



PYTHIA TECHNOLOGIES
data transformation solutions

Data Transformation Product Line Brochure



SNMP

SQL


 **Modbus**



 **BACnet**[™]


XML

MicroServer Solutions

The MicroServer solutions provide:

- Data transformation for industry standard and proprietary protocols.
- A quick, simple and cost effective way to add serial based equipment to the network
- Rack mount, DIN mount, wall mount and VESA mount options.
- Ethernet, WiFi and Cellular Air Card communication options.

MS0, MS0-MBS, MS0-BR : DIN, Surface Mount



MS0



MS0-MBS



MS0-BR



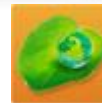
MS1: Wall / VESA Mount



MS2/MS3: Rack Mount



MS2



MS3



Custom Solutions:

Custom MicroServer solutions are also available.

MicroServer Compatibility Matrix



MicroServer Level 0, -MBS, -BR		Translated Protocol					
		Modbus TCP	BACnet IP	BACnet MSTP	SNMP-1	SNMP-M	XML
	Part #						
Modbus RTU / TCP	MS0	x					
Modbus RTU	MS0-MBS	x	x		x		
BACnet IP	MS0-MBS	x	x		x		
SNMP	MS0-MBS	x	x		x		
BACnet MSTP	MS0-BR			Routing			
Maximum Device Count							
MS0 = 32 devices daisy-chained				MS0-MBS = 1 device* <small>* Point count dependent</small>			



Micro Server Level 1, 2, & 3		Translated Protocol						
		Modbus TCP	BACnet IP	BACnet MSTP	SNMP-1	SNMP-M	XML	
	Part #	MTCP	BACIP	BACMSTP	SNMP1	SNMPM	XML	
Device Protocol	Modbus RTU / TCP	MRTUTCP	x	x	x	32 max	x	x
	BACnet IP	BACIP	x	x	x	32 max	x	x
	BACnet MSTP	BACMSTP	x	x	-	32 max	x	x
	SNMP	SNMP	x	x	x	x	x	x
Maximum Device Count								
MS1 = 16 devices		MS2 = 32/64 devices			MS3 = 64/128/247 devices			

Part Number Breakdown

Part Number:

MSx	-	Device Protocol	-	Translated Protocol	-	Number of Devices
MS2	-	MTCP	-	SNMP1	-	32

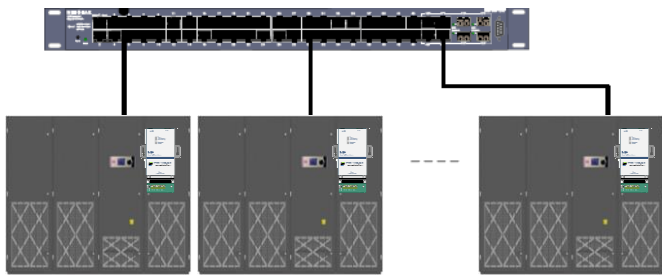
Technical Reference - Data Transformation Solutions: Modbus/RTU to Modbus/TCP

Compatibility: MS0

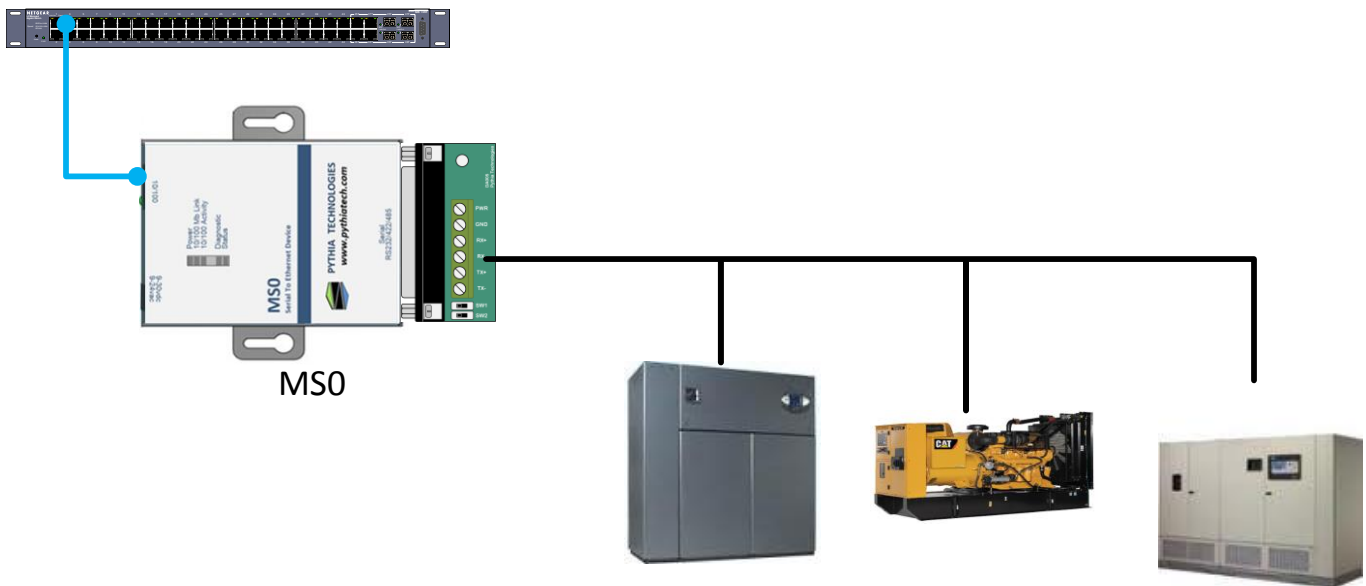
The MS0 provides Modbus pass-through from Modbus/RTU to Modbus/TCP for Building Management Systems. The base MS0 supports 1 direct connected RS-232/422/485 Modbus/RTU device or up to 32 devices daisy-chained.



MS0 Direct-connect:



MS0 Daisy-chain:



Available Part Numbers:

MS0	MS0-MRTU-MTCP-32
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Technical Reference - Data Transformation Solutions: Multiple Protocols

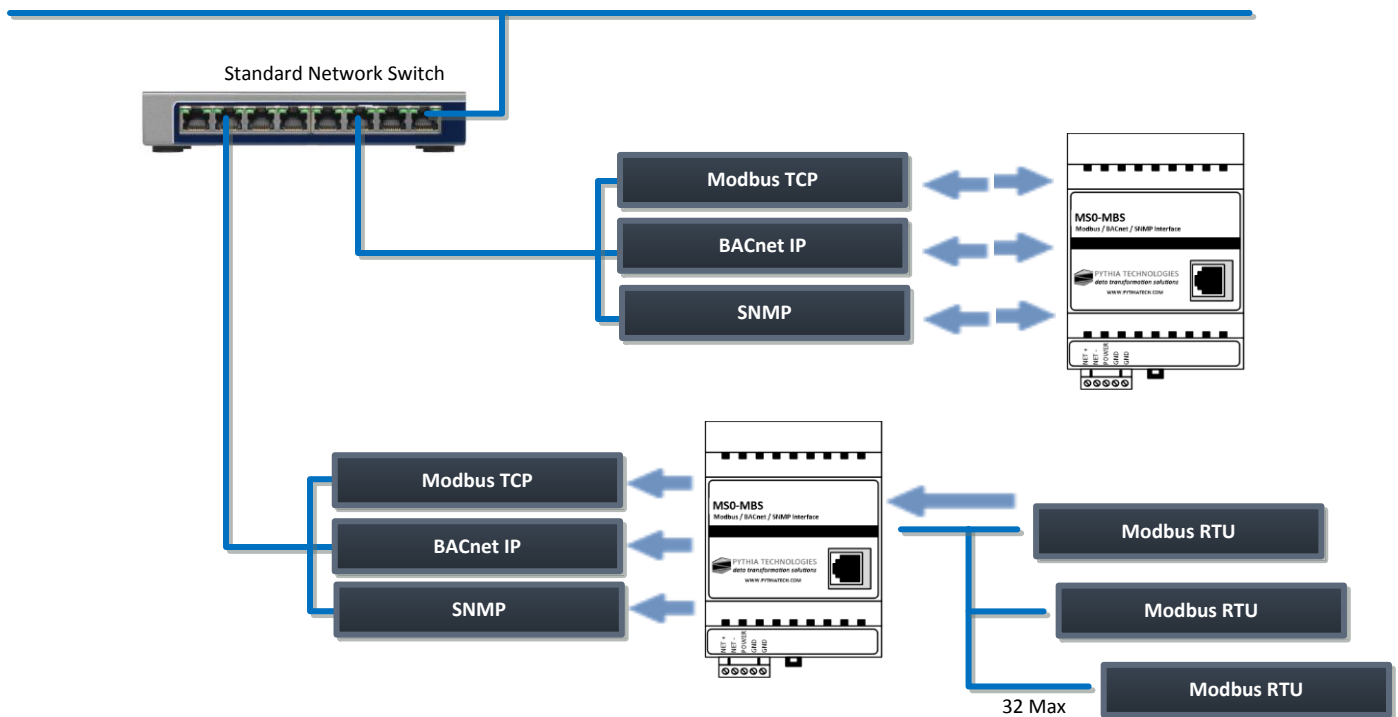
Compatibility: MS0-MBS

The MS0–MBS provides a cost effective, easy to use, DIN rail or wall-mount solution for Modbus, BACnet and SNMP protocol transformation.

The MS0-MBS provides stand–alone protocol transformation between Modbus RTU / TCP, BACnet IP and SNMP based systems. Each protocol can be configured as a client or a server, allowing users to access and share information from differing devices or systems.

The MS0-MBS has two physical communication ports—one 10/100 Mbps Ethernet/IP port, and another optically isolated RTU (EIA-485) port.

The device is configured through it's web interface, where all communication parameters can be viewed and set. Up to 500 objects are supported with a single MS0-MBS



Available Part Numbers:

MS0-MBS

MS0-MBS

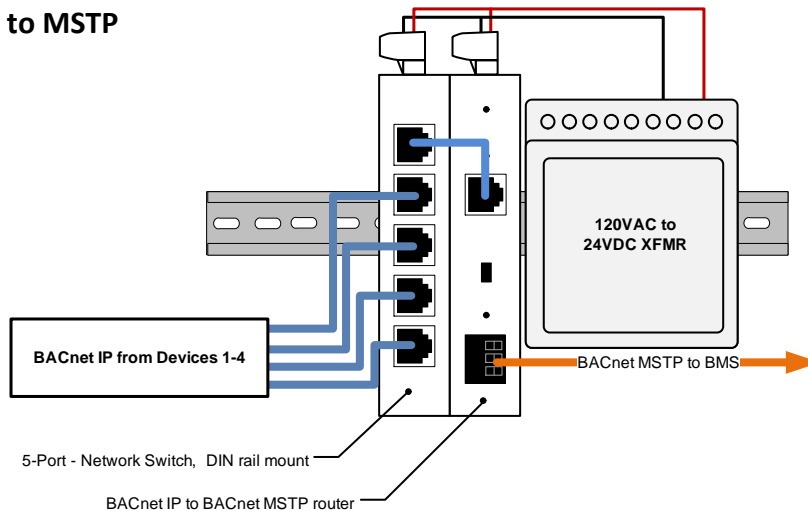
Compatibility: MS0-BR

The MS0-BR provides a cost effective, easy to use, DIN rail or wall-mount solution for BACnet IP to BACnet MSTP routing.

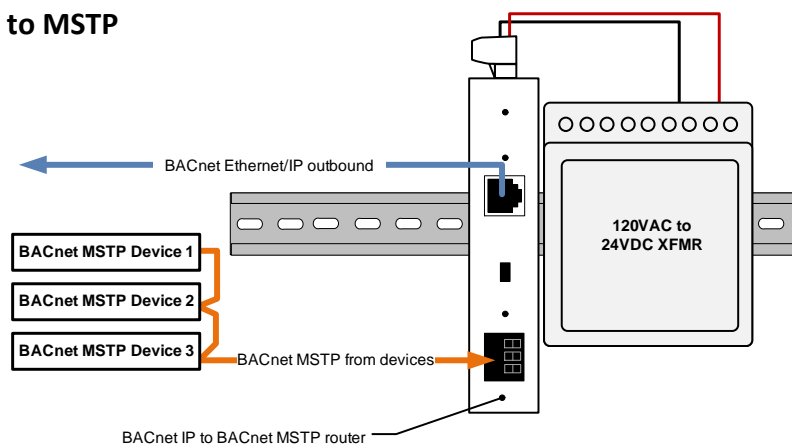
The MS0-BR is a multi-network router, sharing messages among BACnet/IP, BACnet Ethernet and MSTP networks. The router is configurable via its internal webpage. The MS0-BR comes in a metal case, is DIN-rail mounted and is powered from a 24 V AC/DC source. It has one isolated MS/TP port and one 10/100 Mbps Ethernet Auto-MDIX port. The MSTP port offers a 3-pin terminal block with a removable plug for the EIA-485 connection. Through this port, up to 254 devices can be addressed-as many as 31 full-load devices on the attached segment.

A BACnet Broadcast Management Device (BBMD) within the router can be enabled to allow BACnet communication across routed IP networks (ones with multiple IP subnets). If all IP devices use the same subnet, this functionality can be left disabled. The router also supports Foreign Device Registration.

ROUTING BACnet IP to MSTP



ROUTING BACnet IP to MSTP



Available Part Numbers:

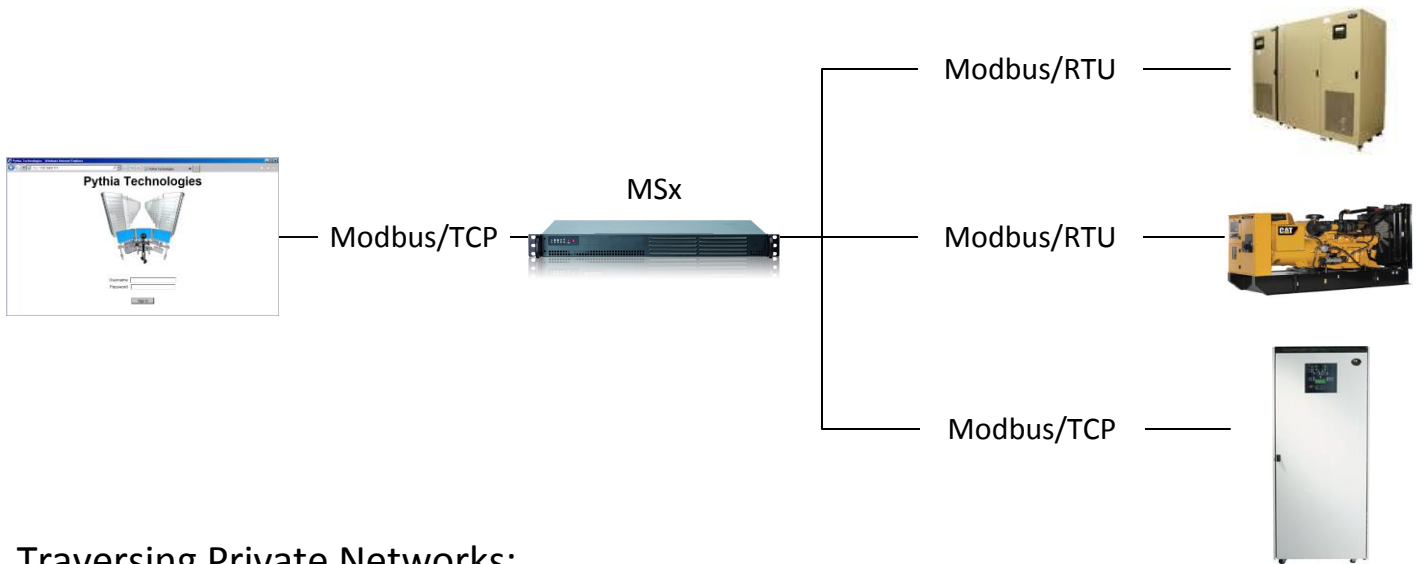
MS0-BR

MS0-BR, MS0-BR-ENCL, MS0-BR-NS-ENCL

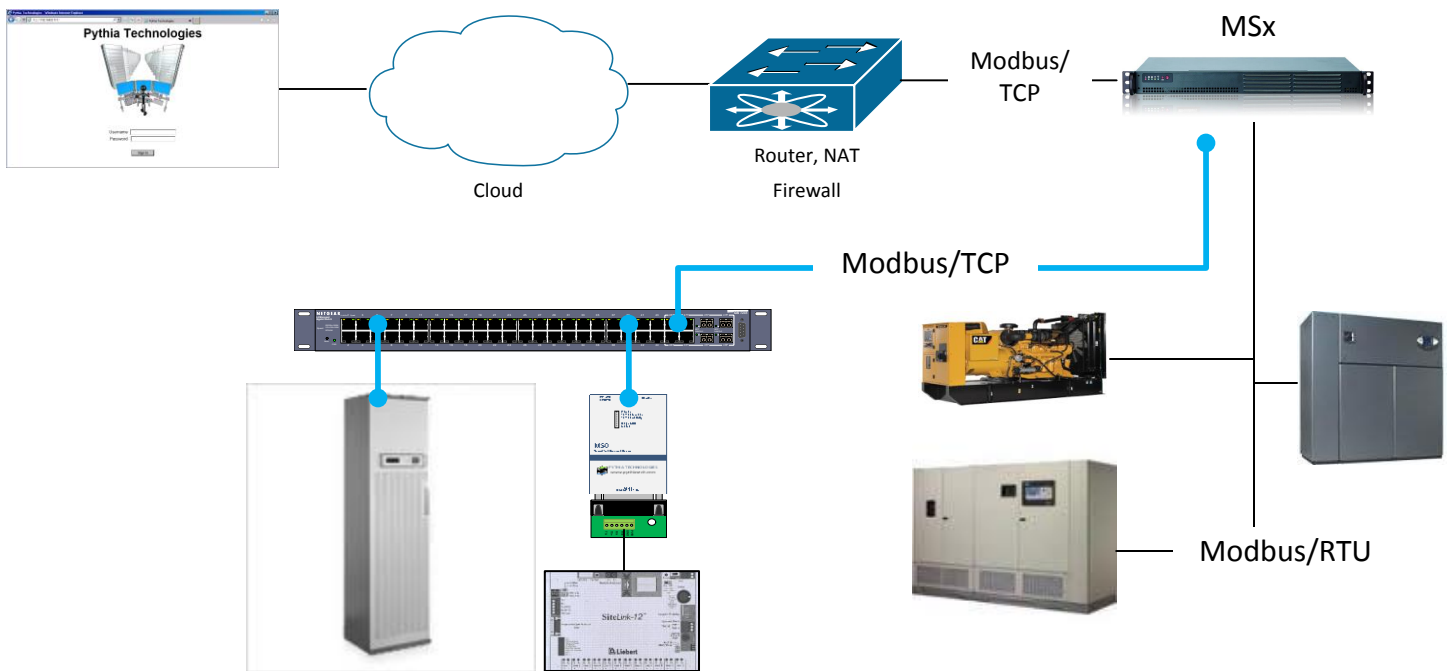
Technical Reference - Data Transformation Solutions: Modbus RTU / TCP to Modbus/TCP

Compatibility: MS1, MS2, MS3

The Micro Servers provide Modbus RTU and/or Modbus TCP to Modbus/TCP protocol translation for Building Management Systems. The base MS1 supports 16 devices and MS2 support 32 devices with options for 64, 128 and 247 Modbus devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for Modbus RTU and/or Modbus TCP to Modbus/TCP.



Traversing Private Networks:



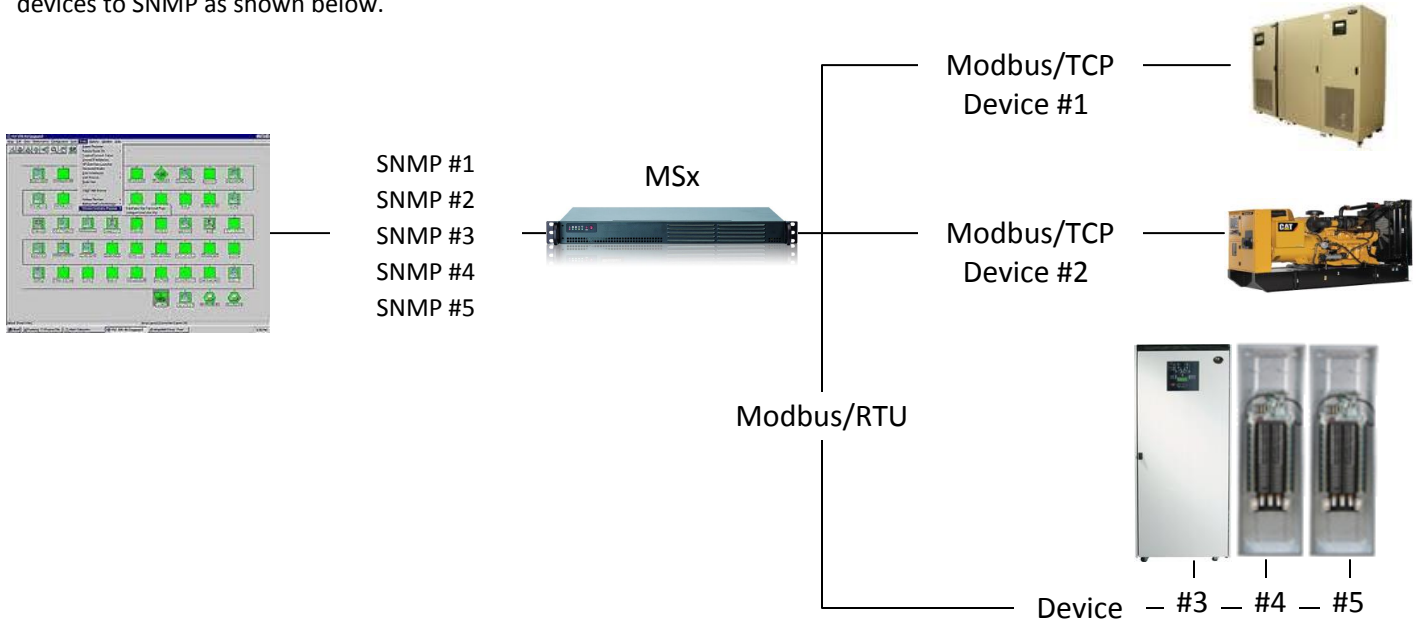
Available Part Numbers:

MS1	MS1-MRTUTCP-MTCP-16
MS2	MS2-MRTUTCP-MTCP-32 MS2-MRTUTCP-MTCP-64
MS3	MS3-MRTUTCP-MTCP-64 MS3-MRTUTCP-MTCP-128 MS3-MRTUTCP-MTCP-247

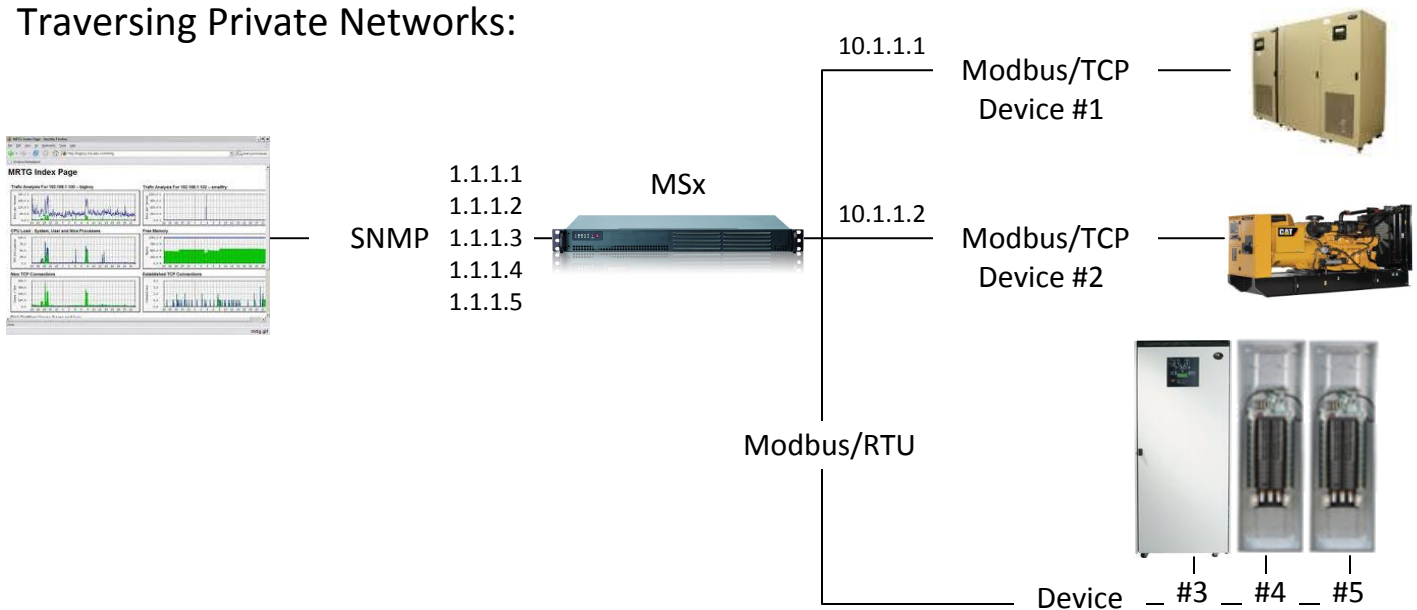
Technical Reference - Data Transformation Solutions: Modbus RTU / TCP to SNMP-1

Compatibility: MS1, MS2, MS3 (16/32 devices max)

The Micro Servers provide Modbus RTU and/or Modbus TCP native protocol to SNMP protocol for Network Management Systems. SNMP-1 dictates a one-to-one device mapping. *That is, every Modbus slave device will equate to one SNMP device. This is important when a consistent MIB definition is necessary. The base MS1 is equipped with 1 network interface, dictating a maximum of 16 devices per MS1. The MS2 and MS3 are equipped with 2 network interfaces, dictating a maximum of 32 devices per MSx.* Special consideration can be made for additional network interfaces and higher device counts, please contact Pythia Technologies for more information and pricing. The Micro Server can also provide private network to public network traversal for Modbus devices to SNMP as shown below.



Traversing Private Networks:



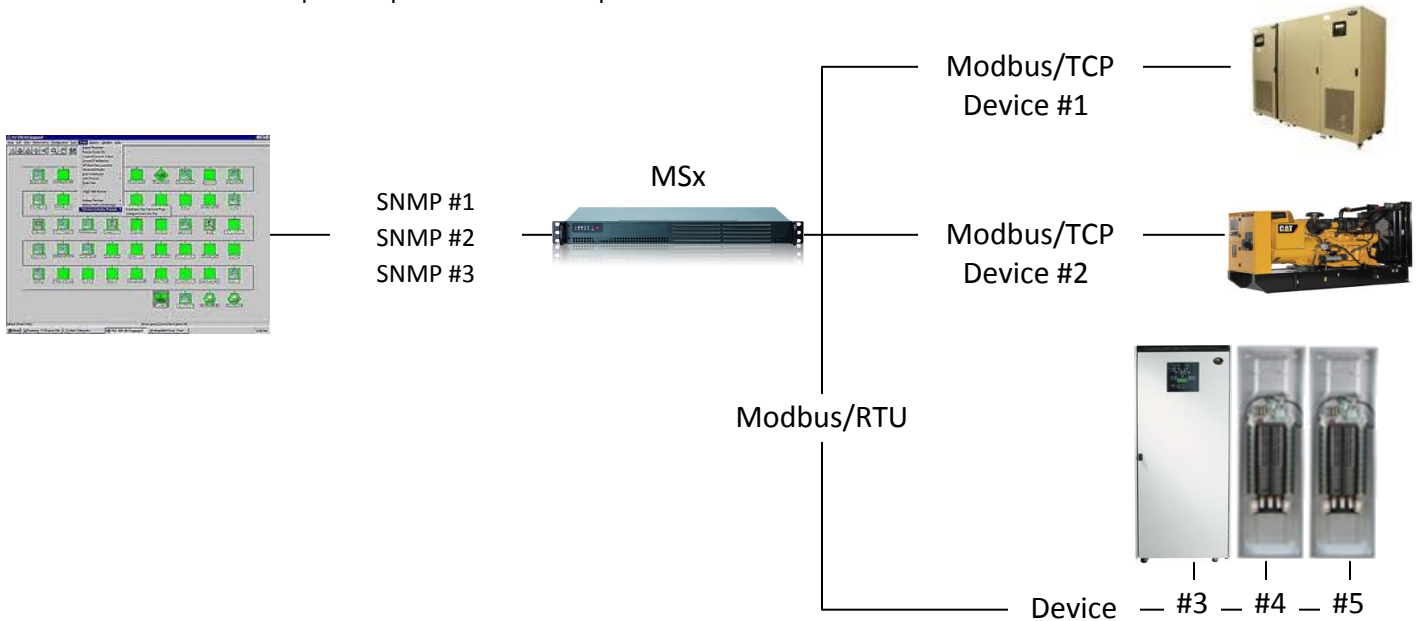
Available Part Numbers:

MS1	MS1-MRTUTCP-SNMP1-16
MS2	MS2-MRTUTCP-SNMP1-32
MS3	MS3-MRTUTCP-SNMP1-32

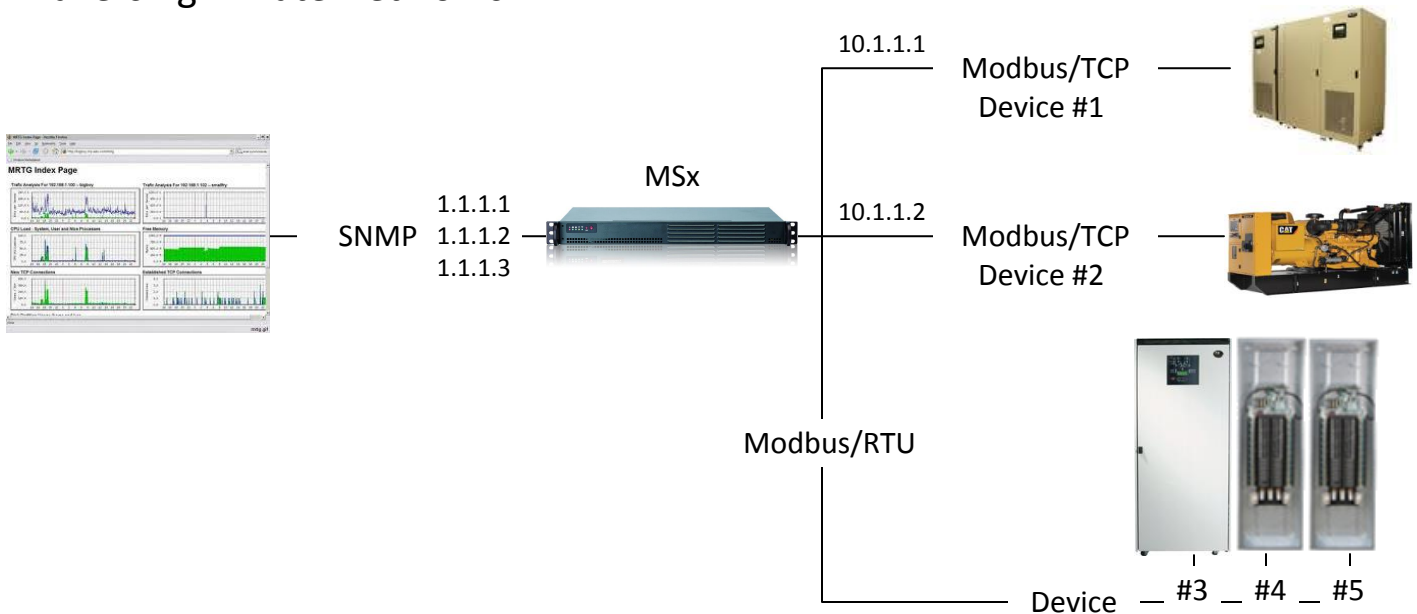
Technical Reference - Data Transformation Solutions: Modbus RTU / TCP to SNMP-M

Compatibility: MS1, MS2, MS3

The Micro Servers provide Modbus RTU and/or Modbus TCP native protocol to SNMP protocol for Network Management Systems. SNMP-M dictates a many-to-one device mapping. That is, multiple Modbus slave devices may act as a single SNMP device. This is important when individual smart parts add up to one larger device. A good example is a floor mount PDU with BCMS. The base MS1 supports 16 devices and MS2 support 32 devices with options for 64, 128 and 247 Modbus devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for Modbus devices to SNMP.



Traversing Private Networks:



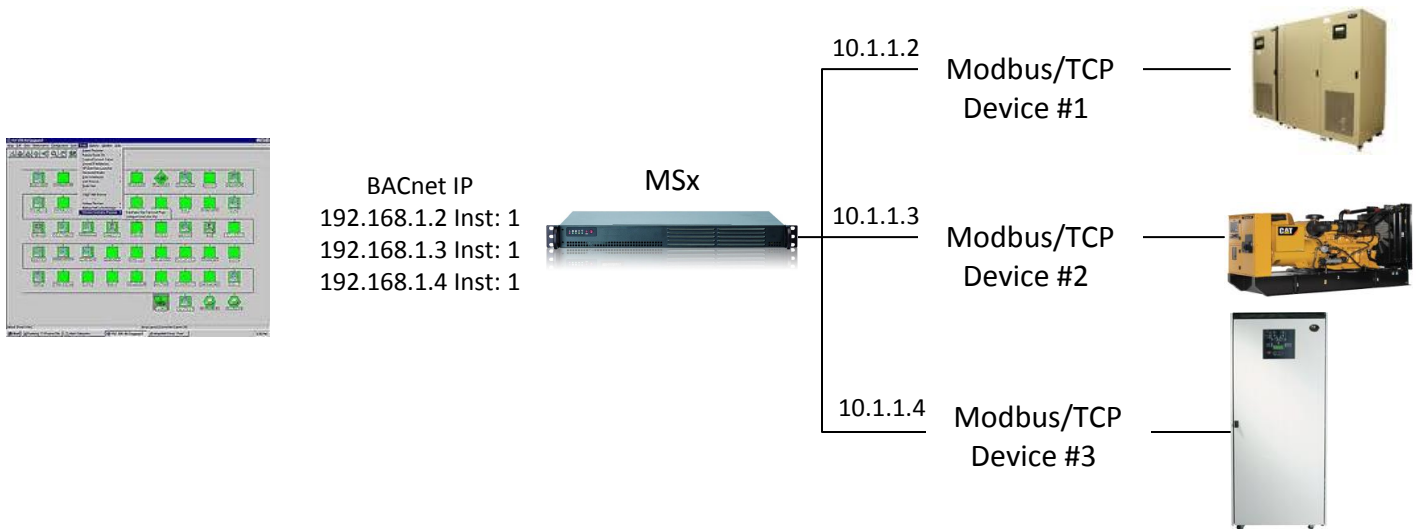
Available Part Numbers:

MS1	MS1-MRTUTCP-SNMPM-16		
MS2	MS2-MRTUTCP-SNMPM-32	MS2-MRTUTCP-SNMPM-64	
MS3	MS3-MRTUTCP-SNMPM-64	MS3-MRTUTCP-SNMPM-128	MS3-MRTUTCP-SNMPM-247

Technical Reference - Data Transformation Solutions: Modbus RTU / TCP to BACnet IP

Compatibility: MS1, MS2, MS3 (247 devices max)

The Micro Servers provide protocol translation for Modbus RTU and/or Modbus TCP native protocol to BACnet IP protocol for Building Management Systems (BMS). The base MS1 supports 16 devices and MS2 supports 32 devices with options for 64, 128 and 247 Modbus devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for Modbus RTU and/or Modbus TCP to BACnet IP networks.



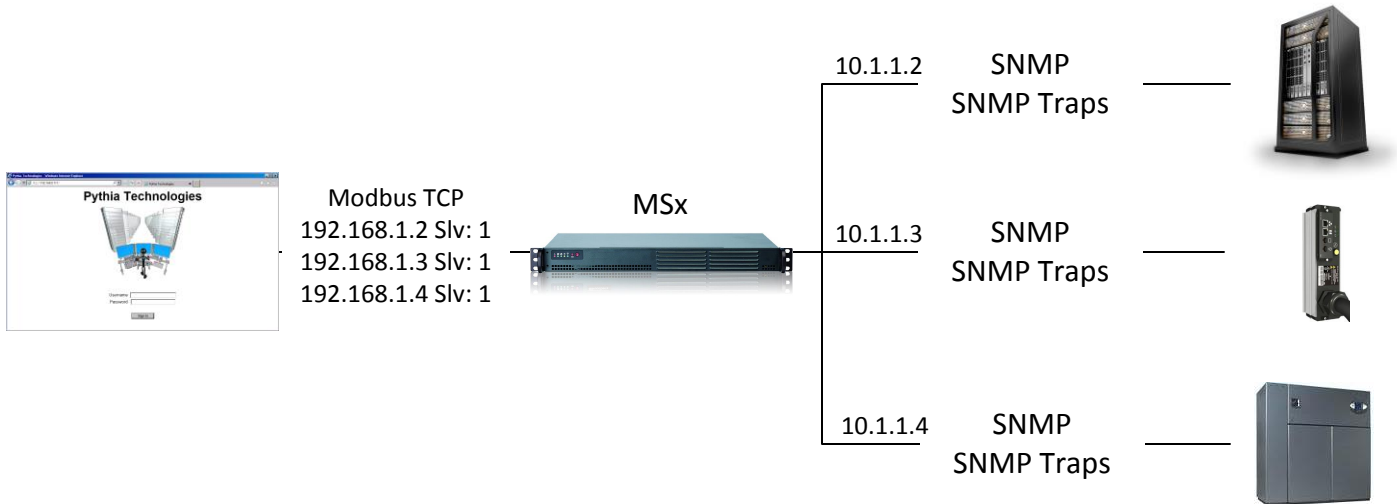
Available Part Numbers:

MS1	MS1-MRTUTCP-BACIP-16
MS2	MS2-MRTUTCP-BACIP-32, MS2-MRTUTCP-BACIP-64
MS3	MS3-MRTUTCP-BACIP-64, MS3-MRTUTCP-BACIP-128, MS3-MRTUTCP-BACIP-247,

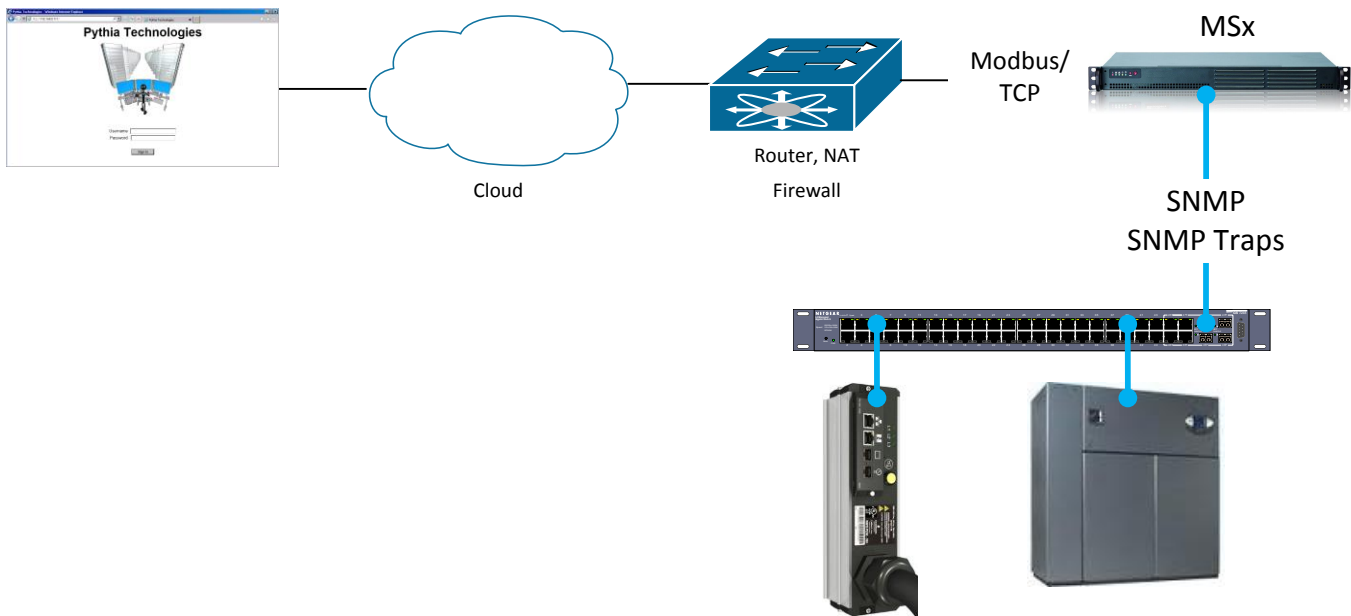
Technical Reference - Data Transformation Solutions: SNMP / SNMP Traps to Modbus/TCP

Compatibility: MS1, MS2, MS3

The Micro Servers provide SNMP and SNMP Traps to Modbus/TCP protocol translation for Building Management Systems. The base MS1 supports 16 devices and MS2 supports 32 devices with options for 64, 128 and 247 SNMP devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for SNMP devices to Modbus/TCP.



Traversing Private Networks:



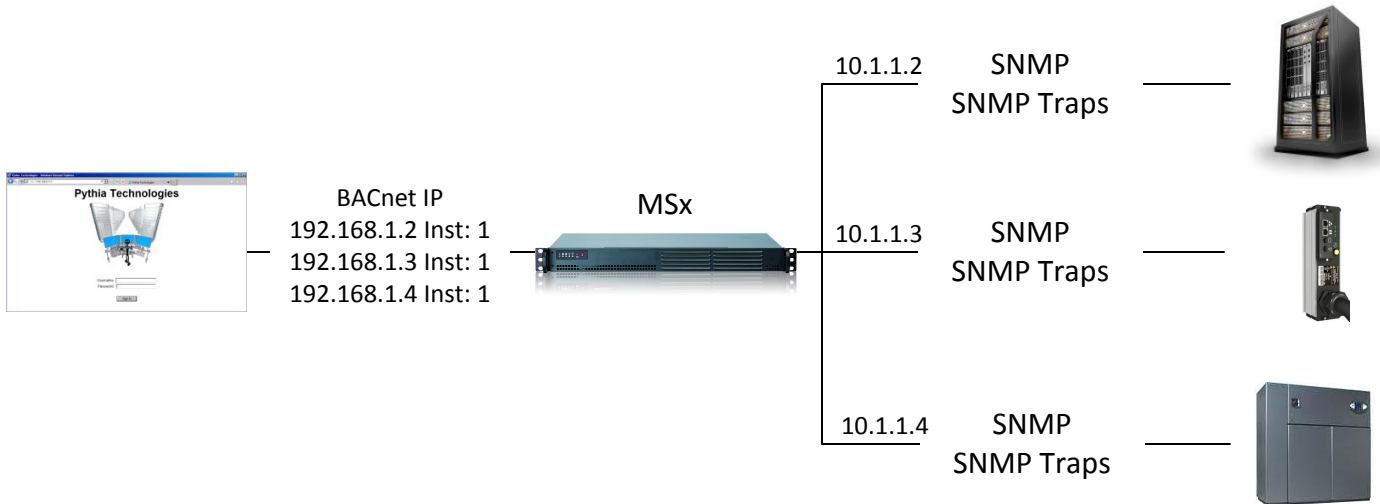
Available Part Numbers:

MS1	MS1-SNMP-MTCP-16		
MS2	MS2-SNMP-MTCP-32	MS2-SNMP-MTCP-64	
MS3	MS3-SNMP-MTCP-64	MS3-SNMP-MTCP-128	MS3-SNMP-MTCP-247

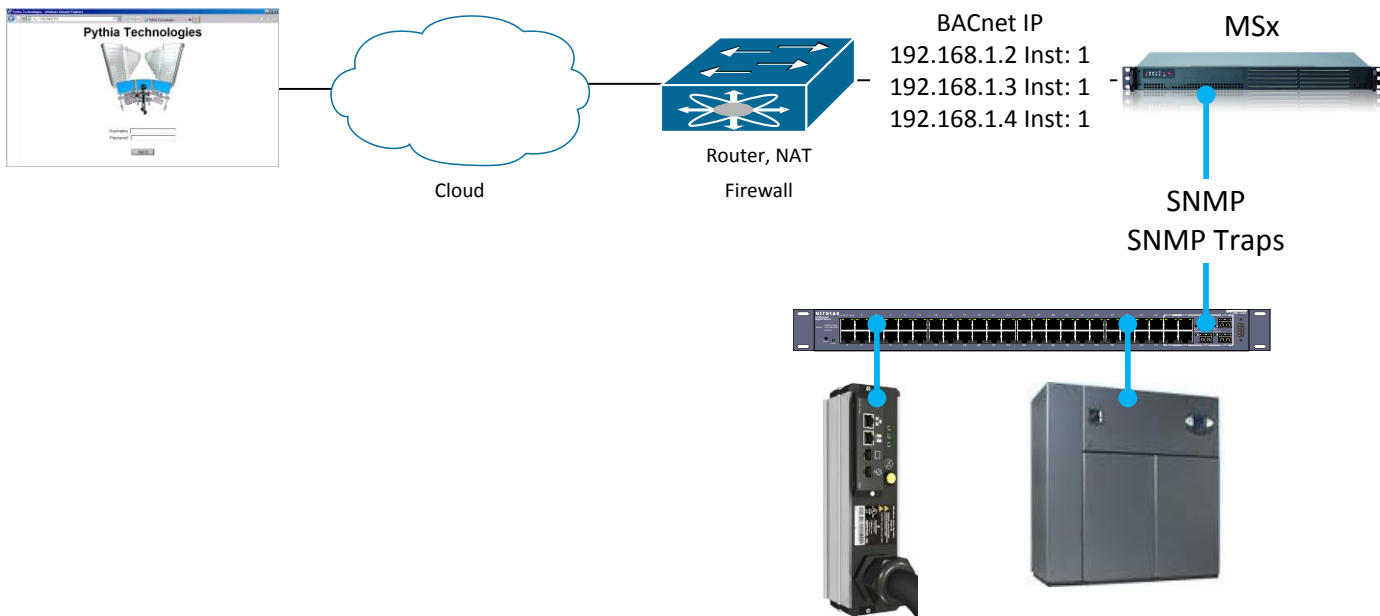
Technical Reference - Data Transformation Solutions: SNMP / SNMP Traps to BACnet IP

Compatibility: MS1, MS2, MS3

The Micro Servers provide SNMP and SNMP Traps to BACnet IP protocol translation for Building Management Systems. The base MS1 supports 16 devices and MS2 supports 32 devices with options for 64, 128 and 247 SNMP devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for SNMP devices to BACnet IP.



Traversing Private Networks:



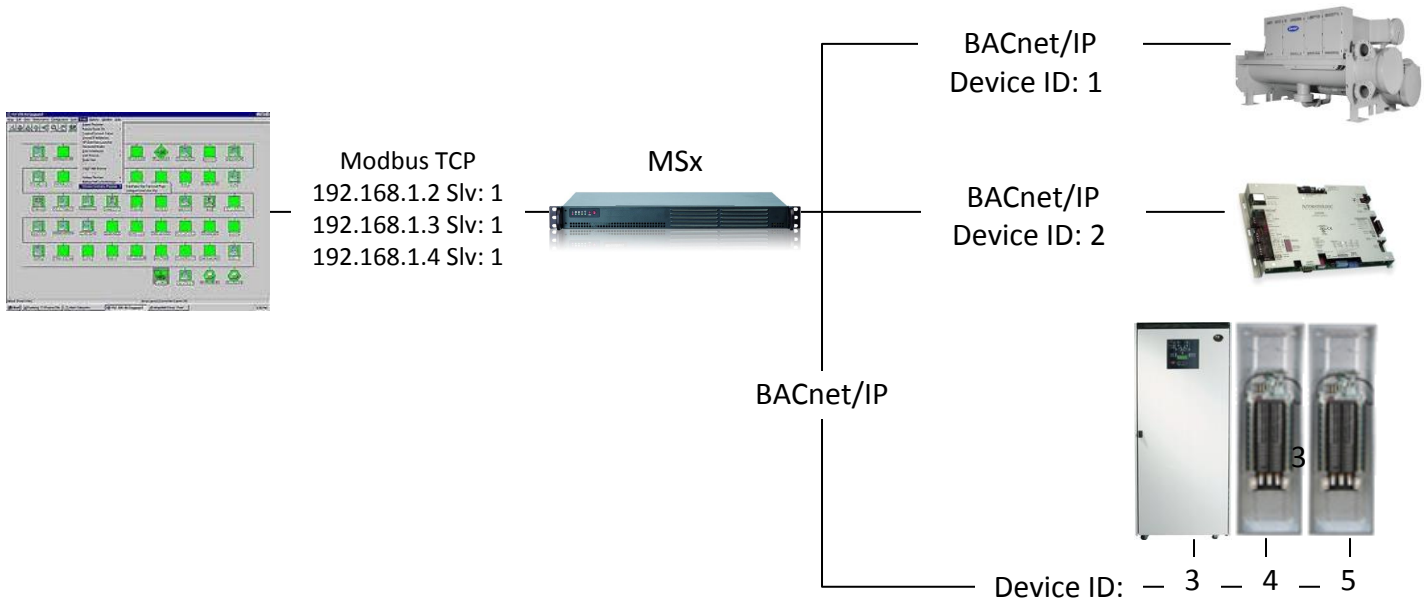
Available Part Numbers:

MS1		
MS2	MS2-SNMP-BACIP-32	MS2-SNMP-BACIP-64
MS3	MS3-SNMP-BACIP-64	MS3-SNMP-BACIP-128 MS3-SNMP-BACIP-247

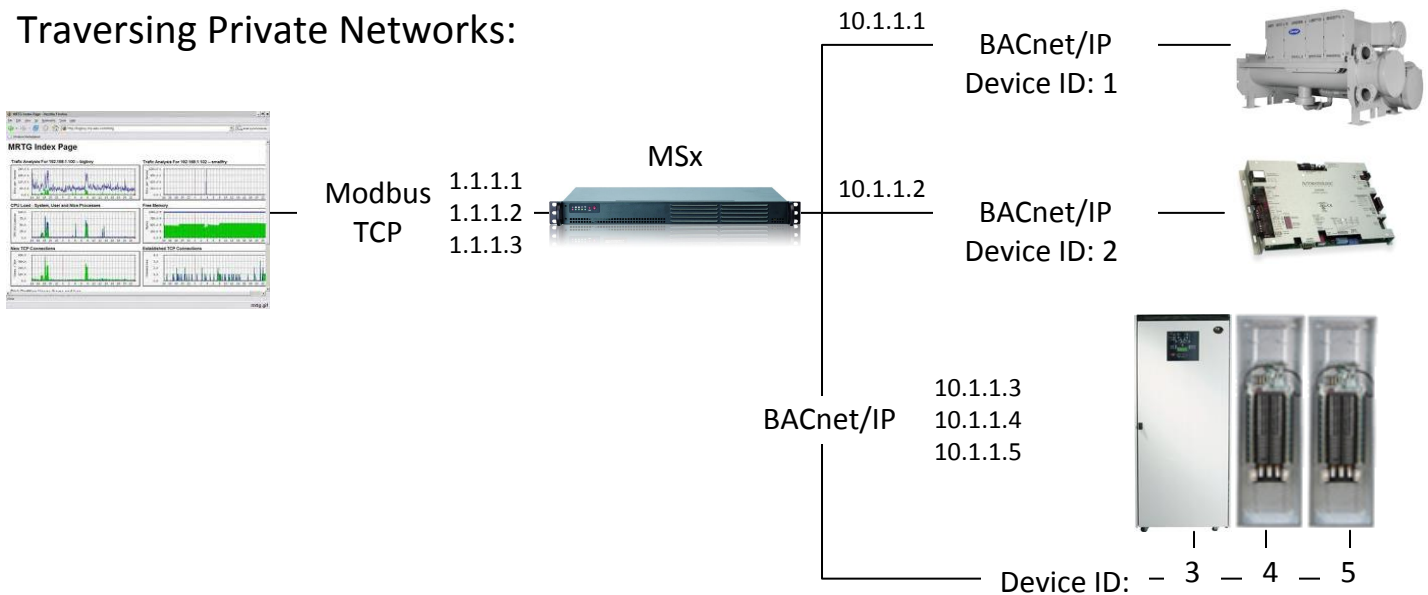
Technical Reference - Data Transformation Solutions: BACnet/IP to Modbus/TCP

Compatibility: MS1, MS2, MS3

The Micro Servers provide BACnet/IP native protocol to Modbus TCP protocol for Building Management Systems.. The base MS1 supports 16 devices and the MS2 supports 32 devices with options for 64, 128 and 247 BACnet/IP devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for BACnet/IP devices to Modbus as shown below.



Traversing Private Networks:



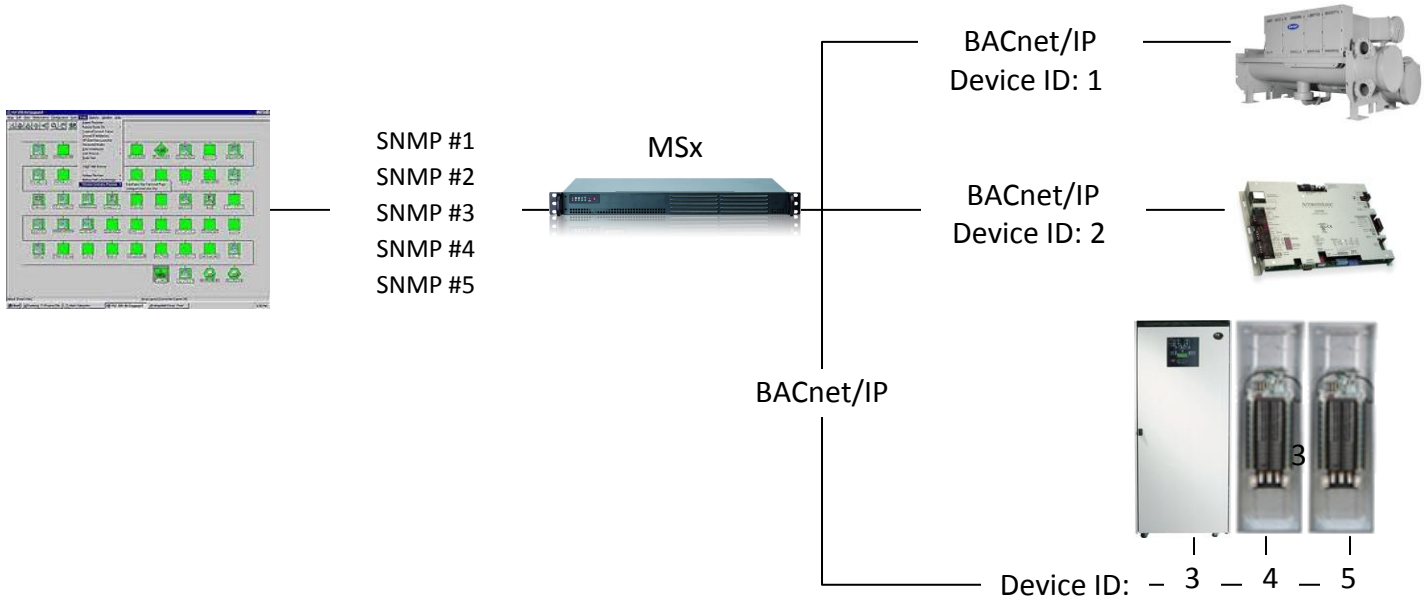
Available Part Numbers:

MS1	MS1-BACIP-MTCP-16		
MS2	MS2-BACIP-MTCP-32	MS2-BACIP-MTCP-64	
MS3	MS3-BACIP-MTCP-64	MS3-BACIP-MTCP-128	MS3-BACIP-MTCP-247

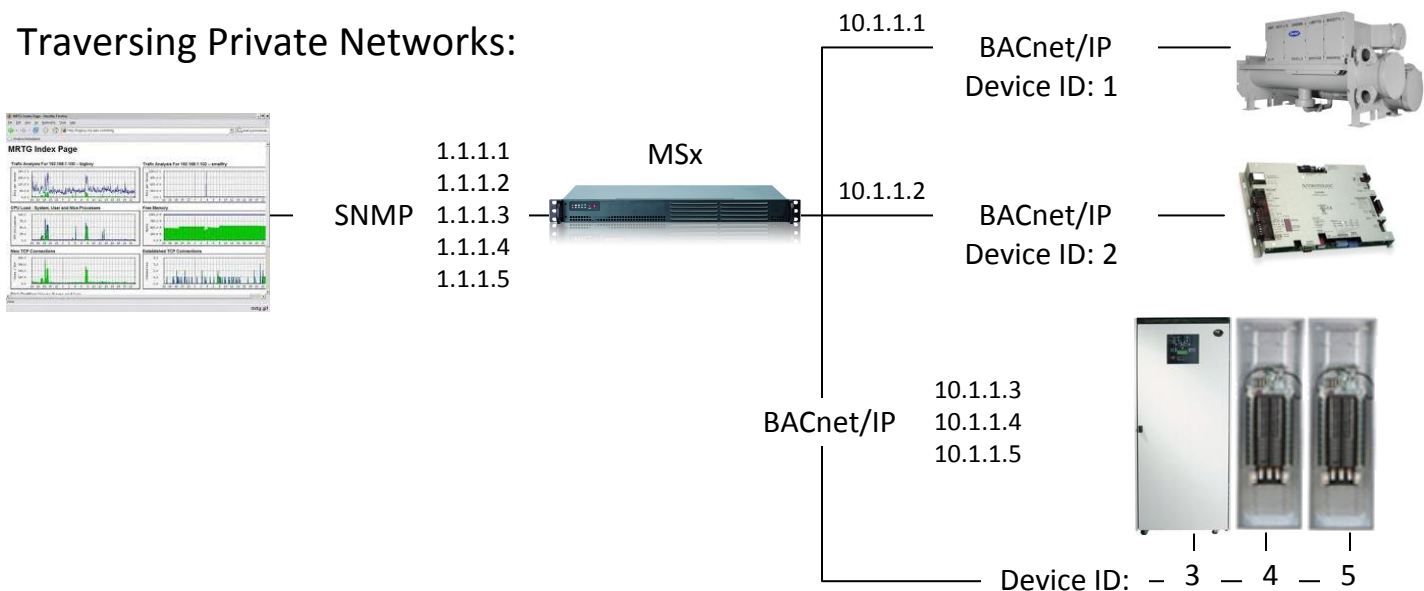
Technical Reference - Data Transformation Solutions: BACnet IP to SNMP-1

Compatibility: MS1, MS2, MS3 (16/32 devices only)

The Micro Servers provide BACnet/IP native protocol to SNMP protocol for Network Management Systems. SNMP-1 dictates a one-to-one device mapping. *That is, every BACnet/IP device will equate to one SNMP device. This is important when a consistent MIB definition is necessary. The base MS1 is equipped with 1 network interface, dictating a maximum of 16 devices per MS1. The MS2 and MS3 are equipped with 2 network interfaces, dictating a maximum of 32 devices per MSx. Special consideration can be made for additional network interfaces and higher device counts, please contact Pythia Technologies for more information and pricing. The Micro Server can also provide private network to public network traversal for BACnet/IP devices to SNMP as shown below.*



Traversing Private Networks:



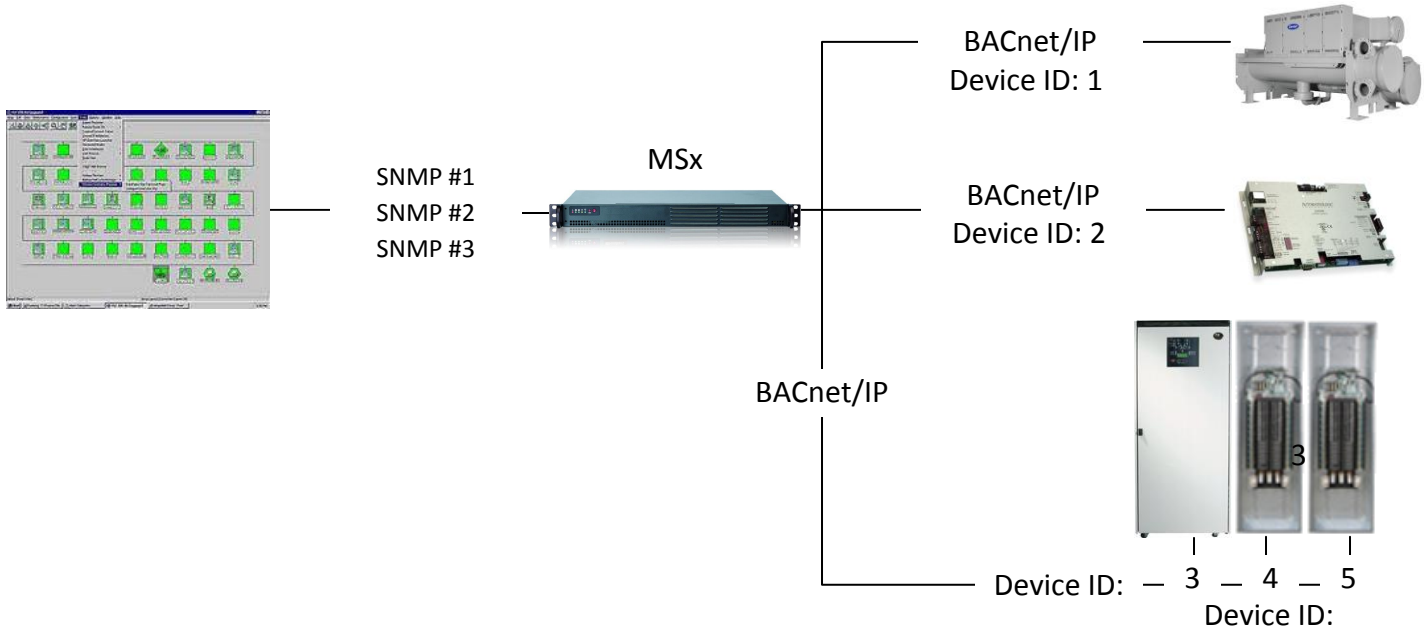
Available Part Numbers:

MS1	MS1-BACIP-SNMP1-16
MS2	MS2-BACIP-SNMP1-32
MS3	MS3-BACIP-SNMP1-32

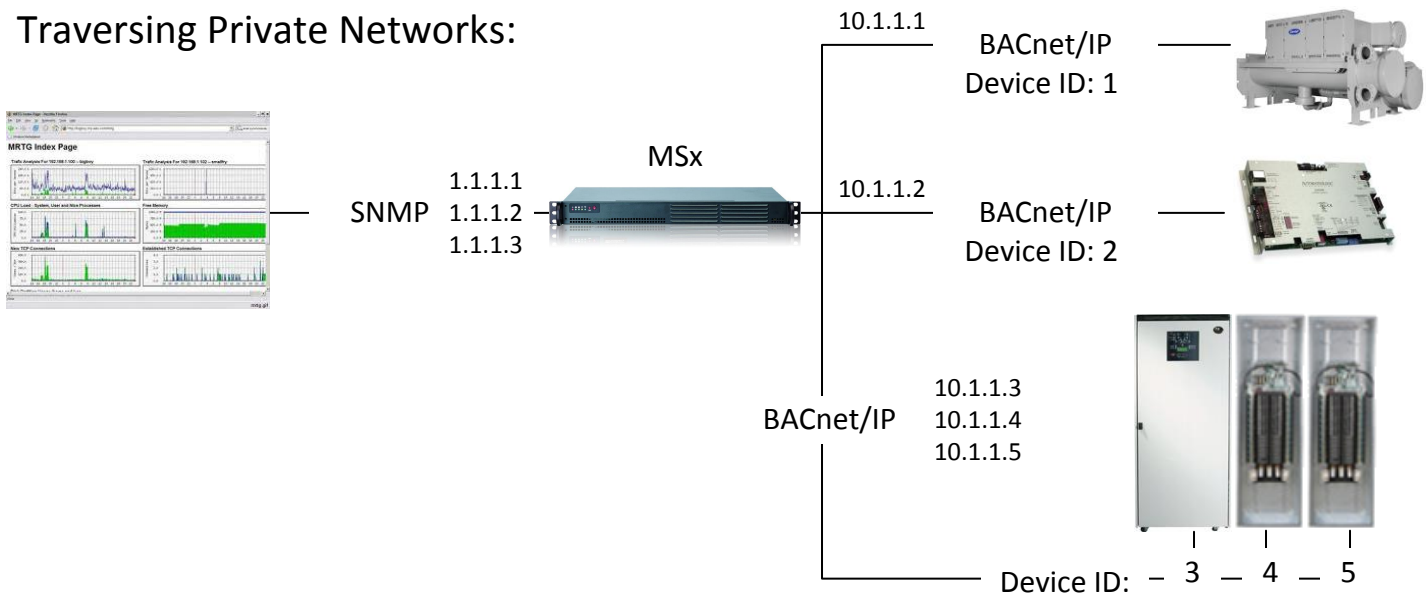
Technical Reference - Data Transformation Solutions: BACnet/IP to SNMP-M

Compatibility: MS1, MS2, MS3

The Micro Servers provide BACnet/IP native protocol to SNMP protocol for Network Management Systems. SNMP-M dictates a many-to-one device mapping. That is, multiple BACnet/IP devices may act as a single SNMP device. This is important when individual smart parts add up to one larger device. A good example is a floor mount PDU with BCMS. The base MS1 supports 16 devices and the MS2 supports 32 devices with options for 64, 128 and 247 BACnet/IP devices with the MS2 and MS3. The Micro Server can also provide private network to public network traversal for BACnet/IP devices to SNMP as shown below.



Traversing Private Networks:

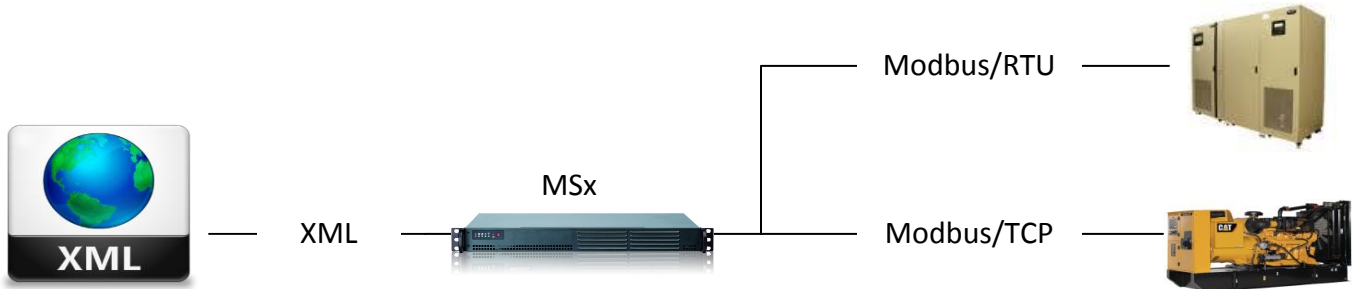


Available Part Numbers:

MS1	MS1-BACIP-SNMPPM-16	
MS2	MS2-BACIP-SNMPPM-32	MS2-BACIP-SNMPPM-64
MS3	MS3-BACIP-SNMPPM-64	MS3-BACIP-SNMPPM-128 MS3-BACIP-SNMPPM-247

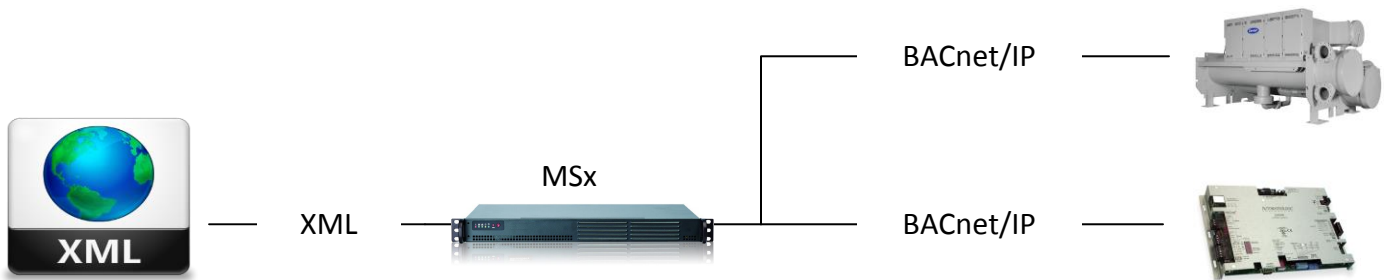
Modbus/RTU/TCP to XML

The MSx provides Modbus protocol translation to XML for Transaction Processing Systems. A query is submitted to the MSx and XML output is returned. The MSx supports 16, 32, 64, 128 and 247 devices.



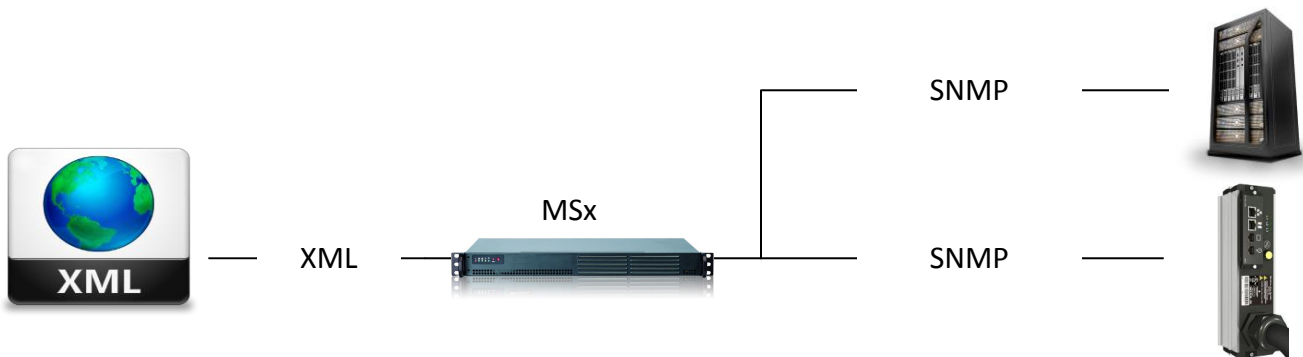
BACnet/IP to XML

The MSx provides BACnet/IP protocol translation to XML for Transaction Processing Systems. A query is submitted to the MSx and XML output is returned. The MSx supports 32 BACnet/IP devices with options for 64, 128 and 247 BACnet/IP devices.



SNMP to XML

The MSx provides SNMP protocol translation to XML for Transaction Processing Systems. A query is submitted to the MSx and XML output is returned. The MSx supports 32 SNMP devices with options for 64, 128 and 247 SNMP devices.



Available Part Numbers:

MS1	MS1-MRTUTCP-XML-16	MS1-BACIP-XML-16	MS1-SNMP-XML-16
MS2	MS2-MRTUTCP-XML-32/64	MS2-BACIP-XML-32/64	MS2-SNMP-XML-32/64
MS3	MS3-MRTUTCP-XML-64/128/247	MS3-BACIP-XML-64/128/247	MS3-SNMP-XML-64/128/247

Data Transformation Services

Onsite and Remote Services

In addition to the MicroServer solutions and Data Transformation and Monitoring solutions, Pythia Technologies also provides on site and remote implementation services.

Summary of Solutions

MicroServer Level 0, -MBS, -BR			Translated Protocol				
			Modbus TCP	BACnet IP	BACnet MSTP	SNMP-1	SNMP-M
		Part #					
Device Protocol	Modbus RTU / TCP	MS0	x				
	Modbus RTU	MS0-MBS	x	x		x	
	BACnet IP	MS0-MBS	x	x		x	
	SNMP	MS0-MBS	x	x		x	
	BACnet MSTP	MS0-BR			Routing		
Maximum Device Count							
MS0 = 32 devices daisy-chained				MS0-MBS = 1 device* <small>* Point count dependent</small>			

Micro Server Level 1, 2, & 3			Translated Protocol					
			Modbus TCP	BACnet IP	BACnet MSTP	SNMP-1	SNMP-M	XML
		Part #	MTCP	BACIP	BACMSTP	SNMP1	SNMPM	XML
Device Protocol	Modbus RTU / TCP	MRTUTCP	x	x	x	32 max	x	x
	BACnet IP	BACIP	x	x	x	32 max	x	x
	BACnet MSTP	BACMSTP	x	x	-	32 max	x	x
	SNMP	SNMP	x	x	x	x	x	x
Maximum Device Count								
MS1 = 16 devices			MS2 = 32/64 devices			MS3 = 64/128/247 devices		



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