NASA Space Center

Reliable Streaming of Live and On-Demand Video via the Internet

Once every 45 minutes, another sunrise or sunset greets the astronauts aboard the International Space Station (ISS) as it completes half of its 90-minute circuit around the planet. Such a spectacle is common to life in orbit. For the rest of us, there's NASA TV.

Available from select cable providers and to viewers online, NASA TV streams live video – when available – from interior and exterior cameras located around the ISS. Earthbound viewers not only share astronauts' breathtaking vistas of the planet below, they can also vicariously experience activities within the station's Destiny Laboratory and Harmony module, and even from within the space shuttle when it docks with the ISS.

The station streams live video to the ground through a sophisticated satellite communications platform. Once earthbound, however, video streams are distributed worldwide with a much more accessible, but no less reliable VBrick video appliance.

Organization
National Aeronautics and Space Administration

Industry
Government

VBrick Products
- **Windows® Media Encoder**
- **MPEG Encoder**
- **Video on Demand Server**

Applications
Streaming live video via Internet protocol

The Challenge

Reliably stream high-quality video from the Space Station's satellite feed to cable providers and the public Internet

In its initial phase, NASA TV broadcast three channels providing programming to targeted public, media and education audiences. In early 2009, it added a fourth channel – simulcast over the Internet – that provided real-time streaming video of Earth as the Station orbited 220 miles above at 17,500 miles per hour.

The station's high-speed communications antenna and NASA's Tracking and Data Relay Satellite System broadcast the video stream to the ground, where it was then simulcast over the Internet from the Johnson Space Center's website. The website aimed to engage the public and convey the challenges involved in making the Space Station a reality.

Shortly after live streaming began, however, NASA began a major consolidation of its websites to create a single portal. In the process, the simulcast video stream from the ISS was temporarily put on hold. As 2009 drew to a close, NASA set out to restore the live video stream of Earth, and add additional live feeds of activities unfolding within the ISS's interior.

The Solution

VBrick appliances for capturing, streaming and recording video in Windows® Media and MPEG formats

NASA began by demonstrating that legacy equipment – specifically, a computer equipped with a video capture card – could push the stream onto NASA's central web portal. Although this initial attempt proved successful, it lacked the reliability of a permanent solution, and ISS fans were quick to point out when the stream was interrupted.

VBrick is the most widely used IP-video system in the U.S. Government including:

All the Branches of the Military

- **U.S. Army**
- **U.S. Air Force**
- **U.S. Navy**
- **U.S. Marine Corps**

U.S. Military Academies

- **West Point,**
- **U.S. Airforce Academy**
- **U.S. Maritime Academy**
- **U.S. Naval Academy**
- **Navy Postgraduate School**
- **Naval War College**
- **Army War College**
- **U.S. Coast Guard Academy**

U.S. Government

- **Department of Defense**
- **Department of Energy**
- **Department of Health and Human Services**
- **Department of Homeland Security**
- **Department of the Interior**
- **Department of Justice**
- **U.S. Coast Guard**
- **Department of Treasury**
- **Department of Veteran's Affairs**
- **Environmental Protection Agency**
- **Federal Aviation Administration**
- **Federal Deposit Insurance Corporation**
- **Securities and Exchange Commission**
- **Bank of The Federal Reserve**
- **National Aeronautics and Space Administration (NASA)**
- **National Ocean and Atmospheric Administration (NOAA)**
- **Social Security Administration**

The Solution, continued

VBrick video appliances were already a familiar fixture at other NASA centers. They stream live video, for example, from the White Sands Test Facility and from the organization's National Buoyancy Lab, where astronauts train for weightless environments in the world's largest swimming pool.

For streaming live video from the ISS, however, NASA opted to use a VBrick Windows Media appliance, which has a lower data rate suitable for an Internet audience.

The Benefits

Reliable, secure streaming of live and on-demand video via the Internet

Designed to be a turnkey solution, VBrick's appliance doesn't impose downtime for maintenance, and doesn't require software upgrades or virus control. Connected to the ISS's video downlink, it allows NASA to distribute high-quality live video to cable providers as well as an unlimited number of online viewers.

Other than when astronauts are off-duty or the Space Station's orbit brings it into a "loss of signal" period, the stream is reliable and constant. Plus, using VBrick's Video on Demand server, NASA TV administrators can easily opt to channel streams of internal or external video onto the website.

NASA broadcasts live coverage of Space Shuttle missions and an on-orbit video of Earth captured by astronauts aboard the International Space Station.
View it at http://www.nasa.gov/multimedia/nasatv/

About VBrick Systems, Inc.

VBrick is the leader in Enterprise IP Video solutions, with over 9,000 corporate, education and government customers and 60,000 installations worldwide. VBrick solutions work over standard IP networks and the Internet to deliver rich media communications that connect people everywhere – from employees and customers, to partners and shareholders. Our comprehensive product suite and end-to-end solutions are used in a wide range of live and on-demand applications including meeting and event broadcasts, distance learning, digital signage, TV distribution, video surveillance, and Web-based marketing campaigns. Headquartered in Wallingford, CT, VBrick's products and services are available through industry-leading value-added resellers.

For more information, visit www.vbrick.com

VBrick

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