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Introduction to Enterprise Bus (EB)

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In this segment

Introduction to ESB

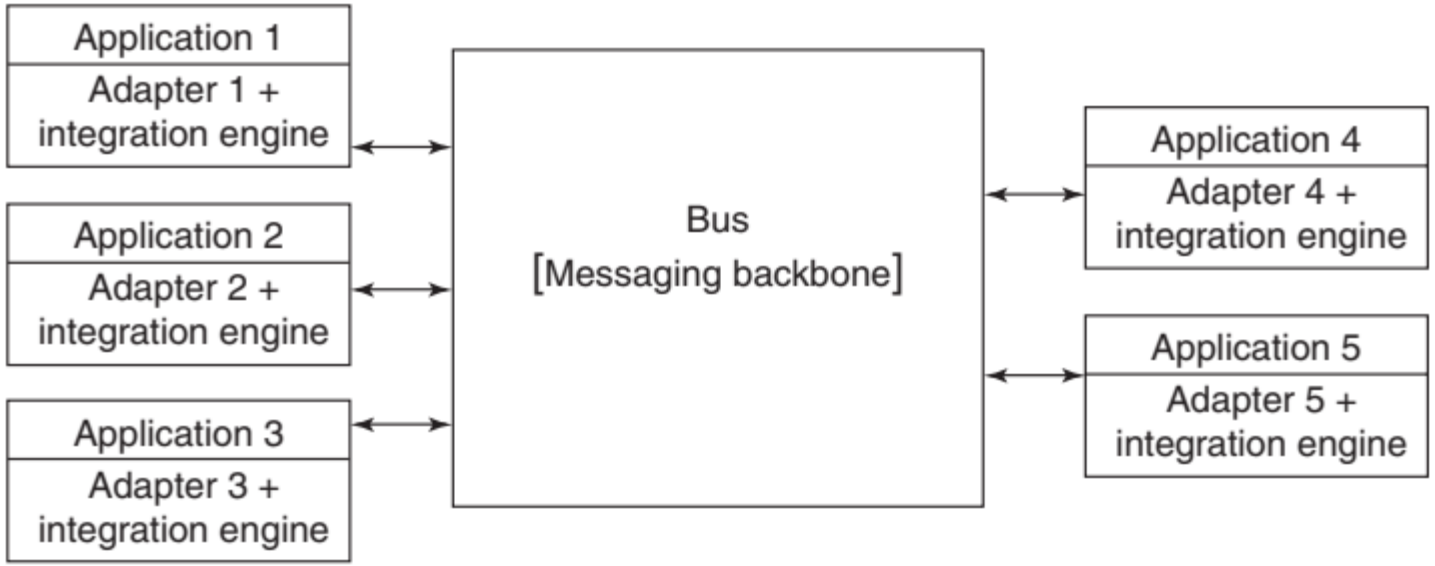
- ESB – Overview
- Capabilities of an ESB
- Why ESB is important?
- ESB challenges

Defining the ESB

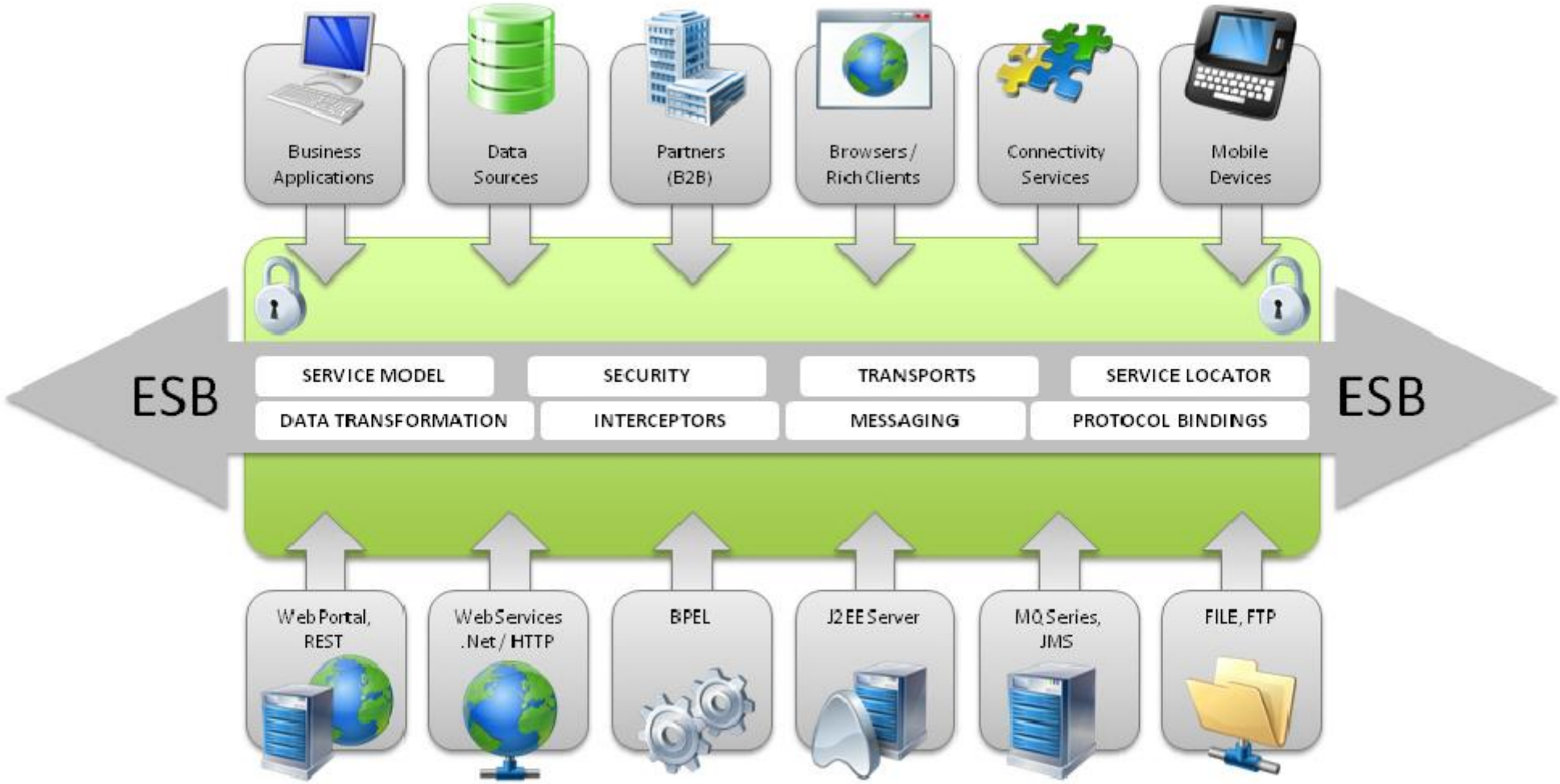
- "A style of integration architecture that allows communication via a common communication bus that consists of a variety of point-to-point connections between providers and users of services."
- "An infrastructure that a company uses for integrating services in the application landscape."

What is an ESB?

- A bus based architecture to enable integration of multiple heterogenous systems in an efficient manner.
- A sophistication over traditional P2P integrations
- ESB acts as an intelligent middleware to enable communication among different systems/application.



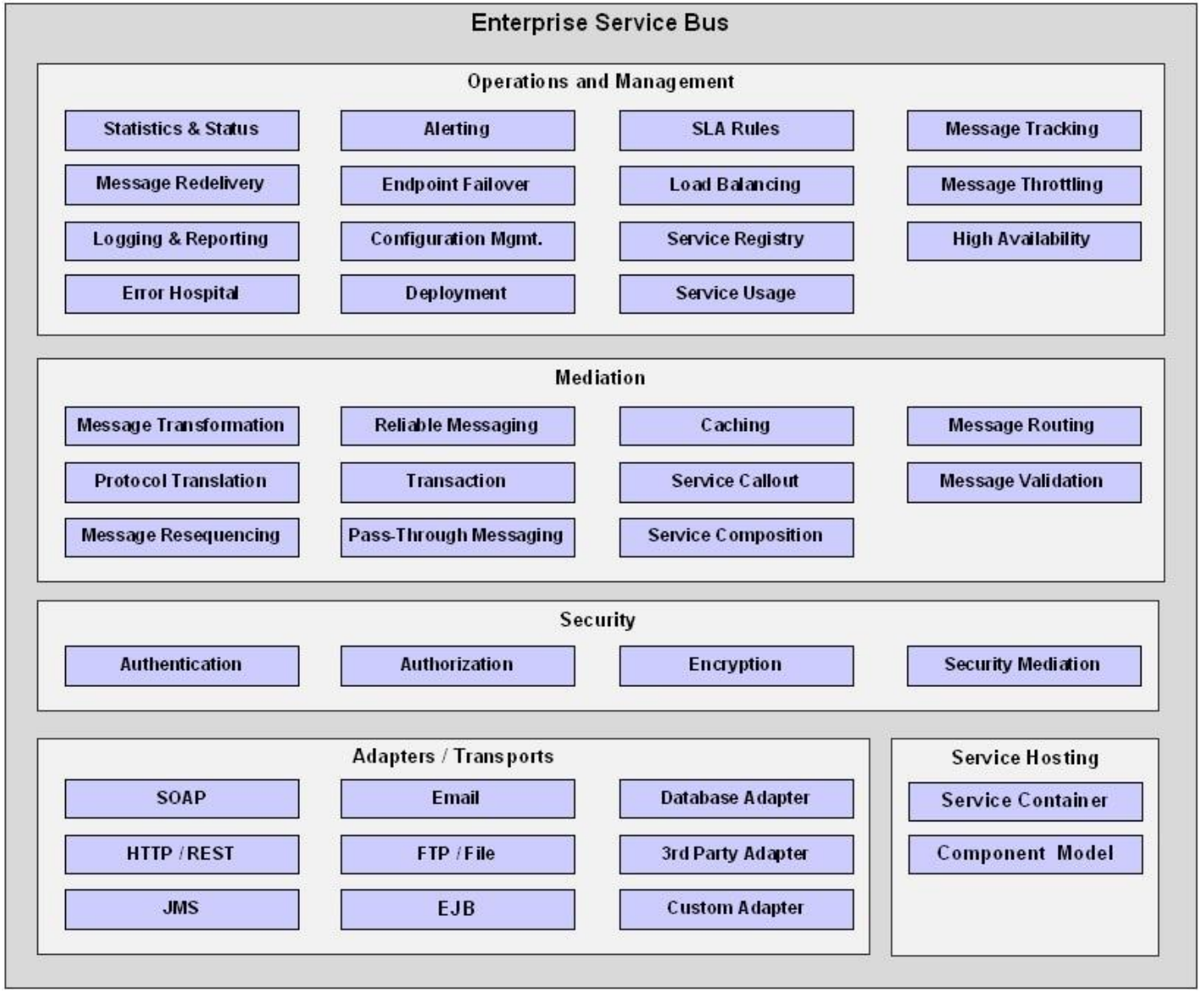
ESB Architecture



Capabilities of ESB

- **Routing** – Logically route data to different integrated servers/applications.
- **Orchestration** – Combining functionalities of discrete services to provide aggregated services.
- **Transformation/Translation** – Data formats transformations and translations as per connected application needs. Example (SOAP to Rest , JSON to XML conversions)
- **Mediation/Message Enrichment** – Customize, enrich, re-format messages as a middleware/mediator.
- **Transportation/Protocol conversions** – Transportation of data between connected systems as per supported transport protocols.
- **Non-Functional Consistency** – Enforcement of security policies, monitoring, management , HA/FT

ESB Blueprint



When Should an ESB be used?

- The use of an ESB is worth considering when three or more applications or services need to be integrated.
- A simple point-to-point integration is significantly easier and much more cost-effective when connecting two applications.
- An ESB can also be worthwhile if services are going to be incorporated from external service providers over which the company has no control.
- The ESB can then be used to monitor the service level agreements that the external provider guarantees.
- If many different protocols, such as HTTP, SOAP, and FTP, are to be used and standardized to one protocol like SOAP, the ESB can perform the necessary protocol transformation.
- If services are to be consistently incorporated into an architecture to be able to receive, process, and produce messages, then the use of ESB is also suitable.

Why ESB is important?

- Efficient decoupling of multiple systems/applications.
- Better use of integration capabilities.
- Improved time to market and conditions.
- Better synchronization for upgrades, monitoring and management of integration layer

Challenges with ESB

- ESB itself can become a bottleneck and a single point of failure.
- ESBs have associated regression of risks with dozens of heterogenous systems/applications connected.
  - Changes/upgrades to a single fat middleware may have ripple effect on many functionalities.
- ESB products have a learning curve involved and lack of professionals in the market.

ESB tools

- IBM Websphere
- Microsoft BiZtalk
- Oracle ESB
- Mule ESB
- RedHat JBOSS Fuse