

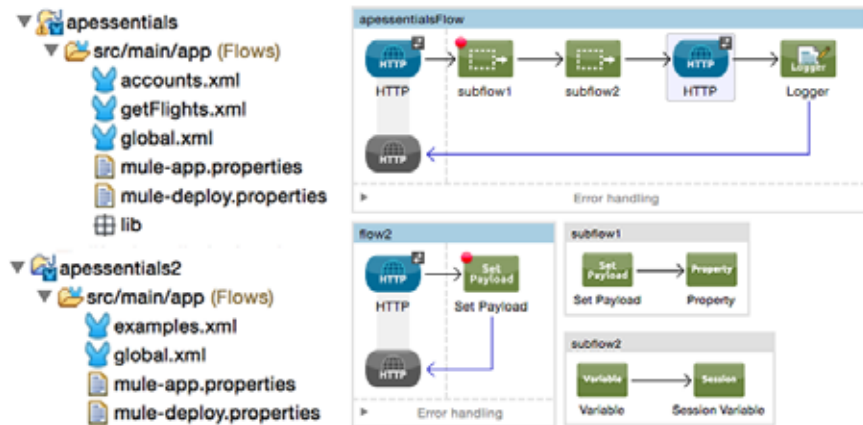


Module 6: Refactoring Mule Applications

Objectives

- In this module, you will learn:
 - To separate applications into multiple configuration files
 - To encapsulate global elements in a separate config file
 - To create and run multiple applications
 - To create and reference flows and subflows
 - About variable persistence through subflows and flows and across transport barriers

Goal



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Organizing projects and applications

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Separating applications into multiple configuration files

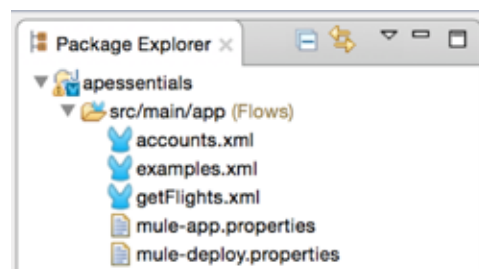
- Monolithic files are difficult to work with
- Separating an application into multiple configuration files makes code
 - Easier to read
 - Easier to work with
 - More maintainable

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Walkthrough 6-1: Separate applications into multiple configuration files

- In this walkthrough, you will:
 - Separate the account flows into accounts.xml
 - Move the rest of the example flows into examples.xml
 - Rename apessentials.xml to getFlights.xml



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Encapsulating global elements in a configuration file

- It can be confusing if you reference global elements in one file that are defined in various, unrelated files
- It also makes it hard to find them
- A good solution is to put most global elements in one configuration file
 - All the rest of the files reference them
 - If a global element is specific to and only used in one file, it makes sense to keep it in that file
 - DataMapper configurations

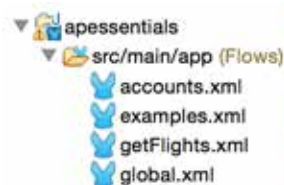
Type	Name
HTTP Listener Configuration	HTTP_Listener_Configuration
HTTP Request Configuration	United_REST_Request_Configuration
HTTP Request Configuration	Bank_REST_Request_Configuration
Web Service Consumer	Delta_Web_Service_Consumer
MySQL Configuration	Training_MySQL_Configuration
Active MQ	Active_MQ
Salesforce	Salesforce
JAXB Context	JAXB_Context
✓ DataMapper	List_Map_To_Pojo
✓ DataMapper	String_To_Xml_findFlight_

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Walkthrough 6-2: Encapsulate global elements in a separate configuration file

- In this walkthrough, you will:
 - Create a configuration file for just global elements
 - Move all the existing global elements to this file



Type	Name
HTTP Listener Configuration	HTTP_Listener_Configuration
HTTP Request Configuration	United_REST_Request_Configuration
HTTP Request Configuration	Bank_REST_Request_Configuration
Web Service Consumer	Delta_Web_Service_Consumer
MySQL Configuration	Training_MySQL_Configuration
Active MQ	Active_MQ
Salesforce	Salesforce
JAXB Context	JAXB_Context
✓ DataMapper	List_Map_To_Pojo
✓ DataMapper	String_To_Xml_findFlight_

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Creating multiple applications

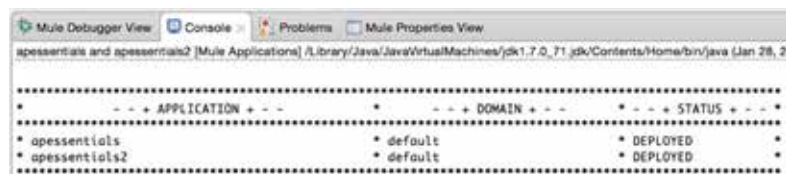
- Separate functionality into multiple applications to
 - Allow managing and monitoring of them as separate entities
 - Use different, incompatible JAR files
- Run more than one application at a time in Studio by creating a run configuration

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Walkthrough 6-3: Create and run multiple applications

- In this walkthrough, you will:
 - Create a new project and application called apessentials2
 - Move the examples config file into the apessentials2 application
 - Create new global connector configurations in the new project
 - Create a new run configuration to run multiple applications simultaneously



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Sharing resources between applications

- Use domains and shared resources
 - Create a Mule Domain Project and associate Mule applications with a domain
 - Define a set of resources (and the libraries required by those resources) for a domain to share between the applications that belong to the domain

Encapsulating processors into separate flows

Flows and subflows

- Flows can be broken into multiple flows and subflows
 - Makes the graphical view more intuitive and the XML code easier to read
 - Promotes code reuse
- All flows are identified by name and can be called via Flow Reference components in other flows
- Flow variables persist through all flows unless the message crosses a transport boundary

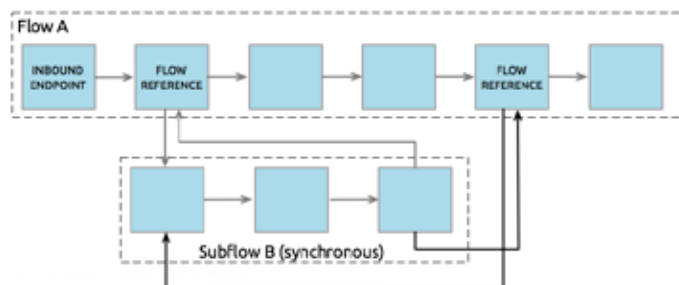


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Subflows

- Subflows are executed exactly as if the processors were still in the calling flow
 - Always run synchronously
 - Inherit the processing and exception strategies of the flow that triggered its execution



Flows

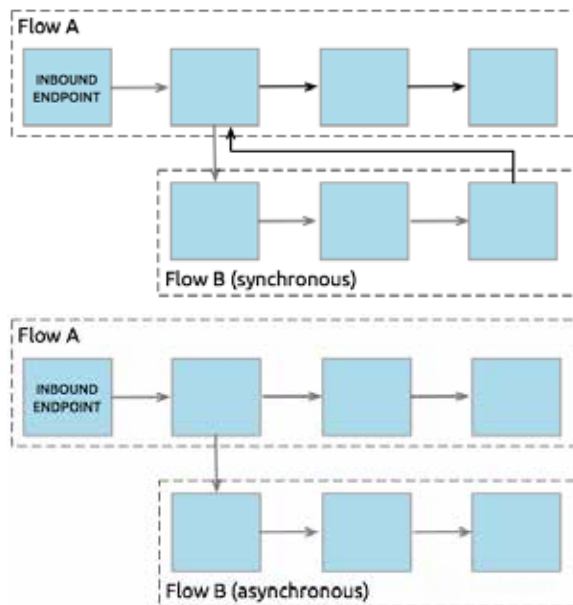
- Flows, on the other hand, have much more flexibility in how they are used
- Can have their own processing and exception strategies
- Can be synchronous or asynchronous
- Flows without message sources are sometimes called private flows

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Synchronous and asynchronous flows

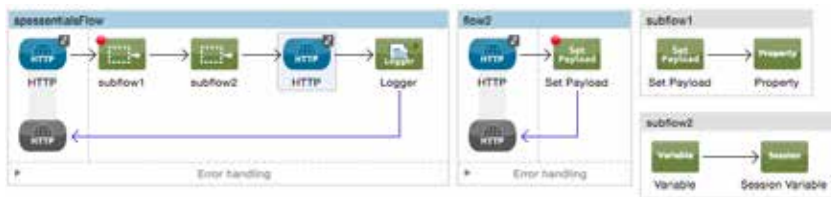
- Synchronous
 - Triggering flow pauses, then resumes only after the synchronous flow completes its processing and hands the message back to the triggering flow
- Asynchronous
 - A copy of the message is passed both to the asynchronous flow and simultaneously to the next message processor in its own flow
 - The two flows execute simultaneously and independently, each finishing on its own



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Walkthrough 6-4: Create and reference flows and subflows

- In this walkthrough, you will:
 - Extract processors into separate subflows and flows
 - Use the Flow Reference component to reference other flows
 - Explore variable persistence through flows, subflows, and across transport barriers
- *Note: Session variables are persisted across some but not all transport barriers*



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Summary

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Summary

- In this module, you learned to refactor Mule applications
- Separate application functionality into multiple configuration files for easier development and maintenance
- Encapsulate global elements that will be used in multiple config files into their own separate config file
- Separate functionality into multiple applications to allow managing and monitoring of them as separate entities
- Run more than one application at a time in Studio by creating a run configuration
- Share resources between applications by creating a shared domain

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Summary

- Separate a flow into multiple flows for easier to read files and for reusability
- All flows are identified by name and can be called via Flow Reference components in other flows
- Flow variables persist through all flows unless the message crosses a transport boundary
- Subflows are executed exactly as if in the calling flow
 - Always run synchronously and inherit processing and exception strategies of the calling flow
- Flows can have their own processing and exception strategies and be synchronous or asynchronous

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