Import alarms fromGE Fanuc iFix to Nimbus

Nimbus uses OPC AE (Alarms and Events) to subscribe for alarm events from iFix.

Mostly the OPC AE server is already installed in the iFix, if it does not exist contact your local GE Fanuc distributor and they will provide it for you. To find out if the OPC AE server exists, look for the iFixOPCAESrv.exe file in the Proficy iFix folder.

The Nimbus Alarm Server itself has no build-in feature for OPC AE but there is an extern application, *NimOPC* (Nimbus OPC AE link), which is freely downloadable from *www.automatisera.nu*.

Install and configure NimOPC

Create a new folder, *NimOPC*, where Nimbus Alarm Server where installed – usually C:\Program Files (x86)\TroSoft\Nimbus Alarm Server 3

Open the downloaded*NimOPC_1.0.0.xx.zip* file, open it and copy the files to the newly created *NimOPC* folder.

Set the folder access rights on the new *NimOPC* folder for group *Users* to *Full control*, by right clicking the *NimOPC folder -> Properties -> Security -> Edit*.

Select Users group and check Full control. Click Ok twice.

Files (x86) + TroSoft + Nimbus Alarm S	erver 3 🕨			-	∳ γ Search Nimb
are with 🔻 🛛 Burn 🔹 New folder					
Name	Date modified	Туре	Size		
Image: Second	17-11-09 19:00 17-11-09 19:01 06-11-27 13:24 15-11-30 13:32 17-06-05 15:07 17-06-05 15:07 17-06-05 15:07 13-09-11 18:39 Image: Composition of the second s	File folder File folder HTML Document HTML Document 046 File 044 File 046 File Application roperties aring Security Previous aring Security Object n Group or Security Object n Group or Security Object n Group or Security Object n Group or Security Object n Group or Security Object n Group or Security Object n Group or Security Dermissions ced. Baccess cool Leam ab	1 KB 1 KB 1 KB 19 KB 32 KB 33 KB 40 KB Versions Customize Versions Customize (Versions Customize) Customize (Versions Customize) (Versions Cus	SS m Serve les (x86)\TroSoft\Nimi CTV34BSE\Administra SE\Users) Add Allow V	bus Alam Serve tors)

Folder access rights needs to be changed, or it will be more difficult to editNimOPC.ini

Open the NimOPC.ini file. Uncomment the ProgId=Proficy.OPCiFIXAE.1 row. Save NimOPC.ini.

Start *iFix* if it not running. StartNimOPC.exe (should be Run as Administrator).

If you get a question about exposing ports to the network, select desired networks and *Ok*. *NimOPC* exposes a TCP socket port where Nimbus will connect.

Proficy.OPCIFIXAE	.1 - NimOPC														
Ele Help															
Source	Time	Sever	NewState	Cond	Subcond	Message	ChangeM	EventType	To Nimbus	[t0] Tag	[t1] Area	[t2] Category	[t3] Name	[t4] Descr	[t5] Status
iFIX	18:44:26.565	150	0x0003			[FIX] TA0220GT81.A	0x0041	0x0002	(fail)	iFIX		150		FIX TA0220	
FIX.TA0220GT81	18:44:24.060	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0041	0x0004	(fail)	FIX.TA0220GT81		950	Tag	Frysskydd larm	LOLO
iFIX	18:44:24.010	150	0x01bc			[FIX] TA0220GT81.A	0x0f60	0x0002	(fail)	iFIX		150		FIX TA0220	
FIX.TA0220GT81	18:44:14.523	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0008	0x0004	(fail)	FIX.TA0220GT81		950	Tag	Frysskydd larm	LOLO
iFIX	18:44:10.332	150	0x01bc			[FIX] TA0220GT81.A	0x0f60	0x0002	(fail)	iFIX		150		FIX TA0220	
•															•

In the title bar it should express *Proficy.OPCiFIXAE.1* which indicates the iFix OPC AE server has started and is connected to *NimOPC*.

Some events will hopefully appear in the list when they occur. *NimOPC* will automatically subscribe to all events.

Configure Nimbus to connect to NimOPC

🖳 Nimbus - SCADA import	Diana Control Diana
SCADA System	Energo WebSystem SMTP (Niagara)
Add SCADA system import	Fidelix FX-2025
Remove this SCADA system import	Generic File
Remove this SCADA system import	Generic Mail
	Generic RS-232
	Generic TCP (Client)
	Generic TCP (Server)
	Googol T1/RBM-600
	Honeywell Excel
	IMSE WebMaster
	INU 130
	INU-vision
	Intellicom NetBiter / Weland OJ Electronis
	Intellution Fix 32
	Johnson Controls MSEA
	Johnson Controls Metasys 5
	Johnson Controls SuperVision

In Nimbus Explorer select Setup -> SCADA import setup. Select SCADA System -> Add SCADA system import - >Generic TCP (Client)

	Nimbus - SCADA import			_ D _X
<u>s</u>	CADA System			
lr'	Nimbus - SCADA import			
	Generic TCP (Client)			
	TCP server address and port	127.0.0.1:14000		
	Reconnect interval (msecs)	30000		
			Cancel	Ok

Nimbus has default values as above.

Nimbus Alarm Server may aswell be installed in some other server than the *NimOPC / iFix* node. If that is the case the above IP should be changed and necessary firewalls be configured accordingly.

Port number should correspond to the port number set in NimOPC.ini. The default value is 14000.

Start the *Nimbus Server* either using *Service Control Manager* if it is installed as service or using the *File* menu.

Nimbus should now connect to the NimOPC application, this will be indicated in the NimOPC list view.

Try some test alarms and ensure they appear in Nimbus Explorer.



In the above example some events have been sent from *NimOPC* to the *Nimbus Alarm Server*.

Double click the alarm event to open the Alarm Event Info form.

Configure the NimOPC application to start automatically

NimOPC may be run as a service, but that could cause problems because iFix cannot be restarted when *NimOPC* is running.

NimOPC should instead be started by iFix.

Run the SCU.

Select Configure -> Tasks



Find the *NimOPC.exe* file and select *Add. NimOPC* should be started as the last task (at least after all iFix core tasks) and run as a *Minimized* task.

Save the configuration file. Restart *iFix* and ensure it starts *NimOPC* and Nimbus reconnects.

Caution Because *NimOPC* is not an iFix application it should always be manually closed before iFix is shutdown. iFix is not capable of shutting it down. *NimOPC* uses *OPC AE (DCOM)* which automatically will start the *iFix OPC AE server*. If the *OPC AE server* is started *iFix* will not be able to restart. If this happens, find the *NimOPC.exe* and *iFixOPCAESrv.exe* processes in *Task manager* and kill them both.

If we would like to run NimOPC as service anyway?

To install *NimOPC* as service start *NimOPC* using the command line switch/ifrom an elevated command prompt, ex:

NimOPC.exe /i

Uninstall using the /u command line switch.

First time NimOPC needs to be started manually using the Service Control Manager (SCM).

If iFix is running as service then *NimOPC* should be run as the same user *iFix* uses. The default user is *Local System Account*.

Also select Startup type: Automatic (Delayed start)

Configure the iFix OPC AE server and NimOPCfor more info

Attributes

The *iFix OPC AE server* is able to provide some more information about each alarm event. This is in the OPC world known as*Attributes*.

III iFIX OPC AE Server									
File Configure Trac	ce Help								
Statistic		Value							
Sample Period (ms)		1000							
Num Event Server Obj	ects	1							
Num Subscriptions Co	onfigure i	FIX OPC AE Server				? ×			
Num Browser Obje 🥅									
Num Events Gener	OPC A	ttributes			User Field Data Sour	ce			
Num Client Notific		iFIX Field Name	Attribute Name		Lleer Field1	Δ			
Num Events Last S		Areas	Areas	_	User Field1.	<u>~-</u>			
	~	Node	Node	User Field2:	A_				
		Physical Node Name	Physical Node Name						
		Application	Application		User Field3:	A_			
		ApplicationVersion	ApplicationVersion	_	Liver Field4:	Δ			
		Message ID	Message ID	=	0301110104.	<u> </u>			
		Alarm Status	Alarm Status	_					
		LV Facilian de l	EV Evelletter	_	Advanced	Advanced			
		EngUnitLabel	T ag Description	_	Priority Rank	Severity Number			
		Liser Field1	Liser Field1	_	INFO	40			
		User Field?	User Field?	_	LOLO	80			
		User Field3	User Field3	_	LOW	150			
		User Field4	User Field4	_	MEDIUM	500			
	V	Alm Ext Field1	Alm Ext Field1	_	HIGH	850			
		Alm Ext Field2	Alm Ext Field2		HIHI	900			
		Operator Name	Operator Name	-	CHITICAL	300			
	_	Select All	Restore Defaults		Queue Size Only get alarm on node	100 18 FIX			
					Help OK	Cancel			

Find the *iFix OPC AE Server* form and select *Configure -> Configure fields*. Select the fields to be sent to *NimOPC*.

In the above example Areas(Alarm Areas) and the Alm Ext fields are selected beside the default fields. Click Ok and select File -> Exit. The OPC AE Server will automatically restart and NimOPC will now be updated with the new attributes.

Show the NimOPC form, select Help -> About NimOPC

About Nii	mOPC	×
Ś	NimOPC Version 1.0.0.26 Copyright (c) 2002-2016 TroSoft AB	OK
Categori	es and Attributes:	
	Attribute 400 (SourceTag)	*
	Attribute 401 (Message Type)	
	Attribute 403 (Areas)	
Cat	egory 1 (Tag)	
	Attribute 100 (SourceTag)	
	Attribute 101 (Message Type)	
	Attribute 103 (Areas)	
	Attribute 104 (Node)	
	Attribute 109 (Alarm Status)	
	Attribute 110 (CV)	=
	Attribute 111 (EngUnitLabel)	
	Attribute 117 (Alm Ext Field1)	
	Attribute 118 (Alm Ext Field2)	-

Here you can see what numbers the attributes get. The Areas will have attribute 1.103 (Category. Attribute)

Open the NimOPC.ini file.

NimOPC.INI - Notepad
<u>File Edit Format View H</u> elp
[Nimbus]
; ; Formatting for the string(s) sent to Nimbus (these formattings are also readable in the ; listview columns t0t5)
[Source] - OPC AE Source [Severity] - Severity 0999 [ConditionName] - OPC AE Condition [Message] - OPC AE Message [SubconditonName] - OPC AE Subcondition [EventCategory] - OPC AE Event Category [2.5] - OPC AE Category 2, Attribute 5
; Fields may be concatenated, ex
; t4=[Message] [1.5][2.5][3.5] ; t1=EventCategory: [eventCategory] Attribute: [1.1][2.2]
; is valid. If ex category 2, attribute 5 does not exist for a certain event, it will simply not be ap
Categories and Attributes is broswed by the About dialog box in NimOPC.
; Any text may be entered, ex
; tO=Alarm from Node 21: [Source]
It is also possible to have different formats depending of alarm event type, ex one format ; when the alarm goes active and another format when it goes back to normal. Use parameter suffix, ex:
t3=[ConditionName] t3_Active=[ConditionName] [2.6]
; Suffixes may be _InAcive _Active and _Acked (ex t3_InActive, t3_Active, t3_Acked)
;t0=[Source] ;t1= ;t2=[Severity]
;t3=[ConditionName] ;t5=[SubconditionName]
t1=[1.103]
;t3=[ConditionName] ;t3_InActive=[ConditionName] [2.5] ;t3_Active=[ConditionName] [2.6] ;t3_Acked=[ConditionName] [2.7]
; Severity (range(s) if you like) to ignore (will not be sent to Nimbus)
; ;IgnoreSeverity=1-100,110-125,201,208 ;
; ; ChangeMask(s) to ignore (will not be sent to Nimbus)
; bit masks for m_ChangeMask ; OPC_CHANGE_ACTIVE_STATE 0x0001 ; OPC_CHANGE_ACK_STATE 0x0002

Select the field(s) where to put the new attributes. In the example above we just use the *1.103Areas* attribute and put into the *T1*-field.

Save NimOPC.ini. Restart NimOPC.

Proficy.OPCiFIXA	E.1 - NimOPC	-			_			-	-		-	100			• X
<u>File</u> <u>H</u> elp															
Source	Time	Sever	NewState	Condi	Subco	Message	ChangeM	EventType	To Nimbus	[t0] Tag	[t1] Area	[t2] Category	[t3] Name	[t4] Descr	[t5] St ^
FIX.TA0220GT81	20:09:36.790	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0041	0x0004	Active	FIX.TA0220GT81	0,1 (A, Nimbus)	950	Tag	Frysskydd Iarm	LOLO _
iFIX	20:09:36.730	150	0x0003			[FIX] Process databas	0x0088	0x0002	Active	iFIX		150		FIX Process	=
iFIX	20:09:36.701	150	0x0003			[FIX] TA0220GT81 wa	0x0088	0x0002	Active	iFIX		150		FIX TA0220	
FIX.TA0220GT81	20:09:16.915	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0088	0x0004	Active	FIX.TA0220GT81		950	Tag	Frysskydd Iarm	LOLO
iFIX	20:08:34.653	150	0x0337			[FIX] TA0220GT81 wa	0x0f60	0x0002	Active	iFIX		150		FIX TA0220	-
<							III								►

Here the *Area* fields appear in the *T1*-column which actually means they will appear in the *Area*-field in Nimbus.

? Alarm event info - FIX.T.	A0220GT81
Tools	
Field	Value
Status as number:	1
Status as text:	ACTIVE
Area [t1]	01 (A Nimbus)
Category (tz):	950
Name [t3]:	Tag
Description [t4]:	Frysskydd Iarm
State from SCADA [t5]:	LULU
PC Date:	2017-11-09
PC Time:	20:09:37
SCADA Date:	2017-11-09
SCADA Time:	20:09:36
SCADA System Number: SCADA Sustem Desc:	18 Generic TCP (Client)
CG-D-N System Desc.	

This is how it looks in Nimbus. The selected *Alarm Areas* in the tag's *Alarms tab* are presented within parenthesis. In the above example the Alarm Areas A and *Nimbus* are selected.

0, 1 means it ranges from *0..1* (totally 2 Alarm Areas), these numbers are of little or no use, but the text (ex *Nimbus* above) may be used as a filter criteria in the *Alarm Route Profiles*.

Category / Severity

Category may also differ from plant to plant and customer needs.

Find the *iFix OPC AE Server* form and select *Configure -> Configure fields*

	iFIX Field Name	Attribute Name		User Field1:	A
7	Areas	Areas			
/	Node	Node	_	User Field2:	A_
	Physical Node Name	Physical Node Name			
	Application	Application		User Field3:	A_
	ApplicationVersion	ApplicationVersion			
	Message ID	Message ID		User Field4:	A_
7	Alarm Status	Alarm Status	=		
/	CV	CV		Advanced	
/	EngUnitLabel	EngUnitLabel		Dista Devel	0
	Tag Description	Tag Description		Priority Hank	40
	User Field1	User Field1			40
	User Field2	User Field2		LOUG	150
	User Field3	User Field3		MEDIUM	500
	User Field4	User Field4			950
/	Alm Ext Field1	Alm Ext Field1	_	HIHI	900
/	Alm Ext Field2	Alm Ext Field2		CRITICAL	950
	Operator Name	Operator Name	Ψ	ChimoRe	330
	Select All	Bestore Defaults		Queue Size	100
		Thestole Delaus		Only get alarr on node	ns FIX

The above (default) settings translates the *iFix priority* to*OPC severity*. This severity may be translated by *NimOPC* to something more readable (or just back to the *iFix priorities* if you like)

NimOPC.INI - Notepad	
<u>File Edit Format View H</u> elp	
; OPC_CHANGE_SEVERITY 0x0010 ; OPC_CHANGE_SUBCONDITION 0x0020 ; OPC_CHANGE_MESSAGE 0x0040 ; OPC_CHANGE_ATTRIBUTE 0x0080 ; Ignor echangeMask=0x0008,0x0020,0x0040	^
, [SeverityTranslation] ; OPC AE severity may be translated to anything else, ex A, B etc	
; 850=A ; 500=B ; 250-350=C ; 100-200=D-larm	
950=A-larm 900=A-larm 850=B-larm 500=B-larm 150=B-larm	
40=C-1arm	E
< III	H. ▲

Enter the Severity number and what it should be translated to in the [SeverityTranslation] section.

Save *NimOPC.ini*. These changes take effect immediately, no programs need to be restarted.

Proficy.OPC:FIXAE1 - NimOPC														
Ele Help														
Source	Time	Sever	NewState	Condi	Subco	Message	ChangeM	EventType	To Nimbus	[t0] Tag	[t1] Area	[t2] Category	[t3] Name	[t4] Descr 🔺
FIX.TA0220GT81	20:31:05.790	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0041	0x0004	Active	FIX.TA0220GT81	0,4 (A, F, L, N, Nimbus)	A-larm	Tag	Frysskydd Iarm
iFIX	20:31:05.704	150	0x0003			[FIX] Process databas	0x0008	0x0002	Active	iFIX		B-larm		FIX Process .
iFIX	20:31:05.704	150	0x0003			[FIX] TA0220GT81 wa	0x0008	0x0002	Active	iFIX		B-larm		FIX TA0220
FIX.TA0220GT81	20:30:46.938	950	0x0003	Tag	LOLO	Frysskydd Iarm	0x0008	0x0004	Active	FIX.TA0220GT81		A-larm	Tag	Frysskydd Iarm
iFIX	20:30:31.831	150	0x0337			[FIX] TA0220GT81.A	0x0f60	0x0002	Active	iFIX		B-larm		FIX TA0220
iFIX	20:30:20.438	150	0x0337			[FIX] TA0220GT81.A	0x0f60	0x0002	Active	iFIX		B-larm		FIX TA0220
FIX.TA0220GT81	20:23:31.690	950	0x0003	Tao	LOLO	Frvsskvdd larm	0x0041	0x0004	Active	FIX.TA0220GT81	0.4 (A. F. L. N. Nimbus)	950	Tao	Frvsskvdd larm 🐣
<														►

Here, the previous severitynumber 950 is now translated to the text A-larm before it is sent to Nimbus.



This is how it looks in Nimbus. The text may be used as filter in the *Alarm Route Profiles* just as any other field.

Other settings and filters

There are some other settings in *NimOPC.ini* that change the behaviour and look. Ex to filter out unwanted events (operator messages).

Unfortenately there are no documentation for *NimOPC*, however the INI-file is pretty well commented.