DATA-LINC GROUP

Making connections with tomorrow's technology today

Upgrade Your Aging Network & Stay on Budget

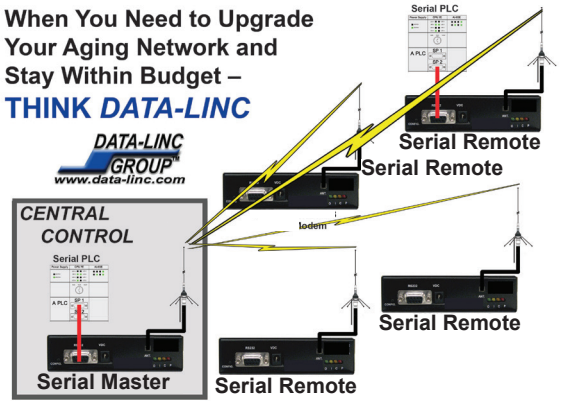
Serial to Ethernet or Wired to Wireless, No Pain, Lots of Gain

In March of 2020, Cisco predicted 5 zettabytes of IP traffic per year by 2022.

In February of 2020, Statista estimated 175 zettabytes of data volume by 2025.

What is your plan so your critical data can compete in the fast approaching 24/7 slowdown from rush hour traffic on the data communication highway?

When you need a plan to reduce your wireless network's digital footprint and more reliably monitor and control your critical process – THINK *DATA-LINC*.



There is no time like the present to future-proof your network.

ADVANCED™ AdaptiveSpectrum
Proprietary FHSS Technology

Because the data-laden future is on the near horizon for all ISM bands, it's time to plan your solution and begin to implement it now. This essentially means that it's time to update/upgrade your network. The process need not be painful. Data-Linc has worked with an increasing number of customers who are looking to upgrade their industrial networks. Whether it is changing from wired phone or leased lines to wireless, or from an older serial network to Ethernet, Data-Linc developed the 900MHz ISM band SRM8000 Family of modems with cutting edge features to address the need. More than anticipating the future, your network needs to be ready to avoid data congestion and the escalating costs of downtime in terms of labor, time, money and patience. An upgrade CAN be done within your budget.

Older networks often have not only older modems but frequently older, even legacy, or approaching end of life PLCs. The straightforward solution is to replace the PLCs and the modems. However, at Data-Linc we often hear, "We've got a network that is working OK but it's old. Everything needs to be updated, but we can't afford to revamp the whole thing. Any suggestions?" Or, "We need to upgrade our SCADA network from serial to Ethernet, but we don't have the budget to get new PLCs AND new modems." These situations have solutions that can be deployed in stages, and Data-Linc will provide project assistance at no cost, a standard customer service.

Our newest SRM8200 modems may be configured as a Master, Remote, Repeater or Repeater/Remote. They employ Advanced Adaptive Spectrum in the 900MHz license-free band and can communicate with serial and Ethernet devices at the same time on the same network.

Things to Consider

Data-Linc suggests upgrading the most critical site on the network by replacing the old PLC with a new serial or Ethernet PLC depending on the need. The new PLC can then interface with Data-Linc's SRM8200 Ethernet-serial modem Master at central control that will communicate with one SRM8200 or more (depending upon the budget) Remote/s at the work site to form a side-by-side

network with the old existing network, regardless of what brand of modems are on the old network. (See Staged Digital Migration diagrams below.)

Data-Linc always recommends having a backup modem on the shelf in case of an untoward event that incapacitates one of the modems. Having an extra network compatible modem for each of the side-by-side networks is good insurance against downtime and process interruption, thus avoiding a costly consequence. Since all Data-Linc modems can be configured as a Maste , Remote, Repeater or Repeater/Remote one backup modem is all that is needed for a quick and easy replacement. The old modems that are replaced can be backups for the old network until the migration is complete. As time and budget allow, new SRM8200 Ethernet-serial modems and upgraded PLCs can be added to the network, one or more sites at a time.

Line-of-sight (LOS) range for the SRM8200 is up to 40 miles (farther with Repeaters and/or high-gain antennas) with data rates up to 4Mbps. If a Repeater is needed to obtain LOS, extend range or to communicate around an obstruction, it may be configured as a Repeater/Remote to serve the LOS need, but it can also communicate with another Remote at another site. All modems then communicate with the same Master SRM8200 which can support a virtually unlimited number of Remotes connected to either Ethernet or serial devices, or both. This flexibility of the dual protocol SRM8200 with its long-range capability, provides a viable and budget-friendly migration.

If the existing network's PLC only offers a single serial port (Phase diagrams show both SRM8200 and the legacy serial modem connected to two serial ports on the PLC), a serial port splitter will allow both the SRM8200 and the legacy serial modem to connect to the legacy PLC.

Advantages Now and for the Future

Looking to the future, the SRM8200 also includes other advantages. In addition to dual protocol, long-range, high-speed and Advanced Adaptive Spectrum, it offers user-selectable RF data transfer speeds up to 4Mbps and an optional feature supporting edge computing that may be activated when need and budget allow. Due to the exponential growth of wireless devices that send and receive information for personal Internet use and streaming, plus IoT and IIoT, band overcrowding in high population areas is coming soon. Using today's standard data communication technology, extreme overcrowding will slow data transmission and eventually clog the information highway, resulting in increased latency and lower throughput.

The future-proof solution is computing on the edge, where the actual monitoring and process control occurs. In this scenario, communication from computations on the edge of the network, in addition to the cloud, occurs by reporting exception-events to central control. When an undesired event occurs, central control's more complex capability intervenes. Implementing modems that support computing on the edge means "no news is good news"— timely processing and a smooth flowing data stream for maximum efficienc , offering confidence that your data is getting through – all's right with your world.

Using the Advanced Adaptive Spectrum SRM8200, the approach described can be applied to any serial or Ethernet network regardless of the modem manufacturer. You can stay within budget by adding to the SRM8200 network modem-by-modem, as your budget and time allow. The flexibility of the dual protocol SRM8200 with its long-range, high-speed capability and its support for edge computing, provides a viable and budget-friendly migration not only from the past to present and the near future, but to the beyond as well. Anticipate the data tsunami, plan, implement and be ready. Start now **THINK, DATA-LINC.** (See diagrams and technical specs below.)

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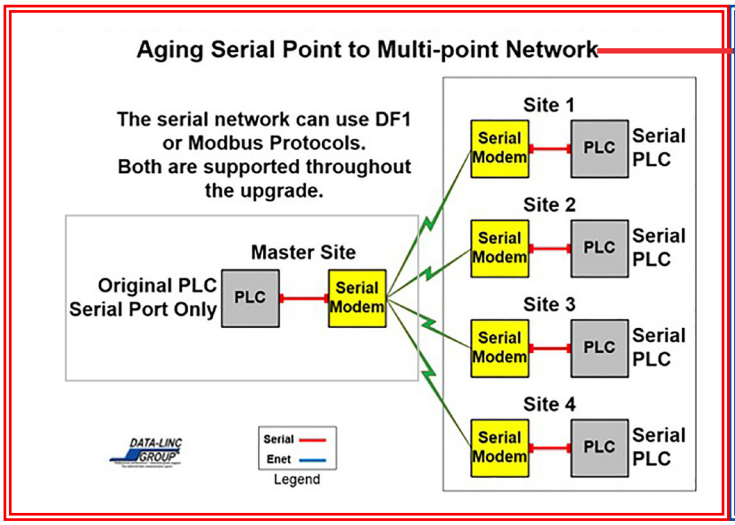
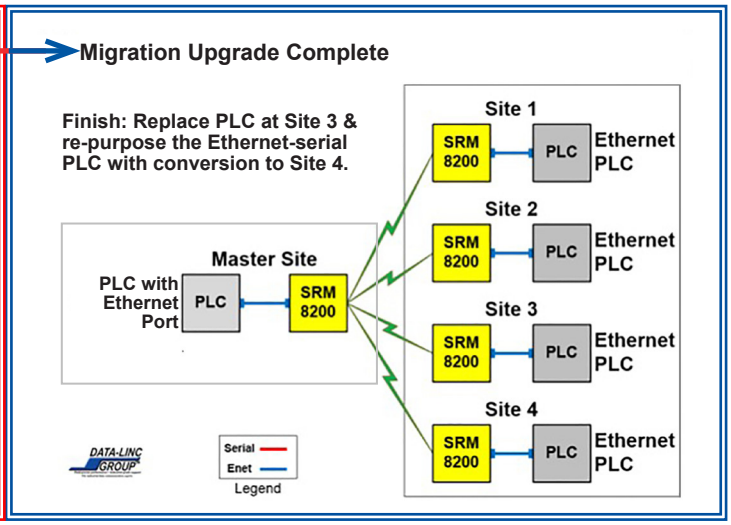
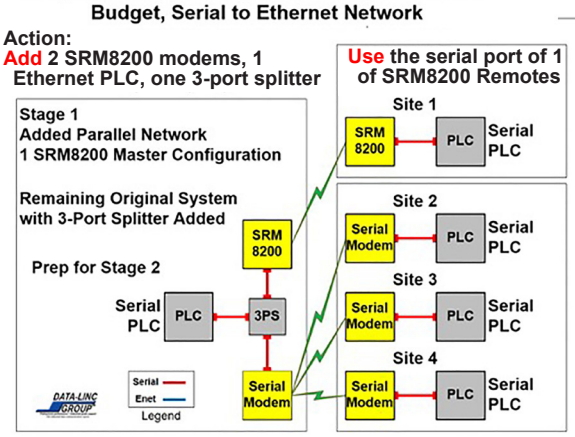
Staged Digital Migration From Start to Finish on Your Schedule

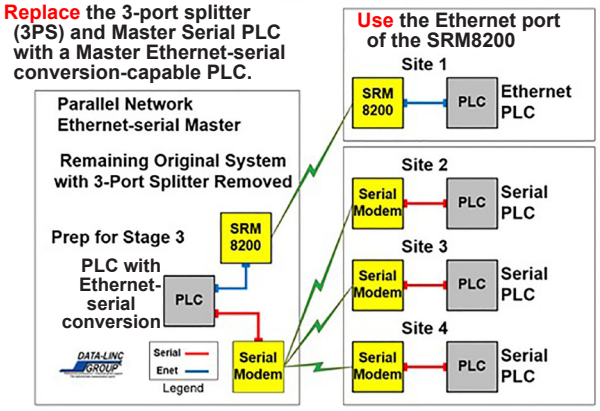




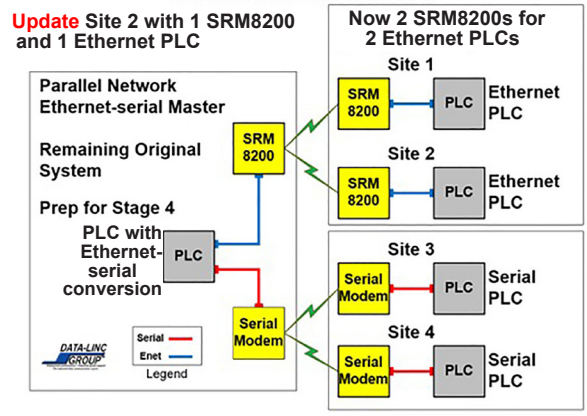
Stage 1 Example of Migration Outlay for Limited Budget, Serial to Ethernet Network



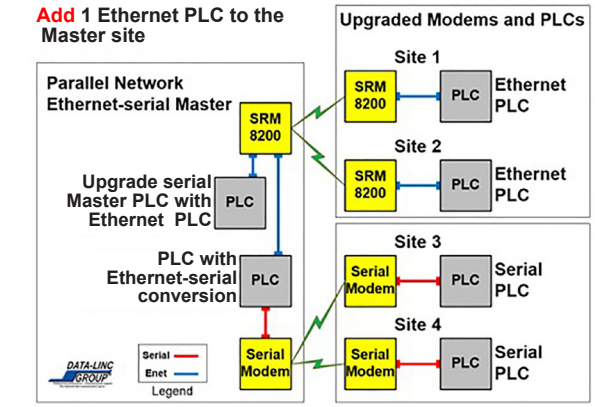
Stage 2 Example of Migration Outlay for Limited Budget, Serial to Ethernet Network



Stage 3 Example of Migration Outlay for Limited Budget, Serial to Ethernet Network



Stage 4 Example of Migration Outlay for Limited Budget, Serial to Ethernet Network



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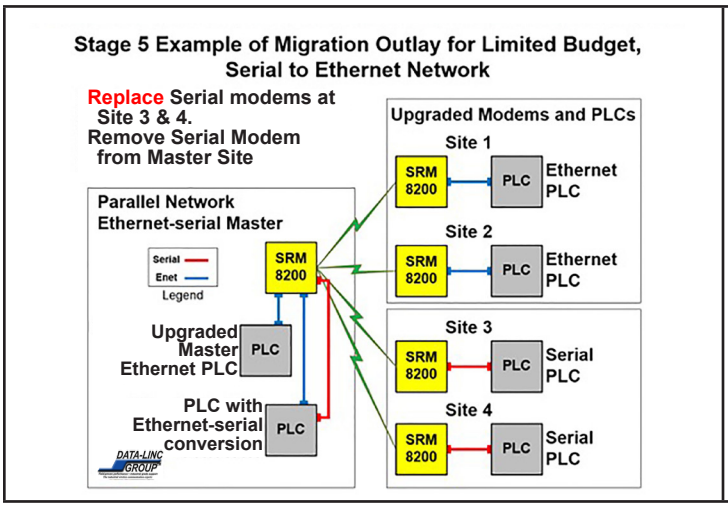
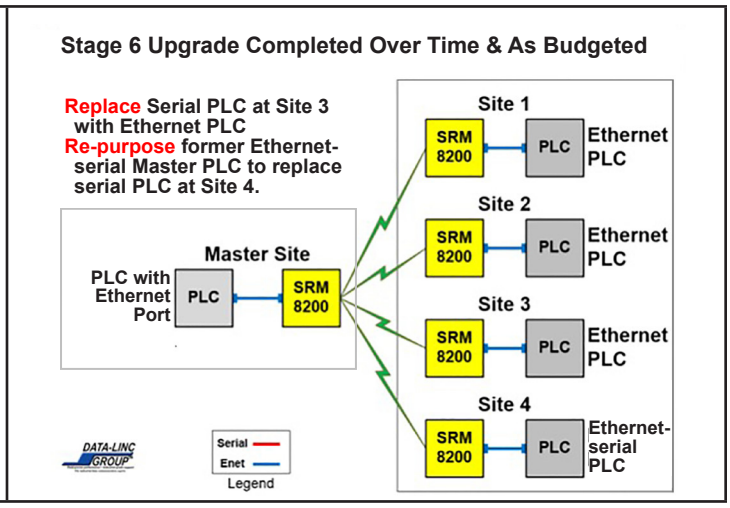




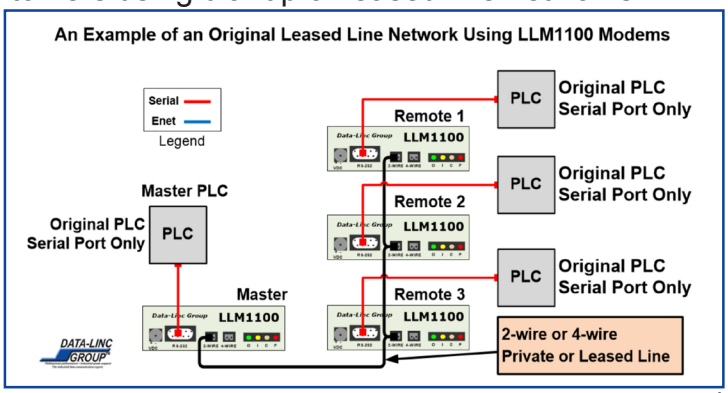
Some SRM8200 Additional Advantages Not Yet Mentioned

- **Remotes can talk to Remotes – peer-to-peer communication**
- **Edge-Linc, optional built-in app support for On the Edge Computing**
- **Advanced packet handling: Compression for greater speed**
- **Forward error correction provides ultra-reliability**
- **Selectable channels for reliable RF links in noisy, congested environments**
- **Aggregation for network efficiency**
- **Configured via web interface, Command Line Interface (CLI), Drag & Drop and Secure Shell (SSH)**
- **NetworkNow, RF network management tool with live mapping & support bundle for troubleshooting**

***DATA-LINC's* SRM8200** Advanced Adaptive Spectrum modems **support staged digital migration from any existing network to an edge-ready one while staying on-budget.** Project and technical assistance are a standard customer service.

Also, Consider Upgrading Old Ethernet & Wired Networks to SRM8200

Wired Network - Similar Stages
Phone companies will cease support for analog lines in the US by the end of 2020, impacting customers using dial-up or leased line networks.



Plan now.
This same staged approach to digital migration may be applied to Ethernet as well as to wired networks such as Data-Linc's DLM4500 dial-up/leased line and LLM1100 leased line modems for point-to-point and point-to-multi-point networks, as shown here.

Contact us for projects, technical info or questions via: info@data-linc.net, (425) 882-2206 or your local Distributor.

DATA-LINC GROUP™
Field-proven performance ~ Industrial grade support
The industrial wireless communication experts

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PN156-10011-002

Adaptive Spectrum SRM8200 Specifications

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License-free 900 MHz Band, Adaptive FHSS High-Speed, Long Range

Included

5 ft CAT5 cable
Bench-test whip antenna
Power Supply 12 VDC, 2 Amp

Transmitter

Frequency Range	902 to 928MHz ISM Band
Frequency - Special Locked	Australia, Brazil, Peru and New Zealand
Output Power	10mW to 1W (User selectable)
Range	40 miles/64 km
Hop Channels	Up to max 112 (User selectable)
Hop Pattern	Max 16, (User selectable)
Data Rates (User Selectable)	115.2, 250, 500 kbps, and 1 & 4 Mbps

Receiver

System Gain	136dB, If Selective >40dB
RF Data Transmission	

RF Data Throughput & Sensitivity (User selectable rate)

Rate	No FEC	w/ FEC
115 kbps	-105 dBm	-108 dBm
250 kbps	-102 dBm	-105 dBm
500 kbps	-99 dBm	-102 dBm
1 Mbps	-95 dBm	-98 dBm
4 Mbps	-83 dBm	-86 dBm

Error Detection	CRC, FEC and ARQ
Security	128-bit and 256-bit AES CCM
IP Filtering	Reduces congestion by blocking non-RF Ethernet traffi

Power Requirements/Consumption

Operating Voltage	+10 to +36 VDC (+/- 10%)
Transmit Current	355 mA @ 12V
Receive Current	100 mA @ 12V

Encryption

128 & 256 AES CCM

Diagnostics

Live & Local	Network Map & Statistics

Front Panel Interface

Ethernet Ports 1 & 2	10/100 Base-T
Serial Ports 1 & 2	DB9 RS232, Max 250 Kbps,
Micro USB Port	Drag & Drop config and CLI (Command Line Interface)
Antenna	Standard thread SMA female Supplied bench test antenna 50 Ω Nominal Impedance
Power Supply	Two-pin Phoenix terminal
Indicator LEDs	Power, RF Link

Advanced Features

Adaptive Spectrum	Adaptive learning for superior performance in RF noise and congested environments
Forward Error Correction	Ensures packet accuracy
Packet Aggregation & Compression	

Operating Environment

Temperature	-40 to 167°F (-40 to 75°C)
Humidity	0 to 95% non-condensing

Enclosure

Standard	Cast aluminum with 2 optional, included mounting flanges
Optional	DIN Rail Mount
Dimensions	6.50 in. x 4.21 in. x 2.09 in.; 165mm x 107mm x 53mm
Weight	1.50 pounds/0.680 kg

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