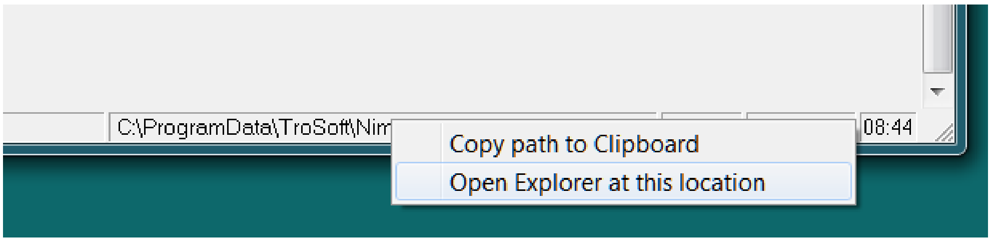
Nimbus Redundancy

From version 3.00.05 there is built-in functionality for redundancy in Nimbus. It will automatically replicate changes to receivers and profiles and also alarm events between two Nimbus servers.

One of the Nimbus Alarm Servers are configured as *Primary* and the other as *Secondary* (*Standby*).
A single TCP socket is used for the information exchange.

The secondary server connects to the primary server, hence the primary server act as a socket server. Firewalls inbetween must be configured appropriate.

The redundancy must be manually setup in *Nimbus_Server.ini*. This file is easily found by right clicking the project path down right in *Nimbus Explorer* and select *Open Explorer at this location*, ex:



Open *Nimbus_Sever.ini* using *Notepad*.

In the *[Redundancy]* section you will find the settings needed. They are found later in this document.

In the primary server you set parameter *ServerType=1*

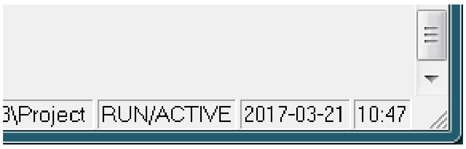
In the secondary server you set parameter *ServerType=2* and *PrimaryServerAddress* to the primary servers' IP-address or DNS-name. The portnumber may also be changed and defaults to 40666.

Both servers shold be setup to import alarm events from the SCADA/PLC, just like a single server solution. The *Nimbus Servers* always transfer the alarm events to each other. However, only the active *Nimbus Server* will send out alarm events.

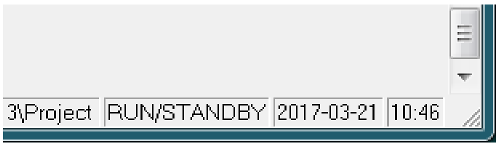
If both servers always should send out the alarm events, you set *SendAlwaysFromBothServers=1*. The reason for this could be if you want double SMS to be sure both servers and all equipment are up and running.

If the active *Nimbus Server* for some reason is shutdown or fails the other *Nimbus Server* will become active. Generally the primary *Nimbus Server* will be active.

Example of how *Nimbus Explorer* indicates that *Nimbus Alarm Server* is active:



Example of how *Nimbus Explorer* indicates that *Nimbus Alarm Server* is standby:



If the *Nimbus Servers* loose the TCP connection, both will become active.

If you do some changes in receivers or profiles, the changes will automatically be replicated to the other *Nimbus Server*.

Other settings (configuration), ex *COM*-ports etc are not replicated, because this may differ between the servers. If you change ex *AlarmFormat*, you will have to do it on both servers.

Caution! Redundancy is not at port level. It means if there is a GSM-terminal on both servers and the active servers' GSM-terminal fails, Nimbus will NOT send from the other GSM-terminal. To configure a backup receiver you will have to enable the backup receiver functionality (Nimbus - Server Setyp -> Advanced -> Allow backup receiver) and select a backup receiver in the receiver configuration form. If the GSM-terminals are on the network it is possible to use them from both servers.

See configuration samples down below.

Example of Nimbus_Server.ini

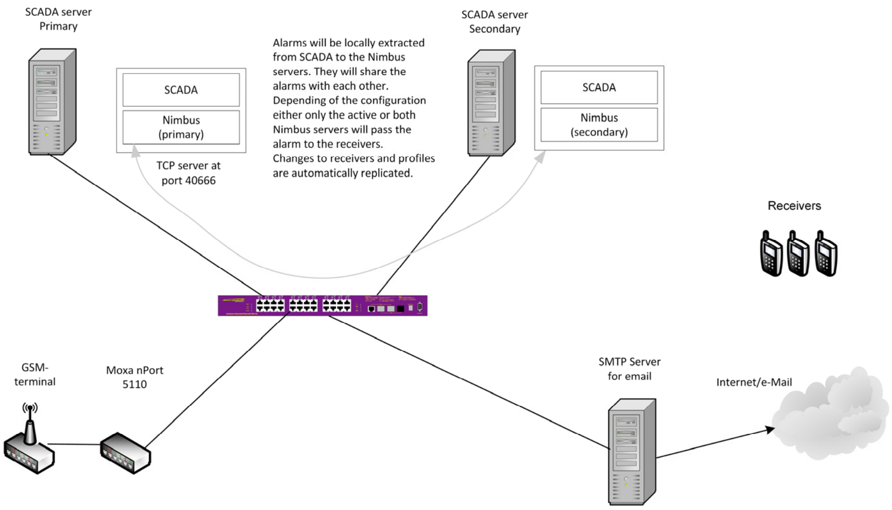
```
[Redundancy]

;
; Server type:
;
; 0 - Redundancy disabled
; 1 - Primary server
; 2 - Secondary server
;
; The primary server acts as a socket server and will listen for incoming connection requests
; The secondary server acts as a socket client and will cyclically try to establish a TCP
; connection to the primary server
;
; When both servers are online, the primary server will always be active
;
; If the connection fails both servers will become active
;
; Receiver, profile, alarm event and som other information will be exchanged between both
; servers (if not individually disabled below)
;
ServerType=0

;
; If SendAlwaysFromBothServers=1 then both servers will try to send alarm events regardless if
; they are active or not
;
SendAlwaysFromBothServers=0

;
; The Primary Nimbus server DNS name or IP-address. Only needed if we are the Secondary
; server, leave blank or remarked if we are the secondary server
;
PrimaryServerAddress=192.168.123.223

;
; The Secondary Nimbus server IP-address. This parameter may be ommitted, it should be entered
; only if we are the Primary server and wish to ensure only a valid secondary Nimbus server is
; connecting. If someone else is trying to connect then the connection attempt will be
; rejected.
;
; Wildcards are allowed, ex AllowedSecondaryServerAddress=192.168.122.*,192.168.123.* will
; allow any secondary server from the 192.168.122.0 and 192.168.123.0 subnets
;
; Defaults to *
;
AllowedSecondaryServerAddress=*

;
; This port will be used as the socket server port if we are the primary server,
; if we are secondary server, we will connect to this port
;
ServerPort=40666
```

```
;
; The connection will be validated by cyclically sending a keepalive message. This message
; also informs the redundant counterpart of the server status
;
; Valid interval is between 1000..300000
;
KeepAliveInterval=5000

;
; Reconnect attempt interval (used only if we are the Primary server)
;
ReconnectInterval=15000

;
; Startup time to let redundant Nimbus connect to each other before alarm handling is started
;
StartupTime=5000

;
; Set to 1 if test alarms also should be sent from the
; inactive server
;
SendTestAlarmsAlsoFromInactiveServer=0

;
; Set to 1 if we should run the watchdog tests also in the inactive server
; It will create local alarms only if watchdog fails
;
CheckWatchdogAlsoAtInactiveServer=0

;
; Set to 1 to replicate watchdog updates
;
ReplicateWatchdogs=1

;
; Set to 1 to replicate test alarm updates
;
ReplicateTestAlarms=1

;
; Set to 1 to replicate receiver updates
;
ReplicateReceivers=1

;
; Set to 1 to replicate profiles updates
;
ReplicateProfiles=1

;
; Time between two similar alarm events to treat it as a real alarm
; Both servers send all alarm events to each other, if they look exact the
; same but the arrival time and SCADA timestamp differs they could be the same
; alarm event. This filter function ensures we don't get double alarm events.
;
; If set to 0, no time deviation filtering is to be done
;
DeviationFilterTime=10000

;
; The incoming alarm events are stored for some time (cached) this is needed
; to compare alarm events and filter out double events
;
CompareAlarmListCacheLiveTime=60000
```

Example of full redundancy

Full redundancy using network-based GSM-terminal and email

2018-06-20
Tomas Rook



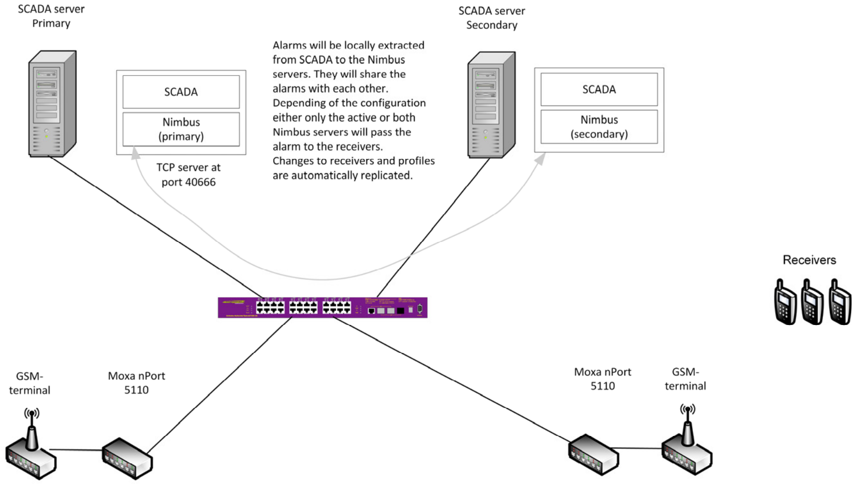
Alarms will be locally extracted from SCADA to the Nimbus servers. They will share the alarms with each other. Depending of the configuration either only the active or both Nimbus servers will pass the alarm to the receivers. Changes to receivers and profiles are automatically replicated.

Primary sending to SMS-receivers using a GSM-terminal. Both Nimbus servers may send SMS using this terminal, though it is located on the network and Nimbus 3 use a TCP socket to the Moxa nPort. No virtual COM-port software is needed. See document *How to configure Moxa nPort device to Nimbus*.

Secondary sending using email. You configure double receivers, ex *Tomas using SMS* and *Tomas using Mail*. At the receiver *Tomas using SMS* you configure *Tomas using Mail* as backup receiver. Nimbus will automatically send to the mail receiver if the GSM-terminal fails.
You need to enable backup receivers in *Server Settings -> Advanced.*
The backup receiver may be of any kind and does not need to be an email receiver.

Full redundancy using two network-based GSM-terminals

2018-06-20
Tomas Rook



Alarms will be locally extracted from SCADA to the Nimbus servers. They will share the alarms with each other. Depending of the configuration either only the active or both Nimbus servers will pass the alarm to the receivers. Changes to receivers and profiles are automatically replicated.

Primary sending to SMS-receivers using a GSM-terminal. Both Nimbus servers may send SMS using this terminal, though it is located on the network and Nimbus 3 use a TCP socket to the Moxa nPort. No virtual COM-port software is needed. See document *How to configure Moxa nPort device to Nimbus*.

Secondary sending to SMS-receivers using a GSM-terminal.
You configure double receivers, ex *Tomas SMS_P* och *Tomas SMS_S* using different receiver types. At the receiver *Tomas SMS_P* you configure *Tomas SMS_S* as backup-receiver. Nimbus will then automatically use this GSM-terminal if the primary fails. You need to enable backup receivers in *Server Settings -> Advanced*. You also need to copy the receiver type and create a secondary using a different IP. Please contact TroSoft for further instructions.
The backup receiver may be of any kind and does not need to be a GSM-terminal