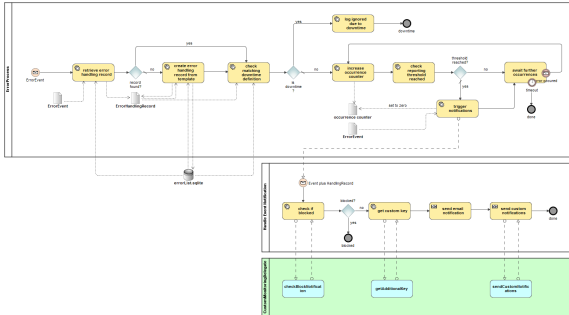


Custom Notification Implementation

E2E provides a standard implementation of the Monitoring Service. In general, notifications are sent by email and/or any other custom notification scheme, which can be configured using the Monitoring UI service. The standard E2E Monitoring service (E2EMailJiraMonitoring) puts JIRA as the custom notification scheme. However, alternative custom notifications schemes can be implemented as well. The bulk of the required functionality is implemented in a xUML library **libMonitoring**. The BPMN diagram below illustrates the overall process (click to enlarge):



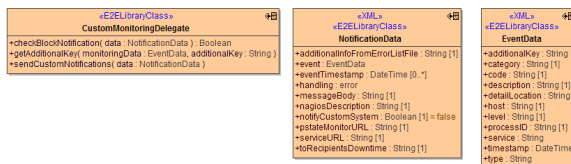
When the E2E Bridge sends an error to be notified, the notification port first performs a couple of checks (i.e. whether a dedicated handling record exists, whether a downtime has been configured, whether the occurrence counter reached the threshold for reporting). In case these checks all go fine, the notification sub process is started. This sub process defines three extension points for custom notifications:

- **checkBlockNotification:** return true to suppress the notification of this error
- **getAdditionalKey:** provide a string value, which will be included in the email notification as *additional key*
- **sendCustomNotifications:** perform any custom notification you want

The mechanism by which these extension points are called is by means of a **CustomMonitoringDelegate** class which you have to provide in your custom monitoring service.

Implementing the CustomMonitoringDelegate

The **CustomMonitoringDelegate** shall implement three methods, which get the notification in question as parameter. See the below class diagram for an overview:



Operation	Parameter	Type	Direction	Description	Values /Example	
checkBlockNotification	data	NotificationData	in	Contains the notification data.		
	block	Boolean	out	Use this flag to block the notification from being sent (default = false).	false	Do not block notifications (default).
					true	Block notifications.
getAdditionalKey	monitoringData	EventData	in	Contains the event data.		
	additionalKey	String	out	Used to return a string that will be added in the monitoring email as an additional key (default = none)	a valid string	
sendCustomNotifications	data	NotificationData	in	Contains the notification data for your custom notification handling.		

In most cases, the content of the **EventData** (which can be accessed through the **NotificationData** instance) instance shall suffice. On some rare occasions, additional information which is internally held in the **NotificationData** structure might be useful as well, so we decided to provide it as parameter, even if most of its attributes will be irrelevant for the task at hand.

Class	Attribute Name	Type	Description
EventData	service	String	Name of the service that originally has thrown the error.
	type	String	Error type.
	code	String	Error code.
	additionalKey	String	Additional key for persistent state error objects.
	level	String	Error log level.
	category	String	Error category.
	host	String	Host name where the error occurred.
	timestamp	DateTime	Timestamp when the error occurred.
	processID	String	ID of the process in which the error occurred.
	detailLocation	String	Location of the logfile the error originally was logged to.
	description	String	Error description.
NotificationData	nagiosDescription	String	Description for the Nagios command (only used with Nagios).
	additionalInfoFromErrorListFile	String	Additional values for this specific error (threshold, remarks). This content is coming from the configurations specified in the Monitoring UI for this kind of error (see Usage of the Monitoring UI).
	event	EventData	Specifies the EventData object to be notified.
	eventTimestamp	Array of DateTime	Timestamp when the error occurred.
	handling	error	The error object that lead to this event.
	messageBody	String	The body of the email message that will be sent.
	nagiosDescription	String	The description for the Nagios command (only used with Nagios).
	notifyCustomSystem	Boolean	The configuration setting, telling if custom notification is requested for this error.
	pstateMonitorURL	String	URL of the corresponding persistent state object.
	serviceURL	String	URL of the service that originally threw the error.
	toRecipientsDowntime	String	List of recipients configured to be notified in case of downtime.

Setting up Your Custom Monitoring Service

In order to setup your custom monitoring service, you have to perform the following steps:

1. Create a new E2E model.
2. Import **libMonitoring.Irep** (provided by E2E).
3. Create your delegate, inheriting from the **CustomMonitoringDelegate** class provided in the library.
 - e.g. **MyMonitoringDelegate**, Base Classifier libMonitoring::MonitoringService::Delegates::CustomMonitoringDelegate
 - Override the three methods mentioned above to suit your needs.
4. Create your delegate factory, implementing the **CustomMonitoringDelegateFactory** interface provided in the library.
 - e.g. **MyMonitoringDelegateFactory**, Realized Interface libMonitoring::MonitoringService::Delegates::CustomMonitoringDelegateFactory
 - Implement the **createDelegate** method, in which you create an instance of **MyMonitoringDelegate** and return it as output.
5. Create a service start up activity.
 - Create an activity, e.g. **onServiceStartup**.
 - In this activity

- a. Create an instance **settings** of `libMonitoring::MonitoringService::CustomMonitoringSettings`.
 - b. Create an instance **factory** of your **MyMonitoringDelegateFactory**.
 - c. Use the memory adapter to globally store the factory under key **settings.delegateFactoryKey**.
6. Create a component diagram for your service, and at least
 - Create E2ESOAPService **MonitoringService** on port 19000, and assign the library E2ESOAPPortType **MonitoringPort** to it.
 - Create E2ESOAPService **MonitoringServiceUI** on port 19002, and assign the library E2ESOAPPortType **MonitoringUIDBHandling** to it.
 - Create E2ESOAPService **MonitoringInfoService** on port 19003, and assign the library E2ESOAPPortType **InfoPort** to it.
 - Select Aliases/Resources **libMonitoring** and **MailLibrary**.
 - On the E2EComposite, select your startup activity in the attribute **startupActivity**.
 - Create any additional services you may have created ports for.
 - Select any additional resources you may have defined/imported.

The service name and port number scheme used in the component diagram ensures backwards compatibility with previous versions of Monitoring services. You are free to assign different names and ports, but this will require you to adjust the SOAP client settings on the Monitoring UI as well as the Monitoring SOAP port settings on the E2E Bridge.