CMON-Line

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HEALTH MONITORING DATA RECORDS

EASY TO INTEGRATE

FAST BOOT

PBITS EXTENDS TO ADD-ONS

LEARN / COMPARE METHOD

CONTROL AND MONITORING FOR MISSION COMPUTER

▶ **PBIT Expert**: total system coverage, no programming (learn/compare approach)

▶ **Monitoring Framework** for computer designers, integrators and end users
  - Synthetic system status check from customizable health sensors list
  - Extensive coverage: hardware, software, peripheral and external elements

▶ **Fast Boot**: when every second counts

POSSIBILITIES START HERE **kontron**

SOLVE APPLICATION ISSUES BY CHECKING THE COMPUTER

Embedded applications may sometimes not function nominally in the field. This incurs big operational issues, availability level reduction and loss of reputation. Kontron introduces specific technologies needed to control and monitor computer systems, avoiding expert level application troubleshooting.

- ▶ The PBIT Expert is run before any OS is launched, it detects and signals unexpected changes to a recorded computer configuration.
- ▶ The Monitoring framework runs in the OS. It provides an extensible and simple solution to open architecture computer health monitoring.
- ▶ The Fast Boot feature is a solution to reduce computer startup time to a few seconds.

PBIT EXPERT

PBIT (Power On Built In Test) is featured on all Kontron VME and VPX boards. It runs prior to OS boot and leaves a detailed result of the run in a non volatile memory. This result is made available to operational software through a library, wich can be found in the PBIT Development License.
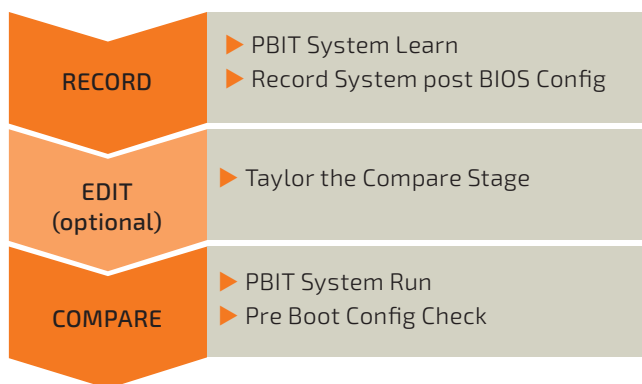
Modular PBIT

The PBIT has a modular architecture allowing users to achieve the right balance between test time and test coverage, each BIT test module being independent of each other. In addition to the classic device specific PBIT modules (e.g. CPU, Memory, PCI, etc), our PBIT includes an Expert mode called the SYSTEM PBIT.

System PBIT Module

This special test covers all devices detected on all busses connected to the main CPU. In addition to the base blade configuration, anything added after the computer board was delivered to multiple integrators, is captured during a one-time 'LEARN' phase to create a computer configuration image where all the information is recorded.

Then, upon each boot sequence, the same test module is used in 'RUN' mode where a new detection is done, followed by a comparison with the recorded computer configuration

RECORD	▶ PBIT System Learn ▶ Record System post BIOS Config
EDIT (optional)	▶ Taylor the Compare Stage
COMPARE	▶ PBIT System Run ▶ Pre Boot Config Check

Unique in the market

This SYSTEM PBIT approach allows to detect situations not covered by traditional solutions. Situations not planned at the time of design are detected easily. E.g.: a forgotten USB stick left at the back of a rack, ETH or PCI Link speed or width discrepancies, newly inserted component, hardware changes.

Since no programming is involved, the cost of ownership of PBIT expert is minimal, while providing awesome coverage.
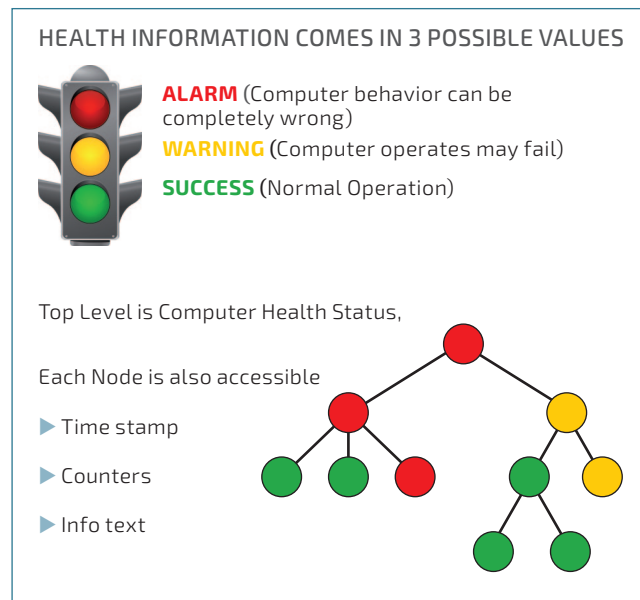
MONITORING

In open architecture embedded computing, multiple actors insert changes in the hardware and software. Even the end user, when commissioning the device into an operational infrastructure will be changing again some key parameters in the computer.

In this context, assessing the computer health status is a challenge that CMON-Line Monitoring fixes easily.
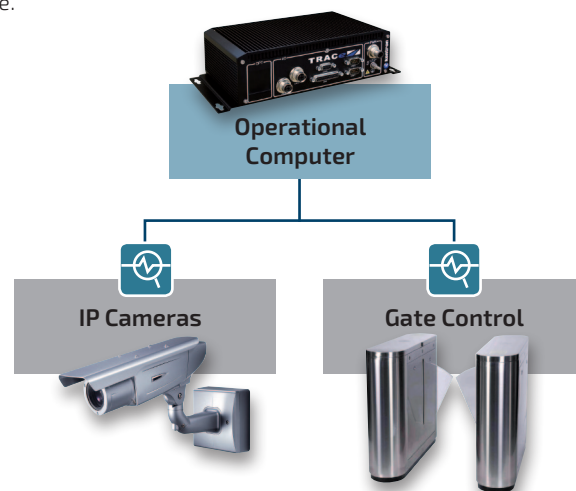
Health Sensors

The core of monitoring is the health sensor concept. It is designed to transform status information from a computer element (physical or logical) into a health value, according to predefined rules.

HEALTH INFORMATION COMES IN 3 POSSIBLE VALUES

ALARM (Computer behavior can be completely wrong)
WARNING (Computer operates may fail)
SUCCESS (Normal Operation)

Top Level is Computer Health Status,

Each Node is also accessible

- ▶ Time stamp
- ▶ Counters
- ▶ Info text

Separate rules are defined to trigger the ALARM or the WARNING status of the health sensor.

Extensible Framework

Extending the monitoring coverage to include additions made to the computer hardware or software is easy: create new measurement points by adding health sensors in the definition file.

Operational Computer

IP Cameras

Gate Control

(Example of complete CCTV system monitoring thanks to additional health sensors)

Single monitoring solution for multiple use cases

This innovative technology is a new solution to old status monitoring problems of open architectures and long supply chains. It provides instrumental help for:

▶ Preventive maintenance,

▶ Proven availability in the field,

▶ Security,

▶ Traceability and support,

▶ System characterisation,

▶ Day to day operation.

You can learn more about this in the Monitoring White Paper or by following one of the training sessions included in the development kit.

How to buy it ?

Free evaluation

Selected Kontron Linux BSPs[*] now include the monitoring engine (BSPs) and sample sensor files covering a selection of VME and VPX blades and a sample application which creates a periodic dump of the in-memory health sensors data into a xml result file or creating a CBIT linux service.
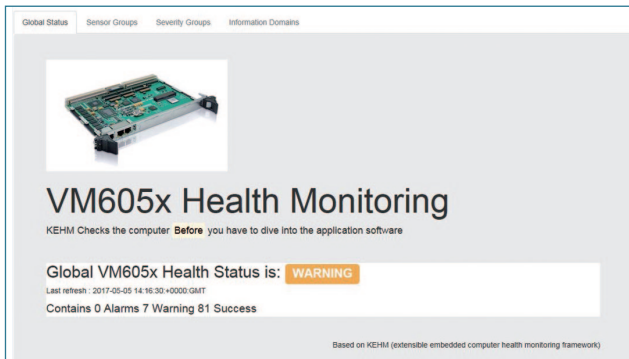
(xml result file displayed by html browser and style sheet)

Development Kit

The development kit (CMON-MONIT-6-V) allows to create health sensors, integrate them into the existing plaform sensor collection. It includes:

▶ Commented source code for CBIT and examples,

▶ Two 2-hour interactive online training sessions,

▶ 4 hours of expert support.

(*) currently: VME and VPX blades + TRACe computer boxes.

The training sessions explain how to create specialised dashboards, create more data domains and complex sensor trigger rules, along with:

▶ Basic sensor creation (files, results, test),

▶ More tuning (threshold, call periods),

▶ Running a characterisation session,

▶ Turn sensor data into evidence documents,

▶ Best practices.

FAST BOOT

Kontron has developped techniques to replace the legacy PC startup sequence with static sofware solutions which are adjusted to initialize only the features used by the target application. Based on FSP (Intel) and coreboot (OSS) technologies, the Fast Boot development kit is used to build a complete payload based on a fast firmware stack (FSP+CoreBoot+Grub or Linux image)

Benefits

▶ Faster boot than standard BIOS. Typically 5 times faster.

▶ Static configuration and tunables.

▶ Small auditable boot code.

▶ More secure (less plug and play).

▶ Royalty free.

Depending on the application and OS choices, the boot sequence routinely sticks under the 10 sec barrier (2.5 s including OS and application startup have been met on current architectures).

The development kit includes fastboot code, two 2-hour online training and 4 hours of expert support

▶ ORDERING INFORMATION

ORDER CODE	DESCRIPTION	
CMON-Line PBIT EXPERT		
CMON-BIT-DEV6-VXNNNN	PBIT Development Kit for PBIT on VME / VPX Boards (Linux)	per project/location
CMON-BIT- RT-VXNNNN	PBIT object run time for VME / VPX boards (coded as P in board variants)	per board
CMON-Line MONITORING		
CMON-MONIT-6-DEV	Development kit for Monitoring for VPX / VME computer blades (Linux)	per project/location
CMON-MONIT-RT-V	Monitoring run time for VPX / VME computer blade	per board
CMON-Line FASTBOOT		
CMON-FBOOT-VXXXXX	Fast Boot Professional Service for VME / VPX CPU blades	per project/location

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