ABB Ability™ Performance Optimization for control systems - 800xA

Early detection of system performance issues

ABB Ability™ Performance Optimization for control systems - 800xA service identifies, classifies and helps prioritize opportunities to improve the performance of ABB 800xA control systems. ABB personnel use data collected during scheduled and on-demand analyses to compare against best practices and standards to detect performance issues. This comparison quickly pinpoints issues, helping to improve system reliability, availability and performance.
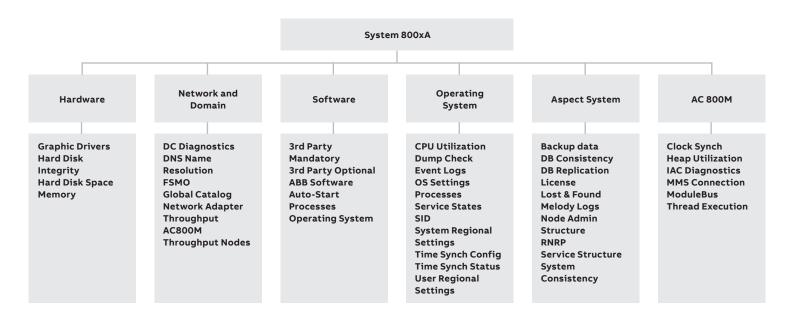
Benefits
– Increases control system performance
– Minimizes risk of system upsets
– Decreases cost of identifying issues
– Ensures smooth maintenance, expansions and changes
– Reduces response time and travel expenses

Features
– Biannual analysis by ABB experts to identify issues and recommend improvements
– Configurable alerts (via email or SMS) when KPIs are outside set thresholds
– On-site or remote access for customer and ABB service personnel
– Remote diagnosis and proactive support from ABB experts
– High-speed data gathering and statistical analysis of data
– Consolidation and long-term storage of KPIs and data
– Continuous performance monitoring
– Secure communications

Scheduled monitoring and analysis quickly identifies performance issues
Performance Optimization for control systems - 800xA service is accessed through a service delivery platform conveniently deployed at customer locations. Data is viewed through a user interface that is easily accessible by customer or ABB personnel.

Performance Optimization for control systems - 800xA provides proactive data analysis to greatly reduce time and effort needed to identify software, hardware, system and network performance issues. Data is classified according to KPIs to provide a list of potential issues that are then prioritized based on severity, criticality and/or financial impact. This analysis allows users to track and trend performance more accurately, which leads to more informed decision-making, better system performance and higher availability.

Increase control system reliability
Scheduled or on-demand monitoring of KPIs

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                            System 800xA
    ┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
 Hardware   Network and  Software  Operating   Aspect System  AC 800M
              Domain                 System
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Hardware	Network and Domain	Software	Operating System	Aspect System	AC 800M
Graphic Drivers **Hard Disk Integrity** **Hard Disk Space** **Memory**	**DC Diagnostics** **DNS Name Resolution** **FSMO** **Global Catalog** **Network Adapter Throughput** **AC800M Throughput Nodes**	**3rd Party Mandatory** **3rd Party Optional** **ABB Software** **Auto-Start Processes** **Operating System**	**CPU Utilization** **Dump Check** **Event Logs** **OS Settings** **Processes** **Service States** **SID** **System Regional Settings** **Time Synch Config** **Time Synch Status** **User Regional Settings**	**Backup data** **DB Consistency** **DB Replication** **License** **Lost & Found** **Melody Logs** **Node Admin Structure** **RNRP** **Service Structure** **System Consistency**	**Clock Synch** **Heap Utilization** **IAC Diagnostics** **MMS Connection** **ModuleBus** **Thread Execution**

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01 Performance Optimization for control systems - 800xA Service analyzes multiple KPIs for control systems and provides a prioritized list of issues to address to improve system performance

More accurate troubleshooting with comprehensive KPIs
System 800xA Performance Service analyzes the following KPIs (Figure 1) to accelerate problem solving:

– **Hardware:** System hardware parameters are analyzed to determine if resource exhaustion and other hardware issues, such as lack of RAM are present.
– **Network and Domain:** The network, which is often divided among several servers and clients, is monitored for communication errors and optimal network speed.
– **Software:** All software needed for System 800xA, from the operating system to individual applications, is analyzed to ensure that proper updates and versions are installed. Dependencies and correlation between versions and functions are also analyzed.
– **Operating System:** The system is examined to confirm that correct processes are running and the system is configured correctly.
– **Aspect System:** Examines if the 800xA aspect system is in good health and performing optimally.
– **AC 800M:** Provides another in-depth view of KPIs for added monitoring that ensures high availability.

Clear view of data and analysis
Access and visualization of KPIs is provided through an easy-to-use interface that offers three separate views of the data:
– **View:** Raw data allows customer and ABB service personnel to view data associated with machine health and performance for further analysis
– **Scan:** Automatic KPI analysis presents a summary of KPIs, ranked by severity, that are outside set limits, so that users can begin addressing issues in order of priority
– **Track:** Users can specify sets of rules for KPIs and display each occurrence that falls outside a threshold, so that users can be proactively notified to address issues
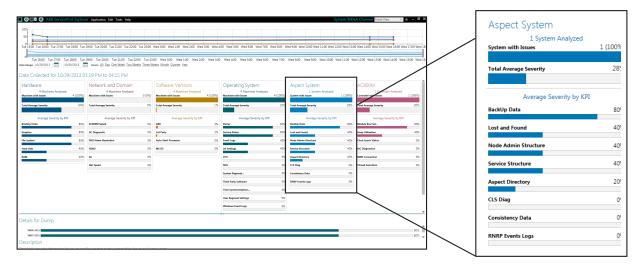
Expert analysis helps predict potential failures
To ensure that the System 800xA operates reliably, ABB provides periodic performance analyses. ABB experts evaluate data to assess system health, determine the statistical accuracy of the KPIs, and find trends that predict potential issues. The resulting performance report outlines actions that will help prevent potential problems and improve availability, reliability and system performance.

View, analyze or receive alerts on system performance
System 800xA Performance Service components

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02 Performance Optimization of control loops data analytics screen shows different views of KPIs. The above example shows the KPI analysis view for the system. The display only shows the KPIs that are outside their threshold and prioritizes them: the bigger the bar, the higher the severity of the problem.

Critical notification when it matters most
To prioritize issues that require immediate action, site-specific rules can be applied to targeted KPIs. Any KPI that tracks outside customizable, pre-determined parameters triggers an instant alert via email or text message. This quickly notifies users about issues that can compromise system availability, so they can be addressed as soon as they are detected.

Guidance for targeted corrections
Solution surface takes analysis one step further to provide easy-to-follow recommendations for correcting problems. User interface provides access to information on issues, potential impact and recommendations for correction.

In-depth understanding of system performance
Users can see the contour plot that presents two different data views of KPIs. The contour plot puts problems into context, giving users a comprehensive system overview and an in-depth understanding of how system components are performing. The contour plot allows users to quickly assess the severity of problems and prioritize them. In one view, users can easily see which KPIs track outside set limits during specific time frames. In the other, the severity of issues is represented by bars, with the longer bars indicating higher severity of the problem.
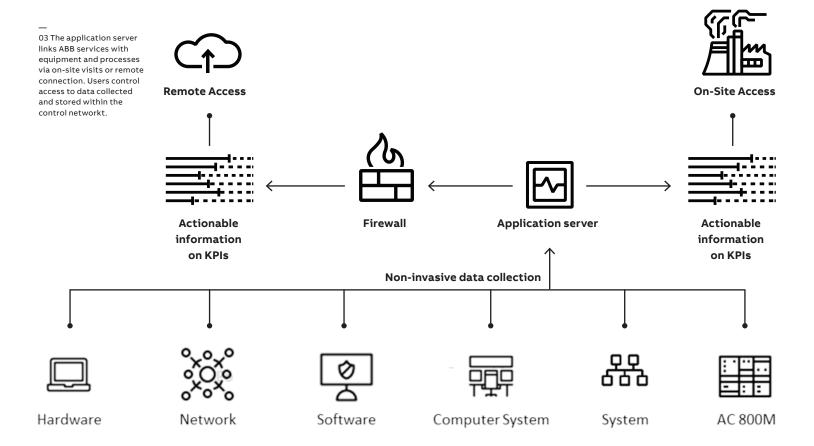
Secure connection for delivery of ABB services

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03 The application server links ABB services with equipment and processes via on-site visits or remote connection. Users control access to data collected and stored within the control networkt.

Remote Access

On-Site Access

Actionable information on KPIs

Firewall

Application server

Actionable information on KPIs

Non-invasive data collection

Hardware Network Software Computer System System AC 800M

Application Server
ABB Application Server is a remote-enabled service delivery platform that provides a secure connection to ABB services and experts. Deployed at customer locations, the application server enables delivery of local and remote services, and provides both customers and ABB service experts a real-time view of KPIs, and diagnostic and system data. Data collected through the Performance Optimization for control systems - 800xA is highly secure as it remains on-site and requires user identification to view.

Advanced Digital Services are available for:
Assets
1. Control systems
   - 800xA
   - Advant
   - Freelance
   - Harmony
2. Low-Voltage drives
3. Mine hoists
4. Rotating machines

Processes
1. Control loops
2. Quality Control Systems (QCS)

Risk mitigation
1. Cyber security for control systems
2. Alarm Management for control systems

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