The NREN TelePresence Community

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TelePresence ≠ Video Teleconferencing

TelePresence refers to a set of technologies which allow a person to feel as if they were present, to give the appearance that they were present, or to have an effect, at a location other than their true location. (from http://en.wikipedia.org/wiki/Telepresence)

- QUALITY - It’s All About the Experience
  - Ultra High Definition Video – 1080p (Twice the video quality of HD today)
  - Every participant has “a seat at the table” – life size images
  - Eye contact, facial gestures and emotion create engagement
  - Audio is spatial, sound comes from participants using normal voice levels
  - Imperceptible latency

- SIMPLICITY - As Easy as Placing a Phone Call
  - Technology is invisible to the user
  - Single button to push when integrated with groupware
  - Standards based (SIP)

- RELIABILITY – Uses the Network as the Platform
  - Leverages the Network as the Platform along with Cisco Unified Communications to deliver advanced levels of reliability, resiliency, & security
Cisco TelePresence
Cisco TelePresence
Redefining How People Communicate
Cisco TelePresence Endpoint Portfolio

CTS 500
1–2 Seats

- Flexible use
- Private office
- Tele-commuter
- <5 Mbps at 1080p
- Wideband audio

CTS 1100
2 Seats

- High immersion
- Flexible deployment
- <5 Mbps at 1080p
- Wideband audio

CTS 1300 Series
Multipurpose Room

- One screen
- High immersion
- Rapid deployment
- <5 Mbps at 1080p
- Wideband audio

CTS 3000
6 Seats

- High immersion
- Transforms business process
- 15 Mbps at 1080p
- Spatial wideband audio

CTS 3200
18 Seats

- Transforming governance processes
- Distanced learning
- 15 Mbps at 1080p
- Spatial wideband audio

Personal

Multipurpose

Group/Team

One-Button-to-Push Call Launch, Easy Scheduling, 48-Location Multipoint, Interoperability and Intercompany Capabilities Across the Entire Portfolio
Cisco TelePresence Recording Studio
Cost Effective Studio-Quality Video Recording

- Simple: One-button-to-push
- High-quality: Recording at 1080p
- Medianet application integration
- User-driven creation and distribution
- Any to Any: Streaming to Web

Capture Video and Data
Press Record
Pause or Stop
Distribute by Email
Web or TelePresence Playback
DMS for Broad Distribution

Simple: One-button-to-push
High-quality: Recording at 1080p
Medianet application integration
User-driven creation and distribution
Any to Any: Streaming to Web

Web
Digital Signs
Cisco TelePresence
Smart Phone
Cisco TelePresence Extended Reach

- Extended Reach supports users in locations with low bandwidth
- 720p or 1080p resolution supported with good, better, or best, motion handling as a function of available bandwidth
- Since Commercial Internet bandwidth is not dedicated, there may be experience issues or even call drops at certain times of the day due to a decrease in available bandwidth

Supported bandwidth types include:
- Dedicated T1/E1
- Dedicated, bonded T1/E1
- Premium broadband (> 2 Mbps)
Cisco TelePresence Interoperability

Supported Protocols
- H.323
- CIF
- G.711
- SIP
- 4CIF
- G.722
- SCCP
- 720p

Cisco 7985
Microsoft Office and Lotus Sametime
Mac XMeeting
Microsoft NetMeeting
And many more...
Cisco CUCV and CUPC
Lifesize
Polycom
Tandberg
TelePresence Applications in R&E

- Distance Education and Training
- Collaborative meetings between researchers and staff at different universities
- Participation from a distance by guest speakers at workshops and conferences
- Curriculum Expansion/Preservation
  - TelePresence give universities the ability to offer students courses from other institutions saving curriculum development costs
  - Access to instructors at other institutions may allow universities to continue offering courses in programs they might otherwise have to cut – possibly saving “endangered disciplines”
- Dissertation Defense
  - TelePresence can be used for participation of faculty from other universities (usually required) – reducing costs and expanding the pool of potential panel members
- Interviews & Recruiting
  - TelePresence enables distance interviewing of candidates for staff and graduate student positions
- Travel time savings for university executives:
  The UC San Diego Chancellor has used TelePresence to enable face to face meetings with the President of the University of California System saving valuable executive travel time and making more regular meetings possible. Beyond the obvious savings the real value add TelePresence brings here is in enabling a closer collaborative relationship
Cisco had partnered with the University of South Carolina’s (USC’s) Moore School of Business to create a Total Learning Solution that Reframes the Business and Experience of Learning.

Using Cisco Technology and the Moore School’s expertise in pedagogy and integrating and applying technology to enhance distance learning Professor Raymond Smith has created a virtual learning environment that is: Affordable; Replicable; and Simple to Use.

The USC Multi-Modal Learning Environment consists of:

- Curriculum and class materials tailored for delivery via this environment
- Virtual Learning Environment: Infrastructure to make it work (TP, Webex, MXE 3500, Smart-board, PowerPoint, recorded video, discussion boards etc.)
- Virtual Learning Portal (VLP) (TelePresence studio for faculty)
- Virtual Learning Environment: Combination of virtual learning portal and remote sites

More information is available at: [http://learnmoore.com](http://learnmoore.com)

“Better learning, time effective, relevant to work, faculty efficient, with a global reach, cleaner and cheaper. With this environment, we can create earning that brings the world together, where learning is in the network and closer to its application”

- Raymond Smith, Associate Dean of Executive Education at the Moore School
Moore School of Business’ Faculty TelePresence Studio (VLP)

- Environment is natural to teach in – Professors can stand, walk around, or sit while teaching and leading discussion (appearing life size to students the entire time)
- Environment is simple and intuitive to use and requires no special training for faculty
Moore School of Business’ TelePresence Classroom

- All classrooms are equal – there are no local “haves” and remote “have nots”
- Both the curriculum and the course materials are tailored to take advantage to the technology creating a much richer teaching environment for students and teaching environment for faculty
The custom-built lecture facility includes three 103-inch plasma displays, six 1080p cameras for both panoramic and lifesize immersive video experiences, an instructor's podium with two document cameras for sharing class materials, three remote student displays for the instructor to view remote classrooms from the podium, and 66 custom push-to-talk microphones for interactive discussions.

“We are now realizing the future classroom that can support education with the global foundation that students need today and in the future. This TelePresence lecture hall will facilitate an immersion into the classroom experience from points around the country and around the world for embedded and connected learning and collaboration.”

- Blair Sheppard, Dean, Duke University
US NREN Support for TelePresence

Internet2

NLR

PacketNet

Internet2/NLR Cisco TelePresence Exchange
Kansas City, MO

CUBE-SP
(Cisco Unified Border Element)

TelePresence Multi-point Switch

Regional Network

Campus Network

UCM 7816
CUBE-ENT 2921
# The NREN TelePresence Community

## Community Participants

| University of California, Berkeley | University of California, Los Angeles |
| California State University System | Pennsylvania State University |
| CENIC (California State R&E Network) | Pittsburgh Supercomputing Center |
| Duke University | University of South Carolina |
| Fresno, CA Unified School District | Towson State University |
| Garden Grove, CA Unified School District | Virginia Tech |
| Georgia Tech University | University of Wisconsin |
| Harvard University | Peking University (China) |
| Indiana University | Vienna University of Economics (Austria) |
| Long Beach CA USD | University of the Arts (UK) |
| University of Missouri | National University of Singapore (Singapore) |
| National Lambda Rail | NATO C3 Agency (Netherlands) |
| New York University (NYU) | People’s University (China) |
| University of North Carolina Chapel Hill | Stenden University (Netherlands, Qatar, & South Africa) |
| North Carolina State University | University of Melbourne (Australia) |
| University of Michigan | University of South Queensland (Australia) |
| Pennsylvania State University | Swinburne University (Australia) |
| Pittsburgh Supercomputing Center | Monash University (Australia) |
| University of South Carolina | University of Southern Queensland (Australia) |
| Towson State University | Stanford University |
| Virginia Tech | University of South Queensland (Australia) |
| University of Wisconsin | Johns Hopkins University |
| Peking University (China) | Madison Area Technical College |
| Vienna University of Economics (Austria) | Oakland, CA Unified School District |
| University of the Arts (UK) | Purdue University |
| National University of Singapore (Singapore) | Stanford University |
| NATO C3 Agency (Netherlands) | University of California, Berkeley |

Note: Many of the universities and university systems listed above have multiple TelePresence units.

## Community Participants (TelePresence Units on order)

| Case Western University | University of Denver |
| | University of California, Irvine |
| | University of California, San Diego |
| | Florida International University |
| | University of Illinois at Chicago |
| | Massachusetts Institute of Technology (MIT) |
| | US National Science Foundation |
| | University of Southern California |
| | American University of Dubai |

## Potential Participants

(Not yet connected to an NREN TelePresence Community Exchange)

| University of California, Los Angeles | Pennsylvania State University |
| Cornell University | Pittsburgh Supercomputing Center |
| Johns Hopkins University | University of South Carolina |
| Madison Area Technical College | Towson State University |
| Oakland, CA Unified School District | Virginia Tech |
| Purdue University | University of Wisconsin |
| Stanford University | Peking University (China) |
| University of South Queensland (Australia) | Vienna University of Economics (Austria) |
| Swinburne University (Australia) | University of the Arts (UK) |
| Monash University (Australia) | National University of Singapore (Singapore) |
| University of Southern Queensland (Australia) | NATO C3 Agency (Netherlands) |
| People’s University (China) | Stenden University (Netherlands, Qatar, & South Africa) |
| Stenden University (Netherlands, Qatar, & South Africa) | University of Melbourne (Australia) |
TelePresence in Education

Installed - Instalados
On order – Son Proximos
TelePresence enables Academic/Corporate Collaboration

- NLR has entered into an agreement with AT&T to connect the Internet2/NLR Cisco TelePresence Exchange to AT&T’s Cisco TelePresence Exchange for a trial period.

- TelePresence connectivity is supported over this connection between NREN TelePresence Community participants and Cisco.

- All Cisco TelePresence rooms (more than 650 worldwide) are reachable from the NREN TelePresence Community.

John Chambers, CEO of Cisco Systems and Tracy Futhey, CIO of Duke University recently met via TelePresence enabled by NLR/AT&T Cisco TelePresence Exchange Inter-Connectivity.
The Value of a Community

- Metcalfe's law states that the value of a telecommunications network is proportional to the square of the number of connected users of the system \( n^2 \) not \( n+1 \).

- Metcalfe’s Law applies to the NREN TelePresence Community. Each new member represents yet another end point for a collaborative meeting and a source or destination of distance learning.

- The TelePresence systems being implemented represent break through technology but the true value of the NREN TelePresence Community are the closer relationships it enables.