

Advanced Sandbox Walk-through Guide

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Overview

This document will walk you through creating a dashboard, a derived stream and adding an event to a component.

Modeling items in GroveStreams can be avoided by using GroveStreams Blueprints. More information about GroveStreams blueprints can be found at the <u>Help Center</u>.

Component Studio

Next we will explore "Component Studio". Click on the **Component Studio** button at the top of Observation Studio.

Component Studio	Smart Plug Template	×
Component Templates - 2 0	General Properties	
	Image: Second Properties Image: Control Image: Control	
Time Filters + # @	Submt. Cancel	
Delate Profiler		

Component Studio is where most modeling takes place with the exception of component definitions and dashboards. Part of Component Studio is the modeling of Component Templates. Components can be created from Component Templates. Templates are useful if there are a lot similar components registering with GroveStreams. Templates avoid the requirement to model each component separately.

Let's look at the Smart Plug Component Template:

- 1. Right click on "Smart Plug" and choose Edit Component Template
- 2. Select each object in the left pane that makes up a Component Template to see how it is modeled.
- 3. A component feed can include the Template ID in its feed JSON body. The component will automatically be created during a feed upload based on the template ID in the Feed JSON body if the component does not already exist. The sandbox feeds include component template IDs so that the sensor can automatically register itself and be created from this template during a feed upload.
- 4. Close the template edit window by clicking on the **Cancel** button.

Explore Auto Registration and Notifications

GroveStreams	Sandbox	Fre
Observation Studio 🛛 🐇 Content	2-	
omponents (P) D	- Notifications	×
Components	User System Jobs	
 Garage Temperature and Light Smart Plug Template 	😂 Delete 🐉 View 😌 Refresh Show messages from 11/06/2012 📑 going back 10 🗘 days	
b 55 Events	⊻ Date + Subject Categ	ory Type
Building Specifications	Date: November 06, 2012 (1 Notification)	1.000
A Device Settings	V November 06, 2012, 15:56:42 Auto-registration of component Smart Plug Templater INFO	←(3)
temperature - Celsus current power_on for cost current - rolling 3pt avg for cost per sq foet for Ongoing Monthly Cost (bas	System Notification: Auto-registration of component 'Smart Plug Template' × Date and Time: November 06, 2012, 15:56:42 Category: INFO Subject: Auto-registration of component 'Smart Plug Template' New Component Details: Component Name: Smart Plug Template Component Id: rbig: smartplug [0:013:a;200:40:84:a8:9b] Template Id: rbig: smartplug Template Id: rbig: smartplug Image: Smartplug	
	Move Up 👽 Move Down Delete Close	

A GroveStreams sandbox organization will reregister components if they are deleted.

The next steps will make current dashboards that are referencing the smart plug sensor invalid. Do not perform the next steps if you want to preserve your existing smart plug dashboards.

To demonstrate auto-registration of a component that is based on a component template:

- 1. Right click on the Refrigerator component and choose **Delete** and answer **Yes**.
- 2. You will receive a notification whenever a new component auto-registers. Wait a few seconds until you see a new System notification appear by watching for the number of unread System notifications to increase on the notifications button located at the top of the studio. Click the notifications button when this happens.
- 3. Double click the notification to view it. Select the Components folder located on the left and then select the **Refresh** button located above it. The newly registered component will appear in the **Components** tab under the **Components** folder. You can now create new folders and drag your component(s) to any folder. Note that when you delete a component, all of its data, including characteristic and stream data, is deleted and the properties of the newly registered component will match the properties of the template it was created from, including its name. You can edit the component to change the name and other properties once it has registered. Also, default component, stream and many of their properties can be passed with a Feed such as the component name and fixed location information. The sandbox feed does not pass any default information, only the componentTemplateID.

Examples

Creating a Dashboard – Monitor Refrigerator Current

Dashboards allow many different streams to be viewed from many different components. This section will walk you through creating a new dashboard.

🔲 Content	_	
\$		6
-	-	
Open		
New 🕨		New Folder
Сору	<u>at</u>	Dashboard
Rename	9	Мар 🥄
Delete		
		(3)
	Open New Copy Rename	Open New Copy Rename

- 1. Choose the **Dashboards** tab.
- 2. Expand the **Dashboards** folder.
- 3. Right click on the **Dashboards** folder and choose **New Dashboard**.

	Name Dasht	ooard name:) ×
	Curre	ent - Now	/	
a.		ок	Cancel	

b. Give your new dashboard a name and click **OK**.

Current - Now	
🛃 Serre 🕞 Share Dashiboard 👍 Add Content. 🌍 Change Appearance	Full Screen

- 1. Click the **Add Content** button.
- 2. Click one time on the line chart.
- 3. Select **Done**.

Observation Studio «	Current - Now
Components	
Components 2 @	🚽 Save 💪 Share Dashboard 🛛 💠 Add Content 🛛 🌼 Change Appearance 📑 Full Screen
	× • ×
Garage Temperature and Ligh	1-
a 🔲 Refrigerator Smart Plug Senso	
55 Events	0.8 0
Building Specifications	
Device Settings	
Rate	
light	0.4 -
🚥 temperature - Cersius	
current	0.2
power_on	
률 cost	0
🗊 current - rolling 3pt avg	11-06 15:36:00 11-06 15:36:20 11-06 15:36:40 11-06 15:37:00 11-06 15:37:40
률 cost per sq feet	Refrigerator Smart Plug Sensor.current.AVG
률 Ongoing Monthly Cost (bas	
-	

- 1. Select the **Components** tab.
- 2. Drag the "current" stream onto your line chart widget **three times**. Yes, three times! We will be graphing three separate current streams below. You should now see current being graphed.

Save 🗔 S	Share Dashboard	🖶 Add Content 🛛 🎲 (Change Appearance	Full Screen	1	
1] (Settings -					
0.8	General Data	Graph				
0.6	Title:	Refrigerator Curren	t Now with Daily Hi	gh and Low		
0.4	Height	300	*	-	<u>~</u>	
0.2	Range Type: Fixed Range —	Heartbeat	*		(2)	
0	From:	2012-11-06	15:36:08	*		
06 15:43:20 ator Smart Pluy	To:	2012-11-06	15:36:08	*	0	
ator Smart Pilip	- Data Points					
	Polling (second	ds): 5 🗘	Seconds	Data Point Cycle.	-	
			OK Canc	el		

- 1. Click on the widget's cog button, located at the top of the widget, to edit its settings.
- 2. Enter a name for your dashboard widget. It can be any name.
- 3. Select **Seconds** for your Data Point Cycle. This widget will display the last 100 seconds for the selected streams.

Settings -			(1)		×
General Dat	ta oraph				
🔇 Add 🤤 R	emove				
Component	ltem	Item Type	Display Name	Cycle	Statistic
Refrigerator S	current	stream	Refrigerator S	*Auto-detect*	Time Weighted
Refrigerator S	current	stream	Daily Low	Days	Minimum
Refrigerator S	current	stream 1	Daily High	Days	Maximum
1	11	2	3	4	Þ
		ОК	Cancel		

- Select the **Data** tab. You should see current listed three times, once for each time you dragged it onto the chart widget. Instead of dragging and dropping a stream, you could have clicked the Add button located on this view to add streams to the widget.
- 2. We want the chart to display current and the daily high and lows for the current. Change the display names to match what's in the view above.
- 3. Set the Cycle to **Days** for the last two data streams.
- 4. Set the statistic to **Minimum** and **Maximum** for the last two data streams.

ttings -					X
General Data	Graph				
Vertical Axis Title:	Amperes <				1
Vertical scale					
Automatic:	7			D C	
Maximum:	0	-		9	
Minimum:	0	\$			
Graph settings – Background col Legend Display: Font Name:	or: FFFFFF v Bottom Tahoma	~	G	2)	
		OK Cance	4		

- 1. Select the **Graph** tab and enter "Amperes" for your axis title.
- 2. Click **OK**.

Save	🔜 Share Dashboard	💠 Add Content	🍈 Change Appearance	Full Screen	
Refrigerato	r Current Now With Da	lly High and Low			× • ×
9 - 8 - 7 - Seject and a 8 - 7 - Seject and a 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 - 9 -			1 1 1 0:40 11:07 10:51:00 Senses canvat AVG Daily 1	11-07 10:51:20	11-07 10.51.50

You should see a chart similar to the above image.

Congratulations! You've created a dashboard that shows one second actuals with daily highs and lows in the same chart! Click the save button to save your changes.

Play with the widget settings to learn more about how GroveStreams dashboards give you access to near real-time statistics for many different virtual streams (rollup cycle functions).

Creating a Dashboard – Monitor RSS Feeds

This section will walk you through creating a dashboard that monitors RSS feeds



Click on the **Dashboards** tab within Observation Studio. Right click on the **Dashboards** folder and create a new dashboard.

- 1. Click Add Content within the new dashboard.
- 2. Click the RSS Feed widget **two** times so that two dashboard widgets are added.

Yahoo Busine	ss News		* 0	a X	Refriger	ator S
Title			Date 👻		Title	
Stocks er	Settings - Yahoo Bu	isiness News	× 1 0.40		×	gerat
🔍 US to sell	Title:	Yahoo Business News				ata
The federa Massachu	Add URL	300				gerate ata
energy on	Add URL URL	S Kemove OKL				gerat
	http://news.yahoo	.com/rss/business;_ylt=AhyCYgbSdu	sf9lbUTcjcvyO5scB <u>; v</u>	/lu=X3c	DM	ata gerate ata gerate
	Display up to: Items from: Display:	5 × any date × headline and short summary	~			
			ОК	-	Cancel	

- 1. Edit the first widget's settings (click the cog icon in its title bar)
- 2. Set similar settings to the image above. Set the URL to Yahoo's Business RSS Feed which can be found <u>here</u>:
 - a. <u>http://news.yahoo.com/rss/business; ylt=Ase6xNYRmudcaQJIEUJ76se5scB ; yl</u> u=X3oDMTFtdDBydWJkBG1pdANSU1MgU2l0ZUluZGV4IEJ1c2luZXNzBHBvcwM0 BHNIYwNNZWRpYVJTU0VkaXRvcmlhbA--; ylg=X3oDMTFlamZvM2ZIBGludGwDdXMEbGFuZwNlbi11cwRwc3RhaWQDBHB zdGNhdAMEcHQDc2VjdGlvbnM-; ylv=3
- 3. Click OK

le	Dat	
uc	Dar	
ettings - Refrigera	tor Smart Plug Feeds	2
Title:	Refrigerator Smart Plug Feeds	
Height	300	
🔘 Add URL 👘	Remove URL	
URL		
http://localhost:80	80/labrador-client/api/component/e708bd82-1961-30c4-92	da-1730969c03
http://localhost:80	80/labrador-client/api/component/e708bd82-1961-30c4-92	da-1730969c03
http://localhost:80 Display up to:	10	da-1730969c03
		da-1730969c03
Display up to:	10 💌	da-1730969c03
Display up to: Items from:	10 👻 any date 👻	da-1730969c03

- 1. Drag the Refrigerator Smart Plug Sensor onto your second widget. This will automatically add its GroveStreams RSS feed to the widget
- 2. Edit the widget settings and set the same properties as in the image above (except for the URL since that was set when you dragged the component onto the widget)
- 3. Click OK



Congratulations! You have created a dashboard that displays RSS feeds from outside of GroveStreams and from within your GroveStreams organization.

Defining an Expression Derived Stream

This section will walk you through creating a simple expression derived stream. It will derive a Fahrenheit stream based on an actual Celsius stream. This example will create the derived stream right on the existing component. If you want all newly registered components to have the new derived stream, then create the stream on the component template instead of the component.

Observation Studio 《 Components Content	(
Components 2 0	Garage Temperature and Light Sensor	×
a 🔄 Components		Stream
Currency Exchange Rates	Actions	General Properties Derivation Constraints Gap Filling Visuals
Garage Temperature and Ligh Sevents Building Specific atoms Building Specific atoms Building Specific atoms Bight temperature - Celsius low_Dattery Refrigerator Smart Plug Sense	General Properties Location Events Low Battery Event Characteristic Groups Groups Groups Ight temperature - Celsius low_battery temperature - Fahrenhet	Name: temperature - Fahrenheit Description:

1. Right click on the garage temperature sensor and choose Edit Component.

 Right click on the Streams folder and choose Add Interval Stream. Ensure the new stream is selected.

Garage Temperature and Light Sensor	r						×
*	Stream	Stream					
Actions	General Proper	General Properties Derivation Constraints Gap Filling Visuals					
E General Properties	Pin for Drag and Drop (2)						
Location	Stream data derived from: Expression						
 Low Battery Event Latency Event 	Derivation Effect	tive Date:	2012-11-06			15:47	~
Characteristic Groups	Expression Variables						
a 🔄 Streams	🔇 Add 🤤 Remove						
lght temperature - Celsius	Variable Name	Intvl Offset	Туре	Stream/Char	Cycle	Function	
in low_battery	var1	0	stream	temperature	5 Minutes		
- temperature Farenheight							
	Expression:		~				
	<u>var1</u> * 9/5 + 32	-	-(5)		-6		
l		Subr	mit Cancel				

3. Set the following attributes to the values in the above image.

- 1. Select the **Derivation** tab on the new stream.
- 2. Set Stream data derived from to **Expression**.
- 3. You can click the **Add** button to add variables, but an easier way to add a stream variable is to click the **Pin for Drag and Drop** button and then...
- 4. Drag "temperature Celsius" onto the expression variables grid.
- 5. Type the following formula into the Expression box: var1 * 9/5 + 32
- 6. Click **Submit**. This stream will now be derived from the Celsius stream every few seconds as Celsius data comes in and the GroveStreams derivation engine runs.
 - a. Derived stream variables are only calculated when all dependent intervals have been uploaded into GroveStreams. If any dependent variable has a value of null (is a gap), then the derived value will also be null (a gap).

If an error occurs during derivation, possibly caused by a malformed expression, the error will appear as a Job error since derivation occurs as an asynchronous job that runs every few seconds. Check for derivation errors by clicking on the **Notification** button and selecting the **Jobs** tab if your derived stream is not producing any values.

Defining an RSS Derived Stream

This section describes how to create a component with a stream that is derived from information contained within an RSS (<u>Really Simple Syndication</u>) feed. The World Wide Web is full of information obtainable via RSS feeds. Most feeds are free. Some have subscriptions.

RSS feeds are a great way to import near real-time data into GroveStreams from many different sources. RSS feeds exist for things like:

- Stock quotes
- Weather information
- Currency exchange rates
- Latest news articles

Once RSS data is placed within a GroveStreams stream, it can be used throughout GroveStreams for things like:

- Viewing in dashboards including mapping and graphing
- Used as a parameter for other expression derived streams
- Rollup calendar statistics
- Alerting
- Comparing to other streams
- Exposing the RSS filtered result as a GroveStreams RSS feed

Your sandbox organization was created with a EUR/USD exchange rate component and stream that gathers the exchange rate once an hour and uses it to calculate Refrigerator costs in Euros.

For this exercise, we will extract out an hourly temperature value from a free <u>NOAA</u> RSS feed and place the result into an hourly interval stream.

Observation Studio	<u>_</u>	×
Components (d) Content Components (e)	- Outrin Proprieto	×
	Submit Cancel	

- 1. Right click on the Components folder and choose New Component
- 2. Enter a name for your new component. Since we will be extracting the last observed Minneapolis temperature, we will name the component "Minneapolis Weather".
- 3. Select an Icon color and the component's time zone.

	Location	×
Actions Ceneral Properties Coation Coa	Location Description:	2 Bird's eye - Misurn Ctr Ctr Misurn Ctr Ctr Misurn Ctr Ctr Misurn Ctr Misurn Ctr Misurn Ctr Misurn Ctr Misur
	Longitude:	s Mobile 3.25818393790927 4.974118692672796 Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Course Hune-in Hune

- 1. Select Location
- 2. Navigate within the map and click where the component is located to set its geo coordinates. Since the component represents Minneapolis weather, we'll choose downtown Minneapolis

	×
· · · · · · · · · · · · · · · · · · ·	Stream
Actions	General Properties Derivation Constraints Gap Filling Visuals
Characteristic Groups	Name: Temperature Description:
	Data Type: float (4 bytes) Unit: Fahrenheit (000,000.0 %F) Rollup Calendar: Years, Quarters, Months, Days, Hour, FiveMin Default Rollup Method: Average Interval Size Base Cycle: Hours Change
	Delete Profile: Change

- 1. Right click on the streams folder and choose Add Interval Stream.
- 2. Give the stream a name. It can be any name. Set the rest of the fields to what is in the above image.

🔶 🤿 🤁 🗅	w1.weather.gov/xml/current_obs/seek.php?state=r	nn&Find=Find			☆ =
	and the second se				
	marshan / ryan //www.auc.weaver.ouserving (rymme)	IN STATE	Salut Sal	_	
	Minneapolis / Blaine (KANE)	RSS	XML		
	Minneapolis, Airlake Airport (KLVN)	RSS	XML	n	
	Minneapolis, Crystal Airport (KMIC)	RSS	XML	Ð	
	Minneapolis, Flying Cloud Airport (KFCM)	RSS	XML		
	Minneapolis-St. Paul International Airport (KMSP)	RSS 🗲	V MI	-0	
	Montevideo Automatic Weather Observing / Reporting (KMVE)	R55	XML	Ø	
	Moorhead Municipal Airport (KJKJ)	RSS	XML		
	Moose Lake Carlton County Airport (KMZH)	RSS	XML		
	Mora Municipal Airport (KJMR)	RSS	XML		
	Morris Municipal Automatic Weather Observing (KMOX)	RSS	XML		
	New Ulm Municipal Automatic Weather Observing (KULM)	RSS	XML		
	Olivia Regional Airport (KOVL)	RSS	XML		
	Orr (KORB)	RSS	XML		
	Ortonville Municipal-Martinson Field Airport (KVVV)	RSS	XML		
	Owatonna Automatic Weather Observing / Reporting (KOWA)	RSS	XML		

For this example, we will extract data from a NOAA RSS feed. NOAA's RSS feed library can be found here: <u>http://www.nws.noaa.gov/rss</u>.

- 1. I have selected a feed from Observed Conditions by opening my browser and going to this page <u>National Hourly Aviation Weather Observations</u> and selecting Minnesota.
- 2. Copy the RSS URL to your clipboard: Do this by right clicking on the RSS button next to Minneapolis-St. Paul International Airport (KMSP) and selecting:
 - a. Copy Shortcut (for Internet Explorer)
 - b. Copy Link Address (for Chrome)
 - c. Copy Link Location (for Firefox)

×	Stream
👶 Actions	General Properties Derivation Constraints Gap Filling Visuals
E General Properties	- Pin for Drag and Drop
Location Location Location Location Characteristic Groups Streams	Stream data derived from: From RSS Feed
Temperature	RSS Feed URL: http://w1.weather.gov/xml/current_obs/KMSP.rss
	Extract from feed: All - As JSON
	Test Results:
	Time: Today 12:53 pm Value: Author: Title: Overcast with Haze and 35 F at Minneapolis-St. Paul International Airport, MN Description: Winds are East at 9.2 MPH (8 KT). The pressure is 1021.6 mb and the humidity is 78%. The wind chill is 28. Last Updated on Nov 30 2012, 12:53 pm CST. Link: http://weather.noaa.gov/weather/current/KMSP.html Published Date: 2012-11-30 12:53:00 CST
	Paw Value: Cauthor"" "Hite" Concernativith Haze and 35 E at Minneannlis. St. Daul International Airmort
	Submit Cancel

- 1. Choose the **Derivation** tab
- 2. Select From RSS Feed
- 3. Past the RSS feed URL you copied to the clipboard above into the RSS Feed URL field. The URL should be: <u>http://w1.weather.gov/xml/current_obs/KMSP.rss</u>. Set **Extract from feed** to All-As JSON and click the **Test** button.
- 4. The test result is the latest Minneapolis weather feed from NOAA. The result is a nicely formatted string that is easily viewable by people, but it makes it difficult to use the values within any type of calculations or for graphing. The next step will demonstrate how to filter out only the numerical temperature from the full result.

~	Stream
Actions	General Properties Derivation Constraints Gap Filling Visuals
General Properties	- Pin for Drag and Drop
E Location Events Characteristic Groups	Stream data derived from: From RSS Feed
Temperature	Extract from feed: Title
	Advanced Block items that match all of the following filters (For more advanced filters, use free services sur Filters (Published Date values must be in this format: 2012-05-15 14:10:00) Add Remove Item Operator Value
	Regex Operations (These are applied after filtering)
	Item Replace Value With Value
	Tite F.45
	Tite .*
	Test Results:
	Time: Today 12:53 pm

- 1. Change **Extract from feed** to Title (since the temperature is located within the title field) and click on Advanced.
- 2. We need to create two Regex operations to trim the text before and after the actual temperature value so that only the value is returned. Regex is a powerful tool for searching and replacing elements of text. It is commonly used for RSS parsing. Google Regex to learn more about Regex usage.
 - a. Click the **Add** button **twice** so that two regex rows appear.
 - b. In the first row, choose **Title** item and enter the following for the **Replace Value**: "F.+\$" (only the value between the quotes. Include the space before the F). Leave the **With Value** blank. This regex expression will remove everything after the temperature value.
 - c. In the second row, choose **Title** item and enter the following for the **Replace Value**: ".* "
 (only the value between the quotes). Leave the **With Value** blank. This regex expression will
 remove everything before the temperature value.
- 3. Click **Test** and verify that only the temperature is returned.

- a. The **Time** will be used are for the sample time. Time is extracted from the feed items published dates. If those dates don't exist then it will use the feed's published date. If that date doesn't exist then it will use the current system time.
- b. The **Value** will be used for the sample value.
- 4. Click Submit to save your new component.

GroveStreams will import RSS data into your streams when you save your component and then once every hour.

There are many popular RSS feed websites that can:

- Aggregate and Mashup Feeds into One Feed
- Convert web pages and XML files into RSS feeds
- And much more...

Search the GroveStreams Forum for more more RSS Feed RegEx examples.

Congratulations! You have successfully created a stream derived from an RSS feed. You can use the stream throughout GroveStreams for any stream operation.

Creating an Event with Notifications

This section describes how to create an event, with notifications, on a component. It describes how to add an event to detect when the refrigerator compressor runs which occurs every few minutes.

Observation Studio	Refrigerator Smart Plug Sensor	3
Components	(W)	Event
Components (2) (3) Components) Carage Temperature and Ligh) Refrigerator Smart Ploy Sense (1)	Actions Control Control Control Control Control Control Congressor is Running Cong	✓ Enabled Name: Compressor is Running Apply to Stream: current Event Category Type: INFO Ion: Tan Start Action Delivery Frequency (seconds): 0 Start Action Delivery Stream: 0 Start Action Delivery Frequency (seconds): 10 Start Action Delivery Frequency (seconds): 10 Start Action Delivery Standard Start Action Package Change Stop Trigger Action Package: Standard End Action Package Stop Trigger Action Package: Cycle Function: Value used is validation expression Cycle: Validation Expression (Example: value >= 100): value >= 1.2

- 1. Right click on the Refrigerator component and choose Edit Component.
 - a. The refrigerator current stream contains many gaps. A gap can currently cause the event engine to think an event has ended and then retrigger the event when the next non-gap value is uploaded. To prevent this scenario from filling your inbox with notifications, let's have GroveStreams automatically perform gap filling when feed data is uploaded but prior to event processing.

Refrigerator Smart Plug Sensor	8
(W)	Stream
💮 Actions	General Properties Derivation Constraints Gap Filling Visuals
General Properties Coston Coston Prover is Off Latency Event Contractoristic Circups Contractoristic	Gap Filling: Fill With the Time-Weighted Average of f and f
((
	Submit Cancel
W 5.6	

- c. 1. Select the "current" stream on the left, select the **Gap Filling** tab, select **Fill With Time-Weighted Average** ..." and set max gaps to fill to **five**.
- 2. Select the Events folder, right click it and choose Add Event Trigger Event.
- 3. Set the following properties as seen in the image above:

b.

- a. Select an Icon. The icon is used in the tree view and in maps.
- b. The Start Action Delay amount will prevent the event from starting until the below expression is true for the amount of seconds entered here. Setting a delay will prevent anomalies from triggering the event such as ampere spikes that may occur for only one second or maybe when the refrigerator door is opened for less than ten seconds the light bulb amperes will increase ampere usage. If the door is opened for more than 10 seconds then we may get an invalid compressor event.
- c. The Trigger action packages were automatically created when the sandbox organization was created. Each of these packages will send GroveStreams user notifications and emails to you, the person that created the organization. You can click the **Change** button, select a package and choose **Edit** to view the package definition. Packages can also be designed to send SMS text messages and make HTTP calls. Action packages are designed to be shared across components within an organization.
- 4. Click OK to save your changes to the component. Your event logic will now be active. Trigger events are processed as feed uploads occur and during stream derivation.

Value expressions can be based on virtual streams (rollup calendar cycle functions) to capture events such as:

- Start an event if the daily maximum is greater than a certain amount.
- Start an event if there are too many gaps in a 5 minute interval.

• Start an event if my energy billing metric has exceeded a certain amount.

A trigger expression allows for complex expressions, but sometimes a more complex trigger needs to be defined. Create a derived stream to model more complex scenarios that involve other streams and previous intervals and set an event on the derived stream.

Ĩ		Notifications									×	1
¢	Us	ser System .	Jobs									
96	0	Delete 🛛 ಿ View	2 Refresh S	how me	essages from	11/07/2012	going back	10	days			itvi Er
0		Date -			Subject					Category Typ	e	1-07 0
	-	ate: November 07	2012 (5 Notificatio	200								
	1	November 07, 201			Event Started	INEO: Compres	sor is Running; For a	component 3	Refrigerato	INFO		
		November 07, 201					or is Running; For c			INFO		
		November 07, 201					sor is Running; For (INFO		
		November 07, 201	2, 09:46:23	1	Event Ended:	INFO: Compress	or is Running; For c	omponent 'R	efrigerator	INFO 🔸		-
	7	November 07, 201	2, 09:43:37	1	Event Started:	INFO: Compres	sor is Running; For (omponent '	Refrigerato	INFO 🔶	-4	- Color
		Address: Latitude: Longitude:	User Notificati Date and Time: Category: To: Subject Details: Event: Trigger Date an Component: Stream: Cycle: Statistic Functi Interval Start D Interval Start D Interval Start D Interval Start D Interval Start D Interval End Da Trigger Value: Location: Latitude: Longitude: This message h	Nove INFC Fred Ever Sens d Time: ate: ate: ate:	ember 07, 20) Flintstone It Started: IN sor' : W Ri Cl Se N W W W 8. 44 -9	012, 09:43:37 FO: Compressor is Ru rednesday, Nov efrigerator Smar urrent conds ONE rednesday, Nov rednesday, Nov rednesday, Nov rednesday, Nov rednesday, Nov	ember 7, 2012 9:4	3:37 AM C 3:19 AM C	'Refrigerator ST		MN	
					🛧 Ma	ve Up 🧔 Mov	ve Down Delete	Close				

 After a few minutes, you should receive a start event user notification. Click on the notifications button located at the top of the studio. Double click the notification to view its details. Check the email address you used when you registered with GroveStreams to see if you received an email describing the event. Since we associated a Start and Stop Action Package, you will receive a notification when the event starts and when it ends.



- 1. Notification button. Notice a number appears in the button for each type of notification that has not yet been read.
- 2. You can view active events (events that have started but have not yet ended) by double clicking the event under the component in the left tree panel. Although, there is a **Historical Events** tab, GroveStreams does not currently store historical events. That functionality is on our roadmap.
- 3. Click on the map icon to view where the event took place.
- 4. Click on the component icon to view the component's current location. This is useful if your component is a mobile component.

Active events also appear in Map views. Create a dashboard map and watch for event icons to appear as events start. You may have to filter out component icons to see the event icons. Since sandbox components have a fixed location, event icons will appear exactly where the component icons are located and may be obscured by the component icon.

To disable the event so that you no longer receive emails and notifications, simply edit the component, select the event and uncheck the enabled field. Then save the component.