USER MANUAL

MB3 A&E OPC Server v7.20-3

A&E OPC Server for ABB MasterBus 300
By Novotek

Document version 7.20-3
This version printed: Thursday 19 April 2012

MB3 A&E OPC Server

A&E OPC Server for ABB MasterBus 300

Program version 7.20-3

Version information

Revision	Date	Description
7.20-1	2006-07-04	Created
7.20-2	2006-12-05	New Version
7.20-3	2007-10-24	New Version

CONTENTS

1 About the MB3 A&E OPC Server

The MB3 DA OPC server receives System Events, System Text and Process Events from the ABB controllers. These are then sent from the MB3 DA OPC server to the MB3 A&E OPC server that makes the alarms reachable for A&E OPC clients.

1.1 References

- MB3 Server User Manual
- ABB GCOM Multidrop User's Guide 3BSE 000 165R0001
- ABB MasterNet User's Guide 3BSE 003 839R301
- AdvaCommand Basic Functions User's Guide 3BSE 001 976R0401 Rev A
- AdvaCommand Localization User's Guide 3BSE 009 666R0001 Rev A
- OPC Foundation Alarms & Events Custom Interface Standard Version 1.10

1.2 Abbreviations

Name	Description
OPC A&E	OPC Alarms & Events
MB300	MasterBus 300
MB3	MasterBus 300 OPC server three letter abbreviation.
AC	ABB Advant Controller
MP	ABB Master Piece
OS	ABB Operator Station

2 Installation

The MB3 A&E OPC Server is automatically installed together with the MB3 DA OPC installation. The MB3 A&E OPC server will also be registered.

The files installed that is used by the MB3 A&E OPC Server are:

File	Description
MB3AESrv.exe	The MB3 A&E OPC server program
MB3AESrv.sim	A file containing simulation events.
NDIAEServer.dll	Northern Dynamic DLL version 2.0.2.50 or later
NDIAEErrors.dll	Northern Dynamic DLL
MB3_Event_Treatments.txt	Alarm & Event Texts
MB3_Standard_Events.txt	Alarm & Event Texts
MB3_Standard_Properties.txt	Alarm & Event Texts
MB3_System_Events.txt	System Event Texts
MB3_System_Texts.txt	System Text Texts
opccomn_ps.dll	OPC foundation dll
opc_aeps.dll	OPC foundation dll

The MB3 A&E OPC server will be uninstalled with the MB3 DA OPC Server uninstallation.

2.1 OPC Program ID

The program ID of the MB3 A&E OPC Server is:

Novotek.MB3AEOPCSvr

Browse for this program id or enter it manually when you want to connect your A&E OPC client to the MB3 A&E OPC server.

2.2 Running as a Service

When the MB3 A&E OPC server is installed it is registered as a regular server process. The MB3 A&E OPC server can also run as a Windows Service. Running your A&E OPC server as a Windows service lets users log on and off the operating system without shutting down the A&E OPC server.

To set up the MB3 A&E OPC Server to run as a service, you must register it as a service. During installation, the Setup wizard automatically registers the server as a regular server process. To register it to run as a service, you must run the server on the command line, specifying that you wish to register it as a service. Once the server is running as a service, you may need to re-register it in certain situations, such as when you need to change the logon account.

Before you register the Server to run as a service, follow these steps to ensure that it is not currently running:

- If the server is currently running as a regular server, you must stop the process by shutting down all A&E OPC clients to the server.
- If the driver is currently running as a service, you must stop the process by shutting down all clients to the server, and you must also perform these tasks on your operating system:

  Windows XP and Windows 2000: from Control Panel, select Administrative Tools, and then select Services. A list of all services configured on the machine displays. Locate MB3 AE Server. If the status is Started, right click and Stop the server.

  Windows NT: from Control Panel, select the Services icon. A list of all services configured on the machine displays. Locate MB3 AE Server. If the status is Started, click the Stop button.

Once you stop the server from running, select the Process tab from the Task Manager and verify that the MB3AESrv.exe process is no longer listed.

2.2.1 Registering the MB3 A&E OPC Server as a Service

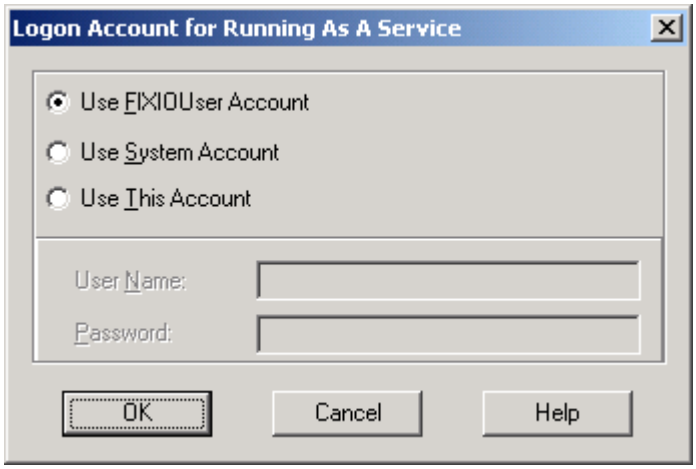
To register the MB3 A&E OPC Server as a service:

1. Select Run from the Windows Start menu.
2. Enter the following text and click OK:

   Path\MB3AESrv.exe /RegService

The registration process now allows the user to specify a logon account. This provides flexibility with the user's choice of security settings.

The Logon Account for Running As A Service dialog box appears after the user enters the command and clicks OK:



This dialog box allows the user to select one of these accounts when registering the MB3 A&E OPC server to run as a service:

FixIOUser Account uses the FixIOUser account to log on the MB3 A&E OPC Server. This conventional account uses a hard-coded password and has the necessary privileges to log on as a service. You should not modify this account if one or more 7.x drivers use this as the logon account when running the Server as a service. If you do modify this account, those drivers will not be able to start as a Windows service. The FixIOUser account may not be created if it does not conform to your local IT department's security policies. If this account does not exist, you must select one of the other two options.
NOTE: If you previously ran the MB3 A&E OPC Server as a service without incident, you should continue to run it using the FixIOUser account.

System Account uses the local system account to log on the MB3 A&E OPC Server. This pre-defined account is useful when your local IT department's security policy requires password expiration.

This Account uses an account specified by the user to log on the MB3 A&E OPC Server. This account is useful if you need to specify a domain account. The account used here must be an existing account with both Administrator and Logon as a Service privileges to run the server as a service. To determine if the account has Administrator privileges, refer to the manual provided with your operating system. For example, to determine Administrator privileges in Windows 2000, select Administrative Tools from Control panel, and then select Users and Passwords. Use the Local Security Policy Setting tool to grant the account Logon as a Service privilege.

You can reset the server to be a regular server process again, by re-registering it as:

Path\MB3AESrv.exe /RegServer

NOTE: Before you register the Server to run as a regular server, you must ensure that it is not currently running.

When registering the server this way, it will run, perform the necessary registration work, and then exit. You can then start the server by using more conventional methods such as starting any A&E OPC client program capable of communicating with the server.

3 A&E OPC Area and Source Configuration

At startup of the MB3 A&E OPC server it will try to read a configuration file named "MB3AESrv.csv" that should exist in the same directory as the exe file. This file shall contain all ABB objects and ABB nodes that can generate System Events, System Texts and Process Events. This file is used to build up the A&E Area and Source information in the MB3 A&E OPC server. A&E clients can use the Area and Source information to filter from which sources and/or areas it want to receive alarms and events.

Note! If the MB3 A&E OPC server receives an alarm or event from an object or node that not exists in its area and source configuration then it will be added to it automatically. When the MB3 A&E OPC server is shut down then it saves its current Area and Source configuration to the file.

The file is a text file with one line per object and node.

The line format for objects is:

PRO_SECxx:ObjectType:ObjectName

Each field is separated by ":" where:

Field	Description
PRO_SECxx	The ABB process section this object belongs to where xx is a number between 00-16. The process section for the object is configured in the ABB controller's database. You can see it in the BAX files. For example if the object belongs to process section 3 then this text should look like this: PRO_SEC03
ObjectType	The type of the object. Supported types are: AI, (See Note below) AO, (See Note below) DI, (See Note below) DO, (See Note below) SEQ, PIDCONA, PIDCON, MANSTN, RATIOSTN, GENCON, GENBIN, GENUSD, MOTCON, VALVECON, MMCX, GRPALARM, DRICONS, DRICONE
ObjectName	The name of the object

And the line format for nodes is:

NODES:NODE_yyy

Each field is separated by ":" where:

Field	Description
NODES	A constant string.
NODE_yyy	A text where yyy is the node number.

	For example if the node number is 7 then this text should look like this: NODE_007

NOTE! The following object types shall be set as AI
AIPTS,
AIS,
AITCS,
PULSES,
AIXRS,
AIS610,
AIS620,
AIS625,
AIS630,
AIS635,
AIS810,
AIS820,
AIS830,
AIS835,
AIC

NOTE! The following object types shall be set as AO
AOS,
AOXS,
AOXRS,
AOS610,
AOS650,
AOS810,
AOS820,
AOC

NOTE! The following object types shall be set as DI
DIS,
DIXS,
DIS610,
DIS620,
DIS621,
DIS622,
DIS635,
DIS636,
DIS650,
DIS651,
DIS652,
DIS810,
DIS811,
DIS814,
DIS820,
DIS821,
DIS830,
DIS831,
DIS885,
DIS890,
DIC

NOTE! The following object types shall be set as DO
DOS,
DOXS,
DOS610,
DOS620,
DOS625,

DOS630,
DOS810,
DOS814,
DOS815,
DOS820,
DOS821,
DOS890,
DOC

3.1 Example Of a Area and Source File

This example contains objects from process section 00, 01 and 02. It also contain 4 nodes, node no 2, 5, 6 and 19.

PRO_SEC00:GRPALARM:AKA93-111.20
PRO_SEC00:DI:AKA93-DI101
PRO_SEC00:MMCX:MMCX_001
PRO_SEC00:MOTCON:MOTCON_001
PRO_SEC00:VALVECON:VALVECON_001
PRO_SEC01:AI:AK-A21-6.10
PRO_SEC01:DI:AK-A41-8.36
PRO_SEC01:GENUSD:G4A32-117.5
PRO_SEC02:DI:AKA93-DI338
NODES:NODE_002
NODES:NODE_005
NODES:NODE_006
NODES:NODE_019

4 Text files

When the MB3 A&E OPC server is installed 5 text files are copied to the installation directory. These are "MB3_System_Events.txt", "MB3_System_Texts.txt", "MB3_Standard_Events.txt", "MB3_Standard_Properties.txt" and "MB3_Event_Treatments.txt".

4.1 MB3_System_Events.txt file

This file contains all the texts that will be shown for System Events received from the nodes. Below you see an extract from the file.

```
280,PROC I/O ST: @3A2@-board error. Net @1A3@ Node @2A3@
281,PROC I/O ST: @3A2@-board working. Net @1A3@ Node @2A3@
282,REM I/O ST: Error in bus @1I1@ node @2I2@. Net @1A3@ Node @2A3@
283,REM I/O ST: Bus @1I1@ node @2I2@ working. Net @1A3@ Node @2A3@
284,DEV ST: Error. Net @1A3@ Node @2A3@
285,DEV ST: Device not ready. Net @1A3@ Node @2A3@
```

You can translate the texts in this file to your choice of language. The number that starts each row must be kept intact. Also the sections that starts and stops with @ must be kept intact. You must restart the MB3 A&E OPC Server after you have modified the texts in the file.

4.2 MB3_System_Texts.txt file

This file contains all the texts that will be shown for System Text events received from the nodes. Below you see an extract from the file.

```
55,Limit out of range. Input ignored.
56,Value out of range. Input ignored.
57,Limit not used. Input ignored.
58,Manual orders blocked. Command ignored.
59,Blocking of Integration not allowed. Command ignored.
60,Blocking of Derivation not allowed. Command ignored.
61,Manual mode selection not allowed.
62,Auto mode selection not allowed.
```

You can translate the texts in this file to your choice of language. The number that starts each row must be kept intact. You must restart the MB3 A&E OPC Server after you have modified the texts in the file.

4.3 MB3_Standard_Events.txt file

This file contains all the standard event texts that will be shown for Process Events. See description of the TEXTCOMB parameter in the Event Treat file in section "4.5.1 Event Treat Block Parameters used by the MB3 A&E OPC Server", for usage of user or standard event texts. Below you see the content of the file.

```
0,Normal
1,Blocked
2,Deblocked
3,Alarm
4,Normal
5,SysText
6,ValueChg
7,AckList
8,ClearPersist
9,On
10,Off
11,StatChkOn
12,UnackOn
13,UnackOff
```

You can translate the texts in this file to your choice of language. The number that starts each row must be kept intact. You must restart the MB3 A&E OPC Server after you have modified the texts in the file.

4.4 MB3_Standard_Properties.txt file

This file contains all the standard property texts that will be shown for Process Events. See description of the TEXTCOMB parameter in the Event Treat file in section "4.5.1 Event Treat Block Parameters used by the MB3 A&E OPC Server", for usage of user or standard property texts. Below you see an extract from the file.

```
2,Value
3,Sig.Err
4,Lim H2
5,Lim H1
6,Lim L1
7,Lim L2
8,Value
9,Printout
10,Alarm
11,Update
12,Disturb.
13,Opening
14,Closing
15,NotClose
16,Not Open
```

You can translate the texts in this file to your choice of language. The number that starts each row must be kept intact. You must restart the MB3 A&E OPC Server after you have modified the texts in the file.

4.5 MB3_Event_Treatments.txt file

When the MB3 A&E server is installed a default exported Operator Station Event Treat BAX file will be installed. This file is named "MB3_Event_Treatments.txt". This file contain all the ABB event treat blocks that will control how the Process Events sent from objects in ABB controllers will be displayed in the MB3 A&E OPC server.

If you have an Operator Station that already contains the Event Treat configuration you want to use then you can export its Event Treat database to a BAX file. After that you can copy the content from that BAX file and replace all content in the default "MB3_Event_Treatments.txt" file. You must restart the MB3 A&E OPC Server after you have modified the file. See the ABB documentation "AdvaCommand Localization User's Guide 3BSE 009 666R0001 Rev A" chapter "3.2.8 Alarm and Event Handling" of how to export your Event Treat database to file.

If you don't have any Operator Station Event Treat configuration you want to use then you can modify the default file with a text editor.

The Event Treat database functionality is described in the ABB documentation "AdvaCommand Basic Functions User's Guide 3BSE 001 976R0401 Rev A" in chapter "3.3.12 Alarm and Event Alarm Handling".

The text handling in the Event Treat database is described in the ABB documentation "AdvaCommand Basic Functions User's Guide 3BSE 001 976R0401 Rev A" in chapter "Appendix A Event Texts". The event texts for each object type are also described in the objects Functional Units documentation, for example "Functional Unit Part 6, MOTCON, VALVECON 3BSE 003 854R0001 Rev A" for MOTCON and VALVECON event texts.

4.5.1 Event Treat Block Parameters used by the MB3 A&E OPC Server

The MB3 A&E OPC server uses these parameters in an Event Treat block:

Flag	Description
AUDIBLE	The value of this flag is saved as a user attribute for the object Process Event in the MB3 A&E OPC server.

	ABB Description: The connection between the Priority in the configured data of External Alarm is the property AUDIBLE in the Event Treat file.
AL_PRIO	Alarm priority 1 – 7. This priority is converted to OPC A&E severity 1 - 1000 according to the values below. 1 = 875 2 = 750 3 = 625 4 = 500 5 = 375 6 = 250 7 = 125
AL_TOBLK	YES = Blocks alarm handling for 0 -> 1 transitions. NO = Invoke alarm handling for 0 -> 1 transitions. Since most alarm signals/flags are active high, AL_TOBLK should be set =NO to invoke alarm handling for 0 -> 1 transitions and =YES to disable it. If both AL_TOBLK and AL_FRBLK is set to YES then the alarm will be treated as a simple event instead of a condition event.
AL_FRBLK	YES = Blocks alarm handling for 1 -> 0 transitions. NO = Invoke alarm handling for 1 -> 0 transitions. Since most alarm signals/flags are active high, and since alarm handling on return to normal makes little sense, AL_FRBLK should normally be set = YES. If both AL_TOBLK and AL_FRBLK is set to YES then the alarm will be treated as a simple event instead of a condition event.
TEXT_TOBLK	YES = Flag that blocks generation of text in lists and printouts when the event/alarm changes from 0 ->1. This will block a simple event to be shown in the MB3 A&E OPC server.
TEXT_FRBLK	YES = Flag that blocks generation of text in lists and printouts when the event/alarm changes from 1 ->0. This will block a simple event to be shown in the MB3 A&E OPC server.
TEXTCOMB	Text Combination code. Integer to select if Standard or User defined property text and event text shall be used. Standard is text from either "MB3_Standard_Events.txt" file or "MB3_Standard_Properties.txt" file and User defined is text from Event Treat block. The combination codes are listed in the table below. This text combination together with the object description is used as the alarm message text for object Process Events.

Text Combination Code	**Property Text**	**Event Text**
0	Standard	Standard
1		User defined
2	Standard	Value + Unit
3	Standard	User defined
4	User defined	Standard
5	User defined	User defined
16	User defined	Standard
17	User defined	User defined

18	Standard	Standard + Step no
19	Standard	User defined + Step no
20	User defined	Standard + Step no
21	User defined	User Defined + Step no
24	Standard	Value + Unit

5 Subscription Filtering in the MB3 A&E OPC Server

5.1 Simple Events

All System Events and System Text sent from the ABB controllers are treated as simple events in the MB3 A&E OPC server. The priority 1 – 7 received with the System Events is converted to A&E OPC severity 1 – 1000 as shown below.

1 = 875
2 = 750
3 = 625
4 = 500
5 = 375
6 = 250
7 = 125

System Text simple events always has A&E OPC severity 625.

The object Process Events not received as "alarm on" or "alarm off" events are treated as simple events. "Alarm on" or "alarm off" events received but blocked with AL_TOBLK and AL_FRBLK in the Event Treat file are also treated as simple events. The priority 1 – 7 is read from the Event Treat file and converted to the A&E OPC severity 1 – 1000 as shown above.

5.2 Condition Events

Object Process Events received as "alarm on" or "alarm off" events and not blocked in the Event Treat file are treated as condition events. The priority 1 – 7 is taken from the Event Treat file and converted to the A&E OPC severity 1 – 1000 as shown above.

5.3 Event Categories

The MB3 A&E OPC server contains the following event categories:

Category	Type	Description
AI_Events	Condition	AI condition events
DI_Events	Condition	DI condition events
PIDCON_Events	Condition	PIDCON condition events
PIDCONA_Events	Condition	PIDCONA condition events
RATIOSTN_Events	Condition	RATIOSTN condition events
MANSTN_Events	Condition	MANSTN condition events
VALVECON_Events	Condition	VALVECON condition events
MOTCON_Events	Condition	MOTCON condition events
MMCX_Events	Condition	MMCX condition events
GENUSD_Events	Condition	GENUSD condition events
GENCON_Events	Condition	GENCON condition events
GENBIN_Events	Condition	GENBIN condition events
SEQ_Events	Condition	SEQ condition events
GRPALARM_Events	Condition	GRPALARM condition events
DRICONS_Events	Condition	DRICONS condition events
DRICONE_Events	Condition	DRICONE condition events
ObjectEvents	Simple	The object Process Events not received as alarm on or alarm off events is treated as simple events. Alarm on or alarm off events received but blocked with AL_TOBLK and AL_FRBLK in the Event Treat file are also treated as simple events.
System	Simple	All System Events and System Text sent from the ABB controllers are treated as simple events.
OPC_SERVER_ERROR	Simple	Internal errors.

5.3.1 AI_Events Conditions

Condition	Description
AI_LevelHIHI	Upper limit H2
AI_LevelHI	Upper limit H1
AI_LevelLO	Lower limit L1
AI_LevelLOLO	Lower limit L2
AI_SigError	Signal error

5.3.2 DI_Events Conditions

Condition	Description
DI_Value	Abnormal position
DI_SigError	Signal error

5.3.3 PIDCON_Events Conditions

Condition	Description
PIDCON_LevelHIHI	Upper limit H2 for measured value
PIDCON_LevelHI	Upper limit H1 for measured value
PIDCON_LevelLO	Lower limit L1 for measured value
PIDCON_LevelLOLO	Lower limit L2 for measured value
PIDCON_DeviationHI	Upper limit for deviation
PIDCON_DeviationLO	Lower limit for deviation
PIDCON_SigError	AI-error

5.3.4 PIDCONA_Events Conditions

Condition	Description
PIDCONA_LevelHIHI	Upper limit H2 for measured value
PIDCONA_LevelHI	Upper limit H1 for measured value
PIDCONA_LevelLO	Lower limit L1 for measured value
PIDCONA_LevelLOLO	Lower limit L2 for measured value
PIDCONA_DeviationHI	Upper limit for deviation
PIDCONA_DeviationLO	Lower limit for deviation
PIDCONA_SigError	AI-error
PIDCONA_ATAbort	Autotuning aborted
PIDCONA_ATFail	Autotuning failed
PIDCONA_TSFault	There is an invalid sample rate
PIDCONA_AdFail	Adaptation failed

5.3.5 RATIOSTN_Events Conditions

Condition	Description
RATIOSTN_LevelHIHI	Upper limit H2 for measured value
RATIOSTN_LevelHI	Upper limit H1 for measured value
RATIOSTN_LevelLO	Lower limit L1 for measured value
RATIOSTN_LevelLOLO	Lower limit L2 for measured value
RATIOSTN_SigError	AI-error

5.3.6 MANSTN_Events Conditions

Condition	Description
MANSTN_LevelHIHI	Upper limit H2 for measured value
MANSTN_LevelHI	Upper limit H1 for measured value
MANSTN_LevelLO	Lower limit L1 for measured value
MANSTN_LevelLOLO	Lower limit L2 for measured value
MANSTN_SigError	AI-error

5.3.7 VALVECON_Events Conditions

Condition	Description
VALVECON_Fault1	User defined Fault 1
VALVECON_Fault2	User defined Fault 2
VALVECON_PosErrO	Position error open
VALVECON_PosErrC	Position error closed
VALVECON_PosO	Valve in/changes from open position
VALVECON_PosC	Valve in/changes from closed position
VALVECON_IntPos	Valve in/not in intermediate position

5.3.8 MOTCON_Events Conditions

Condition	Description
MOTCON_ControlV	Control voltage
MOTCON_BimetalR	Bimetal relay
MOTCON_LStop	Local Stop
MOTCON_SafeMon	Safety Monitor
MOTCON_MainCErr	Main contactor Error
MOTCON_MonLow	Monitor Low
MOTCON_MonHigh	Monitor High
MOTCON_PosA	Position A
MOTCON_HighCurr	Current limit 100 %
MOTCON_PosB	Position B

5.3.9 MMCX_Events Conditions

Condition	Description
MMCX_IND1_00	IND1 status bit 0 (Timeout sequence for GROUP)
MMCX_IND1_01	IND1 status bit 1 (Timeout step for GROUP)
MMCX_IND1_02	IND1 status bit 2 (User defined Fault 3 for GROUP)
MMCX_IND1_03	IND1 status bit 3 (User defined Fault 4 for GROUP)
MMCX_IND1_04	IND1 status bit 4 (User defined Fault 5 for GROUP)
MMCX_IND1_05	IND1 status bit 5
MMCX_IND1_06	IND1 status bit 6
MMCX_IND1_07	IND1 status bit 7 (Position A for GROUP)
MMCX_IND1_08	IND1 status bit 8
MMCX_IND1_09	IND1 status bit 9
MMCX_IND1_10	IND1 status bit 10
MMCX_IND1_11	IND1 status bit 11
MMCX_IND1_12	IND1 status bit 12
MMCX_IND1_13	IND1 status bit 13 (Position B for GROUP)
MMCX_IND1_14	IND1 status bit 14
MMCX_IND1_15	IND1 status bit 15
MMCX_IND2_00	IND2 status bit 0
MMCX_IND2_01	IND2 status bit 1
MMCX_IND2_02	IND2 status bit 2
MMCX_IND2_03	IND2 status bit 3
MMCX_IND2_04	IND2 status bit 4
MMCX_IND2_05	IND2 status bit 5
MMCX_IND2_06	IND2 status bit 6
MMCX_IND2_07	IND2 status bit 7
MMCX_IND2_08	IND2 status bit 8
MMCX_IND2_09	IND2 status bit 9
MMCX_IND2_10	IND2 status bit 10
MMCX_IND2_11	IND2 status bit 11
MMCX_IND2_12	IND2 status bit 12
MMCX_IND2_13	IND2 status bit 13

MMCX_IND2_14	IND2 status bit 14
MMCX_IND2_15	IND2 status bit 15

5.3.10 GENUSD_Events Conditions

Condition	Description
GENUSD_AL_Q1	Alarm ALQ1
GENUSD_AL_Q2	Alarm ALQ2
GENUSD_AL_IND1	Alarm ALF1
GENUSD_AL_IND2	Alarm ALF2
GENUSD_AL_IND3	Alarm ALF3
GENUSD_AL_IND4	Alarm ALF4
GENUSD_AL_IND5	Alarm ALF5
GENUSD_AL_IND6	Alarm ALF6

5.3.11 GENCON_Events Conditions

Condition	Description
GENCON_SigError	AI-error
GENCON_LevelHIHI	Upper limit H2 for measured value
GENCON_LevelHI	Upper limit H1 for measured value
GENCON_LevelLO	Lower limit L1 for measured value
GENCON_LevelLOLO	Lower limit L2 for measured value
GENCON_DeviationHI	Limit for control deviation

5.3.12 GENBIN_Events Conditions

Condition	Description
GENBIN_SigError	Signal-error
GENBIN_LevelHIHI	Upper limit H2 for measured value
GENBIN_LevelHI	Upper limit H1 for measured value
GENBIN_LevelLO	Lower limit L1 for measured value
GENBIN_LevelLOLO	Lower limit L2 for measured value
GENBIN_FBError	Feedback error

5.3.13 SEQ_Events Conditions

Condition	Description
SEQ_JumpError	Position error
SEQ_SeqAlarm	Sequence error
SEQ_StepAlarm	Step error

5.3.14 GRPALARM_Events Conditions

Condition	Description
GRPALARM_Disturbance	Abnormal position

5.3.15 DRICONS_Events Conditions

Condition	Description
DRICONS_IND1_00	IND1 status bit 0
DRICONS_IND1_01	IND1 status bit 1
DRICONS_IND1_02	IND1 status bit 2
DRICONS_IND1_03	IND1 status bit 3
DRICONS_IND1_04	IND1 status bit 4
DRICONS_IND1_05	IND1 status bit 5
DRICONS_IND1_06	IND1 status bit 6
DRICONS_IND1_07	IND1 status bit 7
DRICONS_IND1_08	IND1 status bit 8

DRICONS_IND1_09	IND1 status bit 9
DRICONS_IND1_10	IND1 status bit 10
DRICONS_IND1_11	IND1 status bit 11
DRICONS_IND1_12	IND1 status bit 12
DRICONS_IND1_13	IND1 status bit 13
DRICONS_IND1_14	IND1 status bit 14
DRICONS_IND1_15	IND1 status bit 15
DRICONS_IND2_00	IND2 status bit 0
DRICONS_IND2_01	IND2 status bit 1
DRICONS_IND2_02	IND2 status bit 2
DRICONS_IND2_03	IND2 status bit 3
DRICONS_IND2_04	IND2 status bit 4
DRICONS_IND2_05	IND2 status bit 5
DRICONS_IND2_06	IND2 status bit 6
DRICONS_IND2_07	IND2 status bit 7
DRICONS_IND2_08	IND2 status bit 8
DRICONS_IND2_09	IND2 status bit 9
DRICONS_IND2_10	IND2 status bit 10
DRICONS_IND2_11	IND2 status bit 11
DRICONS_IND2_12	IND2 status bit 12
DRICONS_IND2_13	IND2 status bit 13
DRICONS_IND2_14	IND2 status bit 14
DRICONS_IND2_15	IND2 status bit 15

5.3.16 DRICONE_Events Conditions

Condition	**Description**
DRICONE_IND1_00	IND1 status bit 0
DRICONE_IND1_01	IND1 status bit 1
DRICONE_IND1_02	IND1 status bit 2
DRICONE_IND1_03	IND1 status bit 3
DRICONE_IND1_04	IND1 status bit 4
DRICONE_IND1_05	IND1 status bit 5
DRICONE_IND1_06	IND1 status bit 6
DRICONE_IND1_07	IND1 status bit 7
DRICONE_IND1_08	IND1 status bit 8
DRICONE_IND1_09	IND1 status bit 9
DRICONE_IND1_10	IND1 status bit 10
DRICONE_IND1_11	IND1 status bit 11
DRICONE_IND1_12	IND1 status bit 12
DRICONE_IND1_13	IND1 status bit 13
DRICONE_IND1_14	IND1 status bit 14
DRICONE_IND1_15	IND1 status bit 15
DRICONE_IND2_00	IND2 status bit 0
DRICONE_IND2_01	IND2 status bit 1
DRICONE_IND2_02	IND2 status bit 2
DRICONE_IND2_03	IND2 status bit 3
DRICONE_IND2_04	IND2 status bit 4
DRICONE_IND2_05	IND2 status bit 5
DRICONE_IND2_06	IND2 status bit 6
DRICONE_IND2_07	IND2 status bit 7
DRICONE_IND2_08	IND2 status bit 8
DRICONE_IND2_09	IND2 status bit 9
DRICONE_IND2_10	IND2 status bit 10
DRICONE_IND2_11	IND2 status bit 11
DRICONE_IND2_12	IND2 status bit 12
DRICONE_IND2_13	IND2 status bit 13

DRICONE_IND2_14	IND2 status bit 14
DRICONE_IND2_15	IND2 status bit 15

5.4 Vendor Specific Attributes

The MB3 A&E OPC server can store some vendor specific attributes with each event generated. An A&E OPC client can view these attributes if the client has support of these attributes. System Events and System Text events has one collection of attributes and Process Events has one collection of attributes.

5.4.1 System Event and System Text Attributes

Attribute	Type	Description
Net	VT_I4	Net number that sent the event
Node	VT_I4	Node number that sent the event
TextNo	VT_I4	Text record number of either System Event or System Text text.
ProcSec	VT_I4	Process section of the event. (System Event only) MMI number the text is intended for. (System Text only)
Class	VT_I4	Class of the event. (System Event only)
TimeQuality	VT_I4	Quality of the time stamp. Good = 0 No_time = 1 Uncertain = 2 (System Event only)
RealPar	VT_BSTR	The value of the real parameter if used. (System Event only)
IntPar	VT_BSTR	The values of up to two integer parameters if used. (System Event only)
AsciiPar	VT_BSTR	The values of up to five ASCII parameters if used. (System Event only)
HexPar	VT_BSTR	The value of the hex parameter if used. (System Event only)
DigPar	VT_BSTR	The value of the digital parameter if used. (System Event only)

5.4.2 Process Event Attributes

Attribute	Type	Description
Net	VT_I4	Net number that sent the event
Node	VT_I4	Node number that sent the event
ProcSec	VT_I4	Process section of the event.
Class	VT_I4	Class of the event.
TimeQuality	VT_I4	Quality of the time stamp. Good = 0 No_time = 1 Uncertain = 2 (System Event only)
Audible	VT_I4	The value of the flag AUDIBLE read from the Event Treat file for the event.
Value	VT_BSTR	The actual value of the parameter in the object that caused the event.
TreatRef	VT_I4	The index number of the Event Treat reference block that shall be used.
PropTxt	VT_I4	The index number of which property text in the Event Treat block that shall be used.
EvtTxt	VT_I4	The index number of which event text in the Event Treat block that shall be used.
Reason	VT_I4	Reason of the event. A value between 0 – 13. 0 = Normal 1 = Blocked 2 = Deblocked 3 = Alarm 4 = Normal 5 = SysText 6 = ValueChg 7 = AckList

		8 = ClearPersist 9 = On 10 = Off 11 = StatChkOn 12 = UnackOn 13 = UnackOff
Property	VT_I4	Which property in the object that caused the event. A value between 2 – 278 or 65502 – 65535.
RefType	VT_I4	The reference type of the object that caused the event.
LF	VT_I4	Logical File number of the object that caused the event.
LR	VT_I4	Logical Record number of the object that caused the event.

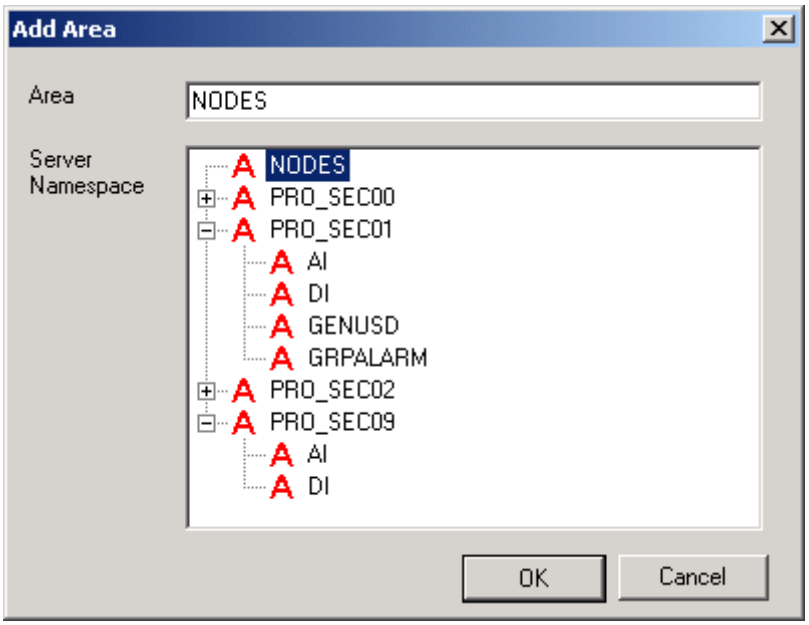
5.5 Areas and Sources

In the MB3 A&E OPC server configuration there exist areas and sources.

5.5.1 Areas

For System Events and System Texts the area is hard coded to NODES. For Process Events the area is built up from the process section the object belongs to and what type the object is of.

See example below.

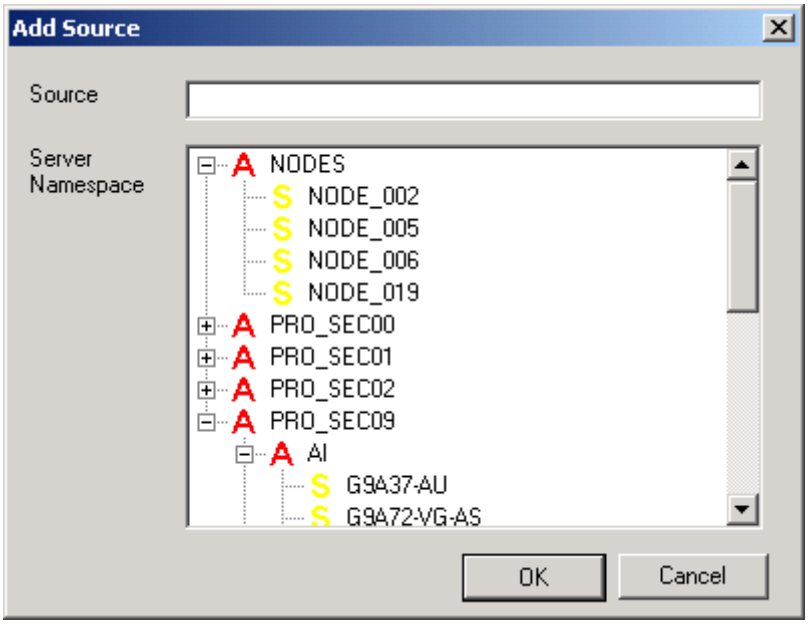


In this example we have objects from four different process sections, 0, 1, 2 and 9. We can also see that in process section 1 we have objects of type AI, DI, GENUSD and GRPALARM and in process section 9 we have objects of type AI and DI. The NODES area contains all node sources that can send System Events and System Texts.

5.5.2 Sources

For System Events and System Texts the sources are the node numbers that can send the events. The sources will get the name NODE_yyy where yyy is the node number. For Process Events the source is the object name that can send the events.

See example below.



The NODES area contains four nodes, node number 2, 5, 6 and 9, that can send System Events and System Texts. The PROC_SEC09:AI area contains at least two AI object sources with name "G9A37-AU" and "G9A72-VG-AS".

6 MB3 Alarm & Events in the A&E OPC Client

6.1 System Events

The System Events sent from an ABB controller will be shown as simple events in the A&E OPC client. The Standard Attributes will contain:

- Source – NODE_yyy, where yyy is the node number. E.g. NODE_003 for node number 3.
- Time – The timestamp when the event occurred in the controller. This timestamp is sent from the controller.
- Type – Simple
- EventCategory – System
- Severity – The alarm priority 1 - 7 sent with the event is converted to an OPC severity 1 - 1000.
- Message – A text based on a text index number sent from the controller. The MB3 A&E OPC server searches for the text in the "MB3_System_Events.txt" file. The parameters in the text are filled in with the parameters received with the event.

6.2 System Text

The System Text sent from an ABB Controller will be shown as simple events in the A&E OPC client. The Standard Attributes will contain:

- Source – NODE_yyy, where yyy is the node number. E.g. NODE_003 for node number 3.
- Time – The timestamp when the server received the System Text. This timestamp is created in the MB3 A&E OPC server.
- Type – Simple
- EventCategory – System
- Severity – Always 625 for System Text.
- Message – A text based on a text index number sent from the controller. The MB3 A&E OPC server searches for the text in the "MB3_System_Texts.txt" file.

6.3 Process Events

The Process Events sent from the ABB controllers will either be shown as simple or condition events in the A&E OPC client.

6.3.1 Simple Process Events

The Standard Attributes for simple events will contain:

- Source – The object name of the object that caused the event.
- Time – The timestamp when the event occurred in the controller. This timestamp is sent from the controller
- Type – Simple
- EventCategory – ObjectEvents
- Severity – The alarm priority 1 – 7 read from the Event Treat block is converted to an OPC severity 1 – 1000.
- Message – Is created from the Description of the object sent with the event + the combination of event text and property text told by the TEXTCOMB flag in the Event Treat block. E.g. "AI Description Alarm Blocked".

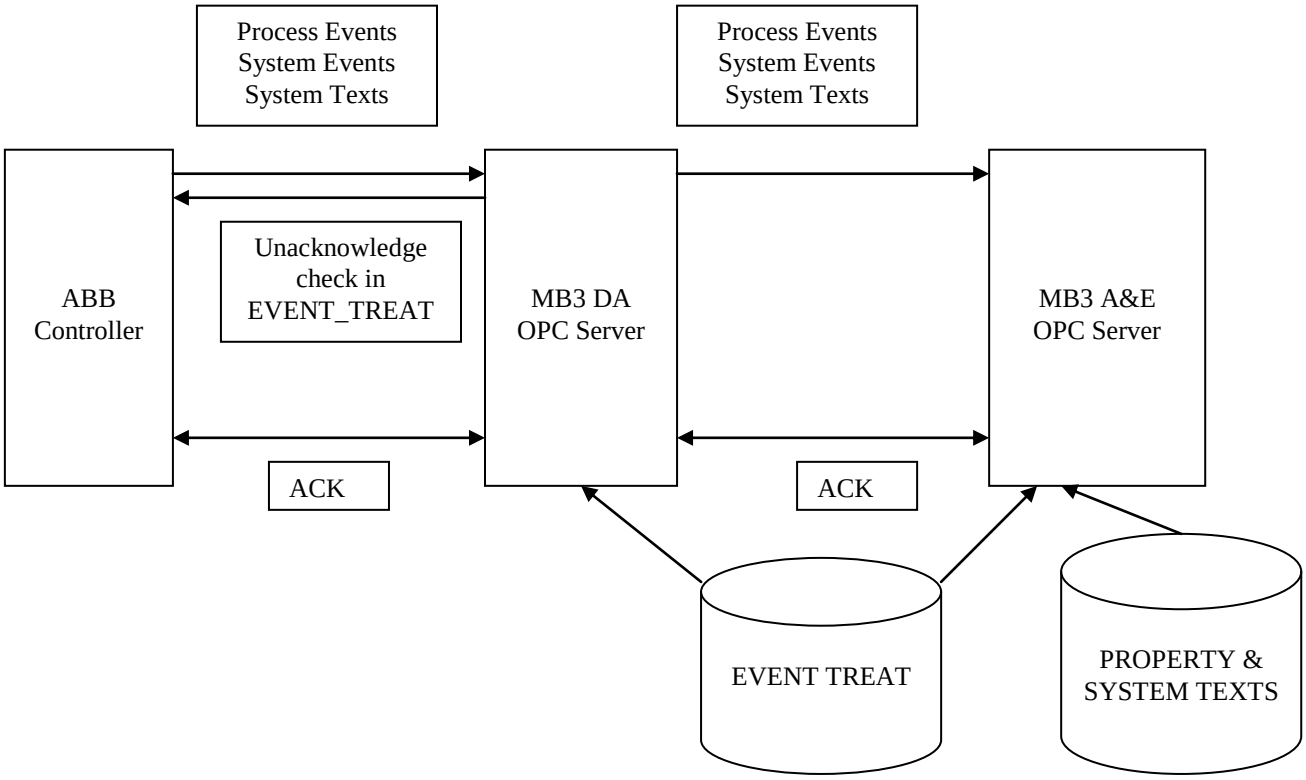
6.3.2 Condition Process Events

The Standard Attributes for condition events will contain:

- Source – The object name of the object that caused the event.
- Time – The timestamp when the event occurred in the controller. This timestamp is sent from the controller
- Type – Condition
- EventCategory – TYPE_Events, where type is the object type. E.g. AI_Events.

- Severity – The alarm priority 1 – 7 read from the Event Treat block is converted to an OPC severity 1 – 1000.
- Message – Is created from the Description of the object sent with the event + the combination of event text and property text told by the TEXTCOMB flag in the Event Treat block. E.g. "AI Description Lim H1 > 75 %".
- Condition Name – Name of associated condition. See tables in sections 5.3.1 – 5.3.16 for valid conditions for each object type.
- SubCondition Name – The name of the currently active sub condition. The name of the sub condition is the same as the condition.
- Change Mask – Indicates which properties of the condition have changed, to cause the server to send the event notification.
- New State – Indicates the new values for the Enabled, Active and Acked properties of the condition.
- Quality – Always Good in MB3 A&E OPC server.
- AckRequired – Indicates whether or not an acknowledgement is required. This is controlled with AL_TOBLK and ALFRBLK in the Event Treat file when the server receives the event from the controller.
- ActiveTime – The time of the transition into the condition which is associated with this event notification.
- Actor ID – The identifier of the OPC client, which acknowledged the condition.

7 Acknowledging Process Events



7.1 In the MB3 DA OPC server

When the MB3 DA OPC server receives a Process Event from an ABB controller then it checks in the Event Treat file for the event if it shall send an Unacknowledge back to the ABB controller. If it is an "Alarm On" event and the AL_TOBLK flag in the Event treat block is set to NO then it will send an Unacknowledge. If the AL_TOBLK flag is set to YES then it will not send a Unacknoweldge.

If you want to prevent the MB3 DA OPC server to send Unacknowledge to the ABB controllers then you have to set all the AL_TOBLK and AL_FRBLK parameters in the Event Treat file to YES.

7.2 In the MB3 A&E OPC server

When the MB3 A&E OPC server receives a Process Event then it checks in the Event Treat file block for the event if it shall set the AckRequired flag for the event to TRUE or FALSE. If it is an "Alarm On" event and the AL_TOBLK flag in the Event treat block is set to NO then it will set the AckRequired flag to TRUE.

A condition event in the MB3 A&E OPC server, that requires acknowledge, can be acknowledged in two ways.

1. The condition event is acknowledged from the connected A&E OPC client.
2. The MB3 A&E OPC server receives an acknowledge process event from the object that has caused the condition event. This event is sent from the ABB controller.

When an operator acknowledges the alarm from the A&E OPC client then it trigs the MB3 DA OPC server to send an Acknowledge order to the ABB controller. The ABB controller will then send a process event to all event subscribers that the event has been acknowledged. In this way the acknowledgement is synchronized in all MB3 A&E OPC servers connected to the ABB controllers.

8 Time Synchronization

There are two options.

1. The MB3 OPC server is the clock master and sends broadcast clock synch telegrams every 10 minute.
2. Another node on the network is clock master and the MB3 OPC server receives the clock synch telegram and sets the clock in the PC from it.

8.1 MB3 OPC server is clock master

There is a channel item that can be used to control the MB3 OPC server as a clock synch master on the Masterbus network.

ItemID	Type	Description
!START_CM:ChannelName	Long Integer	Whenever this tag is set <> 0, the MB3 OPC server sends clock synch-broadcast message every 10 minutes. The 'state' of the tag is saved in the registry, at :HKLM\Software\Novotek\Drivers\MB3\SendCM A clock synch-broadcast is also sent every time an OPC client writes <> 0 to the !START_CM tag. The nodes on the network must be set up to listen for time synchronization messages. LOC_TIME in the controllers must be set to 3 “Listen to Time Set Telegram and High Precision Time Synchronization Telegram”.

8.2 Another node on the masterbus network is clock master

From an OPC DA client it is possible to read the latest received clock sync date and time and from those values then set the clock in the computer. There are two possible clock sync telegrams that the MB3 DA OPC server might receive a broadcast clock sync telegram or a clock sync telegram sent from a specific node addressed to the MB3 DA OPC server. In the MB3 DA OPC server it is possible to address both of these clock sync date and times as items.

Broadcast clock sync telegram (Clock Master is set to CLK_SEND = 3):

ItemID	Type	Description
!CS_DATE:ChannelName	Long Integer	Latest Clock Sync Date received from a broadcast clock sync telegram. The format is in number of days since 1 January 1980. 1 January 1980 is day 1.
!CS_TIME:ChannelName	Long Integer	Latest Clock Sync Time received from a broadcast clock sync telegram. The format is in number of 0,1 milliseconds since midnight.

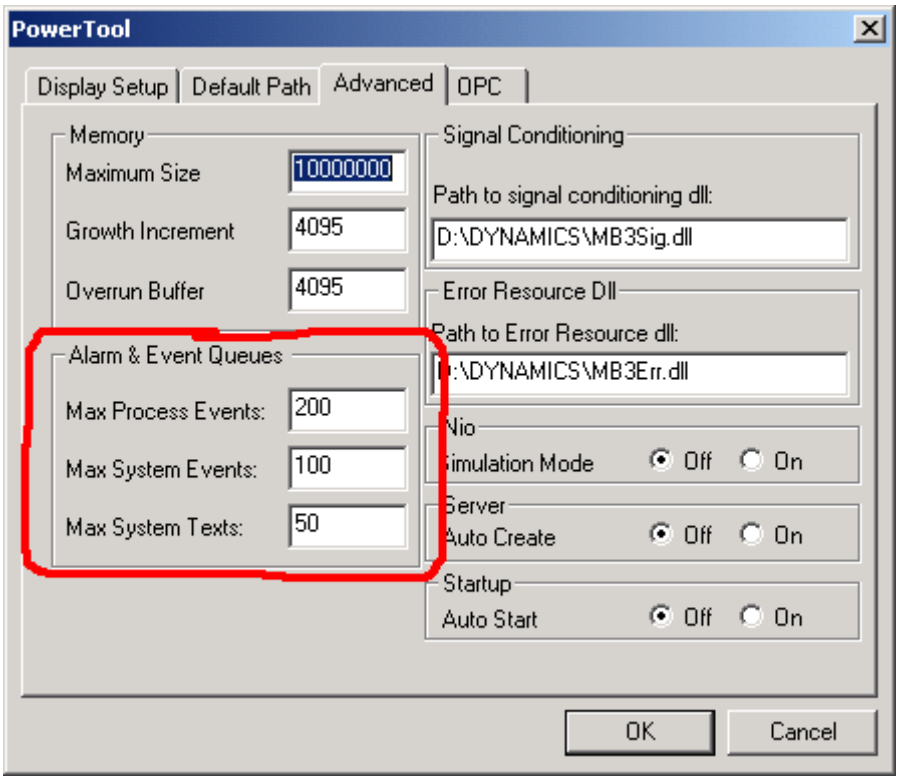
Clock sync from a node (Clock Master is set to CLK_SEND = 2):

ItemID	Type	Description
!CS_DATE:DeviceName	Long Integer	Latest Clock Sync Date received from this node's clock sync telegram. The format is in number of days since 1 January 1980. 1 January 1980 is day 1.
!CS_TIME:DeviceName	Long Integer	Latest Clock Sync Time received from this node's clock sync telegram. The format is in number of 0,1 milliseconds since midnight.

There is installed an OPC DA client program for clock synchronization together with the MB3 OPC server. The program is named “MB3ClockSync.exe” and it has an own manual “MB3 Clock Sync User Manual” for further information.

9 Configuration in MB3 Power Tool

In the MB3 Power Tool it is possible to set up how many events, of each type, the MB3 DA OPC server can store when no MB3 A&E OPC server is connected to it.



The default values are

- Process Events – 200
- System Events – 100
- System Texts – 50

If you make changes to the values then you must restart the MB3 DA OPC server before it will take effect.

When a MB3 A&E OPC server connects to the MB3 DA OPC server then the DA OPC server will send the stored events to the A&E OPC server.

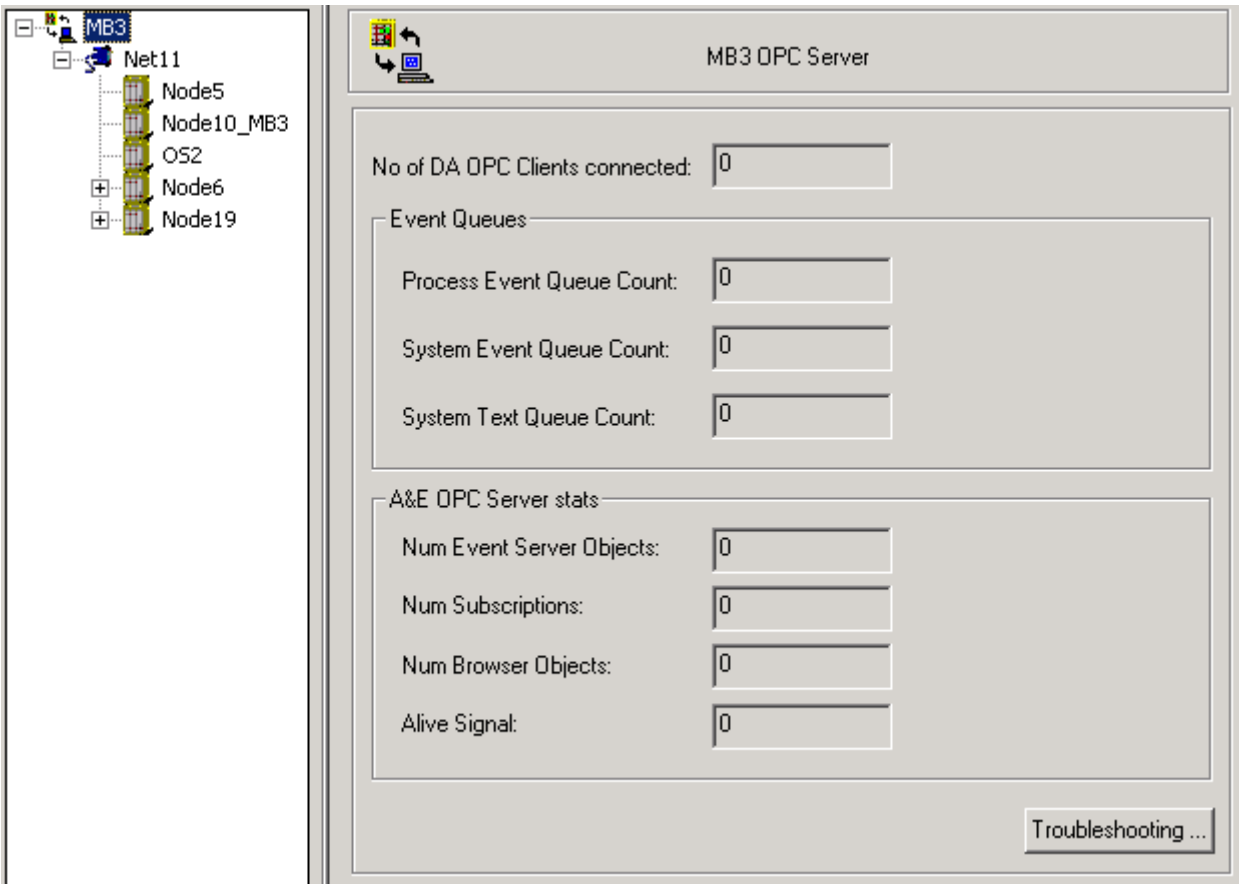
9.1 A&E Statistics in MB3 Power Tool

At the MB3 level in the tree browser you can watch statistics about the alarms & events.

Event Queues statistics shows the number of events of each type that the MB3 DA OPC server has stored and not sent over to the MB3 A&E OPC server.

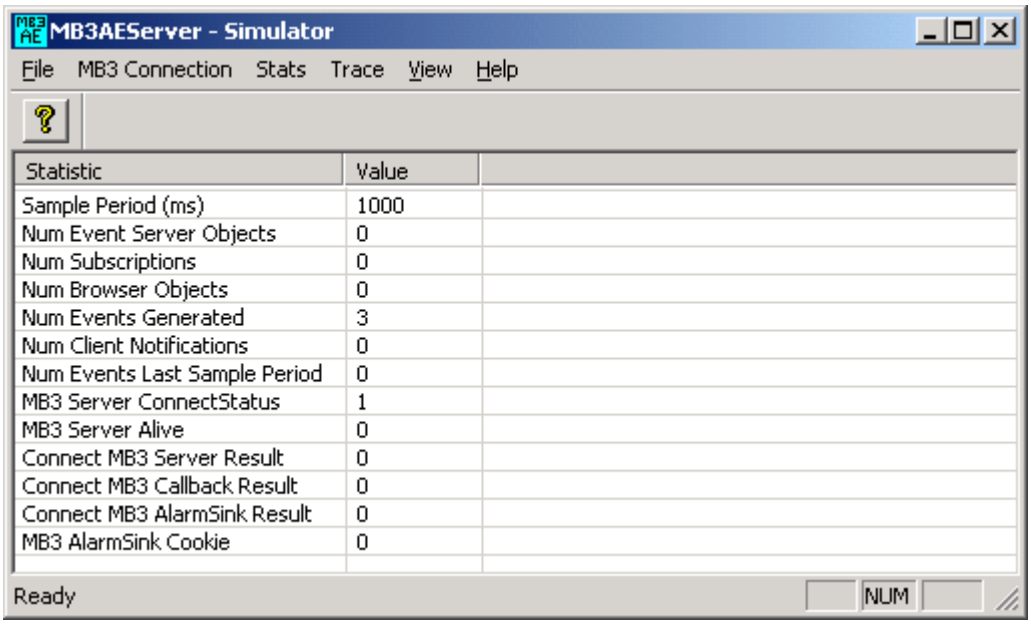
A&E OPC Server Stats shows some statistics from the MB3 A&E OPC server.

- Num Event Server objects – Indicates how many clients are connected to the MB3 A&E OPC server.
- Num Subscriptions – Indicates how many subscriptions have been created in the MB3 A&E OPC server.
- Num Browser Objects – Indicates how many browse sessions are underway in the MB3 A&E OPC server.
- Alive Signal – Toggles between 1 and 0 every third second in the MB3 A&E OPC server.


MB3
Net11
Node5
Node10_MB3
OS2
Node6
Node19
MB3 OPC Server
No of DA OPC Clients connected:
0
Event Queues
Process Event Queue Count:
0
System Event Queue Count:
0
System Text Queue Count:
0
A&E OPC Server stats
Num Event Server Objects:
0
Num Subscriptions:
0
Num Browser Objects:
0
Alive Signal:
0
Troubleshooting ...

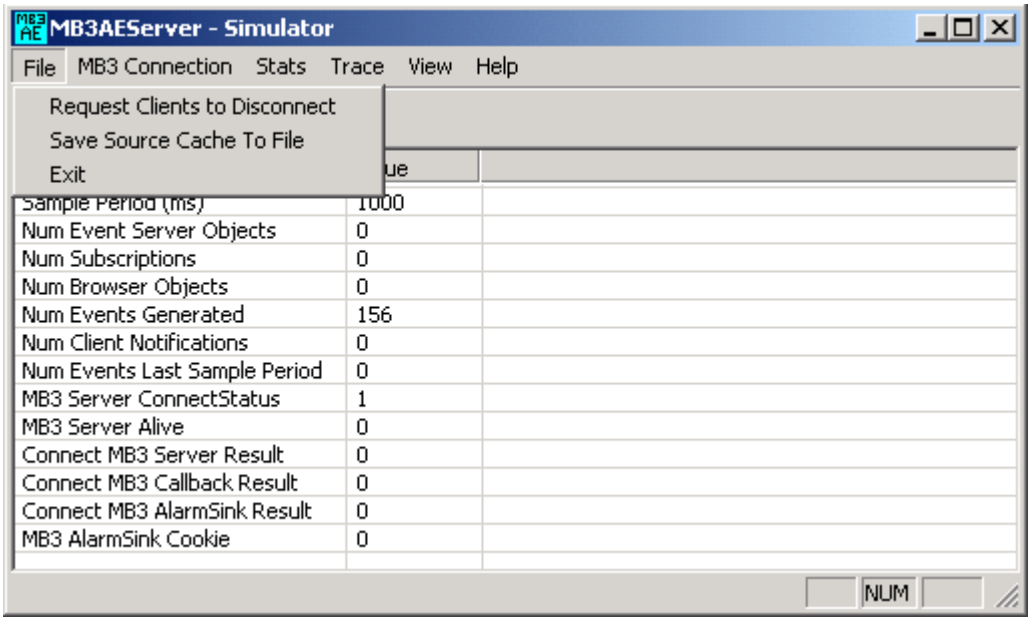
10 MB3 A&E OPC Server Window

If you are running the MB3 A&E OPC server as a service then the window is not visible. The window contains some information about connected clients, events generated and the connection to the MB3 DA OPC server.



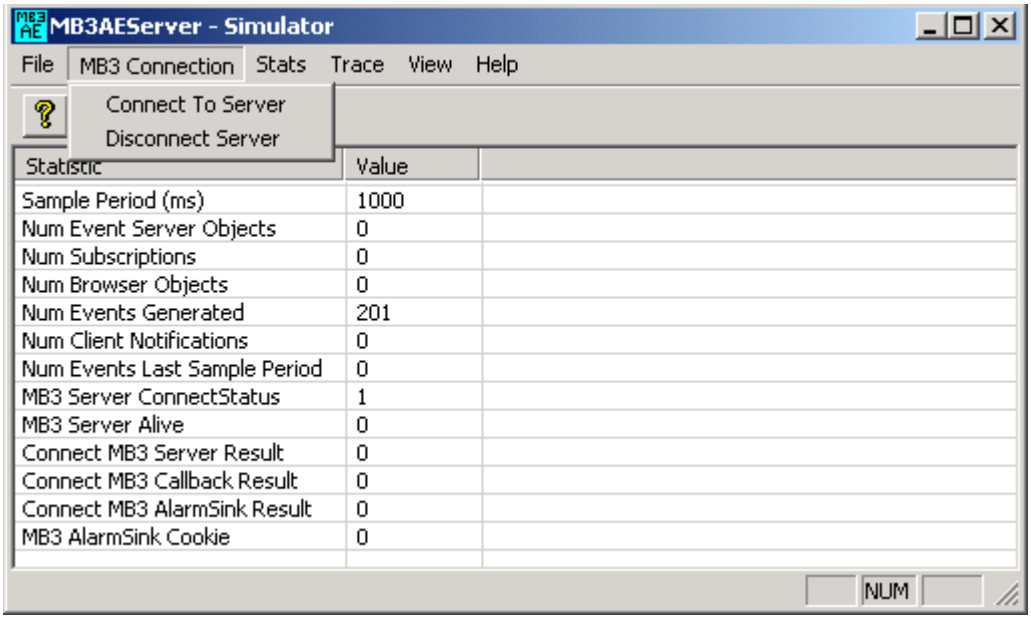
Field	Description
Sample Period (ms)	Sample time for periodic statistics in ms
Num Event Server Objects	Number of active clients connected
Num Subscriptions	Number of subscriptions created in the server
Num Browser Objects	Number of browse sessions underway
Num Events Generated	Number of events generated since startup
Num Client Notifications	Number of event notifications sent to the server's clients. Note that a notification can contain data for multiple events.
Num Events Last Sample Period	Number of events generated the last sample period
MB3 Server ConnectStatus	Connect status with the MB3 DA OPC server. 1 = Connected, 0 = Disconnected.
MB3 Server Alive	A toggle flag indicating a connection between the MB3 DA OPC server and the MB3 A&E OPC server. Is toggled every second.
Connect MB3 Server Result	HRESULT of last connection to the MB3 DA OPC server. 0 = OK.
Connect MB3 Callback Result	HRESULT of last connection to the MB3 DA OPC server's callback connect interface. 0 = OK
Connect MB3 AlarmSink Result	HRESULT of last connection to the MB3 DA OPC servers AlarmSink. 0 = OK.
MB3 AlarmSink Cookie	The returned Cookie to the MB3 DA OPC servers AlarmSink.

10.1 File Menu



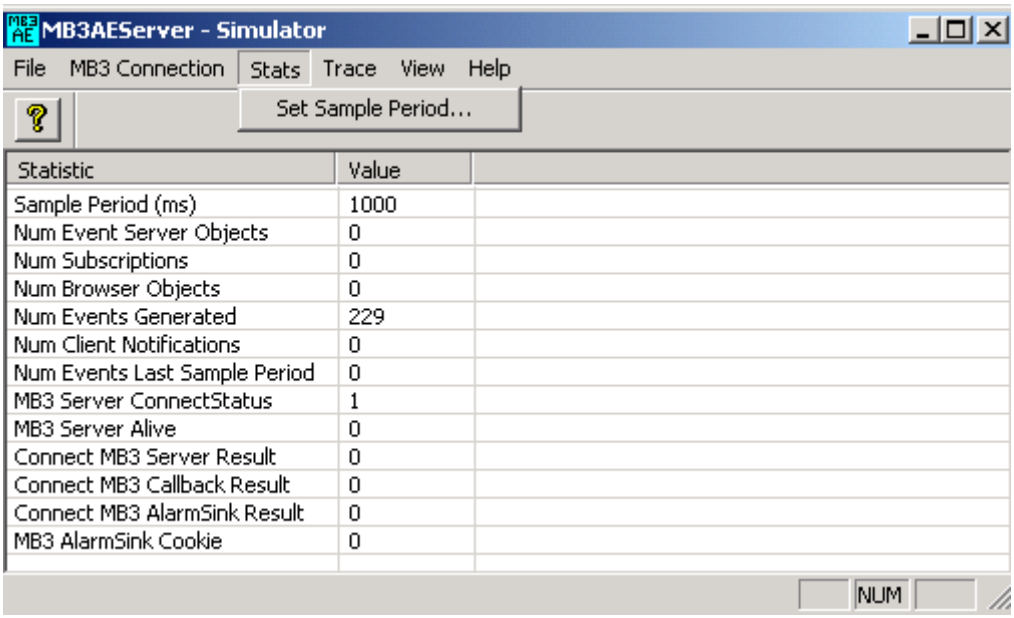
Menu Option	Description
Request Clients to Disconnect	Sends out a request to the connected clients that they should disconnect.
Save Source Cache To File	Saves the actual Source Cache to the file "MBAESrv.csv". This file is also updated when the server is shutdown.
Exit	Shuts down the MB3 A&E Server if no clients are connected.

10.2 MB3 Connection Menu

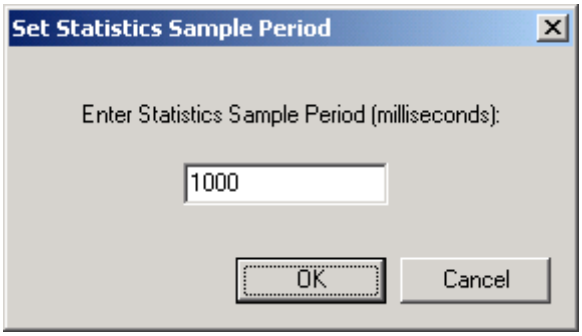


Menu Option	Description
Connect To Server	Trigs a manual connection to the MB3 DA OPC server.
Disconnect Server	Trigs a manual disconnection from the MB3 DA OPC server.

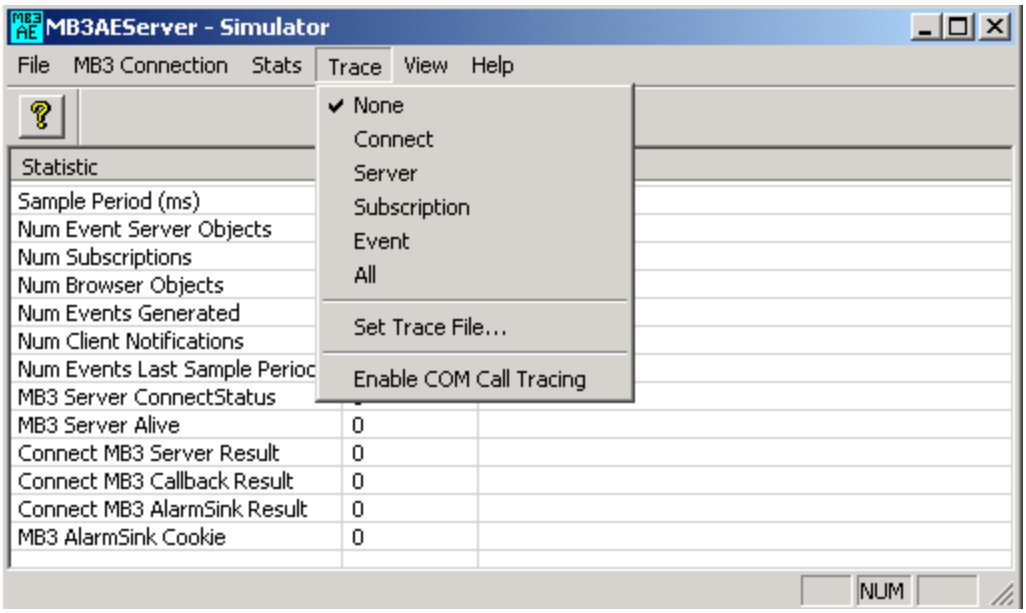
10.3 Stats Menu



Opens the dialog to enter the sample period in ms as shown below:



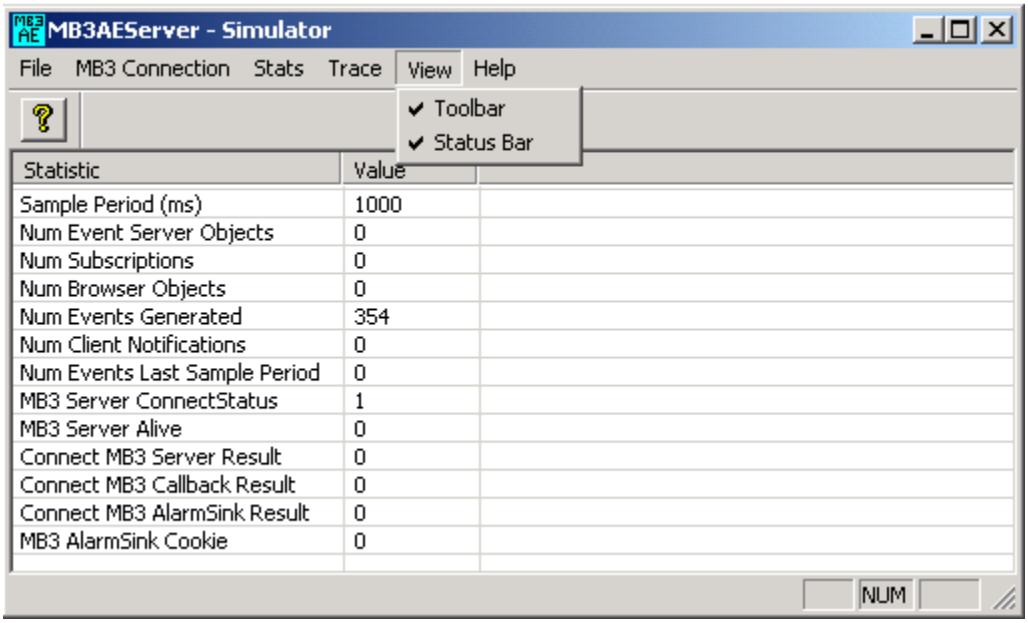
10.4 Trace Menu



Menu Option	Description
None	No trace messages are output.

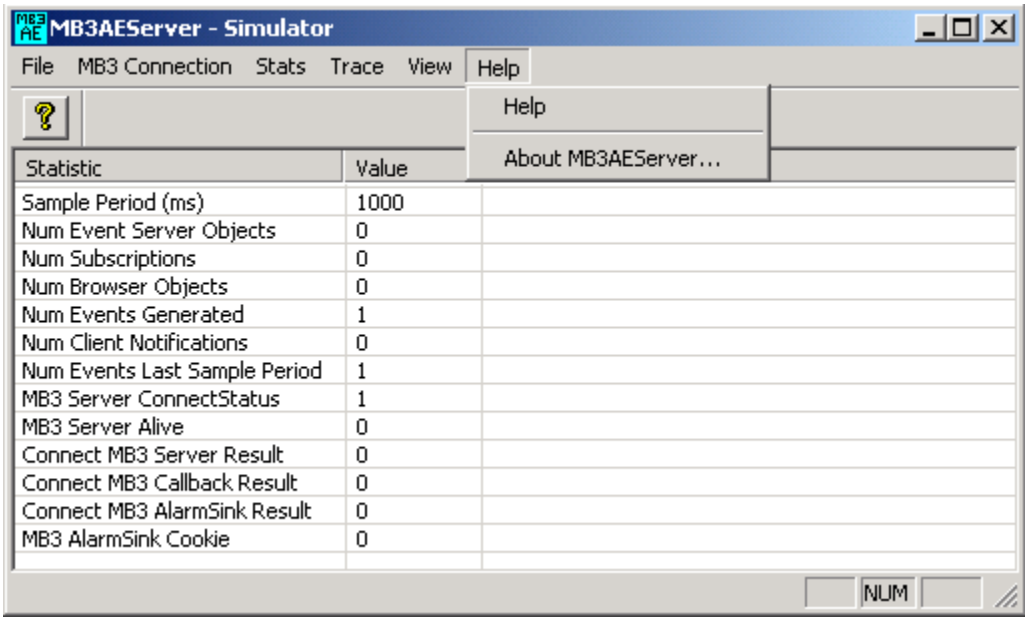
Connect	Log trace messages associated with client connectivity and server activation.
Server	Log trace messages from operations invoked on OPCEventServer object. For example, enabling and disabling conditions.
Subscription	Log trace messages associated with subscription transactions. For example, client event notifications, subscription state changes, etc.
Event	Log trace messages associated with the generation of events. This is irrespective of whether or not any clients have subscribed.
All	Log all message types.
Set Trace File	Set filename where to store the trace.
Enable COM Call Tracing	Is not supported in this version.

10.5 View Menu



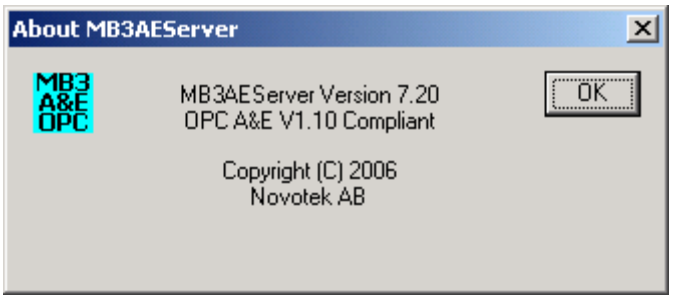
Here you can set if you want to view the toolbar and/or status bar.

10.6 Help Menu



Menu Option	**Description**

Help	Shows the online help
About	Shows the About dialog box.

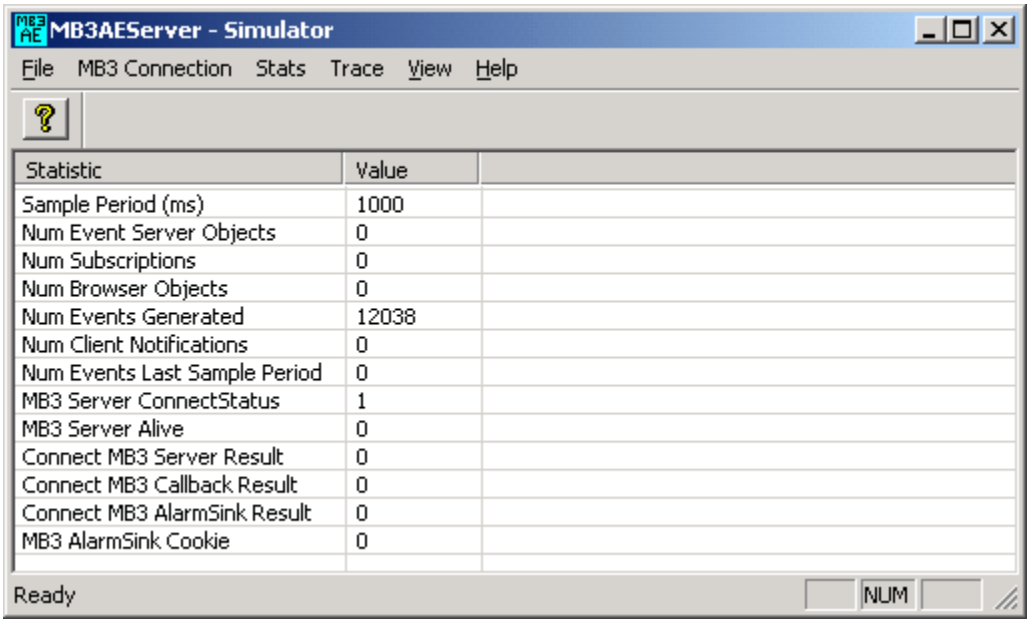


11 Simulation

If you run the MB3 A&E OPC server as a regular server process then you can start it in simulation mode with a command line parameter.

MB3AESrv.exe /Simulate

The MB3 A&E OPC server window will show the text Simulator in the title. There is no connection to the MB3 DA OPC server when it is started in simulation mode.



The simulated events are generated from a file named "MB3AESrv.sim". This is a text file where each row represents a new event. When all events in the file has been read then it starts over from the beginning again but with a new timestamp. There are three valid event types in this file. They are System Text, System Event and Process Event. There are certain rules for the file. These are:

- Comment starts with #
- Every field on a row must be separated with ",".
- Each row starts with Simulation interval in ms -> time to generate the next event from the file
- The next field is Type of event. 1 = System Text, 2 = System Event, 3 = Process Event
- System Text fields = Net, Node, MMI, Text No
- System Event fields = Time Quality, Timestamp, Net, Node, List, Reason, Source, OutDesc, Class, Process Section, List Store, Priority, AndRef, TextStat, LF, TextNo, RealPar, IntPar1, IntPar2, HexPar, AsciiPar1, AsciiPar2, AsciiPar3, AsciiPar4, AsciiPar5, DigPar, TxtPtr1, TxtPtr2, TxtPtr3, TxtPtr4, TxtPtr5, TxtPtr6, TxtPtr7, TxtPtr8, TxtPtr9, TxtPtr10
- Process Event Fields = Time Quality, Timestamp, Net, Node, ObjectName, ObjectDesc, Value, Unit, Source, TypOfReq, Reason, StatChkSrc, Property, PropTxt, EvTxt, AlrmBlk, PrintBlk, RepFailBlk, RefType, LF, LR, TreatRef, GroupRef, Process Section, Class

System Text Fields	Description
Net	Masterbus 300 net number who sent the event
Node	Masterbus 300 node number who sent the event
MMI	The MMI number the text is intended for.
Text No	The system text no. Valid numbers are those listed in "MB3_System_Texts.txt".

System Event Fields	Description
Time Quality	Quality of the timestamp. 0 = Good

	1 = No_time 2 = Uncertain
Timestamp	Timestamp in format: "YYYY-MM-DD HH:MM:SS.ccc" where ccc is milliseconds.
Net	Masterbus 300 net number who sent the event
Node	Masterbus 300 node number who sent the event
List	Always 0. Not used.
Reason	Reason of the event. 0 = Normal 1 = Blocked 2 = Deblocked 3 = Alarm 4 = Normal 5 = SysText 6 = ValueChg 7 = AckList 8 = ClearPersist 9 = On 10 = Off 11 = StatChkOn 12 = UnackOn 13 = UnackOff Always 3 alarm on for system events
Source	Always 0. Not used.
OutDesc	Always –1. Not used.
Class	Class number 0-99 for the alarm. Only seen 0 for system events
ProcessSection	Process Section 0 –16 of the alarm. Only seen 0 for system events
List Store	Always 1. Not used.
Priority	Alarm priority 1 – 7. Is converted to A&E OPC severity 1 - 1000
AndRef	Always 0. Not used.
TextStat	Always 512. Not used.
LF	Always 0. Not used.
TextNo	The system event text no. Valid numbers are those listed in "MB3_System_Events.txt".
RealPar	Value of the Real parameter. If no real parameter then add a space in the field.
IntPar1	Value of the Integer parameter 1. If no Integer parameter 1 then add a space in the field.
IntPar2	Value of the Integer parameter 2. If no Integer parameter 2 then add a space in the field.
HexPar	Value of the Hex parameter. If no Hex parameter then add a space in the field.
AsciiPar1	Value of the Ascii parameter 1. If no Ascii parameter 5 then add a space in the field.
AsciiPar2	Value of the Ascii parameter 2. If no Ascii parameter 5 then add a space in the field.
AsciiPar3	Value of the Ascii parameter 3. If no Ascii parameter 5 then add a space in the field.
AsciiPar4	Value of the Ascii parameter 4. If no Ascii parameter 5 then add a space in the field.
AsciiPar5	Value of the Ascii parameter 5. If no Ascii parameter 5 then add a space in the field.
DigPar	Value of the Digital parameter. If no Digital parameter then add a space in the field.
TxtPtr1	Enter a value 0 – 99. Not used
TxtPtr2	Enter a value 0 – 99. Not used

TxtPtr3	Enter a value 0 – 99. Not used
TxtPtr4	Enter a value 0 – 99. Not used
TxtPtr5	Enter a value 0 – 99. Not used
TxtPtr6	Enter a value 0 – 99. Not used
TxtPtr7	Enter a value 0 – 99. Not used
TxtPtr8	Enter a value 0 – 99. Not used
TxtPtr9	Enter a value 0 – 99. Not used
TxtPtr10	Enter a value 0 – 99. Not used

Process Event Fields	**Description**
Time Quality	Quality of the timestamp. 0 = Good 1 = No_time 2 = Uncertain
Timestamp	Timestamp in format: "YYYY-MM-DD HH:MM:SS.ccc" where ccc is milliseconds.
Net	Masterbus 300 net number who sent the event
Node	Masterbus 300 node number who sent the event
ObjectName	The name of the object that caused the process event. Max 20 characters.
ObjectDesc	The description of the object that caused the process event. Max 28 characters.
Value	The value of the parameter or limit in the object that caused the process event.
Unit	The unit of the value that caused the process event. Max 6 characters.
Source	Always 0. Not used.
TypOfReq	Always 1. Not used.
Reason	Reason of the event. 0 = Normal 1 = Blocked 2 = Deblocked 3 = Alarm 4 = Normal 5 = SysText 6 = ValueChg 7 = AckList 8 = ClearPersist 9 = On 10 = Off 11 = StatChkOn 12 = UnackOn 13 = UnackOff
StatChkSrc	Always 0. Not used.
Property	The property of the object that caused the process event. A value between 2 – 278 or 65502 – 65535.
PropTxt	The property text line number 1- 16 in the Event Treat block.
EvTxt	The event text line number 1 – 16 in the Event Treat block.
AlrmBlk	Always 0. Not used.
PrintBlk	Always 0. Not used.
RepFailBlk	Always 0. Not used.
RefType	Object reference type number for the object that caused the process event.
LF	Logical file number for the object that caused the process event.
LR	Logical record number for the object that caused the process event.
TreatRef	The number to the Event Treat block to use for this process event. Valid block numbers are those listed in "MB3_Event_Treatments.txt".
GroupRef	Always 0. Not used.
Process Section	Process section 0 - 16 of the object that caused the process event.
Class	Class 0 – 99 of the object that caused the process event.

When the MB3 A&E OPC server is installed a default simulation file, "MB3AESrv.sim", will be installed. This file contain Process Events for the following object names:

Type	Object Name	Object desc	Number of events
AI	AI	AI OBJECT	11
AO	AO	AO OBJECT	1
DI	DI	DI OBJECT	8
DO	DO	DO OBJECT	1
SEQ	SEQ	SEQ OBJECT	7
PIDCON	PIDCON	PIDCON OBJECT	14
PIDCONA	PIDCONA	PIDCONA OBJECT	23
MANSTN	MANSTN	MANSTN OBJECT	10
RATIOSTN	RATIOSTN	RATIOSTN OBJECT	10
GENCON	GENCON	GENCON OBJECT	14
GENBIN	GENBIN	GENBIN OBJECT	13
GENUSD	GENUSD	GENUSD OBJECT	18
VALVECON	VALVECON	VALVECON OBJECT	18
MOTCON	MOTCON	MOTCON OBJECT	24
MMCX	MMCX	MMCX OBJECT	6
GRPALARM	GRPALARM	GRPALARM OBJECT	3

The file also contains 19 System Text events and 7 System Event events.