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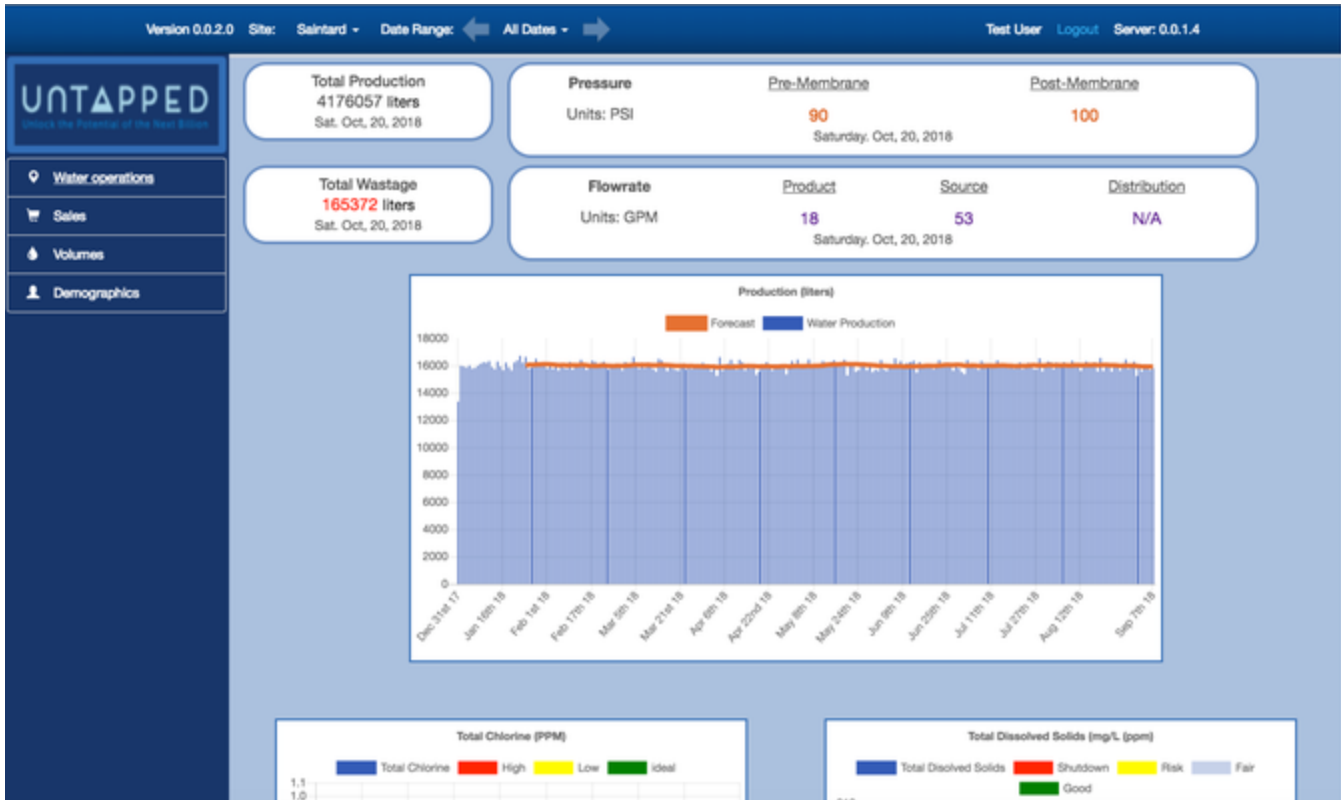
Report Client

Overview

The report_client application is a React Browser application. It displays various metrics related to water production, sales and customer demographics.

The report_client uses MVC pattern, the model is maintained in a Redux store, the views are implemented using React Components and the Sema REST services are used to load the Model Store

A picture of the report_client is shown below



Components

The report_client application consists of three main 'panes', the navigation pane, the toolbar pane and the main content pane. The React root component **App** initializes the application and presents either a login page, **SemaLogin**, (if a user login is required), or **SemaContainer** component which hosts, **SemaSidebar**, **SemaToolbar** and **SemaMain**, (the navigation pane, toolbar pane and main content pane content respectively)

Navigation Pane, (SemaSidebar)

This React component controls the content of the main view. It also contains a vendor specific logo at the top.

Toolbar Pane (SemaToolbar)

This react component contains, (in left to right order); The version information of the client application, a 'Site/Kiosk' selector, a Date 'filter' selector, the name of the logged in user, a logout button and the version of the Sema service.

When the application first starts, the user must first select a Site/Kiosk in order to populate the main content

Main Pane (SemaMain)

This contains the routing information for the various 'content' components. The root components for each content page are

SemaWaterOperations - The root component for "Water Operations"

SemaSales - The root component for "Sales"

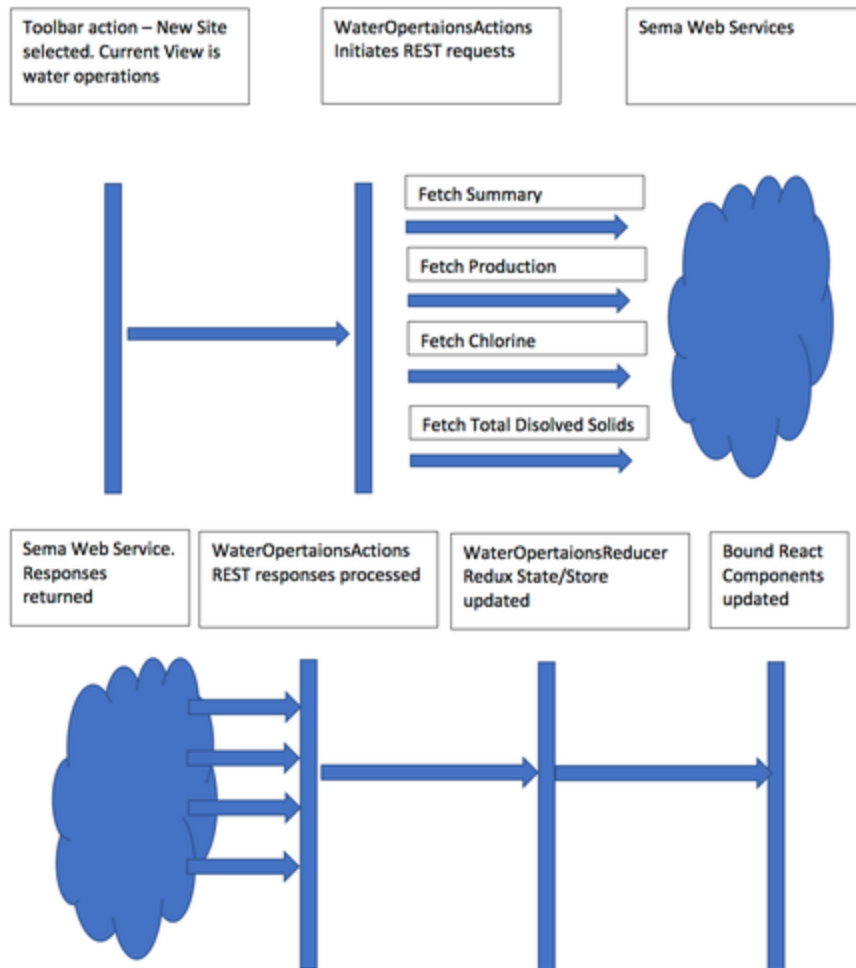
SemaVolume - The root component for "Volumes"

SemaCustomer - The root component for customer "Demographics"

The sections that follow describe these root components in more detail

Redux

The report_client application uses React Redux to save the results of Sema REST API requests to the Redux store. Components that need the various model properties then bind to those properties. The flow of an user interaction that results in new data being fetched from the Sema service followed by a component update is shown below. The example illustrates the flow after a user selects a different kiosk/site while the application is displaying the Water Operations content



Water Operations

The Water Operations page shows information on water production, quality etc, filtered by date. When the date filter chosen is "Total", the total metrics of water operations is shown. When a date range is specified, the water operations for the date filter period is shown.

Total Production

Shows water production as **"501759 liters, Wed Jan 31, 2018"**. If there is no Date filter, total water production up to the current date is displayed. Otherwise production for the period selected by the date filter is displayed.

The service endpoint is **/sema/dashboard/site/water-summary**

Total Wastage

Shows the difference in water production at the source, ("B:Product) and production at the "Fill" (D:Fill).

The service endpoint is **/sema/dashboard/site/water-summary**

Pressure

Shows the average water pressure in different parts of the water production system for the selected period. **Details TBD**

The service endpoint is **/sema/dashboard/site/water-summary**

Flow Rate

Shows average Product/Source and Distribution flow rates for the selected period.

The service endpoint is **/sema/dashboard/site/water-summary**

Production Chart

Shows a bar chart of daily water production over the period. Note that daily production is calculated as the (maximum volume reading - minimum volume reading) per day

The service endpoint is **/sema/dashboard/site/water-chart**

Total Chlorine

Shows a line chart of Total Chlorine levels over the period.

The service endpoint is **/sema/dashboard/site/water-chart**

Total Dissolved Solids

Shows a line chart of Total Dissolved solids over the period

The service endpoint is **/sema/dashboard/site/water-chart**

Sales

The Sales page shows sales information filtered by date. When the date filter chosen is "Total", the total metrics of water sold that meet the various criteria is shown. When a date range is specified, the water sales for the date filter period is shown.

Total Customers

Shows the total customers for the site plus the change in customers since the previous period. For example if there are 40 total customers, 9 created for May 2018 and 4 customers created in April 2018, this show as **"40 Total Customers, 125% since April, 2018"**

The service endpoint is **/sema/dashboard/site/sales-summary**

Total Revenue

Shows total revenue plus the change in revenue for the for the current period since the last period.

The service endpoint is **/sema/dashboard/site/sales-summary**

Gross Margin

Gross Margin is calculated as total revenue - cost of goods sold. Both total Gross Margin and change in Gross Margin since the previous period are shown

The requirements for Gross Margin is that, **receipt.cogs** is populated.

The service endpoint is **/sema/dashboard/site/sales-summary**

Customer Location

The customer location map shows the geographic location of customers. The requirement for geographic locations is that **customer_account.gps_coordinates** be populated. Customers whose sales increased over the previous period are shown in green, while customers whose sales decreased over the previous period are shown in red. Larger circles correspond to larger gains/losses

The service endpoint is **/sema/dashboard/site/sales-summary**

Customer Sales List

The customer sales list shows customers, by sales revenue in descending order. Green indicates a gain, while red indicates a loss since the previous period. The 'trend' column indicates if sales increased or decreased since the previous period.

The service endpoint is **/sema/dashboard/site/sales-summary**

Revenue/Customer

Shows the Revenue/Customer for the current period.

Revenue/Sales Channel

Shows a pie chart of revenue by sales channel for the period

The service endpoint is **/sema/dashboard/site/receipt-summary**

Volumes

The Volumes page shows information on water sales filtered by date. When the date filter chosen is "Total", the total volume of water sold that meet the various criteria is shown. When a date range is specified, the water sales and volumes for the date filter period is shown.

Example:

Total Volume

A Site contains 181 receipts, with a water volume of 1603.4 liters.

For the month June, 2018, 199.6 liters were sold

The database requirements for water volume data are that, **receipt_line_item.quantity** and **product.unit_per_product** are populated.

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Volume/Consumer

Shows the volume sold per consumer. Note that this per consumer refers potential consumers that the kiosk services.

The database requirements for water volume data are that, **receipt_line_item.quantity** and **product.unit_per_product** are and **kiosk.consumer_base** populated.

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Average Purchase Frequency

Shows the number of times over the period that customers purchase water.

This is calculated as $\text{SUM}(\text{receipt.id}) / \text{SUM}(\text{Distinct receipt.customer_id})$

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Volume/Purchase

Shows the volume per purchase over the period

This is calculated as $\text{SUM}(\text{receipt_line_item.quantity} * \text{product.unit_per_product}) / \text{SUM}(\text{Distinct receipt.id})$

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Volume By Sales Channel

Volume by channel shows a pie chart of volume sold via the different sales channels.

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Volume By Sales Channel and Income level

Volume by sales channel and income levels show horizontal bar charts for different income ranges where each bar displays the volumes sold via the various sales channels. The additional requirement is that **customer_account.income_level** be populated.

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Although the report client will be used in countries that use currencies other than USD, customer income level should be entered in USD. Question... The ranges for \$8, \$5 and \$2 are built in. At some point these may need to be configurable?

Volume By Sales Channel and Payment Type

Volume by sales channel and payment types show horizontal bar charts for different payment types where each bar displays the volumes sold via the various sales channels. The additional requirements are that **receipt.amount_cash**, **receipt.amount_loan**, **receipt.amount_mobile**, **receipt.amount_card** be populated.

The service endpoint used is **/sema/dashboard/site/receipt-summary**

Demographics

The Demographics page shows information on active customers filtered by date. When the date filter chosen is "Total" the count of all active customers created that meet the various criteria are shown. When a date range is specified, the count of all active customers created during the date range are shown.

Number of Active Customers and Consumer Penetration

Example: A Site contains a total of 45 customers, 40 of which are active and these customers have a total consumer base of 859. The Site has an estimated potential consumer base of 2000 consumers

Demographics will show a total of 40 customers for 'total' date range with a Consumer Penetration rate of 43% ($859/2000 * 100$)

For the month June, 2018, 9 customers with a potential consumer base of 263 consumers were created. This results in a Consumer Penetration rate for that month of 13% ($263/2000 * 100$)

The requirements for accurate "Consumer Penetration" are that database **kiosk.consumer_base** and **customer_account.consumer_base** be populated.

The service endpoint for **Number of Active Customers** and **Consumer Penetration** is **/sema/dashboard/site/customer-summary**

Customers by By Distance

Customers by distance shows a pie chart of customers as a function of distance from the kiosk. The requirements for accurate "Customers by distance" is that **customer_account.distance** be populated.

The service endpoint is </sema/dashboard/site/customer-summary>

Customers by By Income level

Customers by income level shows a pie chart of customers as a function of income level. The requirements for accurate "Customers by income level " is that **customer_account.income_level** be populated.

Although the report client will be used in countries that use currencies other than USD, customer income level should be entered in USD. Question... The ranges for \$8, \$5 and \$2 are built in. At some point these may need to be configurable?

The service endpoint is </sema/dashboard/site/customer-summary>

Customers by By Gender

Customers by gender shows a pie chart of customers as a function of gender. The requirements for accurate "Customers by income level " is that **customer_account.gender** be populated, ('M' or 'F')

The service endpoint is </sema/dashboard/site/customer-summary>