NGI/NE/02

Network Flow Profiling

FY 2004 Proposal to the NOAA HPCC Program

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Proposal Theme: **NGI**

Funding Summary:

Signature 1 (required)	*Signature 2 (required)*	*Signature 3 (optional)*
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Jumbo Frame Transfer Capability at the MAX

Proposal for FY 2004 HPCC Funding

Prepared by: John C. Kyler

Executive Summary:

The NOAA Network Operations Center in the Office of the CIO (OCIO) supports NOAA's connectivity to the research Internet2 at the MAX Gigapop. Due to security requirements and funding limitations, the infrastructure in place at the MAX prohibits use of the JETT standard jumbo frames. This limitation potentially impacts supercomputer communications through I2, limited the NOC's participation in a recent Net100 test project means that NOAA is not in compliance with the JETT and I2 standard to which we subscribe. This proposal requests funds to upgrade existing equipment so that NOAA DC can support jumbo frames.

Problem Statement:

In order to satisfy requirements that in-bound network traffic be mirrored through the NCIRT, all network traffic between the MAX and NOAA Washington DC offices transits a cisco 3508 switch. While the 3508 supports current bandwidth requirements, it has limited functionality and does not support Message Transfer Units (MTU) in excess of the standard 1544 bytes. This limitation is inconsistent with the JETT mandated standard of MTU of 9000 for communications across research networks. The 9000 byte MTU offers greater flexibility in terms of layer 4 tuning and hence performance benefits for high capacity communications with high performance computers or other specialized applications, such as the FY 04 HPCC Net100 project which demonstrated the benefits of TCP tuning.

Proposed Solution:

The NOC will procure and install a cisco 4507 class switch to support internal communications among NOAA devices connected to the NOAA presence at the MAX. The switch will support Jumbo Frames. It also has fully redundant components (Power supplies and Supervisor modules) and would thus provide additional fault tolerance at the hub of a communications center which is part of NOAA's Coop strategy. After the device has been completed, the NOC will work with the Boulder NOC to rerun the Net100 test that both locations supported earlier in FY 04 and will use the metrics in part to compare the benefits of the larger MTU frames in high performance communications projects.

Analysis:

This project will provide a state of the art communications infrastructure to support NOAA's communications with the research community and enhance the survivability of that infrastructure for a number of key Coop applications. Immediate benefits will derive from rerunning Net100 tests to better understand benefits of TCP tuning.