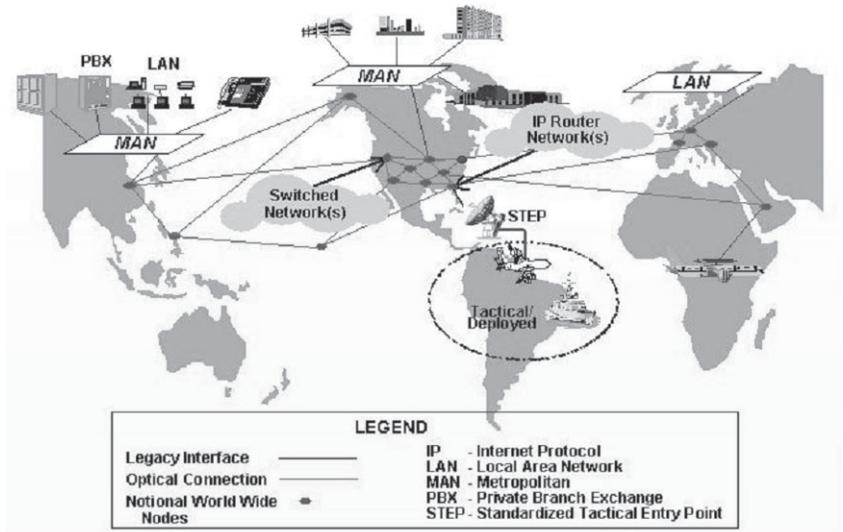


Global Information Grid - Bandwidth Expansion (GIG-BE)

SUMMARY

- The Global Information Grid – Bandwidth Expansion (GIG-BE) Program is a key component of the Department of Defense’s net-centric transformation initiative. It creates a constant “bandwidth-available” capability to improve information sharing.
- The operational assessment demonstrated the Network Management capabilities in place at Initial Operational Capability (IOC) are able to detect, diagnose, recover, and repair induced failures.
- The GIG-BE demonstrated that it is operationally effective. Several key policies, procedures, tools, and practices specific to GIG-BE operations were not completed or available during the IOT&E. However, by employing draft documentation, manual workarounds, and legacy practices, Global NetOps Support Center operators could successfully provision, operate, manage, and maintain the small IOC network. Regarding survivability, the IOC network has a one-year authorization to operate.
- Solutions to the suitability shortfalls are expected to be in place well before the full operational capability operational test and evaluation in FY05. Planning has begun for robust survivability and information assurance testing once a sufficient number of sites are on-line to establish a closed-loop “mesh” network and the overseas network operations centers are available.
- As the maturity of the GIG-BE architecture and supporting documentation increases, DOT&E will update our IOC assessment on operational suitability and survivability. There are no issues in either assessment area significant enough not to support a declaration of IOC.



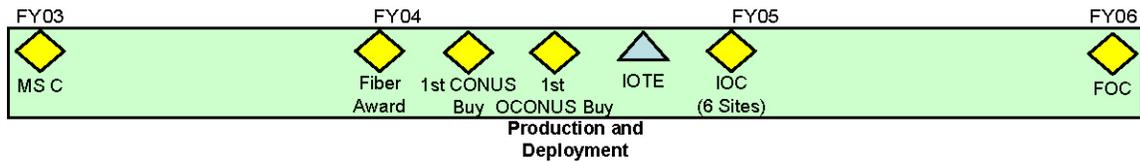
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SYSTEM DESCRIPTION AND MISSION

The GIG-BE Program is a key component of DoD’s net-centric transformation initiative. It creates a constant “bandwidth-available” capability to improve information sharing for national security intelligence, surveillance and reconnaissance, and command and control. The GIG-BE is a secure, switched network interconnected by 800 Gigabits-per-second fiber optical trunks. It offers - along with other common protocols - advanced Internet Protocol user services, employs diverse connections for survivability, and provides “bandwidth on demand” from a flexible network management system. When fully deployed in FY05, GIG-BE will serve 92 of the most critical sites in the continental United States, Pacific, and European Theaters.

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TEST AND EVALUATION ACTIVITY



DOT&E approved the GIG-BE Test and Evaluation Master Plan in July 2003 and the Operational Test Plan in June 2004. All the tests outlined in the Master Plan were executed as planned.

With the exception of some of the encryption components, the GIG-BE consists entirely of commercial products configured to DoD requirements using commercial methods to support a largely technical function – that of communication support. As a result, the operational test strategy built confidence progressively in a four-step process. The operational test agency – the Joint Interoperability Test Command:

- Observed selected integration tests conducted in a commercial laboratory on the individual components.
- Monitored the security and interoperability tests on a six-site test network in the field.
- Conducted an operational assessment of the GIG-BE network management functions on the six-site network prior to approval to carry operational traffic.
- Conducted an IOT&E of the GIG-BE’s ability to carry operational traffic supporting each type of user service.

TEST AND EVALUATION ASSESSMENT

The Test and Evaluation Master Plan identifies three main test limitations for the GIG-BE at IOC. First, not all survivability aspects of the system are tested and assessed at IOC (encryption devices not accredited for TS/SCI traffic at IOC and the IOC architecture does not provide a closed-loop mesh network). Second, assessment of all planned configurations (stateside and overseas) is not possible until full operational capability. Third, given the small size of the network, observation of all network management functions is not possible.

Overall, the GIG-BE at IOC meets its effectiveness requirements. The GIG-BE transported all manner of user traffic and successfully interoperated with the various legacy DoD network services and systems. Testing highlighted the need for a Defense-wide policy on Internet protocols and ports to ensure consistent settings are identified to take advantage of GIG-BE capabilities. Wavelength services were exercised successfully in the laboratory and in a provisioning exercise during the IOT&E. Quality of Service assessments (latency, packet loss, and bit error rates), Class of Service assessments (priority/precedence), and transport and user services all performed well. The Joint Interoperability Test Command captured data on availability during the IOT&E, but will fully assess this full operational capability requirement once a more robust network is in place.

A full assessment of suitability is not possible until the GIG-BE matures. Several policies, procedures, and practices specific to GIG-BE operations were not available during the IOT&E. Global NetOps Support Center operators could successfully provision, operate, manage, and maintain the small IOC network by employing draft documentation, manual workarounds, and legacy practices. However, mature policies and practices, as well as GIG-BE Network Management System automated tools, are needed to do this on a larger scale network. Specific needs include finalizing the draft Concept of Operations describing policies and procedures; adjust the existing Provisioning guidance to account for unique GIG-BE requirements; complete the Logistics Support Plan covering maintenance standards, sparing, vendor response times, etc.; and complete and implement Standard Operating Procedures for configuration management, performance metrics, and other related activities for all the types of service nodes. The program office has been responsive to shortfalls identified during the installation process, the operational assessment, and the IOT&E and has already completed, or is working on, improvements and solutions.

Information Assurance is the only aspect of survivability that could be evaluated for the IOC network. The GIG-BE was granted a one-year Authorization to Operate – and the Joint Interoperability Test Command conducted an Information Assurance Controls assessment. However, before permanently moving significant amounts of user traffic onto the GIG-BE later in FY05, a demonstration of the following items is needed: automated fail-over to alternative routes with the

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fiber optical mesh network, fail-over at dual service delivery node sites from the primary to the secondary service delivery node, and red team penetration testing and further information assurance testing. During the Full Operational Capability operational test and evaluation, the Continuity of Operations Plan back-up of the Global NetOps Support Center by other network centers, must also be exercised and evaluated.

The Joint Interoperability Test Command conducted the GIG-BE IOC IOT&E as outlined in the DOT&E-approved Test and Evaluation Master Plan and Operational Test Plan. Minor exceptions occurred resulting from the level of maturity in the architecture under test and supporting processes. DOT&E considers the GIG-BE as operationally effective. However, a final determination on operational suitability and survivability will be made as the maturity of the GIG-BE architecture and supporting documentation increases. There are no issues in either assessment area significant enough not to support a declaration of IOC.

