Repetition Questions (dt. Wiederholungsfragen) Lesson 10

Topics and Concepts (Link to Lecture, via Fact Sheets)

The lesson of the lecture today covered the following concepts:

1. Enterprise Integration Patterns (EIP): Category Overview
2. Enterprise Service Bus (ESB): Capabilities and Technologies
3. PostFinanz Case Study: ESB Usage, Distributed Logging

In the corresponding exercise[1], we designed and evaulated ESB features in a simplified scenario and also looked at integration styles and their impact on coupling.

Questions

Topic/Concept: Integration Styles and EIP

1. List the six Enterprise Integration Patterns (EIP) categories.
2. What is the difference between a Recipient List and a Content-Based Router (CBR)?
3. Which five integration styles exist and which two ones come out best in the coupling dimension analysis in the exercise?

Topic/Concept: ESB

1. What are the three core responsibilities of an ESB?
2. What else can ESBs do/support/implement according to the lecture and the case study presented in it?
3. Discuss how an ESB can help achieve NFRs/QAs and other ASRs in enterprise application integration settings (hint: think "ilities"). Two answers will suffice.
4. Which adapter technologies (e.g., APIs, protocols or formats) should an ESB support according to the lecture?

Topic/Concept: Distributed Logging

1. What makes distributed logging important? List two stakeholders and one concern for each of them.
2. What makes distributed logging difficult in practice (for instance, in the case study)?
3. How can distributed logging be implemented (according to the lecture)? Name a pattern and a technology.

Answers

Topic/Concept: Integration Styles and EIP

1. *From http://www.enterpriseintegrationpatterns.com/patterns/messaging/: Messaging Channels, Message Construction, Message Routing, Message Transformation, Messaging Endpoints, Systems Management*

[1] ../3-exercises-solutions/ZIO-AppArch-ExerciseWeek10.pdf

2. *Recipient List[2]: Defines a fixed list of recipients who all receive (a copy of) an incoming message; CBR[3]: one recipient is dynamically chosen based on the message payload.*
3. *File Transfer, Shared Database, Remote Method Invocation/Call, Messaging, Web/REST. The latter two do best in the coupling dimension scoring (exercise step 1).*

Topic/Concept: ESB

1. *Adaptation, routing, transformation (of message content)*
2. *Security checks, logging/monitoring (used for billing), support versioning by routing requests from certain clients to to old provider version or by transforming messages (see lecture slide 17)*
3. *Interoperability is promoted by adapting proprietary protocols to standard ones. Reliability is promoted if the ESB is message queue-based. Changeability is promoted if ESB supports versioning and compatibility modes (see answer to question 2).*
4. *JMS (plus underlying messaging system such as ActiveMQ), SOAP/HTTP, RESTful HTTP, file transfer (FTP, SFTP), SMTP, database protocols; many ESBs also support RPCs and certain proprietary protocols, for instance to connect to SAP systems or to send and receive EDI(FACT) messages.*

Topic/Concept: Distributed Logging

1. *System administrators and support staff: logging needed for toubleshooting, performance measurement and improvement. It is also essential for/in certain agile practices and pproaches such as DevOps and microservices.*
2. *Message identifiers need to be consistent and transported so that correlation is posible and the "big picture" can be seen.*
3. *Correlation Identifier and all EIPs in systems management category; Splunk or combination of Elasticsearch, Logstash, and Kibana (formeerly known as ELK Stack, now called the Elastic Stack).*

[2] http://www.enterpriseintegrationpatterns.com/patterns/messaging/RecipientList.html
[3] http://www.enterpriseintegrationpatterns.com/patterns/messaging/ContentBasedRouter.html