

## Expose a Behavior as a Web Service

Graphite Studio provides the capability to expose any Behavior as a Web Service. This can be a Behavior in a Library or an Implementation Project. This Web Service can be exposed as SOAP API or REST API or both.

In order to create the Behavior that will be exposed as a Web Service create the following Entities in a Category named **Mortgage**.

### Payment

Name	Type	List	Required
CapitalPaid	Currency		
InterestPaid	Currency		
Number	Integer		
PaymentAmount	Currency		
RemainingBalance	Currency		
StartingBalance	Currency		

Table 1: Entity - Payment

### Mortgage

Name	Type	List	Required
InterestRate	Decimal		
LoanAmount	Currency		
NumberOfYears	Integer		
PaymentAmount	Currency		
Payments	Payment	Yes	
PaymentsPerYear	Integer		
TotalInterestPaid	Currency		
TotalNumberOfPayments	Integer		
TotalPaymentAmount	Currency		

Table 2: Entity - Mortgage

Create a Behavior named **CalculateMortgageDetails** in the Mortgage Entity. In this Behavior you will run the PMT Behavior in FixedRateMortgage Entity to calculate scheduled mortgage payments.

The following table shows the Inputs and Outputs needed for the CalculateMortgageDetails Behavior.

	named	of type
<b>Input/Output</b>	Mortgage	Mortgage

Table 3: CalculateMortgageDetails - Start

This Behavior will take a variable called Mortgage as the Input with properties InterestRate, LoanAmount, NumberOfYears and PaymentsPerYear set. It then updates the rest of the properties (except Payments) before it returns the same variable as the Output.

The following figure shows the completed Behavior.

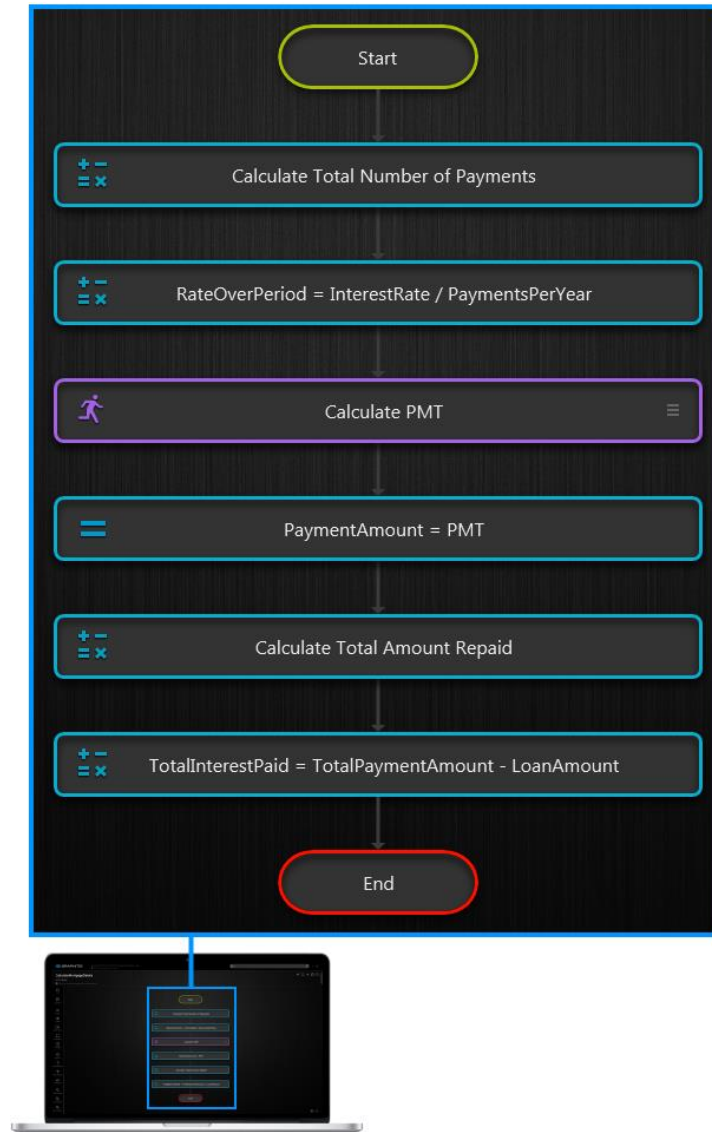


Figure 1: Calculate Mortgage Details

The following tables show the details of each shape.

Evaluation - Calculate Total Number of Payments	
Mortgage.TotalNumberOfPayments	
=	Mortgage.NumberOfYears * Mortgage.PaymentsPerYear

Table 4: CalculateMortgageDetails - Calculate Total Number of Payments

<b>Evaluation - RateOverPeriod = InterestRate / PaymentsPerYear</b>	
RateOverPeriod	
=	Mortgage.InterestRate / Mortgage.PaymentsPerYear

Table 5: CalculateMortgageDetails - RateOverPerios

<b>Run Behavior - Calculate PMT</b>	
From	FixedRateMortgage
run	PMT
result named as	FixedRateMortgagePMTResult
<b>Inputs</b>	
NumberOfPayment	Mortgage.TotalNumberOfPayments
Principal	Mortgage.LoanAmount
Rate	RateOverPeriod

Table 6: CalculateMortgageDetails – Run Calculate PMT

<b>Assign - PaymentAmount = PMT</b>	
Mortgage.PaymentAmount	
=	FixedRateMortgagePMTResult.Outputs.PMT

Table 7: CalculateMortgageDetails - PaymentAmount

<b>Evaluation - Calculate Total Amount Repaid</b>	
Mortgage.TotalPaymentAmount	
=	Mortgage.PaymentAmount.RawDecimal * Mortgage.TotalNumberOfPayments

Table 8: CalculateMortgageDetails – Calculate Total Amount Repaid

<b>Evaluation - TotalInterestPaid = TotalPaymentAmount - LoanAmount</b>	
Mortgage.TotalInterestPaid	
=	Mortgage.TotalPaymentAmount.RoundedDecimal - Mortgage.LoanAmount.RoundedDecimal

Table 9: CalculateMortgageDetails - TotalInterestPaid

Exposing this Behavior is done by clicking the Web Service icon at the top right corner of the Behavior Screen as shown in the following figure.

The Service Endpoints dialog provides a choice to expose the Behavior as a SOAP Service or a REST Service or both. For REST API the dialog expands to get more details to generate the OpenAPI specification.

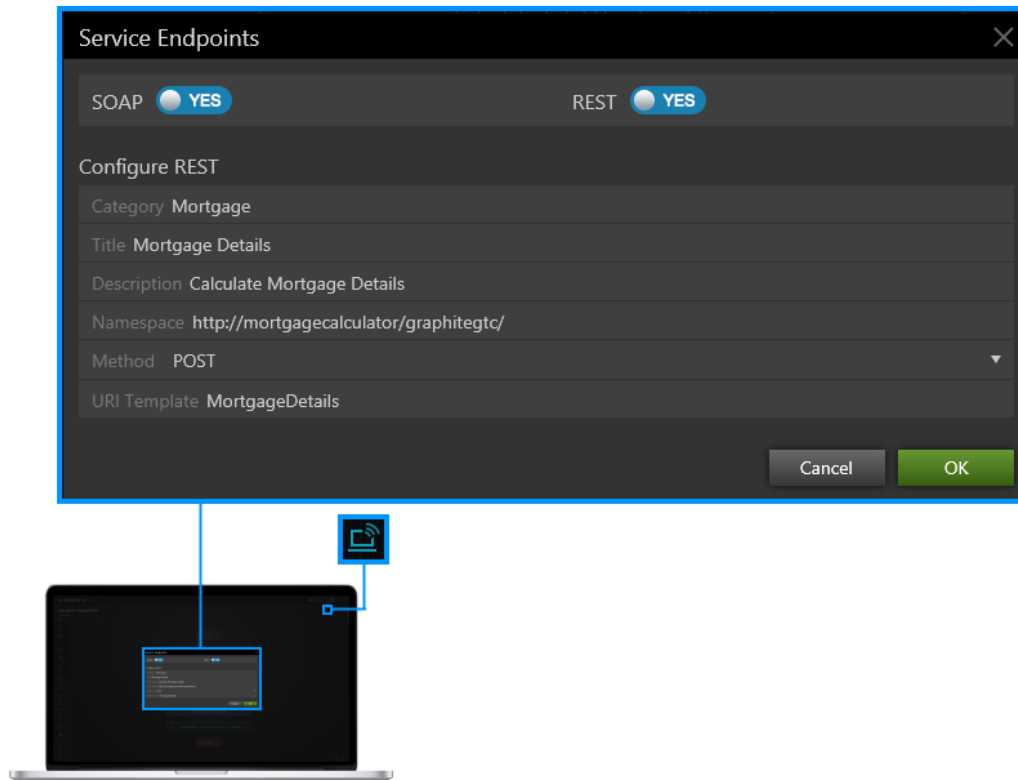


Figure 2: Exposing a Web Service

There are another set of details in the Environment settings that have to be setup to enable the proper generation of the OpenAPI specification for this Project. The following figure shows the REST tab of the Environment dialog.

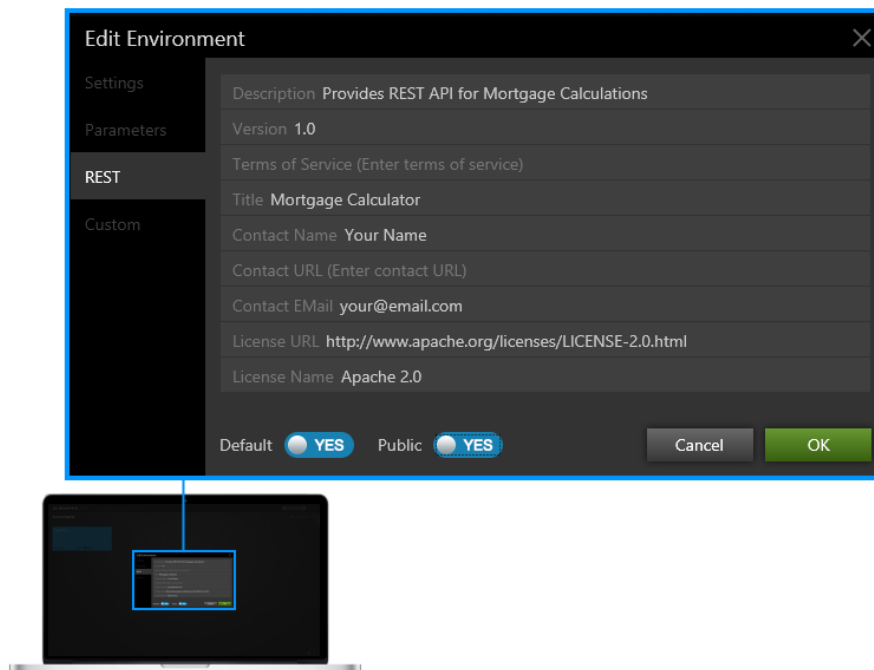


Figure 3: Environment Settings (REST)

When the Project is built a summary of all the services exposed in the Project are available in a screen in Graphite Studio. This is the **Services Screen** and can be accessed via the Side Bar menu.

The following illustrates the SOAP and REST Service summary of the Project.

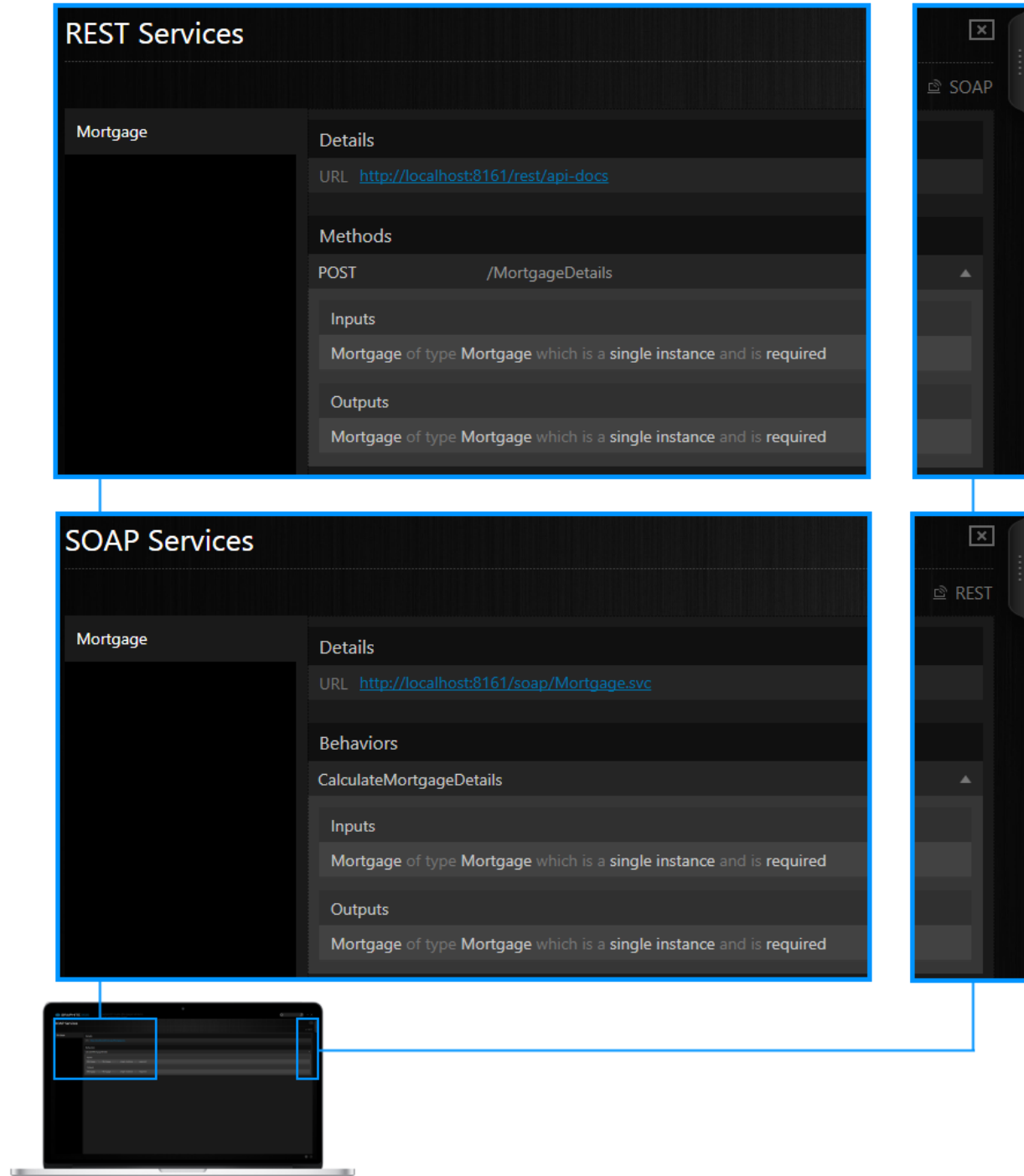


Figure 4: Get Market Holidays - SOAP