

salesforce

InVent360

Real-time ventilator alerts and analysis



Setup Guide



Introducing InVent360



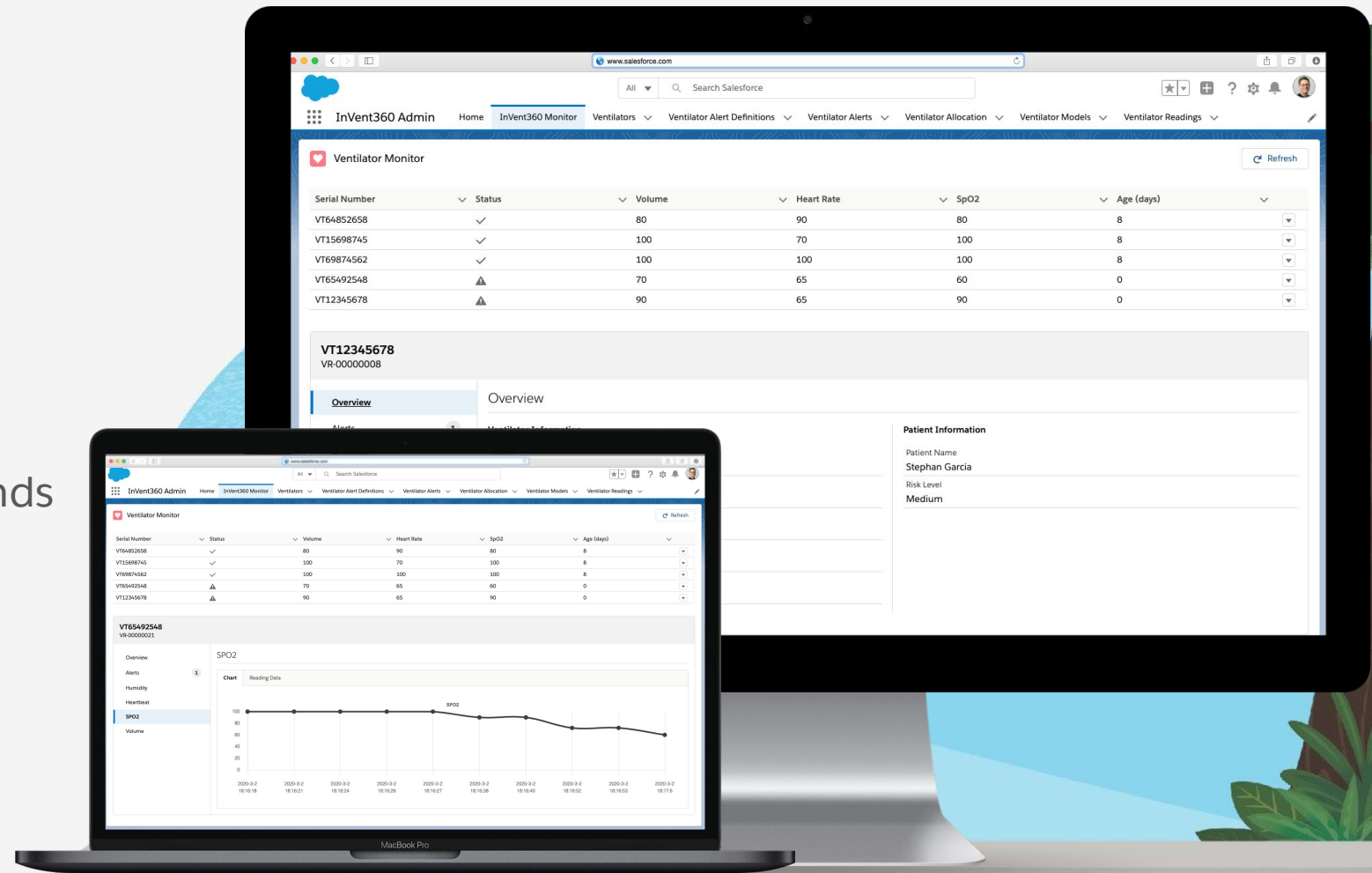
Ventilator monitoring & alert management on Salesforce

Monitor real-time ventilator data

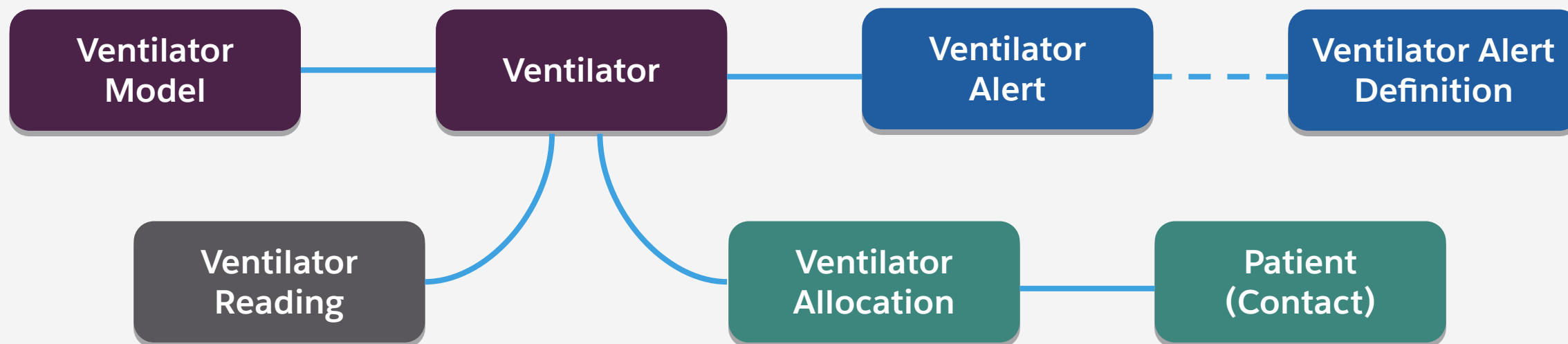
Associate devices to the next available patient

Set and send alerts based on data trends and thresholds

100% natively built on Salesforce



Core Object Model



Ventilator & Model - the main records for each ventilator - they are used to track the logs, alerts and patients associated to the ventilator

Ventilator Alert & Definition - used to notify users of issues with the ventilator - the definition is used as a predefined template for each alert type

Ventilator Reading - a reading that has been sent to Salesforce to update the ventilator

Ventilator Allocation - a triage object that is used to assign patients waiting to ventilators

Setting up the Required Objects



The **ventilator**, **ventilator model** & **ventilator alert definition** records must be created before you begin using the app.



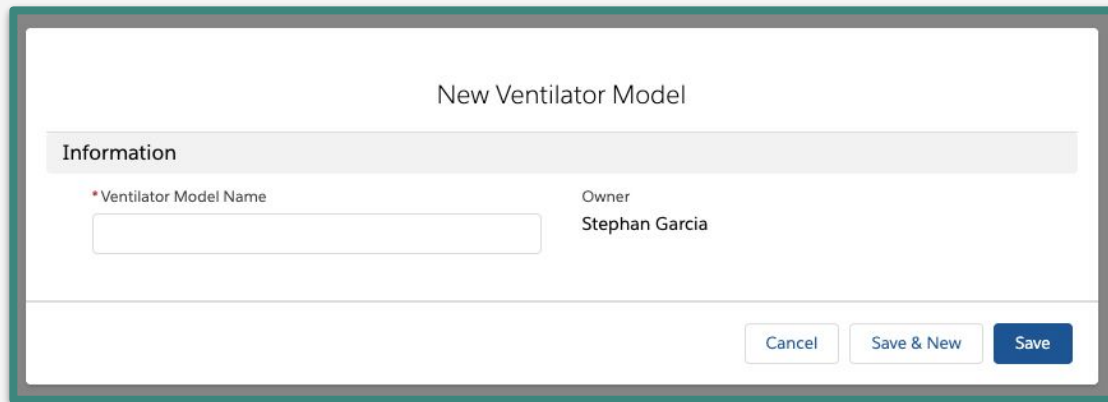
If a new ventilator is introduced via the payload sent from the device - the app will automatically create a ventilator record, but you must manually associate it to a model retrospectively.



Setting up the Required Objects



Ventilator Model & Ventilator

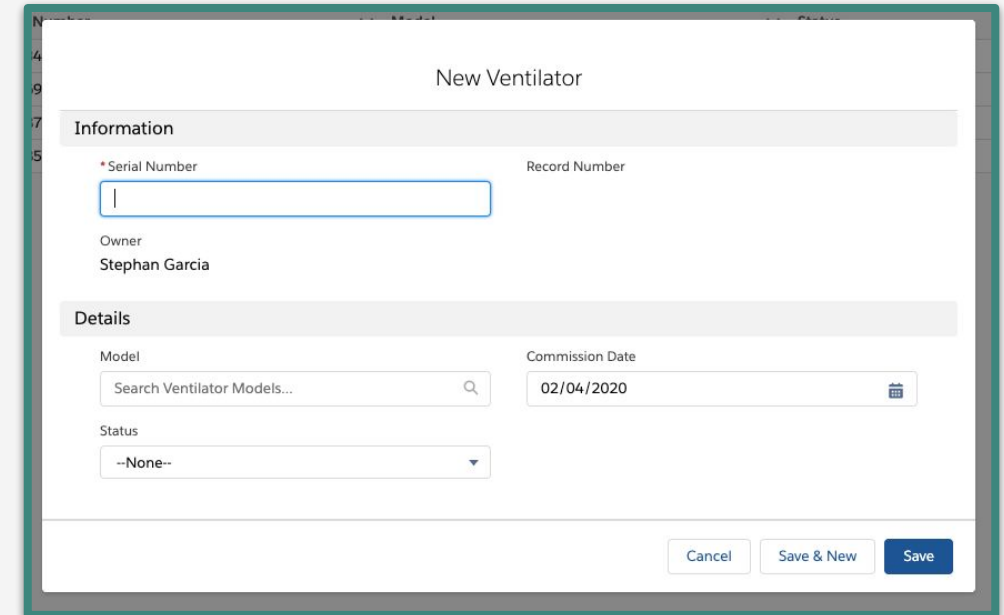


New Ventilator Model

Information

* Ventilator Model Name

Owner
Stephan Garcia



New Ventilator

Information

* Serial Number Record Number

Owner
Stephan Garcia

Details

Model

Commission Date

Status

External Id: Serial Number - this is used to match an existing ventilator to the logs that are consumed by the app.



Setting up the Required Objects



The ventilator alert definition will be used to create alerts and email sent to the owner of the ventilator.

00001 The patient's BPM reading has dropped below 70 Med

New Ventilator Alert Definition

Information

* Subject

Description

Alert Code

Owner Stephan Garcia

Priority --None--

Cancel Save & New Save

Related Details

Subject Volume below 80

Description The volume has fallen below 80, please check the device.

Alert Code 00002

Created By Stephan Garcia, 02/04/2020, 18:16

Owner Stephan Garcia

Priority High

Last Modified By Stephan Garcia, 02/04/2020, 18:16

The **alert code** field is used in the flow to identify which definition to create the alert from.



Ventilator Monitor



The ventilator monitor tab allows you to view your list of ventilators and live data consumed by Salesforce.

Ventilator List - A list of the active ventilators that can be explored

Ventilator Details - information about the selected ventilator and current patient.

Ventilator Monitor

Refresh

Serial Number	Status	Volume	Heart Rate	SpO2	Age (days)
VT64852658	✓	80	90	80	8
VT15698745	✓	100	70	100	8
VT69874562	✓	100	100	100	8
VT65492548	⚠	70	65	60	0
VT12345678	⚠	90	65	90	0

VT12345678
VR-00000008

Overview

Alerts1

Humidity

Heartbeat

SPO2

Volume

Overview

Ventilator Information

Model
DIY Ventilator

Age
0

Volume
90

Heartbeat
65

SPO2
90

Patient Information

Patient Name
Stephan Garcia

Risk Level
Medium

Ventilator Monitor

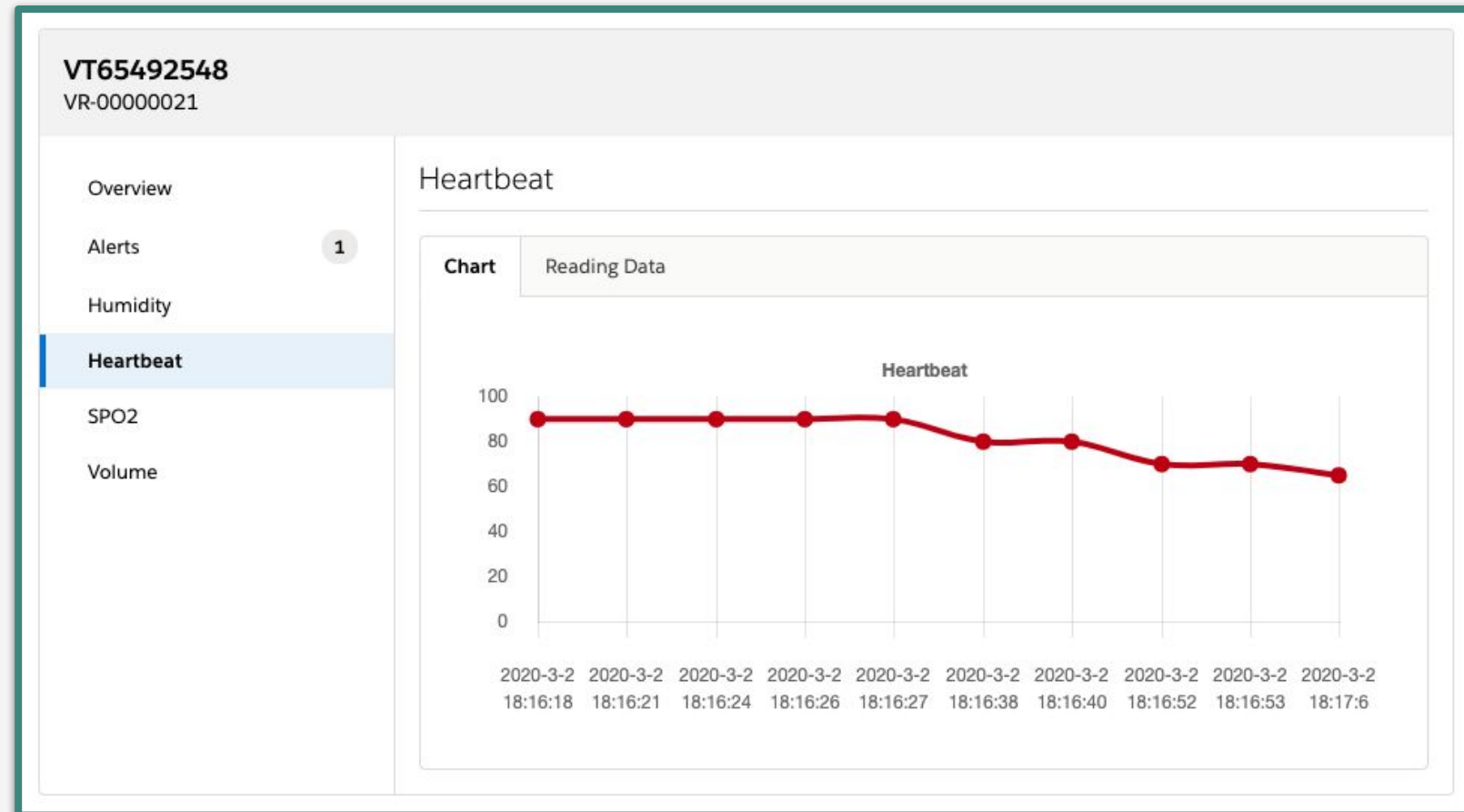


The selected ventilator section of the monitor allows you view an overview of the monitor and dig into its readings.

Overview - The details of the selected device

Alerts - A list of the alerts associated with the ventilator

Charts - Dynamic charts rendering the data that comes in via the readings.



Alerts - The alerts that are created by the flow are visible in the monitor and can be closed directly from the app.

VT65492548 VR-00000021	
Overview	Alerts
Alerts 2	
Humidity	
Heartbeat	
SPO2	
Volume	

Ventilator Reading Management Flow



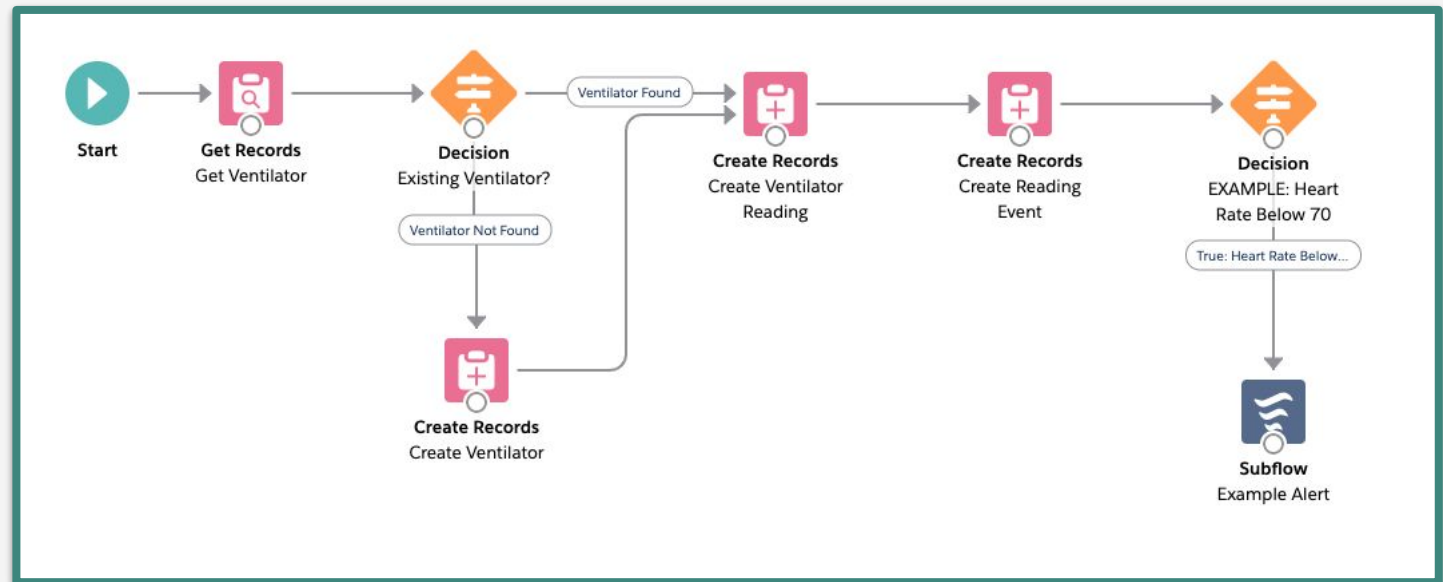
The flow can be initiated by any application that can connect to the Salesforce Rest API.

Query Ventilator - The flow check to see if the ventilator has already been created by the external Id. If not found, will create a record.

Create Reading Record - It then creates the reading log record for auditing.

Create Platform Event - The flow fires a platform event for consumption in the monitor.

Evaluates Alerts - The flow then evaluates any alert criteria and distributes them.



Ventilator Reading Management Flow



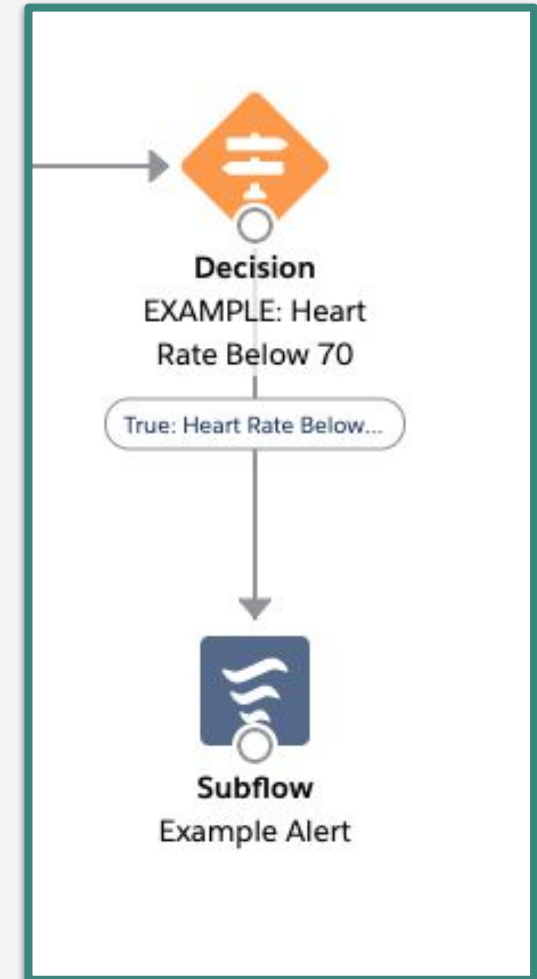
Alerts can be defined by anyone with access to the InVent360 Admin App.

Alert Definition - Each alert definition you create can be used to drive notifications in the flow.

Decision Elements - You can define your criteria and then route to a sub-flow to process the alert.

Example: Low Heart Rate

One of the values received from a ventilator is the **heart rate** of the current patient. If the heart rate value goes below 70 we can navigate to the **ventilator alert management** sub flow. We will then pass the **alert code** of our alert definition record and the alert will be processed.



Ventilator Alert Management Flow



The flow is initiated by the ventilator reading management flow

Query Existing Alert -

The flow first checks to see if there is already an open alert. If so, it adds 1 to the hit count field. If not, it will query the definition.

Find Alert Owner -

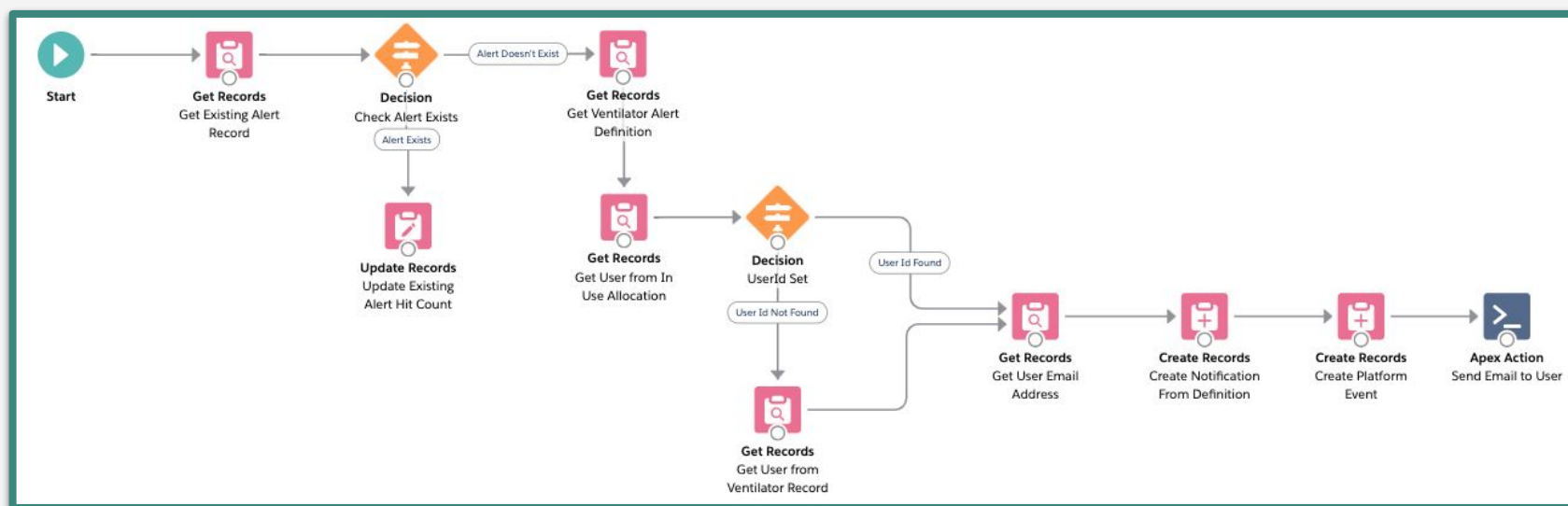
First the flow checks to see if there is currently a patient on the ventilator - it notifies the owner, if not it finds the ventilator owner.

Create Alert -

Once the owner is found, the flow creates the alert and the platform event is fired to notify the monitor app.

Send Email -

The flow will then use the definition to send and email to the selected recipient.



Ventilator Allocation Management Flow

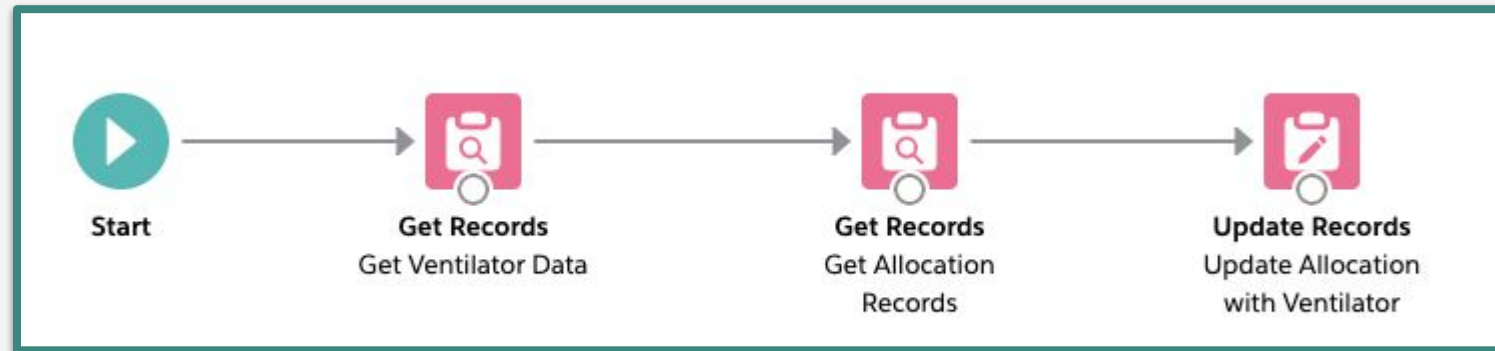


The flow can be initiated by process builder to automatically allocate a ventilator to the next patient.

Query Ventilator - Get the details of the ventilator that has just become available.

Query Allocations - Check to see if there is a patient currently waiting and grab the record that has been waiting the longest.

Update Allocation - Update the allocation record to include the available ventilator and change the status to 'Allocated'.



Submit Readings via the REST API



The main entry point for the flow is through the REST API.

Endpoint - `"/services/data/v32.0/actions/custom/Ventilator_Reading_Management/"`

Invoking this endpoint and passing the inputs in the body will process the flow and ensure the data is reflected in Salesforce.

```
{
  "inputs" : [{
    "Ext_SerialNumber" : "12345678",
    "Ext_Alarm" : "1",
    "Ext_HeartRate" : "90",
    "Ext_Humidity" : "100",
    "Ext_SpO2" : "100",
    "Ext_Volume" : "100"
  }]
}
```

