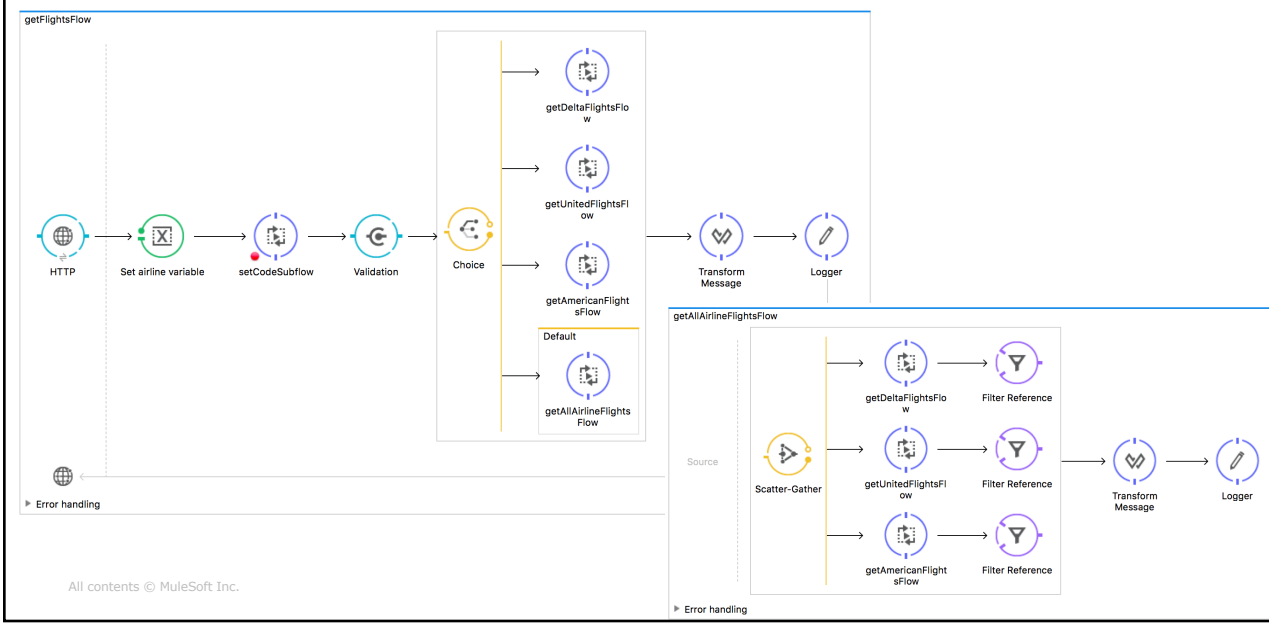
Module 10: Controlling Message Flow

Goal



At the end of this module, you should be able to

MuleSoft

- Route messages based on conditions
- Multicast messages
- Filter messages
- Validate messages

Routing messages

Routers

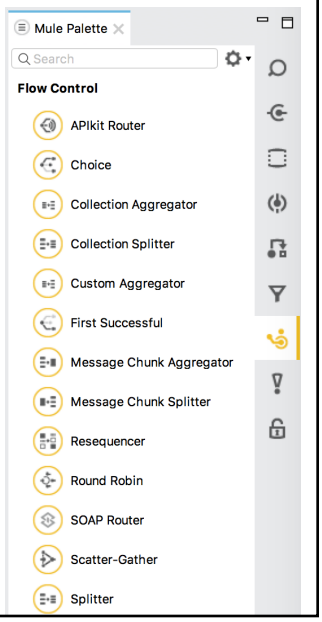
MuleSoft

- Routers route messages to various destinations in a Mule flow
- Some incorporate logic to analyze and possibly transform messages before routing takes place
- Some change the payload, some don't

Available flow controls

MuleSoft

- Three main types, those that
  - Check logic and route
    - Choice
  - Multicast and aggregate
    - Scatter-Gather
  - Split and/or aggregate

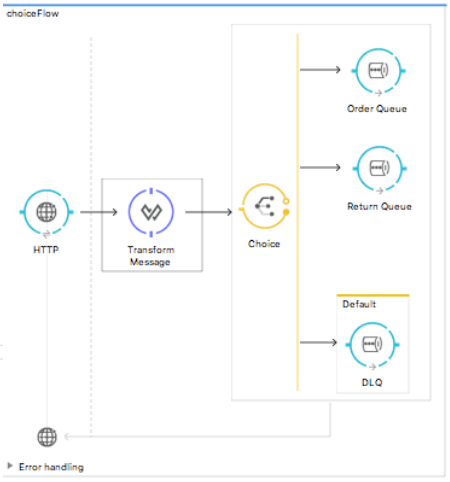


Routing messages based on conditions

The Choice router

MuleSoft

- Sends the message to one route based on conditions
  - Each path can include multiple message processors

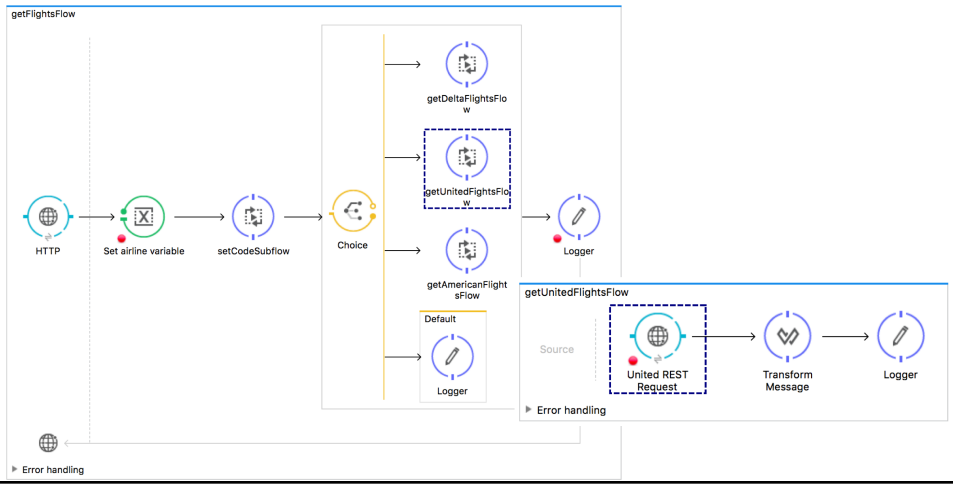


- The conditions are written with MEL

When	Route Message to
#[message.inboundProperties['requestType']== 'order']	Order Queue
Default	DLQ
#[message.inboundProperties['requestType']== 'return']	Return Queue

Walkthrough 10-1: Route messages based on conditions

- Use a Choice router
- Set the router paths



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Multicasting messages

The Scatter-Gather router

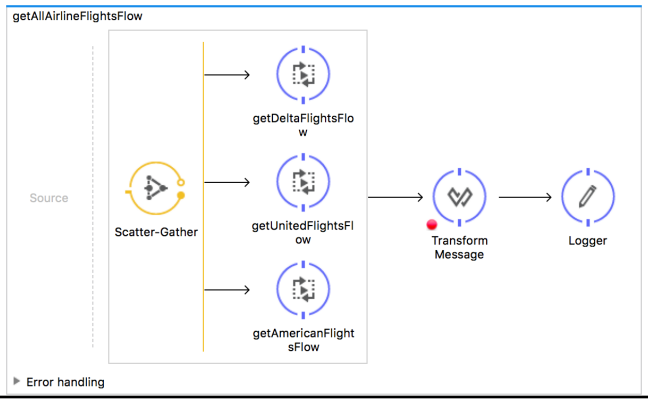
MuleSoft

- Scatter-Gather sends the message to each route concurrently and returns a collection of all results

Walkthrough 10-2: Multicast a message

MuleSoft

- Use a Scatter-Gather router to concurrently call all three flight services
- Use DataWeave to flatten multiple collections into one collection
- Use DataWeave to sort the flights by price and return them as JSON



Filtering messages

Filters

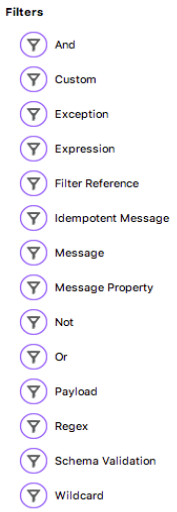
MuleSoft

- Determine whether a message can proceed in a Mule flow
- By default, filtered messages are dropped and processing of the message ends
  - Keeps subsequent processors from receiving irrelev1ant or incomprehensible messages
  - Filters can be configured to throw an exception

Available filters

MuleSoft

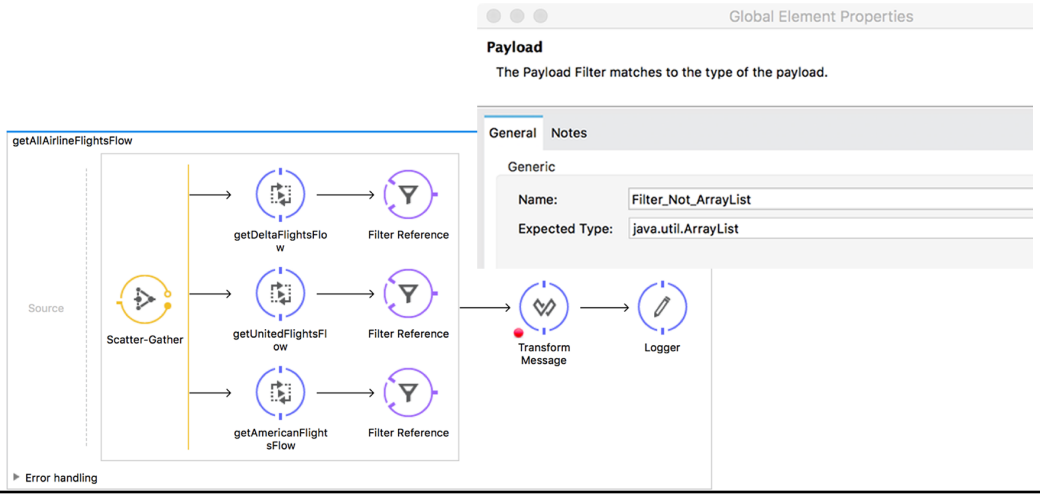
- There are 12 bundled filters
  - Expression and Payload are often used
  - And, Or, Not apply Boolean logic
  - Message filter nests other filters for more complex logical conditions
  - Idempotent ensures a message is not delivered more than once
- You can create custom filters
- You can define global filters and reference them for reuse



Walkthrough 10-3: Filter messages

MuleSoft

- Use the Payload filter
- Create and use a global filter



Validating messages

Validators

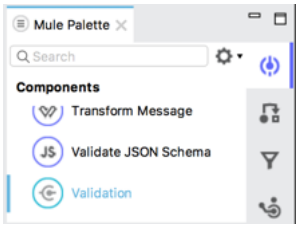
MuleSoft

- Provide an easy out-of-the-box way to test some conditions are met and throw an exception if the validation fails
- The main advantage over using filters is traceability
  - Filters all raise identical exceptions, making it hard for you to know where the exception was caused
  - Validators, on the other hand, raise an exception with a meaningful message attached

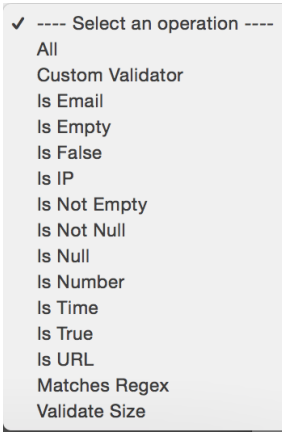
Using validators

MuleSoft

- Use the Validation component



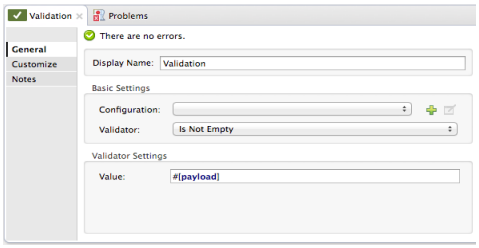
- Select the type of validation
  - Select All to create a list of validations to execute



Using validators (cont)

MuleSoft

- Set the value to validate



- Handle the ValidationException exception
  - By default, this exception will have a meaningful message attached

Name	Value
DataType	CollectionDataType{type=java.util.LinkedList, itemType=java.lang.Object,...
exceptionThrown	org.mule.api.MessagingException: Collection is empty. Message payload i...
cause	org.mule.extension.validation.api.ValidationException: Collection is empty
CAUSE_CAPTION	Caused by:

There are actually two ways to use validators

- Using the Validation component message processor

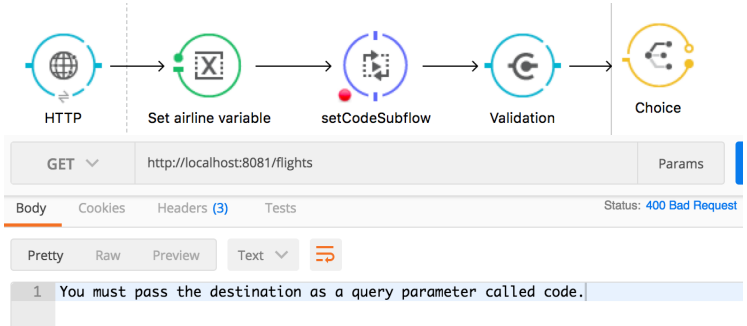
```
<validation:is-email email="mule@mulesoft.com" />
```

- Through MEL

```
#[validator.validateEmail('mule@mulesoft.com')]
```


Walkthrough 10-4: Validate messages

- Require a destination code to be passed to the app as a query param
- Use the Validation component to throw an exception if the query param is not set
- Catch the exception in the global exception strategy and return an appropriate message



Summary

Summary

MuleSoft

- Use different, routers, filters, and validators to control message flow
- Use the Choice router to send a message to one route based on conditions
- Use the Scatter-Gather router to send a message concurrently to multiple routes
  - A collection of all results is returned
  - Use DataWeave to flatten the collection
- Use filters and validators to determine whether a message can proceed in a Mule flow
  - Filters all throw identical exceptions
  - Validators can throw a ValidationException with a custom message or a custom exception object