



## CUSTOMER SUCCESS STORY

# ENERGY SCIENCES NETWORK ENRICHES SCIENTIFIC COLLABORATION WITH INTEGRATED VOICE, VIDEO, AND WEB CONFERENCING

## EXECUTIVE SUMMARY

### CUSTOMER NAME

- Lawrence Berkeley National Laboratory

### INDUSTRY

- Scientific research

### BUSINESS CHALLENGE

- Facilitate collaboration among scientists in geographically dispersed locations
- Simplify participation in rich-media conferences
- Reduce resources needed to administer collaboration solution

### NETWORK SOLUTION

- Cisco MeetingPlace
- Cisco routers and switches

### BUSINESS VALUE

- Scientists advance research projects through more frequent and effective collaboration
- Use of video enriches collaboration
- Fewer resources are needed to manage system

With the Cisco® MeetingPlace® solution, the Energy Sciences Network (ESnet) located at Lawrence Berkeley National Laboratory, allows scientists from around the world to collaborate by conducting multimedia conferences over ESnet. By integrating voice, video, and Web conferencing, this solution makes remote meetings as natural and effective as if they were face-to-face.

## BUSINESS CHALLENGE

Behind some of the world's most important scientific projects—the Human Genome, fusion energy research, nanotechnology and research on climate change—you'll find ESnet, a high-speed network serving thousands of scientists and collaborators conducting research for the U.S. Department of Energy's (DOE) Office of Science at more than 1000 locations worldwide. ESnet addresses an inherent challenge of global science: geographically dispersed scientists can accomplish far more through collaboration, but generally cannot meet face-to-face because of time and money constraints.

ESnet is a service funded by the DOE Office of Science to support its science mission. The ESnet Collaboration Services (ECS) allows researchers at national laboratories, universities, and other institutions worldwide to communicate with voice, video, and Web conferencing. Its goal: help researchers establish closer working relationships and collaborate more effectively as they address some of the most daunting scientific challenges. "The ability to share information with other scientists, 'see' their lab setups, control their instrumentation, and view results via the Web makes it much easier for scientists to collaborate," says Clint Wadsworth, ESnet collaboration specialist. "They don't have to physically travel to each others' labs, which usually isn't in the budget."

ESnet began offering voice, video, and Web conferencing as a value-added service to the Office of Science research community in the late 1990s, using Cisco MeetingPlace for voice conferencing and other products for video and Web conferencing. These systems were not integrated, however, preventing ESnet users from enjoying the full potential of collaboration via voice, video, and the Web. Setting up and attending meetings was complex because organizers had to set up each system separately, and participants had to sign on and use each system individually. Video and audio were frequently not synchronized, which was distracting to meeting participants. Pre-scheduling was not available for videoconferencing, so scientists were limited to conducting video sessions on an ad-hoc basis, and only if sufficient ports happened to be available. Meeting leaders could not view or control the voice or video portion of the meeting from the Web, which limited their ability to control the meeting and manage disruptions. Using non-integrated systems also complicated administration—member scientists had to be added to all systems individually.

"A single, easy-to-use interface that offered voice, video, and document collaboration would allow us to provide better service to ESnet users while simplifying administration," says Wadsworth. "We wanted members to be able to schedule and participate in rich-media collaboration sessions with less effort, and for our staff to maintain one user database instead of three."

Ease of use ranked high in the list of requirements for a new collaboration solution. “Scientists want to focus on their research—not on learning how to use a complicated interface for conferencing,” says Wadsworth. “The goal is point, click, and go.”

## **CISCO SOLUTION**

To foster scientific collaboration, ESnet resolved to offer its users an integrated voice, video, and Web conferencing solution. The Cisco MeetingPlace solution already provided two of the three ingredients, having been used by ESnet at Lawrence Berkeley National Laboratory for voice conferencing since the late '90s and Web conferencing since 2001. In 2004, Cisco had enhanced MeetingPlace to include video capabilities, as well, so ESnet decided to upgrade to the new version to acquire voice, video, and Web conferencing in one solution. “Now, users experience a single integrated solution, as opposed to separate systems cobbled together,” says Wadsworth. ESnet opted to deliver all conferencing components—voice, video, and Web—over a converged IP network. There are numerous benefits to combining media over a single network, such as the ability to integrate audio from phone and video sources. Deploying the solution over ESnet’s converged IP network also eliminates service provider transport fees.

### **Convenient Scheduling and Connection**

Using the Cisco MeetingPlace solution, scientists can set up ad-hoc meetings combining voice, video, and Web resources in a single step, or can pre-schedule meetings through Web, Microsoft Outlook, or Lotus Notes calendars. Meeting invitees automatically receive notification by e-mail or a calendar invitation, and can join a meeting with a single click rather than the three separate sign-ons required previously. Rescheduling meetings is just as easy. Regardless of the interface (Web, Microsoft Outlook, or Lotus Notes) used to reschedule meetings, the voice, video, and Web conferencing resources are automatically rescheduled as well. This simple approach saves time for meeting participants, thereby improving their productivity.

When a meeting is scheduled to begin, users can simply click on a control in their calendar or Web browser and then MeetingPlace simultaneously launches the Web conference and directs the system to dial out to the voice or video endpoint, which can be either a room-based video system or desktop endpoint such as a Web camera or personal video system. Alternatively, ESnet users can connect to the voice and video portions of the conference by directly dialing in from any video endpoint or telephone. The service is provided at no cost to users. If ESnet scientists connect via an IP phone, there is absolutely no cost; if they dial in over the public switched telephone network (PSTN), they pay only the cost of the phone call.

### **Integrated Voice, Video, and Web Conferencing**

The integration of voice, video, and Web conferencing in the Cisco MeetingPlace solution makes the user experience far richer and simpler than single-media conferencing solutions. All meeting participants can hear and contribute to the discussion, view other participants who are using video endpoints (improving communication by revealing facial expressions and body language), and share documents. Using the Web interface, participants can see who else is in the meeting; see whether their colleagues are attending by voice, video, or Web; and see who is speaking. If the meeting has been recorded, participants can play back synchronized Web and voice meeting content without special hardware or software.

Scientists use the solution to share visual aids as they would in face-to-face meetings—to show presentations, share applications running on their computers, and jointly develop plans and reports. The combination of video and Web conferencing enables scientists to view and interact with equipment, documents, and presentations, and to control equipment remotely, making it seem as though scientists are physically in the same lab. Consider scientists studying the structure and properties of various materials using Berkeley Lab’s Advanced Light Source, the world’s brightest source of soft X-ray light. The Advanced Light Source emits tiny wavelengths capable of imaging miniscule samples, such as the wall of a red blood cell for the purpose of finding a cure for malaria. Researchers at LBNL and the University of Wisconsin collaborate on Advanced Light Source experiments using the Cisco MeetingPlace solution. They simultaneously conduct voice conversations, view video of the equipment and its output, and use the Web conferencing capability to view, monitor, and take turns interacting with the Advanced Light Source. DOE scientists around the globe use ESnet Collaboration services running Cisco MeetingPlace, as when researchers from the United States, Switzerland and Japan collaborated on research related to particle physics.

## **Integrated Conference Management**

The Cisco MeetingPlace solution gives ESnet meeting leaders' flexible control over the meeting proceedings, for greater productivity. Like other participants, leaders can view the status of all participants, including who is speaking and whether they're using voice, video, or Web conferencing. Uniquely, leaders can manage disruptions—for example, by muting participants who introduce on-hold music or other background noise in a meeting. Meeting leaders can also control attendees' speaking and sharing privileges by granting one or all attendees the ability to share any Website, document, or application on their desktop. When attendees share content, they can assign others the right to take control of the content they are sharing "With Cisco MeetingPlace, the meeting doesn't have to be in 'lecture mode,'" says Wadsworth. "All participants can contribute which is attractive to attendees and helps further the goal of scientific collaboration."

Conference participants can manage their own participation as well, by muting and unmuting the audio and video portions of their calls with a single click and conducting breakout sessions with other participants. Video participants can size and move their own video windows, and have the option to display multiple participants or only the active speaker.

## **Security**

Security is important for ESnet because scientists working on classified or sensitive projects need assurance that they're communicating in a secure environment. ESnet deployed the Cisco MeetingPlace solution "on-net," behind the corporate firewall, for security as well as cost savings. Because security is implemented at the application and network levels, and because meeting participants are visible from the Web interface, ESnet scientists have confidence when they use Cisco MeetingPlace that their meetings cannot be "crashed" by unauthorized attendees.

## **RESULTS**

The ability to show a lab setup, equipment, or experimental results via videoconferencing is a huge benefit for remote scientific collaborators. With its original standalone videoconferencing system that did not allow prescheduled meetings, ESnet users conducted more than 4000 hours of videoconferencing each month. "With the ability to schedule and control videoconferencing in the Cisco MeetingPlace solution, we think volume will increase greatly," says Wadsworth. "Now meeting organizers will feel more confident about including video in their conferences because they'll know that all invitees can attend and nobody will get a busy signal because not enough ports are available."

Wadsworth asserts that video significantly boosts the effectiveness of scientific collaboration sessions. "Only video provides the 'three-dimensional' communications you experience when you're in the same room," he says. "E-mail is one-dimensional—with written words, I may have to interpret intentions. Voice is an improvement because I can hear a person's inflection, but misinterpretations are still possible. With video, I can tell if someone is agitated, uninterested, or distracted. I can look a person in the eye and know whether I have their full attention."

ESnet users are enthusiastic about using video to show the progress of experiments or give tours of a lab setup. "Now, ESnet users can feel as though they've walked through another scientist's shop or workroom, whether it's in Albuquerque or Tokyo," says Wadsworth. The ability to aim a video camera at a sketch, photograph, or slide also saves time for scientists who don't know how to or don't want to convert these visuals to a computer format that can be shared via typical document collaboration tools. "A scientist engaged in smashing or fusing atoms might not want to take time out to worry about scanning and digital formats," says Wadsworth. "Video is the answer."

"Our job at ESnet is to support scientific research," Wadsworth concludes. "By providing a single means of collaboration with voice, video, and data, the Cisco MeetingPlace solution serves a valuable role in our mission."

## **FOR MORE INFORMATION**

For more information about Cisco IP Communications, visit: <http://www.cisco.com/go/ipc>

For more information about Cisco MeetingPlace, visit: <http://www.cisco.com/go/meetingplace>

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