SCALAGENT
Distributed Technologies

Remote Supervision of Power Supply Devices

This showcase illustrates describes the architecture of a remote supervision solution for power supply devices and introduces the use of a mediation infrastructure as the fundamental building block.

CUSTOMER BENEFITS

The supervision service is operated by either the device manufacturer or a service provider. Such an Internet-based supervision benefits to both the manufacturer and the customer using the devices:

◆ **The device manufacturer** has access to a global view of all installed devices indicators and can keep track of maintenance and support operations. This knowledge base, shared by every on-site technician, leads to faster reaction time for troubleshooting resolution. Moreover, it allows predictive and anticipated maintenance around the world, thus leading to reduced operating costs as on-site maintenance can be avoided in many cases by remote monitoring and control.

◆ **The customer** benefits also from a worldwide source of information. The information collected from the various customer sites might be correlated according to all conditions of use and is shared among customers. This leads to reduced support and maintenance costs, faster reaction time and increased quality of service.

This supervision service showcase relies on mediation infrastructure which aims at collecting usage data and events from the devices in order to process them into indicators and alarms through filtering, aggregation,

fusion and correlation from multiple sources. The mediation infrastructure aims also at delivering those pertinent information to a supervision server in charge of storing, archiving and reporting global indicators and critical events. The mediation infrastructure is adaptable in order to cope with evolving runtime conditions, such as need for new indicators computation, new customer sites, evolving devices and networks, …. In order to allow such a flexibility level, the mediation infrastructure supports a remote, safe and dynamic reconfiguration process without interruption of service and with no further development at the server or device side.

ARCHITECTURE DETAILS

◆ **Collection logic** in charge of collecting usage data from the devices. This logic is embedded on the device or operated very close to the device in order to decrease network traffic.

◆ **Mediation Logic** in charge of processing indicators, creating alarms, aggregating events, ... This logic is distributed all over the networked infrastructure, according to the service provider criteria : response time, network traffic, processing unit capabilities. The more processing can be performed close to the source, the more scalable is the solution.
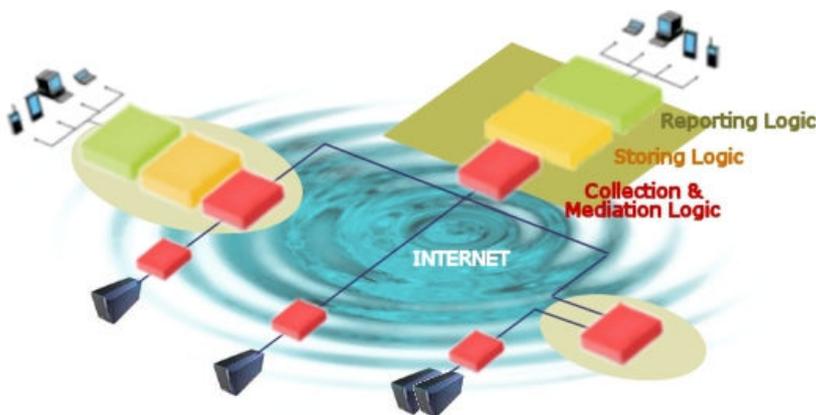
- **Storing logic** in charge of storing, archiving, compressing but also accessing all information that needs to be kept in databases. This logic is usually performed at the server level but it can be partially decentralized into a device level storing logic and a mid-server level logic.

- **Reporting Logic** in charge of presenting supervision information and reporting important events through various means : web based presentation, dedicated PDA based HMI, SMS, email, phone calls, ...

TECHNICAL INTEGRATION

This showcase uses the technical components integrating ScalAgent Mediation Suite and J2EE™ technical components. The realised demonstrator mainly benefits from open-source J2EE™ components provided by Apache and OW2 consortiums. The following components have been used:

- **ScalAgent Mediation Suite** : the Mediation Agents are in charge of the collection and mediation logic. Those processing units are dispatched at the device side - within a Mediation eServer - and the server side - within a Mediation Server.

- **A J2EE™ application server**, composed of Jonas - the EJB application server from OW2 - and Tomcat - the servlet server from Apache. They are in charge of the storing and reporting logic, where the EJB server implements this logic and the Tomcat server enables the Web-based active reporting of alarms and events.

- **Joram JMS™ middleware** used as the "standard" connector between Mediation Suite and the Application Server.

- **kJoram embedded JMS™ middleware** enabling the reporting logic to be displayed on a J2ME™ - Java 2 Micro Edition - communicating device.

CONTEXT

This showcase derives from a joint project with the following companies:

- **M G E** UPS SYSTEMS MGE-UPS System, the worldwide leading UPS system manufacturer,

- **SILICOMP** Groupe Silicomp, system integrator specialized in embedded software development,

- **INRIA RHÔNE-ALPES** INRIA Rhône-Alpes, Institut National de Recherche en Informatique et Automatique,

- **ScalAgent** ScalAgent Distributed Technologies SA.

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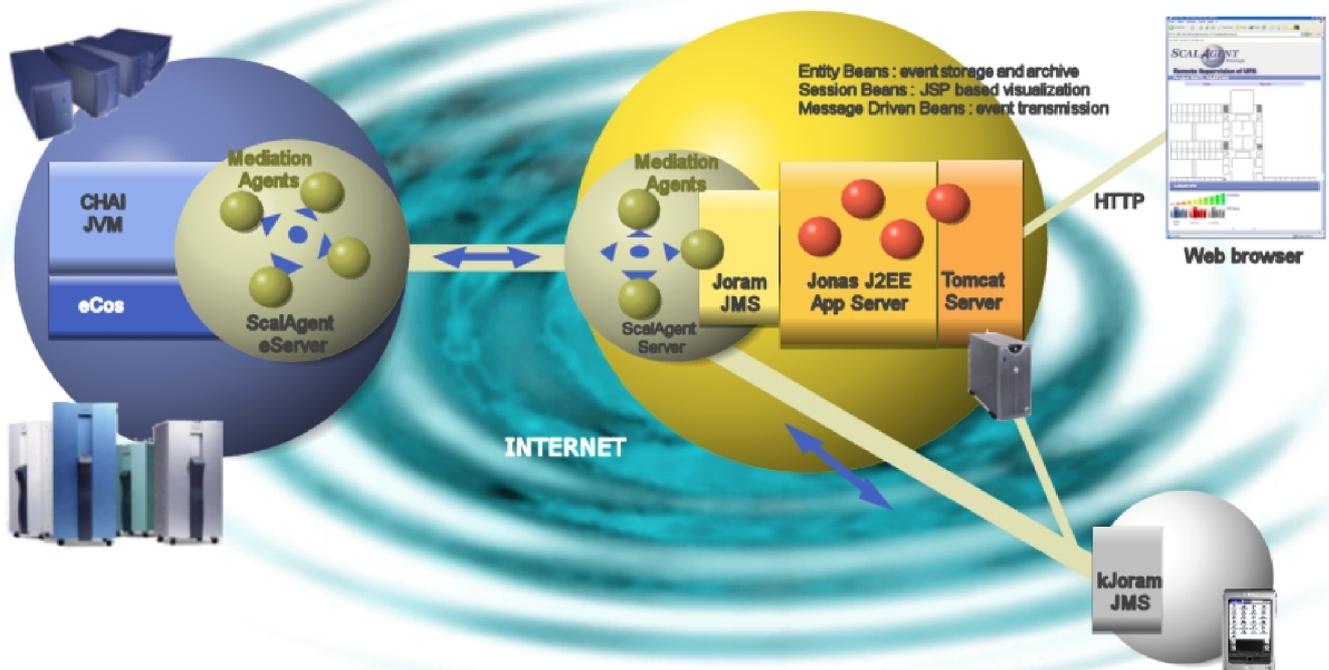
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