ciency has been found or normal network saturation has been attained. Net-
Stress was written for execution in the VxWorks real-time operating system, but
could easily be ported to other operating systems. This program was written by Kurt Leucht
and Guy Bedette of Kennedy Space Center. For further information, contact the
Kennedy Innovative Partnerships Office at (321) 861-7158. KSC-12589

Framework for Flexible Security in Group Communications
The Antigone software system defines a framework for the flexible definition and implementation of security policies in group communication systems. Antigone does not dictate the available security policies, but provides high-level mechanisms for implementing them. A central element of the Antigone architecture is a suite of such mechanisms comprising micro-protocols that provide the basic services needed by secure groups. Policies are implemented through the composition and configuration of these mechanisms. Mechanisms are composed in different ways to address new requirements and environmental constraints. The Antigone framework provides an easy-to-use application programming interface (API), from which secure group application programs can be built. Written entirely in the C++ programming language, the sys-
tem consists of over 18,000 lines of source code and has been ported to sev-
eral versions of Linux, FreeBSD, and SunOS. Information for accessing re-
cent versions of the source code and related documentation is available at http://antigone.eecs.umich.edu.

This program was written by Patrick Mc-
Daniel and Atul Prakash of the University of Michigan for Kennedy Space Center. In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:

Electrical Engineering and
Computer Sciences Department
University of Michigan
3115 EECS
1301 Beal Ave.
Ann Arbor, MI 48109

Refer to KSC-12207, volume and number
of this NASA Tech Briefs issue, and the
page number.

Software for Collaborative Use of Large Interactive Displays
The MERBoard Collaborative Work-
space, which is currently being deployed to support the Mars Exploration Rover (MER) Missions, is the first instantiation of a new computing architecture designed to support collaborative and group computing using computing de-

vices situated in NASA mission opera-
tions rooms. It is a software system for
generation of large-screen interactive
displays by multiple users. The architec-
ture provides a platform and applica-
tions programming interface (API) for
the development of collaborative applica-
tions for NASA mission operations. The standard deployment configuration provides an integrated whiteboard, Web
browser, remote viewing and control for collaboration over distance, and per-
sonal and group storage spaces that pro-
vide ubiquitous access and sharing of
data. Customization for specific domains is provided through plugins. For the MER mission, plugins include a flow-
charting tool for strategic rover opera-
tions and mission planning, 3D visualization of the Martian terrain, a data
navigator to navigate the mission data-
base, and situational awareness tools. The MERBoard software is designed to run on large plasma displays with touch-
screen overlays, thus providing an im-
mersive and interactive environment for
teams to view, annotate, and share data.
The MERBoard overcomes the obstacles to communication, retention, and col-
laborative modification of information in diverse forms that can include text,
data (including images) from scientific instru-
ments, handwritten notes, hand
drawings, and computer graphics. The
MERBoard provides a unifying interface for the integration of heterogeneous ap-
plications, and provides those applica-
tions with a consistent model for saving
and retrieving data. All applications may
be viewed and controlled from any loca-
tion that has a MERBoard. A personal
client provides integration of a user's
personal computing environment with
the MERBoard environment.

This program was written by Jay Trimble,
Thodore Shah, Roxana Wales, Alonso Vera,
Irene Tollinger, Michael McCurdy, and
Dmitriy Lyubimov at Ames Research Cen-
ter. For further information, contact the
Ames Technology Partnerships Division at
(650) 604-2954.

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