ABB Process Automation Advanced Services

Harmony Performance Fingerprint
Identify system performance improvement opportunities

A Harmony Performance Fingerprint audits and analyzes the control system to deliver high-impact resolutions for anomalies and issues that cause poor performance. The Fingerprint compares system performance and parameters to peak operating conditions, and actual operating data to design capacities, identifying optimum system operation.

Benefits

- Confirmation that all hardware versions are documented and compatible
- Identified errors between modules
- Recorded parameters for exception reports
- Development of cost-effective maintenance and evolution plan
- Verification of installed equipment and associated maintenance tasks

Features

- Proven diagnostic and benchmarking practices
- Detailed improvement plan to quickly close gaps
- Access to ABB expertise and resources
- Software-based data collection and analysis tools to expedite findings

The Harmony Performance Fingerprint diagnoses system status and performance in order to identify peak system operation. Using ABB's proprietary analyzer software, Harmony Performance Analyzer™, ensures control system performance is not affected while ABB engineers perform the audit to collect system topology and configuration information. Because lifecycle status, operating condition and maintenance practices associated with Harmony have critical roles in cost-effectively managing the system, associated control system equipment and applications are also reviewed.

Harmony Performance Indicators

Included in the Harmony Performance Fingerprint is the measurement and analysis of INFINET performance, Controller CPU utilization and PCU Nodes communication loading. More specifically, the audit includes:

• Network monitoring/peak loading
  - Node performance statistics: Communications traffic is monitored to identify nodes with high message rates
  - Node event and error counters
    - Counters indicate when messages are lost or unable to find their designated target
    - This helps isolate the source of potential faults so they can be addressed before a problem occurs
    - Exception reporting statistics: Measurement of this key communication mechanism indicates where parameters should be adjusted to optimize control system operations

• Performance thresholds
  - Error rates: Identification of interrupted and/or discarded message rates
  - Controlway errors: Identification of module-to-module communication error rates
  - Redundancy link errors: Identification of errors between redundant modules
  - CPU utilization
    - Measurement of CPU utilization identifies module loading and configuration issues
    - Detection of anomalies related to these thresholds allows correction to be made before problems occur

Delivery Schedule

Ongoing communication between ABB and the plant is essential to ensuring the daily schedule and agenda is communicated clearly and the process stays on schedule.

Day 1	Project introduction meeting and discussion Set-up data collection software and begin collecting system hardware and software data
Day 2	Complete data collection process
Day 3	Begin data analysis
Day 4	Complete data analysis Begin reports
Day 5	Complete reports Present findings and discuss recommended actions

The Harmony Performance Fingerprint is also available as a remote diagnostic service and provides a faster and more cost-effective way to identify performance improvement opportunities.

Reporting

Once the evaluation is complete, a comprehensive report is generated and the detailed findings and strategy for issue resolution are presented to plant personnel. The audit identifies the following:

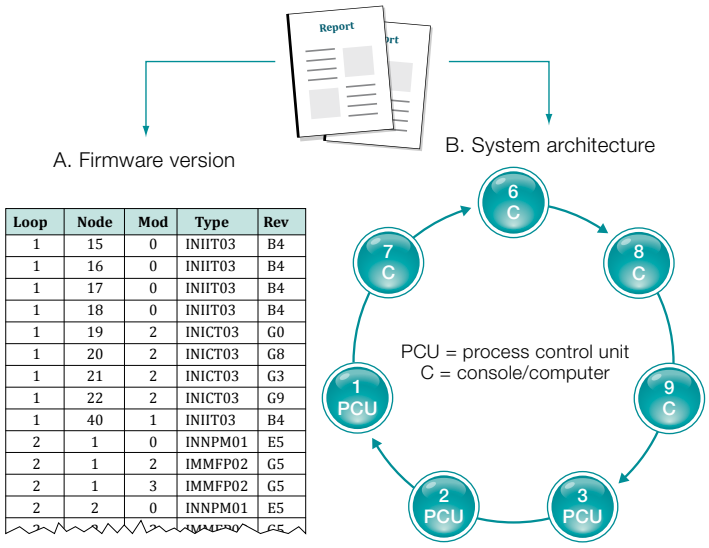
- Module firmware levels
- Redundant modules with conflicting firmware revisions
- Potential communication loop performance issues
- Situations that may cause temporary system performance degradation
- System settings that restrict maximum communication performance
- NIS communication poll rate settings
- Module reporting error codes

Improvement Plan

The improvement plan provides recommendations for solving performance issues and identifies the steps required to achieve optimal control system operation. In addition, expected results from each recommendation are provided. Based on the findings, recommendations may include configuration changes, fixing incorrect settings or mismatched firmware revisions, and replacing or upgrading equipment.

Sustain Improvement

The Harmony Performance Fingerprint is the foundation for achieving improved system performance levels. To achieve total system optimization, recommendations based on the Fingerprint Report must be completed. These activities can be scheduled to coincide with your annual or multi-year service agreement and can be implemented by ABB, your site engineering team or a combination thereof. To sustain improvements, ABB's HarmonyScan and HarmonyTrack remote periodic and continuous monitoring software services are recommended.



Loop	Node	Mod	Type	Rev
1	15	0	INIIT03	B4
1	16	0	INIIT03	B4
1	17	0	INIIT03	B4
1	18	0	INIIT03	B4
1	19	2	INICT03	G0
1	20	2	INICT03	G8
1	21	2	INICT03	G3
1	22	2	INICT03	G9
1	40	1	INIIT03	B4
2	1	0	INNPM01	E5
2	1	2	IMMFP02	G5
2	1	3	IMMFP02	G5
2	2	0	INNPM01	E5

(A) The Harmony Performance Fingerprint identifies hardware, firmware and software version levels to determine if updates may result in higher system performance. (B) System architecture is mapped during the Fingerprint so that problems such as communication interruptions can quickly and easily be identified and fixed.

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