



What are Design Patterns?

Enterprise-level capability guidance documents that identify best practice approaches to solving reoccurring technical problems in VA. They enable the reuse of enterprise capabilities in standard ways.

How do Design Patterns relate to the Enterprise?

Design Patterns translate OI&T's strategic goals, as documented in the Enterprise Technology Strategic Plan (ETSP), into "real world" direction to guide system design.

How can I learn more?

To learn more about this design pattern, contact Joe Brooks.

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To read the full document:
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To ask questions about Design Patterns in general, reach out to AskTS@va.gov

Enterprise Design Patterns: Enterprise Messaging Capabilities and Message Exchange Patterns (MEPS)

- **Design Pattern Scope:** Provides a vendor-agnostic framework of functionality in terms of documented Message Exchange Patterns (MEP) that address the messaging needs of the Department of Veterans Affairs (VA), and refers to pertinent design and implementation guidelines.
- **Current State:** VA provides enterprise messaging capabilities to connect disparate applications that support both internal and external users, although stove-piped development of messaging projects has resulted in redundancies, creating unnecessary costs.
- **Design Pattern Solution:** By mapping a high-level process for choosing the most effective MEPs, and referencing implementation guidance documents, this design pattern helps relevant projects maintain cohesion with the greater VA enterprise messaging architecture.



This design pattern provides a high-level overview of VA's enterprise messaging capabilities and attributes, identifying best practices for further development of VA's messaging environment.

The document describes the standard set of MEPs that facilitate message transport, as well as guidance for ensuring enterprise messaging persistence and using Enterprise Services Buses (ESBs) for enterprise messaging. Furthermore, the design pattern lays out a high-level process to help stakeholders determine which MEP is appropriate to apply for their particular project. MEPs discussed in the document include:

- **One Way Delivery:** A one-way message sent from a service consumer to a service provider.
- **Request / Reply:** A pair of one-way messages (i.e. service consumer sends a message to a service provider and waits for a reply), normally associated with synchronous messaging.
- **Event-Driven Messaging:** Implemented with broadcast publish-subscribe channels and allows multiple receivers to register to receive notification of an event or to receive updates through a message persistence capability.

VA has faced problems with the consistency and cohesion of its enterprise messaging architecture.

Projects within VA historically developed or acquired applications in a stove-piped fashion, resulting in a proliferation of duplicative functionality, such as messaging, throughout the enterprise. These wasteful redundancies through different types of middleware systems created unnecessary maintenance costs, system management burden, and a lack of interoperability tied to the deployment of products utilizing proprietary components and closed standards.

The "to-be" vision for VA's enterprise messaging is the ability to provide a reliable, efficient messaging experience across the Department's LOBs for both internal and external users.

VA will use a nationally deployed ESB that provides logically centralized enterprise messaging capability, and allows the use of open standards (REST and SOAP services; XML/JSON messages) to enhance interoperable data sharing. The Enterprise Shared Services (ESS) Message Exchange Guide developed by ASD Product Engineering provides an authoritative reference on the common set of web service messaging standards and their usage depending on different messaging scenarios. VA will diligently follow the ESS Message Exchange Guide's for MEPs using enterprise messaging capabilities.