

OSGi Alliance Community Event

Using OSGi Technology for Retail Stores

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Objective

- This presentation focuses on an OSGi-technology-based lightweight integration solution that was developed for a European retail company which uses messaging-based application integration for business processes at the head office (back-end).
- The presentation will explain the customer's requirements and the chosen re-usable solution that is currently running in pre-production environments.

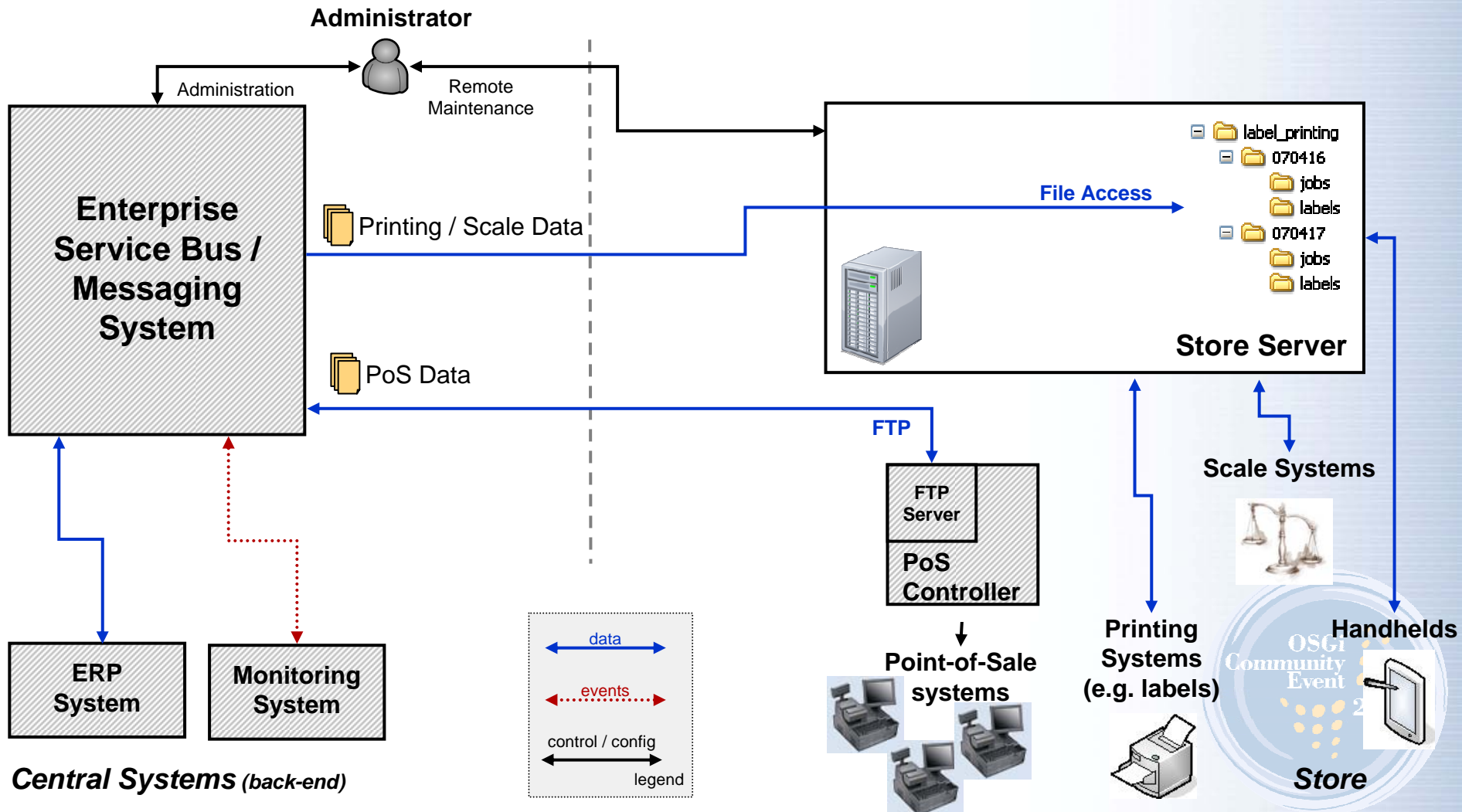


Agenda

- Typical retail situation today
- Customer requirements
- Solution scenario
- Why OSGi as Integration Platform?
- Summary

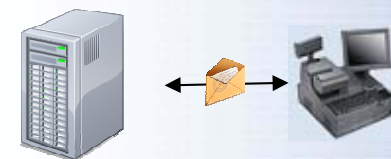


Typical Retail Store Integration Today

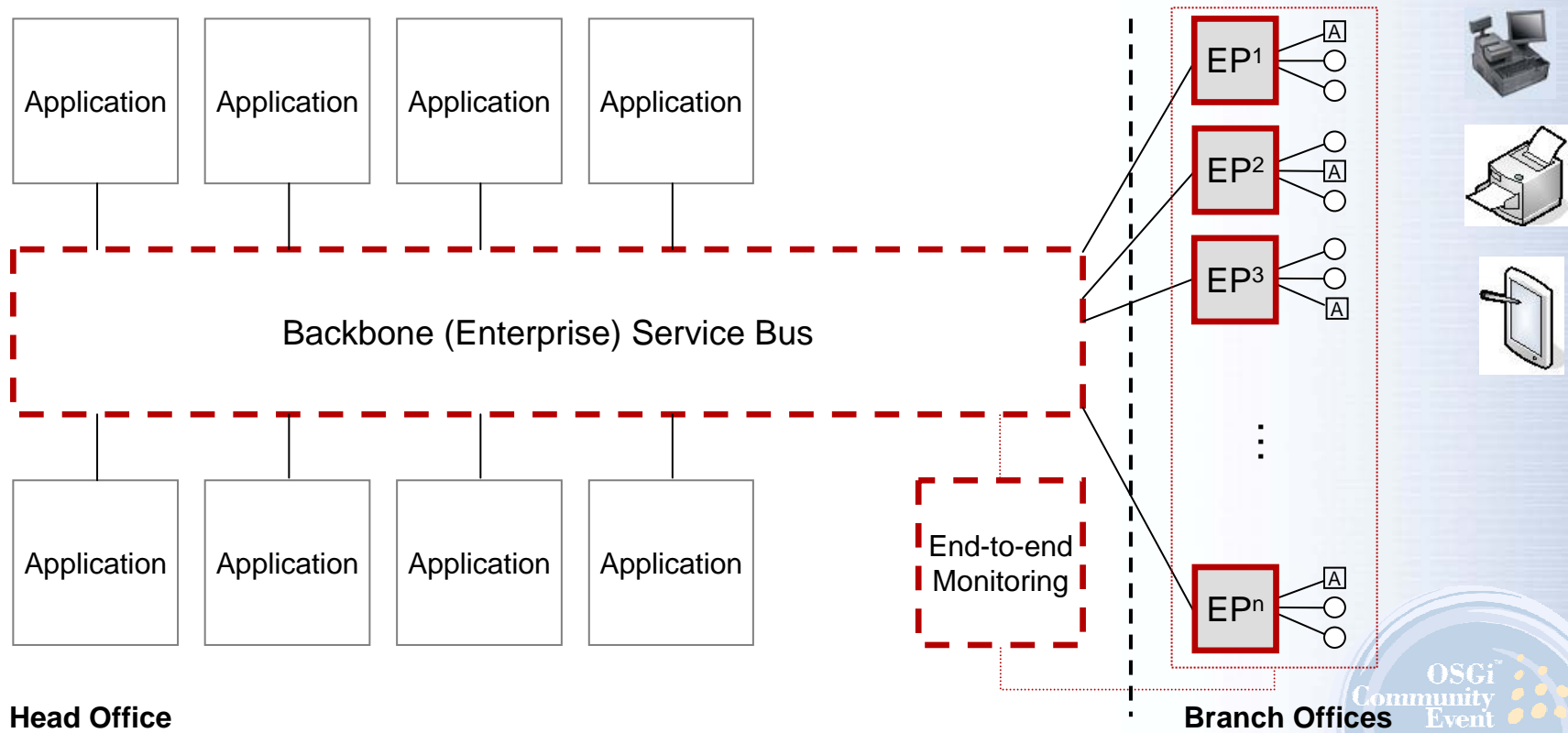


The customer expected seamless integration of the stores into the existing back-end infrastructure.

- Reliable message-based data transfer between stores and head/central office (back-end) to
 - transport data to the store
 - retrieve data from the store
 - retrieve information about store resources
 - to control the remote running applications
- Access to different resources at branch offices and stores (file systems, devices, databases, ...)
- Minimal operational effort
- Centralized business and technical monitoring
- Fine grain software (component) distribution and dynamic configuration management
- Remote maintenance and control
- ***Operation on servers with limited hardware and software resources***



The suggested solution is based on the Federated ESB Pattern for integration of endpoints.



Integration end points of an Enterprise Service Bus (ESB) that provides reliable and managed data exchange as well as remote device control



The customer requirements led to a lightweight integration facility.



The stated requirements were met by choosing an OSGi® -based application and runtime platform, because it offers:

- Standardized Java® application runtime environment for **operation on servers with limited hardware and software resources**
- Development of service-based components that communicate through OSGi Event Admin service and allow for easy extensibility after deployment
- State-of-the-art event-driven application environment (based on Event Admin Svc)
- Minimal operational effort due to stable industry-proven technology (platform stability for remote, headless applications)



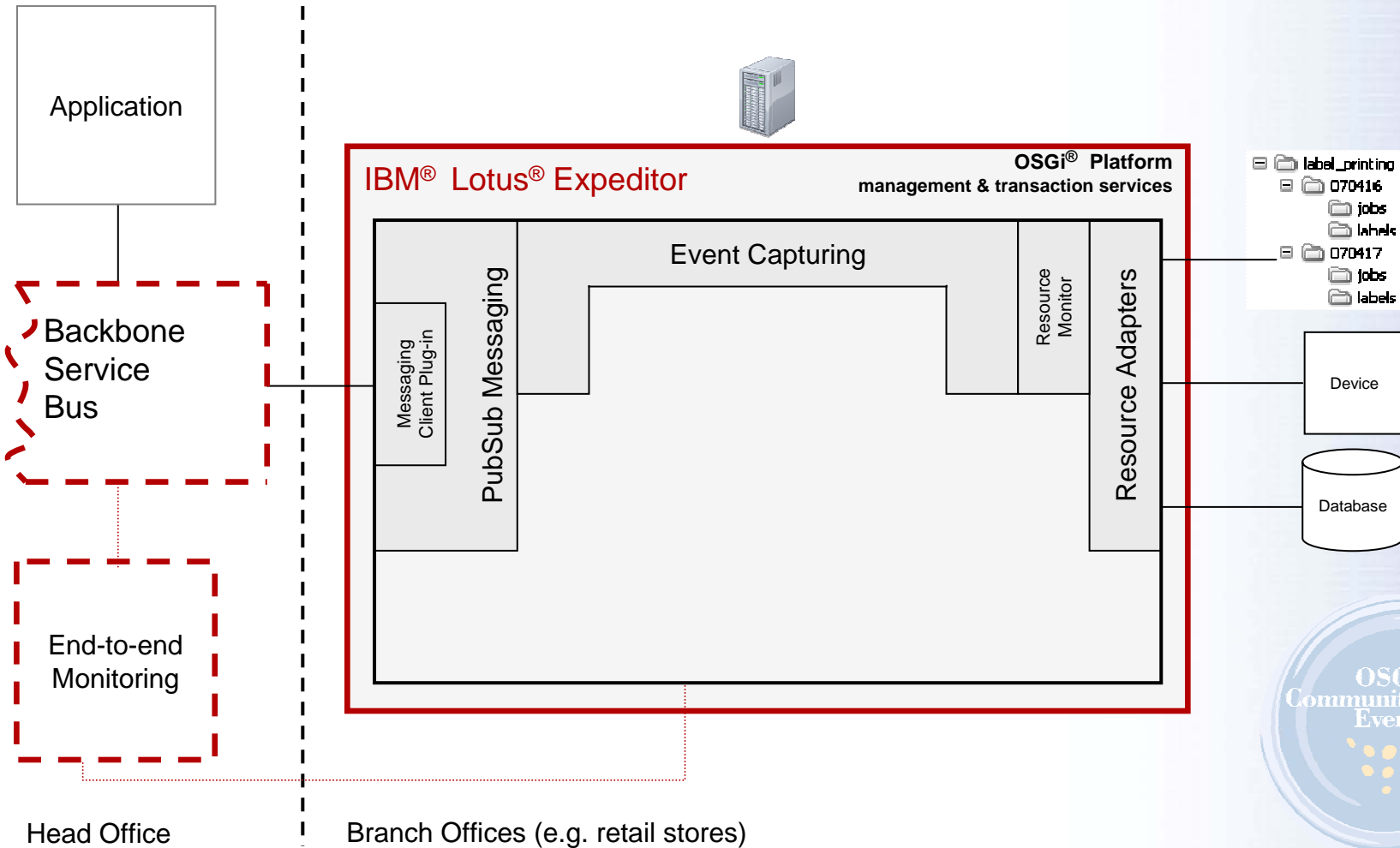
The customer requirements led to a light-weight integration facility, continued.



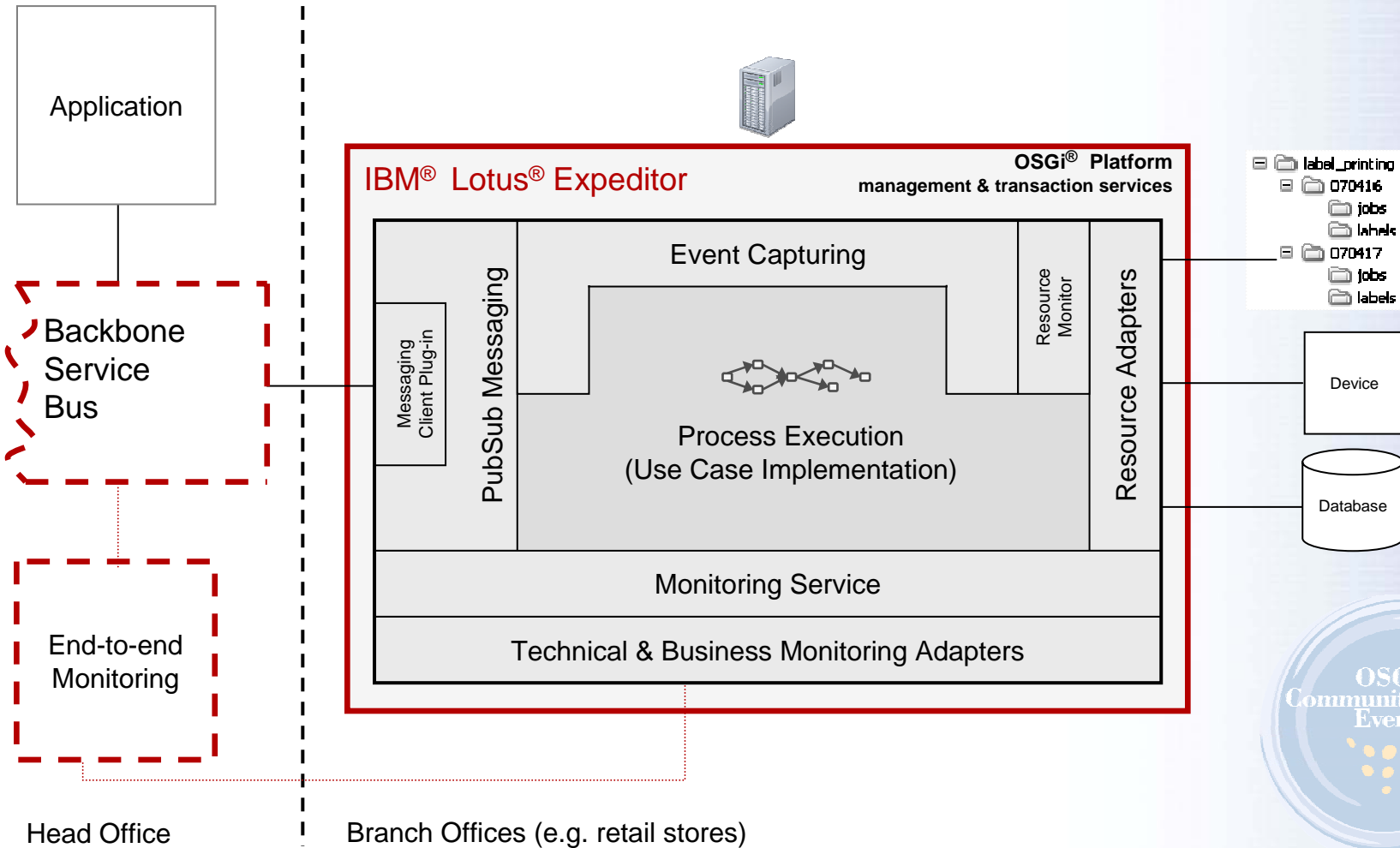
- Remote control and maintenance with fine grain software component distribution through standardized OSGi bundle control and life cycle management
- Dynamic configuration management (based on Configuration Admin Svc)
- Monitoring support by standard logging and event handling (OSGi Log and Event Admin Svc)
- Integration options for accessing different resource types (FTP, file access, database access etc.)



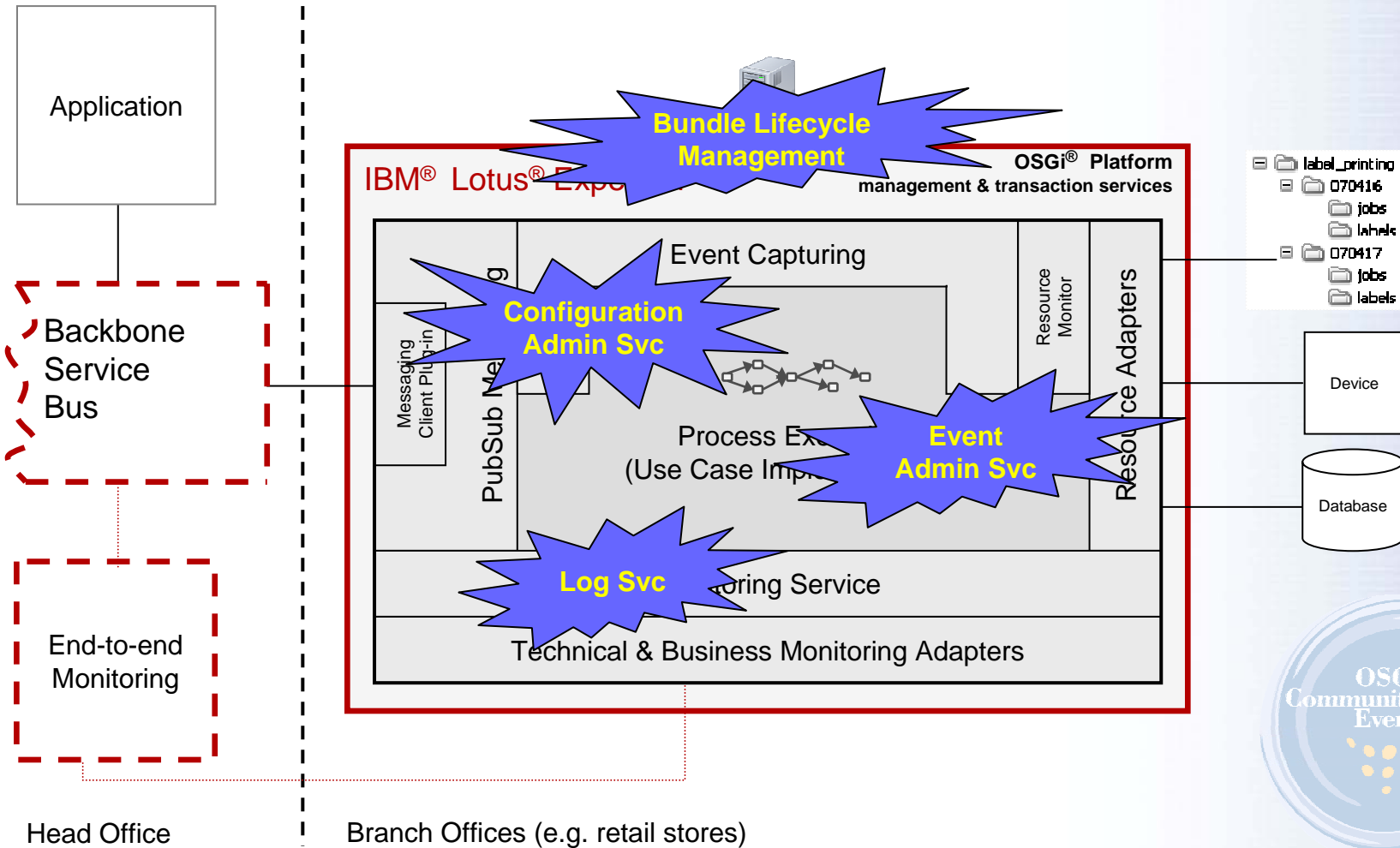
Standard OSGi® Platform was extended with capabilities for ESB endpoint integration.



Standard OSGi® Platform was extended with capabilities for ESB endpoint integration.



The Retail Store solution is based on standard OSGi Services.



Standard OSGi Platform was extended with capabilities for...



IBM Lotus Expeditor

- Secure, reliable messaging with assured delivery including file system persistence (IBM WebSphere® MicroBroker/-bridge)
- Centralized business and technical monitoring (using OSGi **Event Admin** Service and OSGi **Log Service**)
- Central configuration management (using OSGi **Configuration Admin** Service)
- Remote maintenance and control (using OSGi **bundle control and life cycle management** options)
- Transactional processing
- Configurable execution of custom use cases (“mini Flow Engine” using event-driven approach based on **Event Admin** Service)



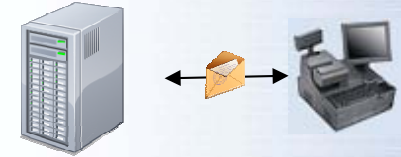
The selected approach is also suitable for other industries with similar integration requirements for remote locations.

Other industries with remote locations where local integration requires pre-processing of data can also benefit from this approach:

- Automotive industry
 - Integration of floor equipment with existing back-end processes (e.g. testing equipment).
- Utilities
 - Automated meter management
- Energy industry
 - Pipeline management
- etc.



Summary



OSGi Service Platform provides a standardized runtime environment not only for retail environments, e.g. due to:

- Minimal hard- and software requirements on target system
- Prerequisites for integration of (remotely located and running) processes, data and devices into existing back-end infrastructures
- Java application environment with standardized
 - (remote) lifecycle and (fine grain) configuration management capabilities
 - event service for event-driven applications
 - logging capabilities (for monitoring)



Further Information

- OSGi Alliance, on-line information, <http://www.osgi.org> , 19.02.2008
- OSGi Alliance Community Event 2008, on-line information, <http://www.osgi.org/CommunityEvent/HomePage>, 28.05.2008
- IBM Lotus Expeditor, IBM on-line information, <http://www-306.ibm.com/software/lotus/products/expeditor/> , 19.02.2008
- IBM Lotus Expeditor, IBM on-line support, <http://www-306.ibm.com/software/lotus/expeditor/support/> , 19.02.2008
- IBM Lotus Expeditor, IBM on-line Info Center, <http://publib.boulder.ibm.com/infocenter/ledoc/v6r1/index.jsp> , 19.02.2008



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Backup Slides



The selected approach for low hard- and software resources also has restrictions.

- Remember: This solution is an extension of existing (messaging-based) back-ends with ESB functionality to the edge of the enterprise (stores).
- High availability must be addressed separately (might not be required due to existing services).
- Local persistence of messages requires additional tools and effort (file system persistence might not survive hard disk crashes).
- Messaging functionality is limited (not a full messaging server).
- Flow configuration and flexibility is limited (e.g. no branching in flows).
- Integration of additional resources through Resource Adapters requires customization (e.g. for additional in-store devices).

