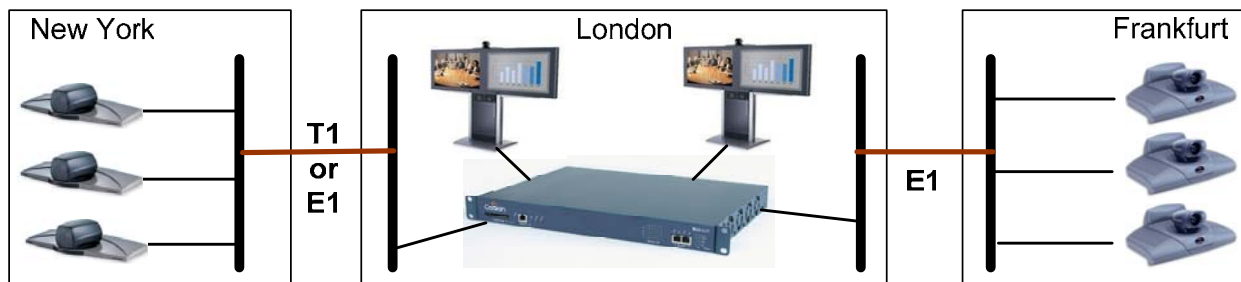
### Option 3 – Service Provider Co-Location Facility

Another option worthy of consideration is the installation of the video bridge in a service provider’s co-location (a.k.a. “co-lo”) facility. This approach provides two primary benefits:

- Eliminates the need to deploy additional bandwidth to “feed” the video bridge
- Provides access to the benefits of a professional co-lo facility, such as redundant network, backup power supplies, 24 / 7 support staff, etc.

### Using Dedicated Lines

Another benefit of purchasing and installing an internal MCU is the ability to install dedicated lines between locations frequently involved in videoconferences. For example, let’s assume that one enterprise organization conducts frequent multipoint video calls between its New York, London, and Frankfurt offices. In this case, the company could install its video bridge in its London facility and deploy dedicated T1s / E1s from London to each of the other two offices as shown below.



**Figure 7: Saving Money with Dedicated Data Lines**

In effect, this allows the organization to replace its “pay by the minute” ISDN service with a pay-one-price model. To illustrate the financials, let’s make the following assumptions:

	<b>New York</b>	<b>Frankfurt</b>
Hours of multipoint calls / month (for all systems in this facility)	60	60
Cost / hour of ISDN (384k) from this location to London office	\$150	\$120
Cost / month for T1 / E1 from this location to London office	\$1,500	\$1,500

**Figure 8: Cost Assumptions for Dedicated Data Line Calculation**

Based on the above, the break-even for installing a dedicated line (E1 or T1) between New York and London is only 10 hours per month. In other words, with its current usage of 60 hours per month, this organization will save \$7,500 per month in ISDN fees simply by routing its New York to London multipoint calls over a dedicated line. For the Frankfurt office, the break-even for the E1 from Frankfurt to London is only 12.5 hours per month, and the firm will enjoy a monthly savings of \$5,700 in ISDN fees.

Note that this approach works for either ISDN or IP networks, although ISDN environments may need to install ISDN switches (available from companies like Initia and Ascend) in order to share the T1 / E1 line between multiple video systems. Finally, let's not forget that the same dedicated line could also host point-to-point calls, thereby increasing the monthly savings.

## ROI Calculations

Perhaps the most compelling reason to purchase and manage an internal video bridge is to save money. To illustrate these financial benefits, this section highlights the costs that a typical enterprise would incur with the same usage pattern under each of the following scenarios:

- Using a service provider's MCU via ISDN
- Using an internal MCU on ISDN
- Using an internal MCU on IP

For this example, the enterprise consists of five (5) locations that participate in three (3) multipoint conferences of 1.5 hour duration each week.

### ***Option 1 - Service Provider MCU via ISDN***

Assuming an hourly bridging fee of \$44, monthly fixed ISDN costs of \$40 per line, and ISDN transport fees of \$60 / hour / site (charged by the service provider), the monthly costs are as follows:

ISDN fixed fees:	$5 \text{ sites} \times 3 \text{ lines / site} \times \$40 / \text{line} = 15 \times \$40 = \$600 / \text{month}$
Total meeting hours:	$1.5 \text{ hours} \times 5 \text{ sites} \times 3 \text{ meetings} \times 4 \text{ weeks} = 90 \text{ hours of usage / month}$
Bridging fees:	$90 \text{ hours} \times \$50 / \text{hour} = \$4,500 / \text{month}$
ISDN fees:	$90 \text{ hours} \times \$60 / \text{hour} = \$5,400 / \text{month}$
Total monthly cost:	$\$600 + \$3,960 + \$5,400 = \$10,500$

Therefore, the monthly cost to use a service provider to host these ISDN multipoint meetings is \$10,500.

### ***Option 2 - Internal MCU on ISDN***

In this example, we assume that the end-user organization has purchased a 12-port Codian IP MCU and two PRI to IP gateways, resulting in the monthly costs shown below.

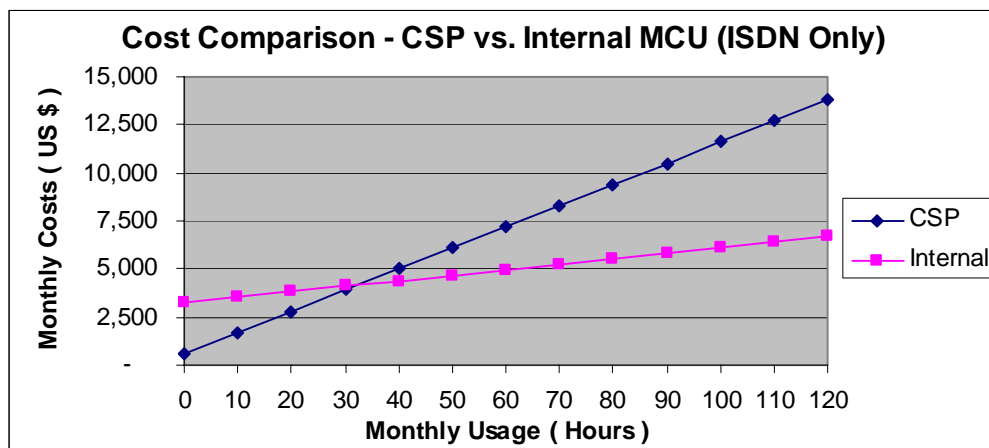
As shown in the table below, the total monthly cost to host these meetings on an internal MCU, including all ISDN fees and the monthly cost of owning the MCU and gateways, is \$5,313. This means that by migrating these multipoint meetings from a service provider MCU to an internal MCU, the end-user organization can save almost \$5,200 per month or approximately \$62,000 per year in total costs.

Analyzing the cost calculation further, we note that the total cost of owning this MCU (and the required IP to ISDN gateways and PRIs) is \$1,859 per month. Using the \$50 / hour bridging fee charged by the service provider, we can easily calculate the break-even on this MCU purchase to be 37 hours of usage per month when considering only saved hourly bridging fees.

Item	Cost or Calculation
MCU Purchase Price	\$32,000 (List Price) – 15% Discount
ISDN / IP Gateway Purchase Price	\$30,000 (List Price) – 15% Discount
Total Hardware Purchase Price (NET)	\$62,000 – 15% = \$52,700
Estimated Asset Life Span	36 months
Yearly Maintenance	9 % of purchase price
Calculated Monthly MCU Cost of Ownership	$\$52,700 / 36 \text{ months} + 9\% / 12 \text{ months} \times \$52,700 = \$1,859$
Monthly PRI Costs	$2 \times \$450 = \$900 / \text{month}$
Monthly ISDN Fixed Fees	$4 \text{ sites} \times 3 \text{ lines} / \text{site} \times \$40 / \text{line} = 12 \times \$40 = \$480$
Hourly ISDN Transport Fees / Site	$\$0.08 / \text{B channel} = \$28.80$
# of Hours of Billable ISDN	$1.5 \text{ hours} \times 4 \text{ sites} \times 3 \text{ meetings} \times 4 \text{ weeks} = 72 \text{ hours} / \text{month}$
Monthly ISDN Transport Costs	$72 \text{ hours} / \text{month} \times \$28.80 / \text{hour} = \$2,074$
Total Monthly Cost	$\$1,859 + \$900 + \$480 + \$2,074 = \$5,313$

**Figure 9: Cost Calculations - Internal MCU on ISDN**

The other significant source of savings stems from the fact that the endpoints located in the same facility as the MCU will not incur ISDN transport fees when dialing into the internal MCU. Considering that each site is participating in 18 hours of multipoint meetings per month, this yields a savings of  $18 \times \$28.80$  or \$518.40 per month.



**Figure 10: Cost Comparison - CSP vs. Internal MCU (ISDN Only)**

As shown above, the break-even in this example occurs at approximately 32.5 hours of multipoint usage (considering both hourly bridging fees and ISDN transport costs). Furthermore, as highlighted by the greater slope of the CSP cost line, as usage continues to increase, the total cost will increase faster under the CSP model than under the Internal MCU model.

### Option 3 - Internal MCU on IP

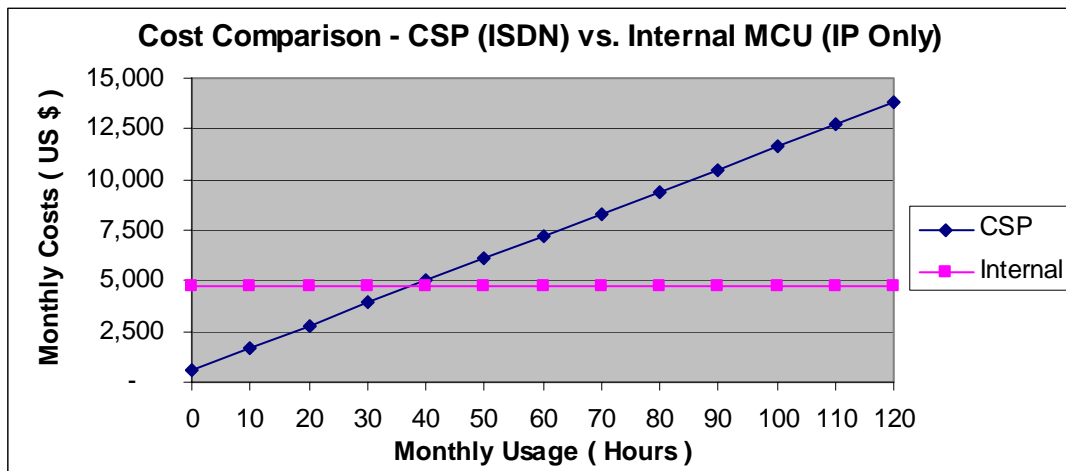
In this example, we assume that the end-user organization has purchased the same 12-port Codian IP MCU as in option 2 above, but that in this case all calls will be made using a dedicated IP network instead of ISDN. An all-IP environment negates the need to purchase the PRI to IP gateways and therefore yields the following estimated costs:

Item	Cost / Calculation
MCU Purchase Price	\$32,000 (List Price)
Total Hardware Purchase Price (NET)	\$32,000 – 15% = \$27,200
Estimated Asset Life Span	36 months
Yearly Maintenance	9 % of purchase price
Calculated Monthly MCU Cost of Ownership	$\$27,200 / 36 \text{ months} + 9\% / 12 \text{ months} \times \$27,200 = \$960$
Monthly IP Network Costs	$4 \text{ sites} \times \$700 / \text{month} + 1 \text{ site} \times \$1,000 / \text{month} = \$3,800^*$
Total Monthly Cost	$\$960 + \$3,800 = \$4,760$

\* T1 costs for each site are estimated for illustration purposes only.

**Figure 11: Cost Calculations - Internal MCU on IP**

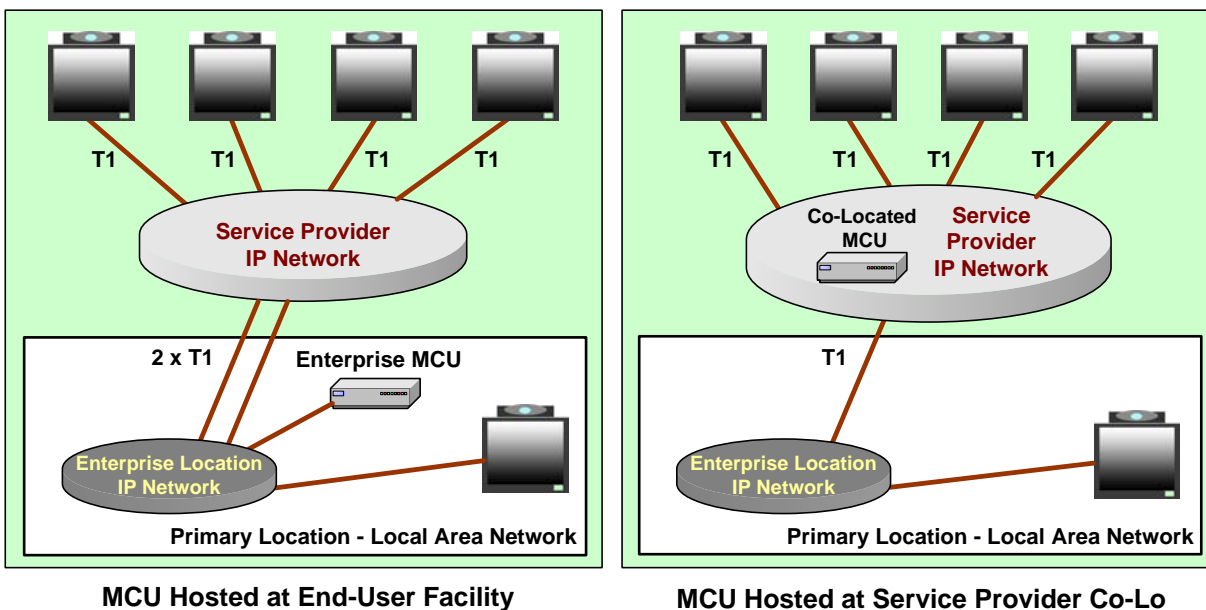
The above cost calculation assumes that the site hosting the MCU requires two dedicated T1s, and that the other four locations each require a single T1 dedicated for videoconferencing. In this case, the end-user organization can save more than \$5,700 per month (or \$68,000 per year) by shifting all multipoint traffic from the conferencing service provider (and ISDN) to an internal MCU (and dedicated IP data lines).



**Figure 12: Cost Comparison - CSP vs. Internal MCU (IP Only)**

As shown above, the break-even in this example occurs at approximately 38 hours of multipoint usage. Furthermore, since the monthly costs in an all-IP internal MCU environment *are not* usage dependent, additional usage yields significant additional savings. For example, at 120 hours of usage per month, the monthly and yearly savings will be \$9,040 and \$108,000 respectively.

Another interesting option for this organization would be to host its Internal MCU at its T1 service provider's co-lo space. Since this would eliminate the need for a second T1 at the main end-user facility, those funds could be routed to the T1 service provider to cover co-lo hosting and bandwidth fees. This not only provides the previously described co-lo benefits, but also allows each site to increase its video call connection speed to utilize the entire T1. In short, the end users enjoy higher quality video and enhanced reliability (since the MCU is professionally hosted at the co-lo) without any cost increase.



**Figure 13: Hosting MCU at Co-Lo Eliminates Bandwidth Bottlenecks**

In all fairness, the above calculation might be slightly conservative as it limits the end-user organization to conducting only internal, IP video calls. In reality, this company would probably either deploy an IP-to-ISDN gateway and a single PRI (at an additional cost of perhaps \$1,000 / month) or utilize an IP-to-ISDN gateway service to allow communication with ISDN endpoints.

## Conclusion

In the past, organizations had little choice but to utilize the services of conferencing service providers to host and manage their multipoint video meetings. Today, thanks to technology advances and cost reductions, owning and managing a multipoint video bridge is within the reach of any size organization.

Whether your organization seeks greater control of its multipoint video meetings, enhanced security, avoidance of NAT / firewall issues, the ability to leverage existing data lines, or simply cost-reduction, the purchase of a dedicated multipoint video bridge is a worthwhile consideration.

## About Wainhouse Research

Wainhouse Research ([www.wainhouse.com](http://www.wainhouse.com)) is an independent market research firm that focuses on critical issues in rich media communications, videoconferencing, teleconferencing, and streaming media. 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 Conferencing Markets & Strategies, a three-volume study that details the current market trends and major vendor strategies in the multimedia networking infrastructure, endpoints, and services markets, as well as a variety of segment reports, the free newsletter, The Wainhouse Research Bulletin, and the PLATINUM ([www.wrplatinum.com](http://www.wrplatinum.com)) content website.

### *About the Author*

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## About Codian

Codian is a leading manufacturer of video conferencing infrastructure products. We design and manufacture the most advanced video conferencing products available in the market today, bringing you the best in IP voice, video and data conferencing. Owing to our unique architecture and the latest hardware technology, our products are both easy to use and powerful, offering outstanding quality, performance and features.

Our multipoint video bridge allows video sites to connect at any speed up to 2 mbps, supports any resolution up to 4CIF and XGA, and allows each location to choose from any of 42 different continuous presence layouts, all without loss of capacity. The system, which has been approved by all major vendors, has built-in streaming, scheduling, and a firewall traversal solution. Users can control their meeting either through our easy-to-use web interface or using their video system's remote control.

Our organization was founded on the notion that high-quality conferencing does not have to be prohibitively expensive. As such, we have dedicated ourselves to providing unsurpassed value with every Codian Multipoint Control Unit, Video Conference Recorder, and Streaming Server. We support our worldwide customers from our offices in the UK, California, and Hong Kong. Additional information about Codian can be found on the company's Web site: <http://www.codian.com>