

# Practice: Perform Complex Math with Calculation Procedures

## Requirements

*“As a developer, I'd like to explore potential future needs and set up a matrix to calculate Customer Lifetime Value.”*

Now that you have your Calculation Matrix for the new products and pricing, you are ready to use them in a Calculation Procedure.

## Prerequisites

- Build a Calculation Matrix (see prior unit)

## Tasks

- Build a Calculation Procedure

## Time

- 20 mins
-

## Task: Build a Calculation Procedure

You have seen a Calculation Matrix; next you will build a Calculation Procedure that adds some simple algebra to a matrix output and an aggregate function to some array outputs.



**NOTE:**

Versioning for Calculation Procedures is the same as it is for Calculation Matrices. The Calculation Procedure version is valid between the start time and end time, and if there are multiple versions that are valid, then the highest priority will be run (1 is the lowest priority). You can have multiple versions, and they will automatically rollover.

1. Create the Calculation Procedure.
  - a. Open the **App Launcher**, and select the **OmniStudio** app.
  - b. Select **Vlocity Calculation Procedures > New**.
  - c. For the **Calculation Procedure Name field**, enter `Customer Lifetime Value` and click **Save**.
  - d. Click **Related > Customer Lifetime Value V1**.
2. Build the Lookup Step.
  - a. Under **CALCULATION STEPS** click **+ Add Step**.
  - b. Select **Matrix Lookup**.
  - c. Start typing and select the **teamSLARetention** Matrix from the list. (If it's not visible, it may not be enabled).
  - d. Select **Include in Calculation Output** below **Retention Cost**.
  - e. Confirm the input and output variables from the Matrix are automatically populated to the right of the Matrix Name and in the **VARIABLES** section.
3. Add Variables and Constants and use them to build the Calculation Step.

- a. Before you can calculate CLV, you need to add a number of variables. In **VARIABLES**, click + **Add Variable** for each entry below:

Name	Data Type	Enter Precision
Annual Income	Currency	2
CLV	Currency	2
Total CLV	Currency	2



**TIPS:**

Make sure there are no incomplete entries. They prevent successful saving.

- b. In **CONSTANTS**, click + **Add Constant** for each entry below:

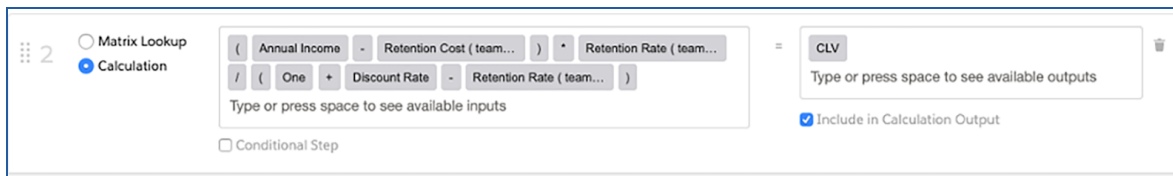
Name	Data Type	Precision	Value
Discount Rate	Percent	[leave blank]	3
One	Number	[leave blank]	1



**TIPS:**

Make sure there are no incomplete entries here as well. They prevent successful saving.

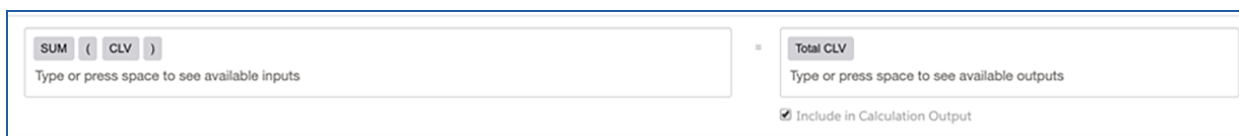
- c. In **CALCULATION STEPS**, click + **Add Step**.
- d. Select **Calculation**.
- e. Build the Calculation as follows:  $(\text{Annual Income} - \text{Retention Cost}) * \text{Retention Rate} / (\text{One} + \text{Discount Rate} - \text{Retention Rate}) = \text{CLV}$



**TIPS:**

You need to add each component of the calculation individually – each component must be its own rectangle. To select the component, start typing and select from the dropdown. Algebraic components can be created by typing it and pressing Enter.

- f. Select **Include in Calculation Output** below **CLV**.
  - g. Click **Save Calculation Procedure**.
  - h. Click **OK**.
4. Add an aggregation step to get a total CLV.
- a. In **AGGREGATION STEPS**, click **+ Add Step** and select **Aggregation**.
  - b. Build the aggregation formula as follows:  $\text{Sum}(\text{CLV}) = \text{Total CLV}$ .



- c. Select **Include in Calculation Output** below **Total CLV**.
  - d. Click **Save Calculation Procedure**.
  - e. Click **OK**.
5. Test the procedure using the Simulate/Simulation tab.
- a. Select the **Simulate** sub-tab.

b. Enter the following:

Property	Value
Effective Date	[Date in the future]
SLA	Platinum
Annual Income	100,000

c. Click **Simulate All Steps**. Your output will match the image below.

```
Output JSON
{
  "output": [
    {
      "calculationResults": [
        {
          "CLV": 1039062.5,
          "teamSLARetention__RetentionRate": 95,
          "teamSLARetention__RetentionCost": 12500,
          "ID": "input"
        }
      ],
      "aggregationResults": {
        "TotalCLV": 1039062.5
      }
    }
  ]
}
```



**ALERT:**

If you receive a **No Valid Pricing Matrix Found** error message, clear the value in the effective date field and try again without an effective date.

d. Review the steps of the Calculation Results and the Input and Output JSON. The input to a Calculation Procedure *must* be on a JSON node called **input** with a lowercase i.

```
Input JSON
{
  "input": {
    "Annual Income": "100000",
    "SLA": "Platinum"
  }
}
```

- e. From the action buttons bar, select **Edit**.
- f. Select the **Enabled** checkbox and click **Save**.

## Review

Confirm your understanding by answering these questions.

1. What does a Calculation Procedure do in OmniStudio?
2. What are the two different types of calculation steps in a Calculation Procedure?
3. What is important about the input JSON?
4. If two Calculation Procedures are both active at the same time, which one will be called?
5. Where can you get the expected input and output JSON from a Calculation Procedure?