X-Force Scheduler Application

X-Force Alarm Scheduler process will be the process which works in background to perform the specific task on specific time. Scheduler application can perform task like Report Generation, Database back up, Database archival, File Transfer/ Copy, Delete files etc.one can also perform manual task for any time duration using Scheduler process.

Scheduler application executes the scheduled tasks from the web application. Scheduler application have the following facility:

1. Reports
2. Database Backup
3. Shrink Database
4. Delete Files
5. Disk Space Check
6. File Transfer
7. Notification
8. T-SQL

Splash Screen

Splash Screen: A splash screen is a graphical control element consisting of a window containing image, a logo, and the current version of the software.
Splash screen typically used for notify the user that the program is in the process of loading. They provide feedback that a process is underway. Occasionally, progress bar within the splash screen indicates the loading progress. A splash screen disappears when the application's main windows appears.

Splash screen progress bar percentage wise list of application processes are as below.

- 10% - It will check that application directory having sufficient privilege or not. Application will close with "You have not sufficient privilege to directory." Message if application doesn't have sufficient.
- 20% - It will check that application having valid license or not, if application not having valid license then application will close with "License file does not exist. Please contact SSM InfoTech Solutions Pvt. Ltd. to get the valid license." Message.
- 40% - It will create one XML file with name xmlConnectivityFile.xml for database connectivity information. If user has stores this information previously than it will not ask again for connection properties.
- 50% - It will check application's version. If version is not correct than it will display a dialouge box for wrong version configuration and after click on ok applicdation will exit.
- 60% - It will check for server configuration.If it is not done than it will display error message "No Server Configuration Found. Please first do the server configuration from X-Force Alarm Web" and then application will exit. If Last Login date is null than it should set currentdate. Lastlogindate must be smaller than current date otherwise it will display error message "License Validity of this application has expired. Kindly contact SSM Infotech for License Renewal." and application will exit
- 70% - It will create one XML file with name ReportGenerationType.XML for report type information (excel/gembox).

- 30%,80%,90% - It is not having any process right now, in future if any feature are added then it will be used for that. Application will start.

Pre-Requisite

Before starting X-Force Scheduler Application, firstly we need necessary things:
1)Report Configuration in X-Force Alarm Web Application
2) Give Every One Rights to the folder where X-Force Scheduler application is installed. if user does not give sufficient privilege to the directory then application will exit automatically.
3) User have to Keep License file Named "ssmxforce.lic" in the root folder where application is installed. if there is not license file in the root folder or license file is not valid or expired application should exit automatically.
4) If any configuration is saved previously then application should load that configuration

T-SQL

TSQL : If user need any SQL statements needs to be execute on scheduled time than user can use this feature.

Scheduler application will execute T-SQL statements on its schedule time.
Its Report Type will be Tquery and block will be given to user for SQL statements while configured in web as described in Screenshot.
PFA for example.

Database related Operations

Database will undergoes for Database Detach, Database Shrink, Database Backup for scheduled time.
PFA.
Database Detech : Detech database from the SQL server.We are writing SQL script for deteching database in TSQL. It will execute on scheduled time and detech database from SQL server.
Shrink Database : It will Shrink Database size on scheudled time
Database Backup : It will take backup of database as per scheudled time .

Delete Files

User can prepare deletion schedule for log & capture files
User can provide frequency for executing this schedule, and according to frequency files will be deleted.

X-Force Reports

We are providing reports for detailed analysis of alarm Events occurrence. This analyses provide in depth detail for the different parameters of the alarm events.Some analyses may not be available for some DCS systems.

Here we are having 12 standard reports :
-Chattering Alarm Analysis Report
-Consequential Alarm Analysis Report
-Duplicate Alarm Analysis Report
-Flood Alarm Analysis Report

-Frequent Alarm Analysis Report
-History Alarm Analysis Report
-KPI Report
-Operator Action Report
-Stale Alarm Analysis Report
-Standing Alarm Analysis Report
-System Alarm Analysis Report
-Time in Alarm Report
-Time to Acknowledge Report

All reports will be configured in X-Force Alarm Web application.

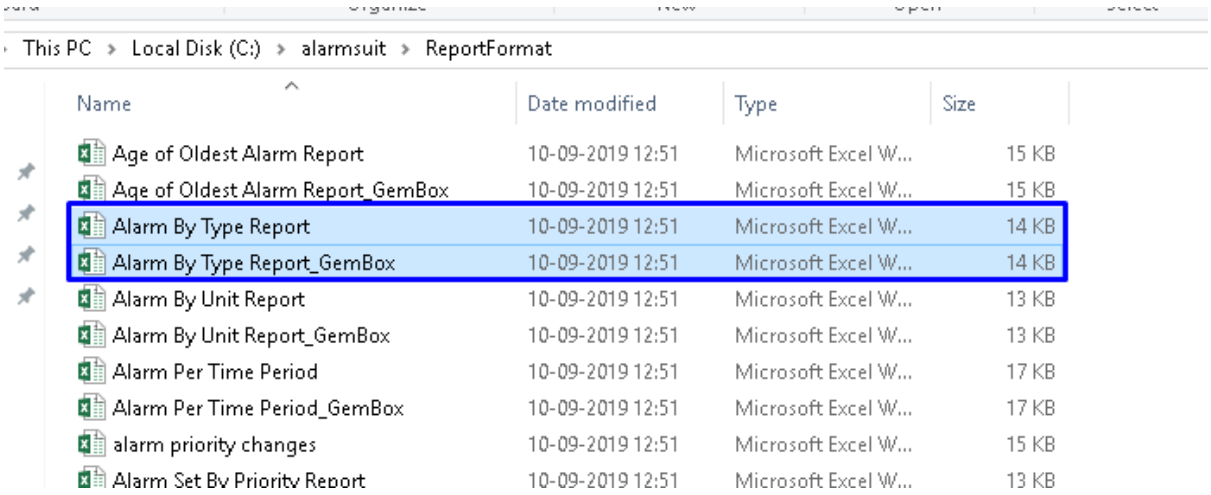
We can generate a report in different types :
Excel, Gembox, CSV, PDF, HTM, MHT

Difference between **excel** and **Gembox** :
If Microsoft Excel is configured on your system then you can generate a reprot in excel format file.
If you are not having excel configured on your system then you can generate gembox report format that will create file with excel format.

For using gembox you just need to append **_GemBox** at the end of file name. You can find it in attechment.

By default, it will take GEMbox option if is not configured.

Please find document for Report command in Report Format.



Chattering Alarm

Chattering Alarm : The Chattering Alarm analysis identifies entities that generate a burst of alarm activity that cycles in and out of alarm very rapidly.

Basically, if more than 3 pair of alarms generate in a minute than it will call chattering alarm.
Usually when some machine is disturbed than it generates these types of alarms in ALM-RTN pair.

PFA.

Consequential Alarm

consequential alarm : A consequential alarm becomes active as a result of another alarm. The Consequential Alarm analysis indicates entities that have gone into an alarm state and other entity/alarm combinations that became active before and after the alarm event

PFA.
It is an alarm that generates in result of any other alarm.

Duplicate Alarm

Duplicate Alarm : The Duplicate Alarms analysis identifies potentially redundant alarms, based on the alarm's context, via the Tagname, Comment.

It will find all duplicate alarms, it can be find using Tagname, AlarmType, MsgType, Unit and Comment's combination.

Basically if any same event occurs 2 or more time then it will be considered as duplicate alarm.

Flood Alarm Analysis Report

Flood Alarm : The Alarm Flood analysis summarizes alarm activities during flood periods.

Alarm Flood is the phnomenon of presenting more alarms in a given period of time than a human operator can effectively respond. It specifies the amount of time, alarm system is in a flood condition in a specified time range.

Detaol description of Analysis :

Flood start time	the time at which Alarm events occurrences exceed to the Flood start Count
Flood Start count	the number of alarms at which to begin the flood
Flood End Time	the time at which Alarm events occurrences drop to the value of Flood End Count
Flood End count	the number of alarms at which to end a flood
Alarm count	The no of alarm events between the Flood Start time and End time
Flood Duration	The time (in hours) for which flood Condition remains on system. Time Difference between Flood start Time and End Time.
Flood Unit	Specifies the duration for flood condition

Frequent Alarm Analysis Report

Frequency analysis : The Frequency analysis reveals important trends in alarm activity by displaying the number of times an alarm event occurred during the given time.it present Alarm Activity as per different Parameters of Alarm Events Behavior. It also display alarm occurrence differently with grouping of particular selected parameter in report.

Frequency analysis report Represents top highest frequency data for the given time duration .i.e. top records = 5 than it will display all tag details which has frequency 5 or less than 5.

History Alarm Analysis Report

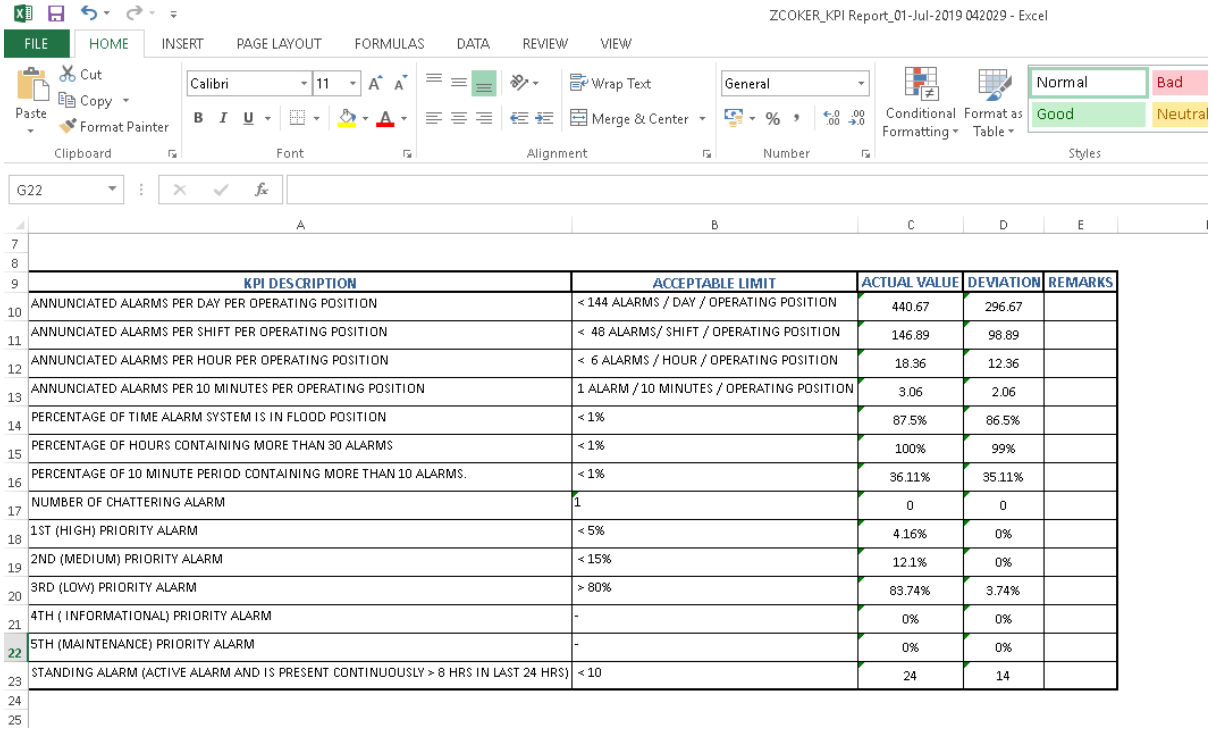
History Alarm Analysis : The History Alarm Report Present the History of Alarm events for the specified time period with message type ALM. This report will show all the data without any specific filters.

It will display data from vw_data_alarm_field for specified dates.
If user needs to verify data of history alarm report than user can fire a query on vw_data_alarm_field for certain eventstamp.
For example : select * from vw_data_alarm_field where eventstamp between 25-sep-2019 06:00:00 and 26-sep-2019 06:00:00 and MSGTYPE='ALM'

KPI Report

Key Performance Indicator (KPI) : The Key Performance Indicator (KPI) summarizes Alarm Activities and display Comparative analysis against the predefined KPI Standards.it present Plant stability in comparison with KPI Standards by displaying different analysis in one Report.

In KPI Report KPIDescription, Acceptable Limit, Actual value, Deviation, Remarks columns are there, Deviation=Actual value-Acceptable Limit



KPI DESCRIPTION	ACCEPTABLE LIMIT	ACTUAL VALUE	DEVIATION	REMARKS
ANNUNCIATED ALARMS PER DAY PER OPERATING POSITION	< 144 ALARMS / DAY / OPERATING POSITION	440.67	296.67	
ANNUNCIATED ALARMS PER SHIFT PER OPERATING POSITION	< 48 ALARMS/ SHIFT / OPERATING POSITION	146.89	98.89	
ANNUNCIATED ALARMS PER HOUR PER OPERATING POSITION	< 6 ALARMS / HOUR / OPERATING POSITION	18.36	12.36	
ANNUNCIATED ALARMS PER 10 MINUTES PER OPERATING POSITION	1 ALARM / 10 MINUTES / OPERATING POSITION	3.06	2.06	
PERCENTAGE OF TIME ALARM SYSTEM IS IN FLOOD POSITION	< 1%	87.5%	86.5%	
PERCENTAGE OF HOURS CONTAINING MORE THAN 30 ALARMS	< 1%	100%	99%	
PERCENTAGE OF 10 MINUTE PERIOD CONTAINING MORE THAN 10 ALARMS.	< 1%	36.11%	35.11%	
NUMBER OF CHATTERING ALARM	1	0	0	
1ST (HIGH) PRIORITY ALARM	< 5%	4.16%	0%	
2ND (MEDIUM) PRIORITY ALARM	< 15%	12.1%	0%	
3RD (LOW) PRIORITY ALARM	> 80%	83.74%	3.74%	
4TH (INFORMATIONAL) PRIORITY ALARM	-	0%	0%	
5TH (MAINTENANCE) PRIORITY ALARM	-	0%	0%	
STANDING ALARM (ACTIVE ALARM AND IS PRESENT CONTINUOUSLY > 8 HRS IN LAST 24 HRS)	< 10	24	14	

Operator Action Report

The Operator Action Report present the list of Alarms which are generated due any action taken by operator for the specified time period.
It has MsgType as OPR.
When operator is taking any action on the system than this type of alarm will be generate.

Stale Alarm Analysis Report

The **Stale Alarms** analysis displays entities that have been in an alarm state for an extended period of time (e.g., longer than a shift) without returning to the normal state.

In this Report, for particular Tagname & Alarmtype, we consider 1st occurrence of ALM time and then find out the return time for the same tag name and alarm type and if alarm to return time is exceed to specified limit (default is 8) then we consider Stale alarm.

If an alarm comes on system having MsgType ALM, then if current time and alarm generated time has difference is greater than 24 hours than it will be considered as a Stale Alarm for 3 months of time period.

Standing Alarm Analysis Report

The **Standing Alarms** analysis displays a list of alarms that sounded within a specified time span but have not returned to normal.

Standing Alarm Report contains only events which are not returned to normal in last 24 hours and event is in the alarm state from 8 hours or greater.

If an alarm comes with MsgType as ALM in last 24 hours, and that alarm is not getting its RTN alarm till 8 hour than it will be considered as standing alarm.
If an alarm is generating at 24-Sep-2019 06:00:00 PM, we are generating this report for 24-sep-2019 06:00:00 AM to 25-sep-2019 06:00:00 AM, it has no RTN till 25-sep-2019 06:00:00 AM, than it will be considered as Standing alarm for those 24 hours.
Difference between Alarm generated time and report generated time is more than 8 hours.

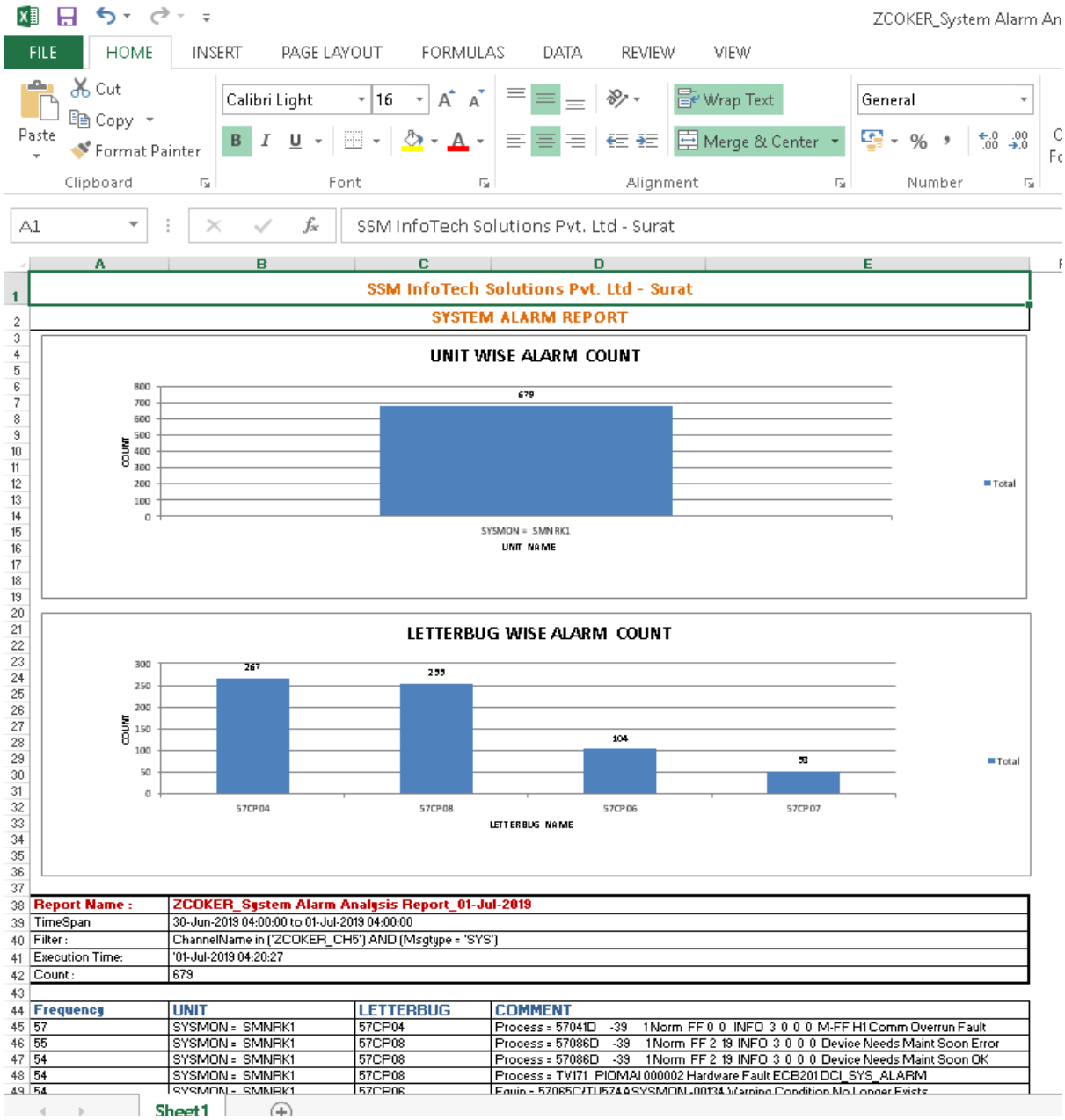
System Alarm Analysis Report

The System Alarm analysis present the list of Alarms generated due to any system or software failure for the specified time period. In AIMS we have given unique identification to system alarm that is Message Type **SYS.**

This types of alarm has MsgType as **SYS.**

User can find system alarm from **SYS** msgtype.

	AlarmId	ChID	Acknowledge	RecvTime	EventStamp	TagName	Comment	AlarmState	AlarmType	MsgType	GroupName	Parameter	IValue	NewValue	Limit	IOldValue	OldValue	EngUnits	Channell
1	1089037	13	NULL	2019-09-16 11:33:54.5950000	2019-09-15 07:28:57.0000000	HIS0257	Time Adjust (old Time 15-09-2019 07:28:53)	NULL	NULL	SYS	330	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
2	1089510	13	NULL	2019-09-16 15:01:50.0100000	2019-09-16 15:03:01.0000000	HIS0257	Time Adjust (old Time 16-09-2019 15:02:57)	NULL	NULL	SYS	330	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
3	1089968	13	NULL	2019-09-17 22:35:47.7910000	2019-09-17 22:37:05.0000000	HIS0257	Time Adjust (old Time 17-09-2019 22:37:01)	NULL	NULL	SYS	330	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
4	1090295	13	NULL	2019-09-19 06:05:53.1420000	2019-09-19 06:07:09.0000000	HIS0257	Time Adjust (old Time 19-09-2019 06:07:05)	NULL	NULL	SYS	330	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
5	1090371	13	NULL	2019-09-19 15:19:53.0340000	2019-09-19 15:21:05.0000000	FCS0302	AI5202B2 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
6	1090372	13	NULL	2019-09-19 15:19:53.0340000	2019-09-19 15:21:05.0000000	FCS0302	AI5202B1 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
7	1090373	13	NULL	2019-09-19 15:19:53.0340000	2019-09-19 15:21:05.0000000	FCS0302	AI5202A1 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
8	1090374	13	NULL	2019-09-19 15:19:53.0340000	2019-09-19 15:21:05.0000000	FCS0302	AI5202A2 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
9	1090387	13	NULL	2019-09-19 17:16:03.5860000	2019-09-19 17:17:16.0000000	FCS0302	AI5202B2 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
10	1090388	13	NULL	2019-09-19 17:16:03.5860000	2019-09-19 17:17:16.0000000	FCS0302	AI5202B1 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
11	1090389	13	NULL	2019-09-19 17:16:03.5860000	2019-09-19 17:17:16.0000000	FCS0302	AI5202A1 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
12	1090390	13	NULL	2019-09-19 17:16:03.5860000	2019-09-19 17:17:16.0000000	FCS0302	AI5202A2 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3
13	1090403	13	NULL	2019-09-19 18:58:41.0840000	2019-09-19 18:59:52.0000000	FCS0302	AI5202B2 Normal from PI/O not Ready	NULL	NULL	SYS	40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	AREA 3



Time in Alarm Report

The Time in Alarm analysis documents the length of time an entity spends in an alarm state before returning to its normal state.

Time in alarm report contains data which shows alarm return pair so that any user can identify when event goes in to normal state from the alarm state.

It calculates the time for an entity that for how much it is in alarm state before returning to normal state.

This analysis is not the same as the Time to Acknowledge analysis because an alarm event may return to its normal state without the operator's acknowledgement.
In this Report, it displays total ALM & RTN Alarms Paring details for particular TAGNAME & ALARMTYPE.

Time to Acknowledge Report

The Time to Acknowledge analysis indicates the average operator response time to alarm events.

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Time to Ack Report just describes all Alarm to Acknowledge Data with all alarm parameters in given time Duration.

In this Report, it displays total ALM & ACK Alarms Paring details for particular TAGNAME & ALARMTYPE.
The analysis results include a list of entities, and for each entity, the associated alarm parameter, accumulated time to acknowledge, number of alarm events, average time to acknowledge per alarm event. The analysis also displays the total number of alarm events and the total number of unique alarm events.

Note: This analysis is not available for all systems. This report is only available for the DCS which will provide Acknowledgement Data.

Navigation: Report Menu -> Alarm system Performance -> Time to ACK
To analyze Time to Ack Report: Follow Steps as mention below to do Analysis with Time to Ack Report

1) Go to Reports Menu and select Alarm System Performance, in that select Time to Ack and click on it.
2) Click on Refresh button from Operation Toolbar.

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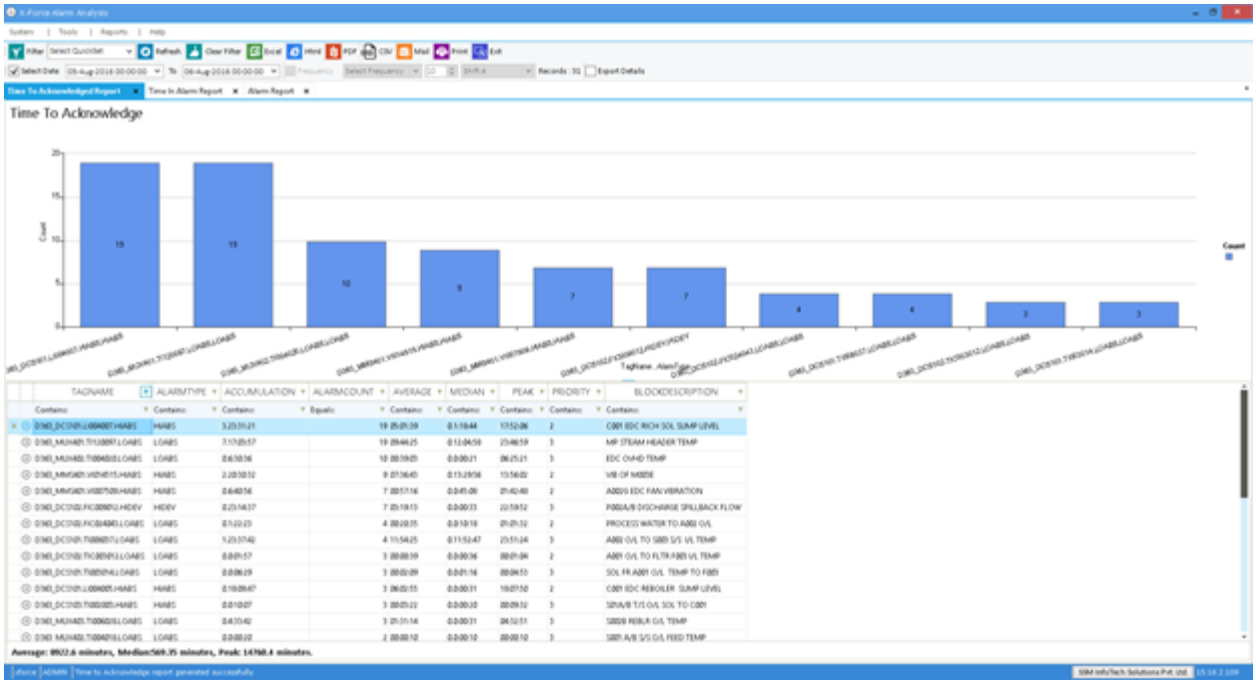
Time to Ack Report just describes all Alarm to Acknowledge Data with all alarm parameters in given time Duration.



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