Komodo data design

## Alarm Design

### Overview

Alarm will be processed in a Web job after common cooked message is received in the topic.

If an alarming condition is detected beyond on delay

### Tables

#### AlarmType:

This table will be used to store broad category of alarm types. This table might help in generating useful information categorized based on alarm type.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| AlarmTypeId | Tinyint | Not null,PK |  |
| Name | Nvarchar(200) | Not null |  |
| Description | Nvarchar(200) | null |  |

Example:

|  |
| --- |
| "AlarmType": [  {  "Id": 1,  "Name": "Device Error",  "Description": "Error sent by transmitter or sensor or gateway"  },  {  "Id": 2,  "Name": "Set Point Alarm",  "Description": "Value is higher than setpoint"  },  {  "Id": 3,  "Name": "Calculated Alarm",  "Description": "Alarm calculated for parameters"  }  ] |

#### AlarmDefinition:

Define the different type of alarms that can be raised by sensors, controllers, Gateways etc. This will be a master list of alarm types.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| AlarmDefinitionId | int | Not null,PK |  |
| Name | Nvarchar(200) | Not null |  |
| AlarmTypeId | Nvarchar(200) | Not null(FK) references  AlarmType |  |
| Priority | Int | Not null |  |
| Description | Nvarchar(300) | Null |  |
| ModifiedOn | Date | Not null |  |
| ModifiedBy | int | Not null(FK) |  |

Example Data:

|  |
| --- |
| "AlarmDefinition": {  "AlarmDefinitionId": 1,  "Name": "Flow Alarm1",  "AlarmTypeId": 2,  "Priority": 200,  "Description": "Moderate priority flow alarm",  "ModifiedOn": "2017-04-17",  "ModifiedBy": "abc@abc.com"  } |

#### AlarmSettings:

Stores alarm settings data related to particular sensor or node or gateway.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| AlarmSettingsId | int | Not null,PK |  |
| MeasurementId | int | Not null(FK) references UniversalMeasurement |  |
| ContextId | int | Not null(FK) references  UniversalContext |  |
| OnDelay | smallint | null |  |
| OffDelay | Smallint | Null |  |
| DeadBand | Smallint | Not null |  |
| ModifiedBy | int | Not null(FK) |  |
| ModifiedOn | Date | Not null |  |
| HasUserOverride | bit | null | If user has overridden all alarms |

Example Data:

|  |
| --- |
| "AlarmSettings": {  "AlarmSettingsId": 1,  "MeasurementId": 45,  "ContextId": 45,  "OnDelay": 5,  "OffDelay": 5,  "DeadBand": 5,  "DeadBandUnit": "gpm",  "HasUserOverride": false  } |

#### SetPointSetting:

Stores set point settings related information related to sensors

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| SetPointSettingsId | Int | Not null (PK) |  |
| SetpointMasterId | smallint | Not null |  |
| MeasurementId | int | Not null(FK) references UniversalMeasurement |  |
| ContextId | int | Not null(FK) references  UniversalContext |  |
| Value | Decimal | null |  |
| ModifiedOn | Date | Not null |  |
| ModifiedBy | Int | Not null(FK) |  |

Example data:

|  |
| --- |
| "SetPointSetting": [  {  “SetPointSettingsId”:1,  "ContextId": 45,  "MeasurementId": 45,  "SetpointMasterId": 1,  "value": 15  },  {  “SetPointSettingsId”:2,  "ContextId": 45,  "MeasurementId": 46,  "SetpointMasterId": 2,  "value": 5  }  ] |

#### SetpointMaster:

This will be master table to store information related to Set points.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| SetpointMasterId | smallint | Not null(PK) |  |
| Name | Nvarchar(200) |  |  |

Example data:

|  |
| --- |
| "SetpointMaster": [  {  "SetpointMasterId": 1,  "Name": "High"  },  {  "SetpointMasterId": 2,  "Name": "Low"  }  ] |

#### Alarm:

This will store alarms generated by Web Job .This table may not be required as the alarms may be stored in the topic or redis cache.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| AlarmId | int | Not null(PK) |  |
| AlarmDefinitionId | int | Not null (FK) references AlarmDefinition |  |
| AlarmState | bit | Not null |  |
| CreatedOn | Date | Not null |  |
| IsAlarmOveridden | bit | null |  |
| IsNotified | Bit | Not null |  |

Example data

|  |
| --- |
| "Alarm": [  {  "AlarmId": 1,  "AlarmDefinitionId": 1,  "AlarmSettingsId": 1,  "AlarmState": "On",  "CreatedOn": "2017-04-18",  "IsAlarmOveridden": false,  "IsNotified": false  }  ] |

#### AlertRecipientMapping:

This will store which users are subscribed for any alerts .the alerts may be related to alarms raised for selected sensors

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| Id | int | Not null(PK) |  |
| AlertTypeId | int | Not null (FK) references AlertType |  |
| ContextId | bit | Not null |  |
| MeasurementId | Date | Not null |  |
| UserId | bit | null |  |
| AlertDefinitionId | int | Not null | This definition could be AlarmDefinition or any other alert type definition. |

Example data:

|  |
| --- |
| "AlertRecipientMapping": [  {  "Id": 1,  "AlertTypeId": 1,  "ContextId": 45,  "MeasurementId": 45,  " UserId ": 1,  “AlertDefinitionId”:1  },  {  "Id": 2,  "AlertTypeId": 1,  "ContextId": 45,  "MeasurementId": 45,  " UserId ": 1,  “AlertDefinitionId”:2  }  ] |

#### AlertType:

This generic alert master table which can be used for alarm related alerts also along with other alerts

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| Id | Int | Not null(PK) |  |
| Name | int |  |  |
| Description | bit | Not null |  |

Example data:

|  |
| --- |
| "AlertType": [  {  "Id": 1,  "Name": "Alarm"  },  {  "Id": 2,  "Name": "Information"  }  ] |

#### AlertHistory:

Stores raised alerts in this table.

|  |  |  |  |
| --- | --- | --- | --- |
| Column | Datatype | Constraints | Notes |
| AlarmHistoryId | int | Not null(PK) |  |
| AlarmId | int | Not null(FK) references Alarm |  |
| AlarmDefinitionId | int | Not null (FK) references AlarmDefinition |  |
| AlarmState | bit | Not null |  |
| CreatedOn | Date | Not null |  |
| IsAlarmOveridden | bit | null |  |
| IsNotified | Bit | Not null |  |

Example data:

|  |
| --- |
| "AlarmHistory": [  {  "AlarmHistoryId": 1,  "AlarmId": 1,  "AlarmDefinitionId": 1,  "AlarmSettingsId": 1,  "AlarmState": "On",  "CreatedOn": "2017-04-18",  "IsAlarmOveridden": false,  "IsNotified": false  }  ] |