National Oceanic and Atmospheric Administration
National Weather Service
Telecommunications Gateway (NWSTG)
Full UPI Code: 006-48-01-12-01-3106-00
Annual Operational Analysis - 2006

1. Strategic & Business Results.

The mix-lifecycle NWS Telecommunication Gateway (NWSTG) O&M baseline consists of the NWSTG Legacy Replacement steady state primary message switching system (FOC achieved 7/31/06) in Silver Spring, MD and the DME backup message switching system (IOC achieved 12/5/06) in Mount Weather, VA. The NWSTG is a critical element allowing NWS to satisfy the requirements for collection and distribution of hydro meteorological data. The NWSTG allows the NWS and its partners - public, private, and commercial - to perform their core functions. The NWSTG supports the NWS mission by collecting and distributing raw and processed hydro meteorological data and products. The NWS CIO/Telecommunication Operations Center (TOC) operates and maintains the NWSTG.

The NWSTG FY06 appropriated non-labor budget of $11.03 M was sufficient to maintain current operations and complete the system build-out and testing at the NWSTG Backup. The NWSTG FY07 appropriated non-labor budget of $13.65M will sustain system and network operations at both Silver Spring, MD primary and Mt. Weather, VA backup sites. For FY08 and beyond, an increase of $700K annually is required to sustain the NWSTG cyclical technical refresh.

The following performance goals have been established to ensure that the NWSTG O&M investment continues to further agency goals and objectives:

Performance Metric	Threshold
System Availability (averaged monthly)	*99.90%*
Warning Message Latency (averaged monthly)	*10 seconds*
Routine Message Latency (averaged monthly)	*60 seconds*
Daily Traffic Volume (averaged monthly)	*1.2TB*

Currently, the TOC has not fully deployed all the metrics gathering tools that will ultimately provide comprehensive performance monitoring and analysis. As a store and forward operation, the NWSTG currently only holds about 24 hours of data. The TOC is in the process of adding additional disk space that will facilitate historical trend analysis. Further development of performance metrics will include latency of model output products and the measurement of file throughput in addition to the existing message throughput.

2. Financial Performance.

The CIO Telecommunications Operations Center (TOC) uses several systems to measure and track project cost and, schedule.

a. Cost: CIO/TOC has oversight responsibility for the entire NWSTG O&M budget. Budget development and execution have been accomplished using PC-based spreadsheets (currently Microsoft Excel) linked to the NOAA financial management systems. These spreadsheets have been used to compare actual cost data to budget baselines and to make the required baseline adjustments for subsequent budget development cycles. Cost and financial data are monitored to identify discrepancies with the approved financial plan and to develop corrective actions. This data is also used to monitor contractor performance, contractor rate adjustments, support program/budget reviews, and to answer questions from NWS, NOAA, and DOC management, OMB and the Congress.

b. Schedule: The Legacy Replacement Full Operational Capability achieved in July 2006 culminated a 2 ½ year DME project. TOC is currently developing schedules for Release II software development activities, SAN Infrastructure upgrades, and technical refresh for the IBM pSeries enterprise servers that comprise the NWSTG message switch engine. The schedule status of these impending projects will be reported to NWS senior management on a monthly basis via Quad Charts and routine Major Investment Reviews. The NWSTG Backup System achieved Initial Operational Capability in December 2006 and is progressing to Full Operational Capability in May 2007 as NWSTG customers transition to the NOAANet MPLS network that interconnects the NWSTG primary and backup systems. Project schedules are developed and tracked on Microsoft Project 2003 Professional.

An annual, recurring O&M investment ($11.03M non-labor in FY 2007) sustains the current high system availability and excellent performance level overall. The budget increases by $2.5M for FY 2007 and beyond to fund the MPLS network connectivity for the NWSTG. TOC has requested an increase of $700K annually starting in FY 2008 to fund the cyclical technical refresh required to sustain the availability and performance levels.

This investment was reviewed by the Commerce IT Review Board (CITRB) in May of 2006 as a System/Control status review Cost, schedule, and performance were presented and generally well received at the CITRB briefing.

3. Customer Results

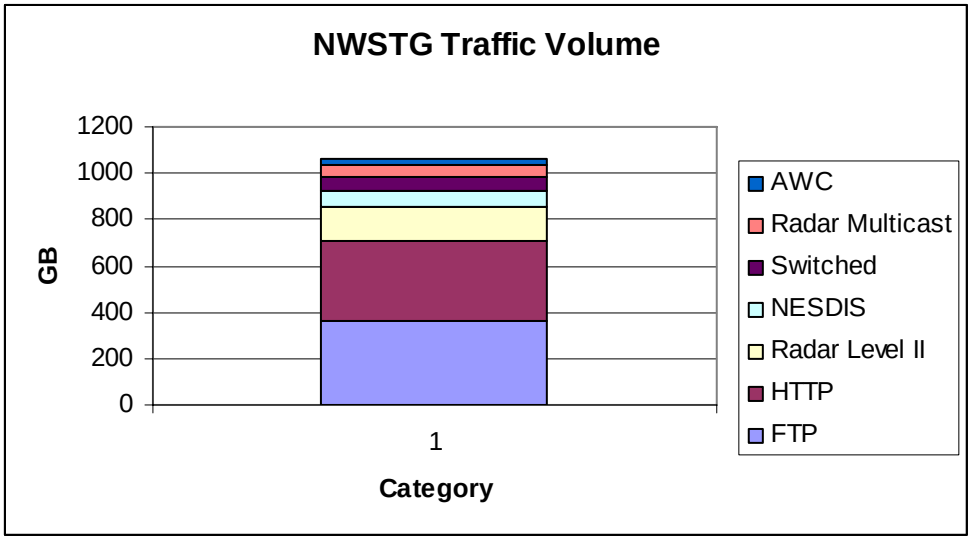
System performance is routinely monitored by the TOC's Operations Support and Performance Monitoring Branch (CIO11). The NWSTG Ops Center is government staffed 24/7/365 and supports all NWSTG internal and external customers. Several key system level performance measures are tracked on a regular basis to determine the effectiveness of the program. Key performance measures are: (1) System Availability, (2)

Warning Message Latency, (3) Routine Message Latency, (4) Traffic Volume. For Message Latency, Thruput Circuit Analysis is conducted for a 24 hour period on representative lines to produce an average message latency from edge to edge of the message switch. System Availability is measured monthly as the percentage of the total hours for the month that NWSTG services were available to any of the four major customer sectors: NCEP, AWIPS, Government (DoD, FAA, etc.), and Family of Services. Non-availability is considered as loss of NWSTG services to all four major customer sectors due to unplanned or planned downtime.

The latest performance data is as of December 31, 2006. The data shows the NWSTG Legacy Replacement is meeting or exceeding all of its performance goals. In fact, the NWSTG Legacy Replacement target goal to improve routine and warning message latency to 60 seconds and 10 seconds respectively was far exceeded with average latency below 1 second for all messages. This dramatic increase in system performance removes the NWSTG as a choke point in the transit of NCEP products to AWIPS. NCEP to AWIPS end-to-end latency that typically averaged monthly between 5 and 10 minutes largely due to delays through the NWSTG dropped to .56 minutes for July 2006 and has averaged less than 1 minute since.

NWSTG Performance Results

Performance Category	Threshold	Actual
System Availability	99.90%	100%
Warning Message Latency	10 seconds	> 1 second
Routine Message Latency	60 seconds	> 1 second
Traffic Volume	1.2TB	1.1TB



NWSTG system availability was 100% throughout the reporting period. This extraordinarily high performance is attributable to the high level of redundancy within the core infrastructure and the fact that the key NWSTG functions are segregated in terms of data paths and server platforms so that the more likely result of a malfunction is degradation in overall NWSTG service rather than a total outage. This robustness is likely to decrease as the impending transition from diverse point-to-point circuits to a network centric topology converges data paths on to common platforms. However, this vulnerability will be negated to a large degree by the availability of the NWSTG Backup System. Moreover, non-availability due to scheduled downtimes for maintenance can be reduced since operations can be transferred between the primary and backup systems to accommodate many maintenance requirements.

4. Innovation

The Telecommunications Operations Center receives executive level guidance from the TOC Division Director, the Office of Climate, Water, and Weather Services (OCWWS), and the National Center for Environmental Prediction (NCEP). Further input is provided by WMO and ICAO who outline Data Management practices and standards for exchange of data and products.

Additionally, the TOC complies with the OMB requirements of Circular No. A-11, Planning, Budgeting, Acquisition, and Management of Capital Assets; NOAA's Planning, Programming, Budgeting, and Execution System (PPBES), and the NWS Operations and Services Improvement Process (**OSIP**). These combined processes ensures the NWSTG O&M investment is exposed to a rigorous review and decision making process that assesses NWSTG performance relative to its contributions to NOAA's strategic goals and that it continues to be a viable and necessary investment.

A dedicated TOC program manager was created who oversees the NWSTG project execution of the four TOC Branches so all IT related activities are interlinked and communicated throughout the TOC, NWS and International community. Changes to the system either on the network, software or hardware side are controlled by an ITIL model infrastructure that uses an automated Configuration Management, Asset Management and Help Desk solution to document, archive and control all changes. An NWSTG Configuration Control Board (CCB) was established which reviews all change requests.