



Product Alert

ALERT - AC 800M Controller Firmware 5.0.2/x, 5.1.0/x, 5.1.1-1, 5.1.1-2, Network Disturbances might Cause OPC Alarm & Event Subscription Stop Working

Products Concerned

800xA - Control and I/O,
AC 800M Controller Firmware, Version 5.0.2/x, 5.1.0/x, 5.1.1-1, 5.1.1-2
AC 800M High Integrity Controller Firmware, Version 5.0.2/1 - 5.0.2/5, 5.1.1-1, 5.1.1-2
Note: version 5.1.0/0 - 5.1.0/3 are using High Integrity Controller Firmware version 5.0.2/3, 5.0.2/4, respectively 5.0.2/5.
Compact 800 - Control and I/O,
AC 800M Controller Firmware, Version 5.0.2/x, 5.1.0/0 - 5.1.0/1, 5.1.1-1

Product Issue Number

800xACON-OL-5020-058

Description

A problem has been found that could cause AC 800M OPC Alarm and Event subscription to fail for systems with certain network configurations. If an MMS A/E connection is broken and later reestablished with a different source IP address than originally used, the Alarm and Event subscription could stop working. Known situations when a connection may be reestablished with the wrong source address:

- If the connection is reestablished when only the secondary network between the Connectivity Server and the controller is working
- If the Connectivity Server has the network parameter "Default gateway" configured with an address on the Client Server network. (only for Windows 7 and Windows Server 2008 or later)

Normally the source address should be the primary control network of the connectivity server, but for the above mentioned cases it will potentially not be so.

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Identifying the problem

To get an indication that the connection is not working properly, the interaction window for SystemDiagnostics in Control Builder could be opened. Then push the button “Advanced” in window SystemDiag Simple and then in window SystemDiag Advanced push the button “Alarm Event. In the window Alarm Events a button should be found for each subscription. Push the buttons for these subscriptions and check the value for “Events to confirm” and “Events to resend”.

System		Con_M15 172.16.204.115
-172.16.204.30:22-		
Subscription queue size		1000
Events to send		0
Events to confirm		0
Events to resend		0
Sent events since start of subscr		25
Last overflow time		1979-12-31-01:00:00.000
Subscription status		1

If these deviates from zero and is increasing for every new alarm/event this is an indication that something is wrong. Also if “Events to send” deviates from zero any longer period this could be an indication that there is something wrong with the subscription.

Another indication that a connection is not working properly, is if a subscription button is missing in the SystemDiagnostics interaction window, for an OPC Server that has the controller connected OK in the Alarm and Event tab in the OPC Server Panel.

A non-working Alarm and Event (A/E) subscription will be removed from the controller after a timeout of “*AE Event Subscription time out*” (default time 6h). When the connection is removed also the queued events are lost. It is possible to supervise the number of active subscriptions from PPA with soft alarms.

To generate an alarm if the problem occurs, the following method can be used. Lower the CPU setting “*AE Event subscription time out*” to improve detection time. Subscribe to OPC Property *NoOfSubscriptions* from the Function Block *SystemDiagnostics* and generate a Soft Alarm when the number is changed (decreased).

By checking existing A/E MMS connections in the controller it is possible to see if the problem might occur for a particular controller. Select the controller in Control Builder and choose “Remote System...” then push the button “Show MMS Connections”. In the window “MMS Connections” under column “Destination” there should only be connections with primary addresses e.g.172.16.x.x. If you find a secondary network address or an address from client server network e.g.172.17.x.x:22 Variable (AE) there is a risk to get the above described error.

System 172.16.204.115 has the following MMS connections:										
Function	Destination	Usage	Transactions	Transactions/s	Max Transactions/s	ICR	IR	IW	ER	EW
Server	172.16.204.132	Variable	1		0.1					
Server	172.16.204.137	Variable	470449	1.0	8.0				1.0	
Client	172.16.204.116	Variable	4764	10.1	10.2				10.1	
Server	172.17.204.76:22	Variable(AE)	1		0.1					
Server	172.17.204.30:22	Variable	3955	8.3	8.6	8.3				
Server	172.16.204.116	Variable	8513	18.7	18.7				18.6	0.1



Corrective Action or Resolution

Workaround

Disconnect and connect the controller in the OPC-server will normally restore the subscription to work in a proper way.

If above did not correct the problem a restart of the OPC-server should restore the correct connection.

If a connectivity server needs to be able to communicate with a computer outside the 800xA system network one of the following two solutions could be used:

- Instead of configuring Default gateway, configure more explicit routing entries for the computers that the connectivity server actually needs to communicate with, e.g. with a specific host or subnet address as target. This method provides better security by not allowing the server to communicate with just about any other computer.
- Use a separate network interface for the external connection and connect it to a network not configured for RNRP. This way the parameter Default gateway may still be used.

Correction

This problem will be corrected in the next system coordinated rollup for AC 800M Control Software version 5.1 feature pack, 5.1.1-3 and System version 6.0 (6.0.0-0).

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REVISION

Rev. ind.:	Page (P) Chapt. (C)	Description	Date Dept.
-	All	New Product bulletin	XAAXP/ 2013-03-07
A	Template	Changed from Bulletin to Alert. Changing title to include redundant network	XAAXP/ 2013-03-15
B	Products concerned Correction	Adding example of detection method. Updating affected versions and planned correction	XAAXP/ 2014-02-17
C	All	General restructuring Adding the case when 800xA Server uses Default Gateway.	XAAXP/ 2014-04-15

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