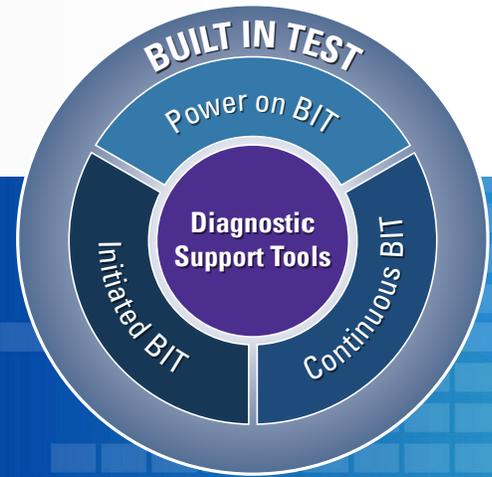


# Diagnostic Support Tools

*System-wide Fault Detection*



- **Easy-to-use and customizable tools to build Built-In-Test**
- **Extensive fault detection of system components and connectivity**
- **Detailed, non-intrusive power-on and online diagnostics**

Mercury's Diagnostic Support Tools (DST) provides the capabilities required to build a robust subsystem Built-In-Test (BIT). Delivered as a comprehensive, customizable toolset of scripts and source code, DST provides fault detection across processor boards, components, networks, backplanes, operating systems and applications.

System health and functionality may be monitored via an extensive network of hardware and software throughout the processing subsystem, including at the component, module and chassis level. When combined, this data may be used to validate the state of the subsystem. DST is a software product that provides a BIT (Built-in-Test) platform that seamlessly orchestrates the access and interpretation of the diagnostic data in a way that is customizable to the applications precise requirements. These tools improve the reliability, predictability and security of an application while reducing development time by 1000s of hours.

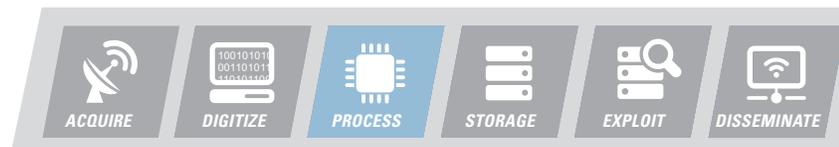
## Built-in-Test (BIT)

For defense systems, including sensors, weapons and mission systems, BIT is an essential component of the application and operating system environment. By monitoring system integrity during power-on and throughout the application lifecycle, the behavior and results of the system can be consistent and trusted. Mercury's Diagnostic Support Tools provide the baseline functionality for a subsystem BIT.

BIT is typically segmented into different modes in order to protect the system during different stages of system execution. These segments include Power-on BIT (PBIT), Continuous BIT (CBIT), and Initiated BIT (IBIT). PBIT is performed during the boot process of the Operating System. Diagnostics like BIST (Built-in Self-test), otherwise called POST (Power-on Self-test), executes prior to hardware handoff to the operating system and will halt boot or record logs if there is a hardware issue. The rest of the power-on includes operating system boot, peripheral detection and instantiation and network connections. A PBIT will monitor those remaining power-on steps and interpret results from the BIST.

CBIT continues to check the components that were covered by BIST and the PBIT during application execution by polling sensors and performing software tests. CBIT implementations need to take care to do this without adding overhead and often need to be configurable as well as have custom tests that are specific to the application.

*Mercury Systems is a leading commercial provider of secure processing subsystems designed and made in the USA. Optimized for customer and mission success, Mercury's solutions power a wide variety of critical defense and intelligence programs.*



IBIT includes an ability to call tests specifically while the application is executing or in a halted state, used during debugging or a triggered event.

DST provides a platform for all three of these BIT modes and a script infrastructure that can be modified for your customized monitoring points. PBIT support includes tailored tests of Mercury's BIST results and software bring-up. CBIT support includes a high-level of test coverage that is tunable depending on both overhead and hardware/software requirements.

DST is delivered as a suite of tools that use a customizable script format that accesses any information required to detect faults in the multicomputer subsystem. The tools utilize Mercury software and firmware capabilities, along with Linux's system tools to provide an accessible and actionable output of results. DST can be used to create BIT reports in minutes with a simple configuration file, eliminating what used to take months of development time.

### Customizable

Processing subsystems are typically task-specific, mitigating the effectiveness of all-in-one BIT solutions. DST supports customized and proprietary inputs for testing as required by the application. Mercury's Built-In-Test utilizes a proprietary approach that is more versatile than typical rigid test platforms.

### Comprehensive Service

Mercury builds custom BIT capability as part of a pre-integrated processing subsystem, giving our customers the reassurance that it will execute consistently throughout development of the subsystem application and eventually in the target production environment. Contact your sales representative to learn more about this service offering.

### DST Compatibility

- All Mercury Intel-based Ensemble® Series 3U and 6U servers or Intel and Linux equipped modules in InfiniBand™, Ethernet and RapidIO® connected subsystems
- XMC Carrier Modules (CCM)
- I/O XMC modules including IOM-300
- GPU Products including GSC6201, GSC6202

### Open Software Environment

Mercury leverages over 35 years of multi-computing software expertise, including multicore processor expertise, across its many platforms. The same Linux development and run-time environment is implemented across our whole Ensemble portfolio of open system architecture building blocks.

### Mercury Sensor Processing Ecosystem

Mercury subsystems are designed from a suite of sophisticated open architecture building blocks that are combined and scaled to meet a broad range of advanced sensor chain processing requirements. Mercury subsystems may include analog, digital and mixed-signal receiver modules, single-board computers and signal processing payload modules. Payloads may have acquisition, digitization, processing, and exploitation and dissemination elements and include FPGA, CPU, GPU or ADC/DAC technology, and be made up of multiple subsystems developed to multiple standards, including OpenVPX and others such as secure AdvancedTCA or VME/VXS.

### Packaging

Licensing: Unlimited developers and runtime license for the program.

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