SIMATIC IT Agent-based Diagnosis Service

The Predictive support for optimized plant availability

Within the SIMATIC IT Maintenance Program, its comprehensive offering of technical support and services, Siemens now provides a new predictive maintenance offer that can influence the availability of the plant by preventing plant and system critical events from happening.

In view of the increasing importance of Manufacturing Execution Systems for manufacturers to achieve corporate and plant productivity and efficiency goals, Siemens is extending its maintenance offering with SIMATIC IT Agents based Diagnosis Service. The use of this technology enables manufacturers to anticipate potential issues within their plant and IT infrastructure and speed up their analisys and solution. This predictive approach provides customers with a number of clear benefits in terms of plant availability, as it fully eliminates the need for stopping production while solving a problem or determining its cause. This results in time and cost savings.

The SIMATIC IT Agents are based on an innovative non-invasive software technology that can predict potential critical conditions, and initiate measures, authorized by the customer, to prevent them from occurring.
On the specific computers on which they are installed the agents are continuously screening defined parameters and correlating them with the entire IT infrastructure and/or with the applications and their behavior patterns. This monitoring activity is perfectly transparent and has no impact on the application. The agents are installed at the customer site to monitor hardware, operating systems and software (SQL, Product, Libraries, 3rd parties products and applications). Therefore, SIMATIC IT customers will not only benefit from optimized plant availability by preventing critical scenarios. They will also see a substantial added value to their IT services in terms of flexibility, productivity, costs and overall quality.

Though the use of the agent technology is essential to achieve optimum plant performance, combining this service with the professional support offered by the Technical Support Service (TSS), including hotline support, technical web support and remote support will allow manufacturers to measure all typical benefits. These services are run by a dedicated team of specialized engineers, working in synergy with the Research and Development and Consultancy departments.

At Siemens, “we think customers”: the TSS not only manages the conventional product and project related consultation and “fix and repair” activities, but also 24/7 “real-time” technical support with a complete coverage of maintenance: from the typical predictive actions with the agent technology, to the reactive offering with its highly effective and reliable escalation process for fast problem solving.

SIMATIC IT

Answers for industry.

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A Real Application of the Agent: memory leak

The SIMATIC IT application, through a set of rules, makes a series of recurring queries to an external application developed for the customer by a partner, causing a memory leak in the component itself. The leak is only in a warning stage, not detected during development and commissioning, and begins to have consequences after some weeks of regular operation.

Scenario WITHOUT agents:

• Tuesday:
During the day, no problem is detected. At night some queries on the SIMATIC IT database fail because there is not enough memory to process them. Some data are not visualized, but the night shift operators don't consider it as a potential problem but only as a strange behavior in the visualization on the interface Client Application Builder (CAB Clients). On the server, the „Low virtual memory" operating system message appears, but nobody will notice it, unless they are working on that server.

• Wednesday:

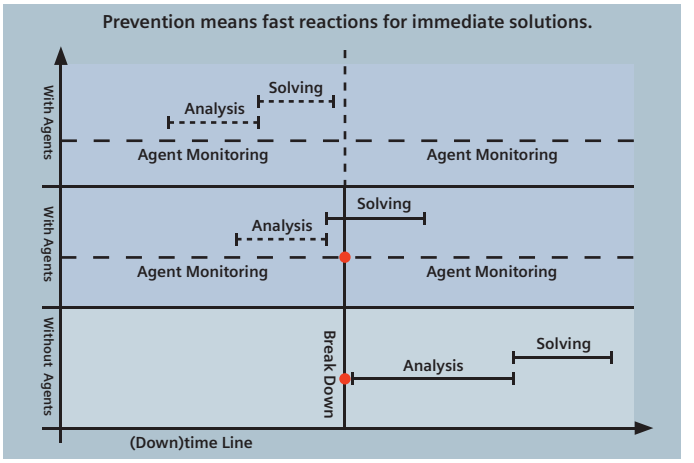
- **10:00 AM**: the missing data on the CAB client has now become a problem. Some restarts of the client machines are done, without effect, and some clients don't connect at all. All the applications start reacting very slowly.
- **10:30 AM**: some quality tests fail. The operators call the Production Manager.
- **10:45 AM**: the Production Manager discovers that some quality tests were aborted and it is not possible to execute any new ones.
- **11:00 AM**: the software component Production Order Manager crashes because there is no memory left in the system for any internal operation.
- **11:10 AM**: the customer's IT responsible, examining the server, finds out that the server is out of memory because all the available server memory is completely allocated. They reboot the system and shortly after that the production can restart: some manual operations are required, many data are lost as well as 3 hours of quality tests.
- **11:45 AM**: the TSS receives the call from the customer. Nobody knows exactly what happened. The configuration of a Performance Monitor is suggested, to try to analyze the situation.

• **Friday**:
The TSS informs the Customer that the detected memory leak was due to unstable behavior of its customized application.

Scenario WITH Agents:

• Tuesday:

- **10:00 AM**: the Agent installed on the production server detects that a process reached the first pre-configured warning threshold of „High memory". An alarm is generated and sent to TSS. The system has no problem yet.
- **10:01 AM**: The TSS reads and analyzes the alarm. The unstable component is immediately identified.
- **10:02 AM**: The TSS operator calls the customer and the partner involved in the project: they identify a point of the production chain 15 minutes later when the problematic application is not active and schedule the corrective action to be executed at that moment. The production has no problem.
- **10:20 AM**: Via remote desktop connection, the same used by the agents, the TSS operator closes and then restarts the application that was consuming the memory. This problem will not recur in short and mid-term.
- **05:00 PM**: By analyzing the component rules, TSS is able to inform the partner about a missing method in the logic of the rule that would eliminate the memory leak.



The benefits of the Agent monitoring activity:

- Detection of potential critical conditions before they happen
- Complete and continuous monitoring of the MES plant system based on this state-of-the-art technology
- A real time support to solve issues that could occur in the MES environment
- Direct and meaningful delivery of ready-to-use solutions in the MES systems
- Significantly reduced customer involvement in troubleshooting issues

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