



BACnet System Health Report

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The enclosed report provides an overview of the network health for a Building Automation System. The purpose of the report is to provide a snapshot of how the Building Automation System is functioning and to identify any critical issues in the network or BAS device configurations that can cause system instability.

This report can be used to provide confidence that a system is running robustly and as a baseline snapshot to compare to in the future. It is recommended that this report be updated periodically to ensure that the health of the building network is maintained over time. In addition, a new report should be generated after each system repair or upgrade to ensure no issues have been introduced into the system.

This report is generated by analyzing the system's network communications during a finite amount of time.

Table of Contents

1. Summary
2. PCAP Info
3. Traffic Graph
4. Statistics Summary
5. Network Diagnostic Checks
- A. Appendix

Summary		BACnet Traffic		Non-BACnet Traffic	
Data:	36.89 MB Total	29.77 kB/s Average Rate			
Packets:	87,771 Total	70.83 pps Average Rate			
Breakdown:	54.38% Non-BACnet	0.98% BACnet	44.64% BACnet Bcast		

Network Health

23%

Critical

Diagnostic Check Summary

<p style="font-size: 2em;">17</p> <p>✓ Passed</p>	<p style="font-size: 2em;">4</p> <p>⚠ Warnings</p>	<p style="font-size: 2em;">7</p> <p>✗ Failed</p>
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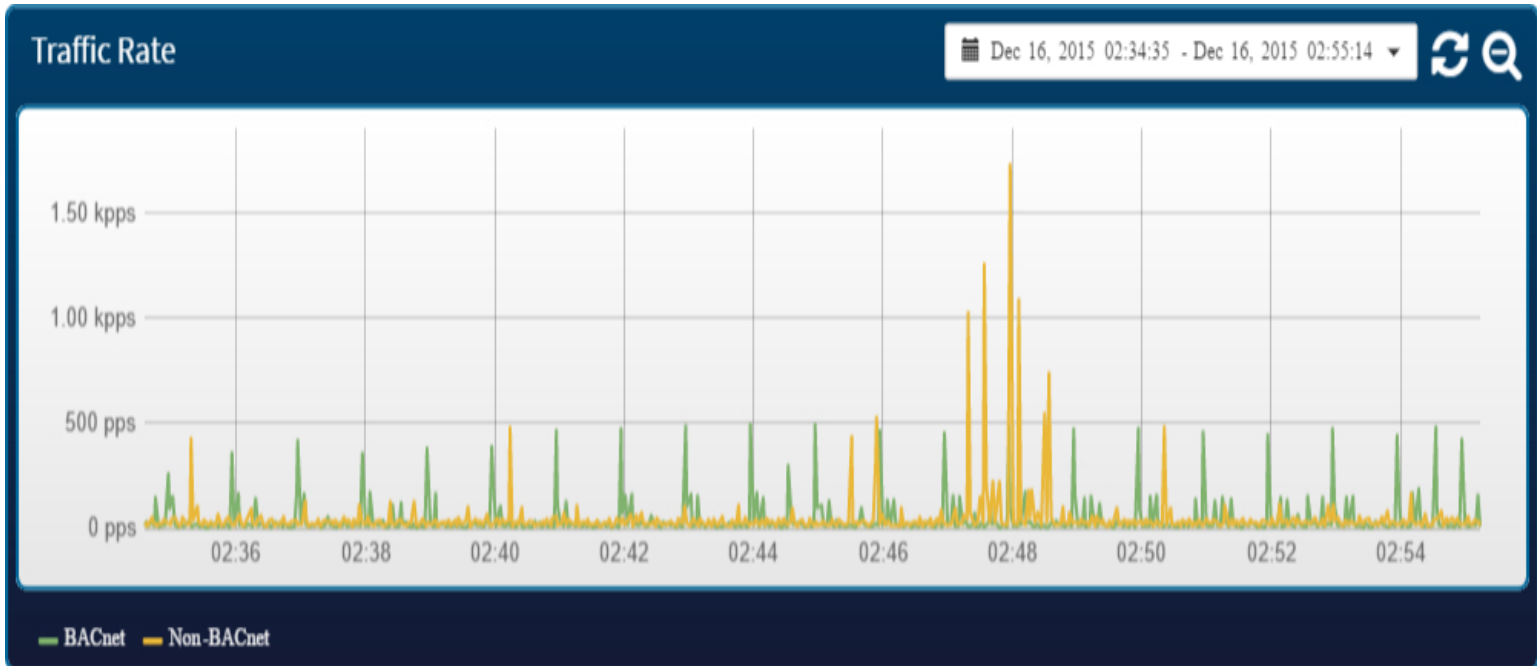
1. Summary

Name	Value
Capture Name	wireshark_2015-12-16.pcapng
Report Date	2017-05-12 17:17:48 UTC
Overall status	Critical
Network Health Score	23%
Failed checks	7
Warnings	4
Checks passed	17
Disabled Checks	0

2. PCAP Info

Name	Value
Start Date	2015-12-16 10:34:35 UTC
End Date	2015-12-16 10:55:14 UTC
Duration	00:20:39
Total Packets	87771
Data Rate	29.77 Kbps
Packet Rate	70.83 pps
Total BACnet Packets	40045
Total Other Packets	47726
BACnet	0.98 %
BACnet Broadcast	44.64 %
Other Packets	54.38 %

3. Traffic Graph



4. Statistics Summary

Name	Value
Networks Found	142
Devices Found	1088
Peak BACnet Traffic Burst	493 pps
Peak Non-BACnet Traffic Burst	1729 pps
BBMD Traffic	24639 pkts
Trend Logs	0 pkts

5. Network Diagnostic Checks

Name	Value	Comment
Detected Circular Networks	0 sources	
Low Hop Count	0 sources	
Duplicate Networks	0 networks	
Duplicate Device ID	6	
Duplicate BBMD Detection	1 BBMDs	
Duplicate IP Address	41 addresses	
Unresponsive Routers	8 routers	
Unresponsive Devices	90 devices	
Duplicate Source Address	0	
Error Responses	0.01 % (4 pkts)	
Missing ACKs	5.45 % (21 pkts)	
Checksum Errors	0 %	
Global Private-Transfers	4 sources	
Busy Routers	0 routers	
BACnet Broadcast Traffic	31.62 pps	
Read-Property Traffic	0 pps	
Write-Property Traffic	0.02 pps	
Confirmed-COV Traffic	0 pps	
Unconfirmed-COV Traffic	0 pps	
Confirmed-Event Traffic	0 pps	
Unconfirmed-Event Traffic	0.91 pps	
Reject-To-Networks	0 networks	
Global Who-Is	565 pkts	
Global Who-Is-Router	2 sources	
Longest Response Time	3.87 s	
BACnet Buffer Full Broadcasts	0 pps	
Max Networks Exceeded	142 networks	
Alarms	0 pps	
Average Token Round-Trip Time	N/A	
Standard Deviation of Token Round-Trip Time	N/A	
Token Disruptions	N/A	

A. Appendix

A.1 Duplicate Device ID - Worst Offenders

Device	Network	Address	Vendor ID
9911	1	ac:10:4c:28:ba:c0	83
9911	1601	ac:10:4c:28:ba:c0	83
91127	1	ac:10:4c:54:ba:c0	83
91127	1601	ac:10:4c:54:ba:c0	83
91130	1	ac:10:4c:58:ba:c0	83
91130	1601	ac:10:4c:58:ba:c0	83
91131	1	ac:10:4c:59:ba:c0	83
91131	1601	ac:10:4c:59:ba:c0	83
91213	1	ac:10:7d:2b:ba:c0	83
91213	1601	ac:10:7d:2b:ba:c0	83
91306	1	ac:10:a8:0a:ba:c0	83
91306	1601	ac:10:a8:0a:ba:c0	83

A.2 Duplicate IP Address - Worst Offenders

IP Address	MAC Address	Device	Network	Address
172.16.125.206:47808	00:00:0c:07:ac:01	991269	N/A	N/A
172.16.125.206:47808	00:06:2a:88:2c:00	991269	N/A	N/A
172.16.168.82:47808	00:00:0c:07:ac:01	991338	1	ac:10:a8:52:ba:c0
172.16.168.82:47808	00:06:2a:88:2c:00	991338	1	ac:10:a8:52:ba:c0
172.16.168.88:47808	00:00:0c:07:ac:01	991344	1	ac:10:a8:58:ba:c0
172.16.168.88:47808	00:05:5f:35:3c:00	991344	1	ac:10:a8:58:ba:c0
172.16.199.28:47808	00:15:5d:fa:16:c1	880037	1	ac:10:c7:1c:ba:c0
172.16.199.28:47808	1c:c1:de:1e:ae:a6	880037	1	ac:10:c7:1c:ba:c0
172.16.199.29:47808	00:26:55:1a:97:f4	199	N/A	N/A
172.16.199.29:47808	1c:c1:de:1e:ae:a6	199	N/A	N/A
172.16.199.33:47808	00:15:5d:fa:17:3c	55010	1	ac:10:c7:21:ba:c0
172.16.199.33:47808	1c:c1:de:1c:09:1c	55010	1	ac:10:c7:21:ba:c0
172.16.199.46:47808	00:0b:cd:82:14:24	198	N/A	N/A
172.16.199.46:47808	1c:c1:de:1b:ae:ea	198	N/A	N/A
172.16.199.52:47808	00:15:5d:fa:14:8e	N/A	N/A	N/A
172.16.199.52:47808	1c:c1:de:1b:ae:ea	N/A	N/A	N/A
172.16.199.56:47808	00:15:5d:fa:14:8d	880002	N/A	N/A
172.16.199.56:47808	1c:c1:de:1b:ae:ea	880002	N/A	N/A
172.16.28.21:47808	00:00:0c:07:ac:01	991408	N/A	N/A
172.16.28.21:47808	00:05:5f:35:3c:00	991408	N/A	N/A

A.3 Unresponsive Routers - Worst Offenders

DNet	Sent	Unanswered	Ratio
1216	20	20	100
1136	1	1	100
1301	1	1	100
5001	1	1	100
5004	1	1	100
11555	1	1	100
25004	1	1	100
29911	1	1	100

A.4 Unresponsive Devices - Worst Offenders

Device	Sent	Unanswered	Ratio
249	1208	1208	100
191	1169	1169	100
231	808	808	100
229	144	144	100
252	28	28	100
880001	22	22	100
880024	20	20	100
1149014	20	20	100
1149015	18	18	100
1149016	18	18	100

A.5 Error Responses - Worst Offenders

Source	Destination	PDU Type	Packet Count
172.25.76.3:47808	172.16.199.52:58612	Error	4

A.6 Missing ACKs - Worst Offenders

Source	Destination	Packet Count
172.16.199.28:47808	172.16.199.52:47808	6
172.16.199.52:47808	172.16.168.88:47808	6
172.16.199.52:47808	172.16.168.82:47808	3
172.16.199.52:47808	172.16.76.75:47808	3
172.16.199.52:47808	172.16.76.155:47808	1
172.16.199.52:47808	172.16.76.200:47808	1
172.16.199.52:58612	172.25.76.3:47808	1

A.7 BACnet Broadcast Traffic - Worst Offenders

Source	Sent	Avg. Rate (pps)
00:40:ae:03:12:ee	13117	10.587
172.16.76.39:47808	1321	1.066
172.16.76.91:47808	1210	0.977
172.16.125.36:47808	844	0.681
172.16.125.29:47808	772	0.623
172.16.199.52:47808	748	0.604
172.16.125.90:47808	706	0.57
172.16.125.191:47808	661	0.533
172.16.125.89:47808	648	0.523
172.16.125.5:47808	578	0.467

A.8 Global Who-Is - Worst Offenders

Source	Sent	Avg. Rate (pps)
00:40:ae:03:12:ee	279	0.225
172.16.199.28:47808	229	0.185
172.16.199.33:47808	23	0.019
172.16.76.3:38420	7	0.006
172.16.76.154:47808	4	0.003
172.16.76.156:47808	4	0.003
172.16.76.157:47808	4	0.003
172.16.76.158:47808	4	0.003
172.16.76.160:47808	4	0.003
172.16.76.152:47808	4	0.003

A.9 Global Who-Is-Router - Worst Offenders

Source	Sent	Avg. Rate (pps)
172.16.76.40:47808	20	0.016
172.16.76.89:47808	19	0.015
172.16.125.158:47808	1	0.001
172.16.125.164:47808	1	0.001
172.16.125.166:47808	1	0.001
172.16.125.169:47808	1	0.001
172.16.125.171:47808	1	0.001
172.16.125.180:47808	1	0.001
172.16.125.183:47808	1	0.001
172.16.125.187:47808	1	0.001

A.10 Longest Response Time - Worst Offenders

Time	Source	Destination	Response Time (ms)
2015-12-16 10:35:00 UTC	172.16.199.52:47808	172.16.76.155:47808	3872.079
2015-12-16 10:51:01 UTC	172.16.199.52:47808	172.16.76.158:47808	2727.666
2015-12-16 10:51:01 UTC	172.16.199.52:47808	172.16.76.159:47808	1994.418
2015-12-16 10:38:51 UTC	172.16.199.52:47808	172.16.76.154:47808	1737.181
2015-12-16 10:44:56 UTC	172.16.199.52:47808	172.16.76.156:47808	1520.982
2015-12-16 10:51:32 UTC	172.16.199.52:47808	172.16.76.160:47808	287.382
2015-12-16 10:48:28 UTC	172.16.199.52:47808	172.16.76.121:47808	102.23
2015-12-16 10:40:18 UTC	172.16.199.52:58612	172.25.76.4:47808	99.928
2015-12-16 10:40:13 UTC	172.16.199.52:58612	172.25.76.3:47808	93.435
2015-12-16 10:42:57 UTC	172.16.199.52:47808	172.16.76.43:47808	86.649