

System 800xA Benchmark and Core Fingerprint Opportunities for system performance improvements

System 800xA Benchmark and Core Fingerprint provide a comprehensive diagnostic analysis of the 800xA control system. Performance, configuration and life cycle parameters are read from the installed system and compared to requirements and best practices. Non-optimal system states and settings are automatically identified. As result, the Benchmark report provides a quick overview of the system status, and the Fingerprint report presents the evaluated findings and gives detailed recommendations for improvement.

Observing typical systems

What we might see in long-term running systems:

- System overload is causing slow response rate
- Gradual system performance degradation is not diagnosed or resolved until issues arise
- Issues arise sporadically which are difficult to diagnose
- Hardware devices glide slowly towards unavailability
- Redundancy problems create single points of failures
- System efficiency losses.
- Unavailability of operational features due to lacks in software installation
- Security vulnerabilities due to obsolete Microsoft update status

Revealing unseen weak spots

As a first step of system analysis, a portable easy-to-use data collection software, which has been developed on the base of long-term service experience, is executed on any computer in the 800xA system. It runs on a low priority level, in order not to strain the system in operation, and produces a packed result file.

The second step is to log in to the ABB web based platform "My Control System" and upload the result file manually, by that keeping the workflow strictly under end user's control.

The web-based analysis starts automatically after upload and checks the measured results against ABB specifications, re-

Legend:

Checks Passed
Checks passed with Warning(s)
Checks with Failure(s)
Not Applicable

Controller Check

No.	CheckItem	eTypeNO1_C190 172.16.12.100	Controller_1 AC800M PM665 172.16.12.101	Controller_2 AC800M PM665 172.16.12.102	Controller_3 AC800M PM660 172.16.12.103	Controller_4 AC800M PM660 172.16.12.104	Controller_5 AC800M PM660 172.16.12.105	Controller_6 AC800M PM665 172.16.12.106	Controller_7 AC800M PM660 172.16.12.107	Controller_8 AC800M PM660 172.16.12.108	NA/Controller1 AC800M PM660 172.16.12.109
Controller Performance Check											
1	Heap Utilization	G	G	R	R	G	Y	G	G	Y	Y
2	Task Information	Y	Y	Y	G	G	R	R	R	G	G
3	Modulebus Fail Counters	G	G	G	R	R	G	G	G	G	G
4	MMS Diagnostics	R	R	R	R	R	R	G	G	Y	Y
5	Thread execution Information	G	G	G	G	G	G	Y	Y	Y	G
6	IAC Diagnostics	G	Y	Y	Y	G	G	G	G	R	R
7	Clock Synchron Status	R	R	R	G	G	Y	Y	Y	G	G
Network Check											
8	Throughput Performance to all connected AC 800M Controllers	R	G	R	R	R	R	Y	Y	R	G

Excerpt from a System 800xA Benchmark Report

quirements and recommendations. Deviations from the expected results are presented in the System 800xA Benchmark Report which is immediately available on My Control System.

It presents a summary of the checks results in easy-to-read "traffic light" tables (green / yellow / red for good / ambiguous / incorrect). The findings are listed briefly and this gives a quick overview of the actual system status.

Performing a deep system analysis

The third step of analysis provides much more than a "Go / No-go" analysis. It is the creation of a System 800xA Core Fingerprint, to be ordered from ABB Local Service. A specialized service engineer performs a computer aided analysis and evaluation of the collected data. The resulting System 800xA Core Fingerprint Report starts with an executive summary, pointing out the most important and urgent corrective actions (as far as necessary). Next it provides all the findings in summary and in detail. For each finding there is a technical description with impact and severity discussion, and proposals for actions to be carried out.

ABB Local Service will present the Fingerprint Report to the customer in a meeting. This gives the opportunity to discuss possible Return on the automation Investment (ROI) impacts, and agree, if necessary, in an action plan to improve system reliability, availability and operational performance to its best.

What we are checking

The System 800xA Benchmark and Core Fingerprint include a comprehensive measurement of system parameters which are mandatory for reliable operation. This covers:

- **AC 800M controller performance data**
Controller performance parameters, such as load and memory utilization, time synchronization and I/O module connect status are measured with commands running on low priority, in order to avoid any impact on production control. Assessment is done against regulations and best practices.
- **Software installation status**
The installation of all required packages in the correct version is a precondition for system functionality. This is validated against the latest ABB release documents.
- **Windows components configuration**
Faulty or inadequate Server and PC hardware endangers System 800xA reliability or decreases operational performance. Additionally, Microsoft Windows® offers a large number of settings and tuning parameters. They are validated against ABB requirements.
- **Computer runtime parameters**
High utilization of computer resources, such as processor, memory or hard disk load, is an indicator for insufficient system layout or undiscovered software / hardware problems. Values above experienced thresholds give early indications possible problem areas.
- **Network parameters and performance**
All network adapter settings are verified against System 800xA installation requirements. Network statistics and performance measurements are taken to validate reliable redundant network communication.
- **Windows domain diagnostics**
Malfunctions on domain controllers may lead to incalculable risks for human access to plant process controls. Comprehensive diagnostic tests are executed to give a deep insight on the domain and domain controller health state.
- **800xA Aspect Directory database check**
The Aspect Directory database, with an exact replica on every Aspect Server, is the central data store of System 800xA. Inconsistent or corrupted databases may have catastrophic impacts on operation. Database parameters, such as consistency, replication, size, utilization and license state, are validated against ABB requirements and recommendations.

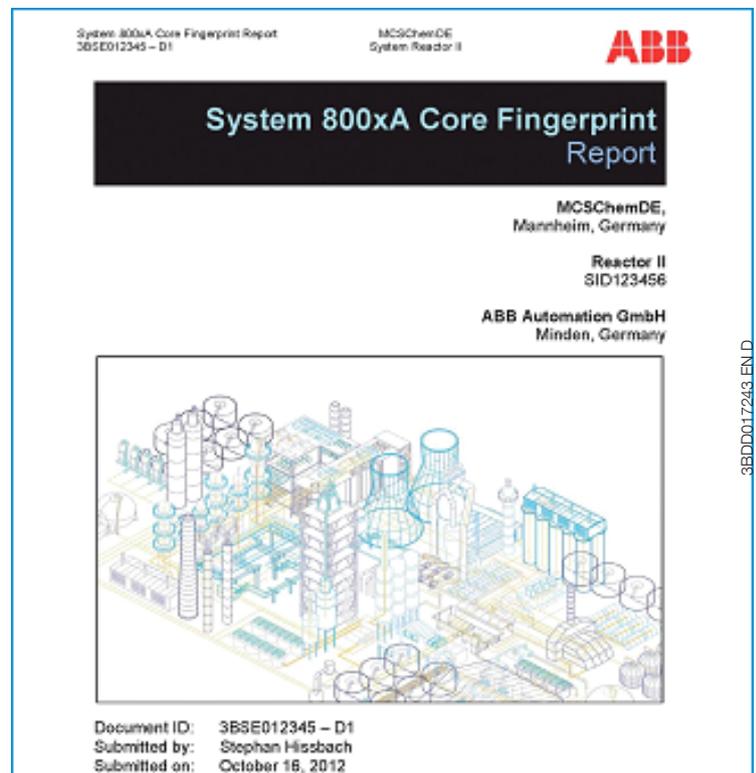
Identifying improvement actions

The System 800xA Core Fingerprint Report goes far beyond problem detection and reporting. It provides for each finding an individual

- technical explanation,
- severity evaluation,

We reserve the right to make technical changes to the products or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not assume any responsibility for any errors or incomplete information in this document.

Copyright© 2014 ABB, All rights reserved



Sample Fingerprint Report

- operational impact assessment,
- recommendation for actions, and
- documentation references.

Our standardized rules for report generation guarantee an easy-to-read report. On one hand this is addressed to top level management. It presents the key findings in an executive summary, together with impact and ROI discussions; and recommendations for an action plan, if necessary. On the other hand it gives a survey to the specialists, listing the identified problems or weak spots, and providing detailed technical advice. The measured data details are presented in an appendix.

Getting the benefits

- Sophisticated report simplifies management decision process by focusing on high impact opportunities for improvement
- Improvement plan provides clear path to quickly closing performance gaps
- Provides a solid foundation for continuous improvement based on data analysis methodology.

The System 800xA Benchmark and Core Fingerprint Services establish a perfect initial step in achieving improved system performance levels. ABB continuously improves and extends Benchmark and Fingerprint Services, and by this steadily increases the trust into process control capabilities.

For more details please contact your local ABB Service organization.