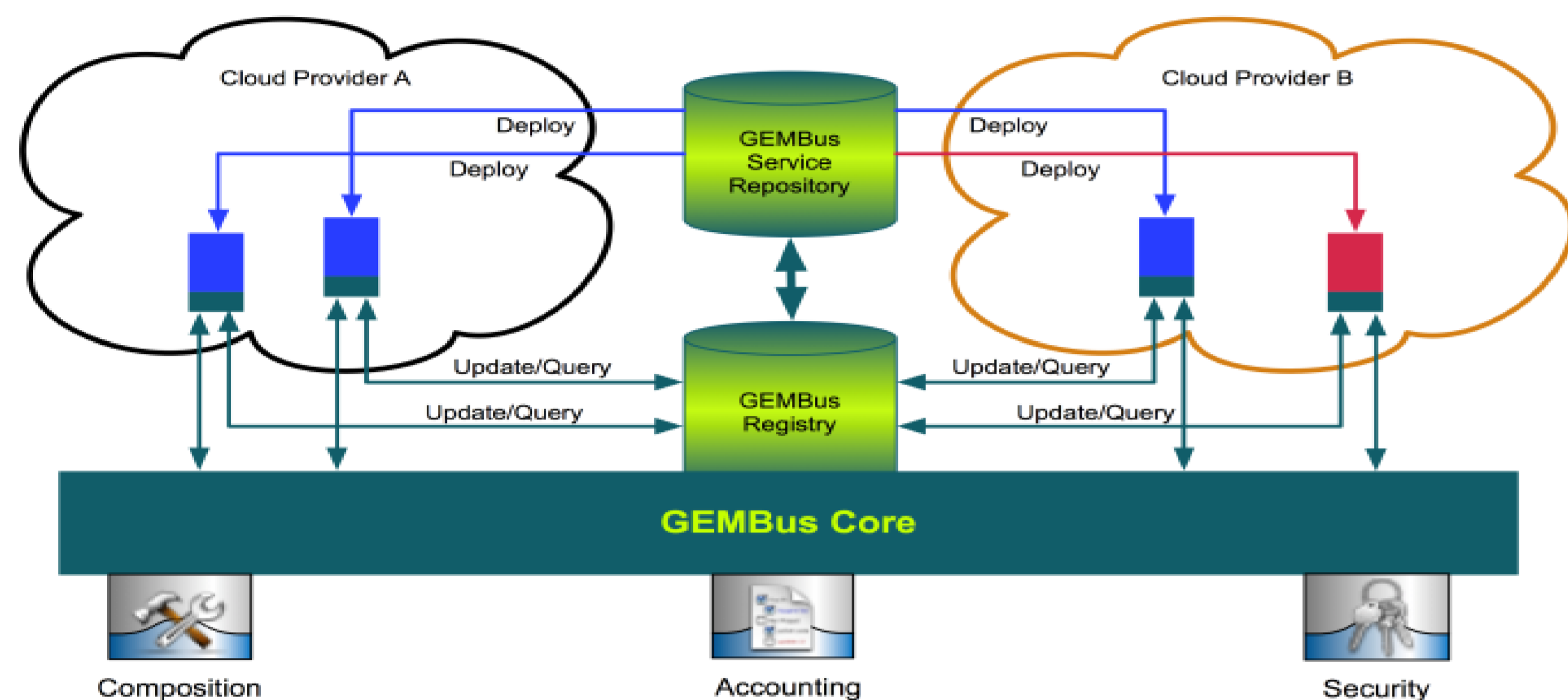
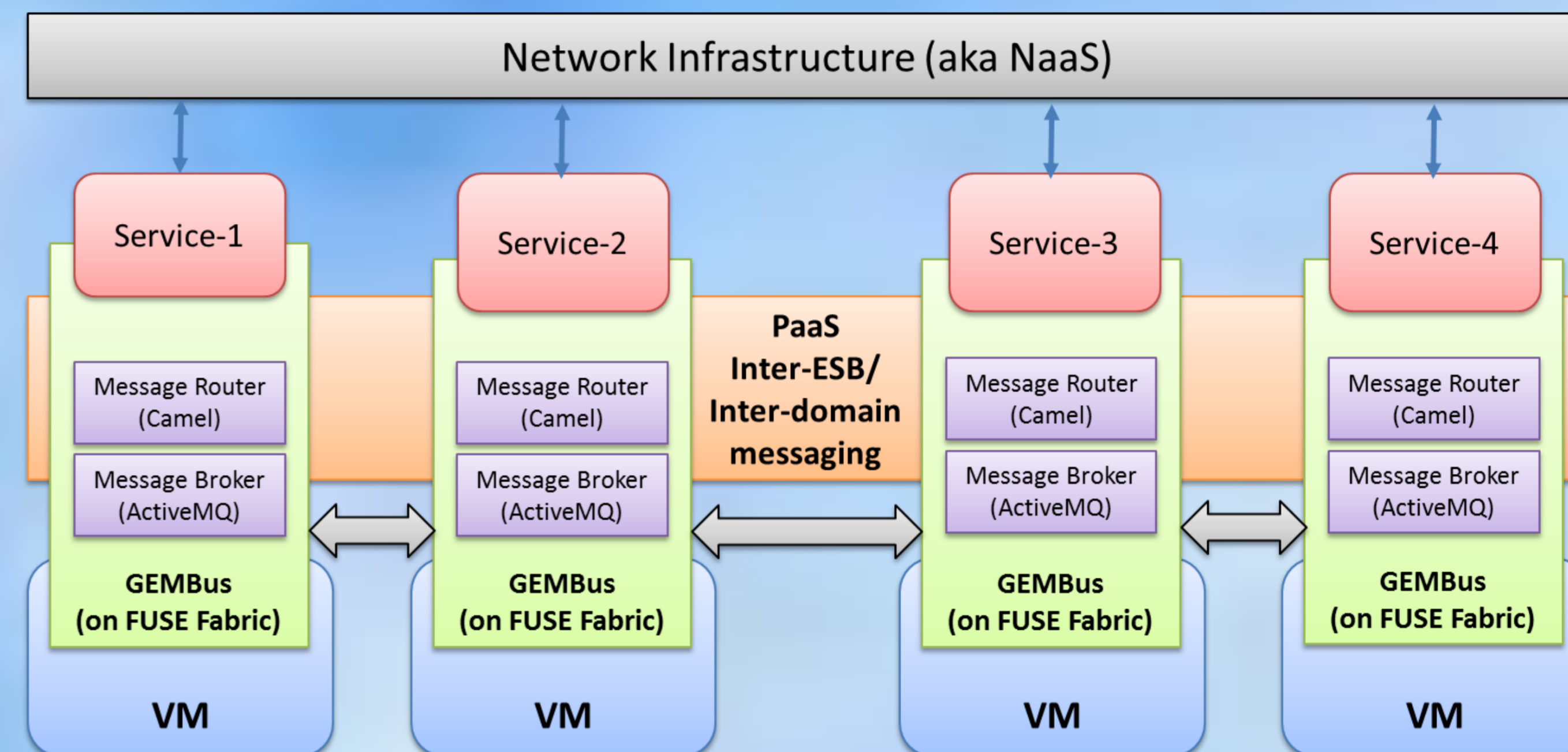


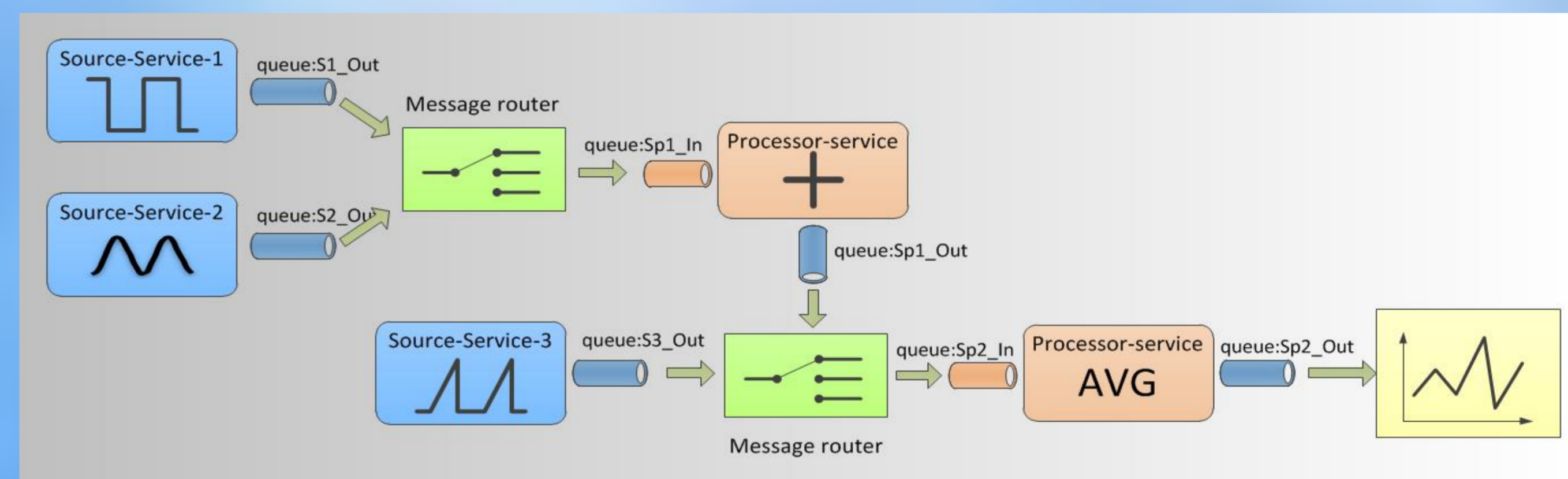
**GEMBus (GEANT Multi-domain Bus)** is a service-oriented middleware platform that allows flexible services composition and their on-demand provisioning and deployment to create new specialized task-oriented services and applications. GEMBus is built upon state-of-the-art Enterprise Service Bus (ESB) technology and extends it with new functionalities that allow dynamic component services composition, deployment, and management.



## Testbed architecture and Usage scenario



## Example Services Composition Workflow



## GEMBus Platform component services

### Composition service

The GEMBus Composition service allows composition of component services into new services, incorporating the Business Process Execution Language (BPEL), Business Process Modeling Notation (BPMN). The Taverna workflow management system allows integrating different technologies: Web services, local Java services (Beanshell scripts), local Java APIs, R scripts.

### Accounting Service

The GEMBus Accounting service consists of a Common Accounting Repository and an Accounting Module (AM) deployed at every GEMBus/ESB instance.

### Security Token Service

The GEMBus Security Token Services (STS) implements WS-Security and WS-Trust security protocols and mechanisms to convey security information between services

- \* STS handles security tokens based on SAML, JWT and X.509 certificates
- \* STS support services (identity) federation and federated identity delegation.

## Composable Service Architecture (CSA)

- GEMBus is a middleware platform for Composable Services Architecture
- CSA provides a framework for the design and operation of distributed composite services
- CSA infrastructure provides functionalities related to Control and Management planes, allowing the integration of existing distributed applications and provisioning systems

## Implementation details (Service-1 - Service-4 are GEMBus services)

- Fuse ESB (ServiceMix and Fuse Fabric): service deployment environment
- Fuse Message Broker: connect message brokers in intra-domains and inter-domains
- Fuse Mediation Router: configurable message routes in composable services
- Java OSGi bundles for services deployment
- OpenNebula and VirtualBox: VM management platforms

GEANT3 JRA3 Task 3 – Composable services (GEMBus) - <http://www.geant.net/>  
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