



Solutions for SCADA communications and protocol translation

ICx Gateway

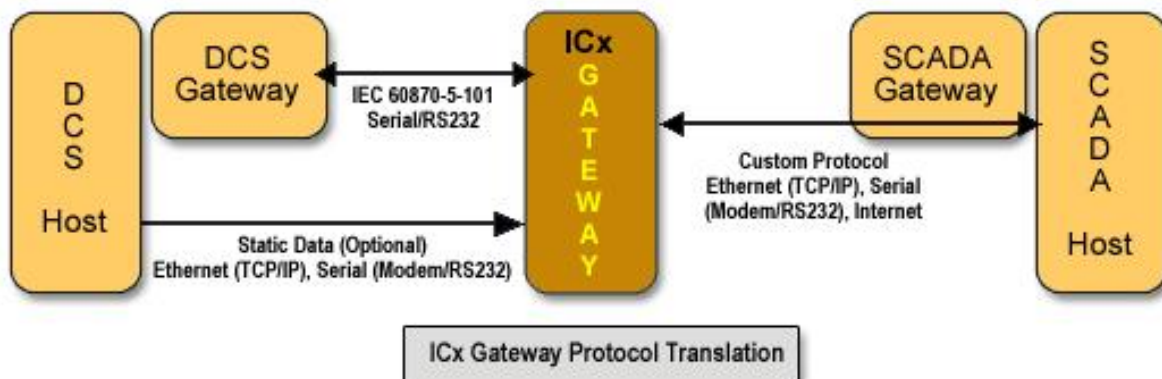
By ...

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ICx Series Gateway is flexible and most advanced solution for information sharing among diverse control systems using different communication standards / protocols. ICx provides fast and economical solutions by utilising the existing infrastructure in the most efficient way. Gateway design helps eliminate the inconvenience typically encountered while bringing the diverse systems online and communicating among non-supporting systems.

ICx Gateway: Sample Implementation



ICx Gateway: Key Features

TIPL's ICx Series Gateway is a smart customer driven solution which combines flexibility and Technology. Features of ICx Gateway are:

Implementation:

- ⇒ Protocol Converter
- ⇒ Data Concentrator
- ⇒ Pass-through Configuration (Transparent Device)
- ⇒ Protocol Analyzer / Monitoring

Operating Mode:

- ⇒ Personal Computers (PC Mode): ICx Gateway can be implemented on any WINDOWS 2000 / XP based computers provided with required serial and Ethernet ports.
- ⇒ Embedded Systems: ICx Gateway supports WINDOWS XPE / CE based devices. ICx gateway is successfully deployed over following devices
 - ADVANTECH UNO 1140 Embedded Computer (WIN CE based).
 - ADVANTECH UNO 1150 Embedded Computer (WIN XPE based).
 - ADVANTECH UNO 3072/74 Embedded Computer (WIN XPE).
 - ADVANTECH UNO 46xx – High-end Embedded Gateways with IEC 61850-3 Certifications.
 - ADVANTECH ARK Series: Embedded Computer (WIN XPE).
 - ICx3343G: 2 Serial + 1 LAN with GPRS and VPN Connectivity.

Redundancy:

- ⇒ Device Redundancy: ICx gateway devices can be configured for redundancy allowing seamless switchover from one device to another without effecting the communication.
- ⇒ Link Redundancy: Over a single ICx gateway, communication links (Serial / Ethernet) can be configured for redundancy, eliminating single point of failure.

Protocols

- ⇒ Full compatibility with Industrial standard Protocols.
- ⇒ Supported media types are:
 - Serial Interface (RS 232, RS 422, RS 485)
 - Ethernet/LAN (TCP/IP)

Database & Diagnosis

- ⇒ 128,000 I/O Tags
- ⇒ Integration with MS Excel for Protocol data points and parameters definitions.
- ⇒ Versioning (commented) of database allows full control.
- ⇒ Error reporting and protocol analysis enable easy maintenance of the system.

Sample Implementation

- ⇒ **Substation Gateway:** ICx can communicate with SCADA System / remote devices (RTU / PLC / Transformers / IEDs) and transfer the data to Remote Control Centres.
- ⇒ **Automatic / Remote Metering Device:** ICx can read data from meters and communicate this data to AMR Applications.
- ⇒ **IED Data Concentrator:** ICx can communicate with Multiple IEDs over RS 485 and extends the full control for the Master Station over single interface for all the IEDs.

Requirement: Interfacing / Integration Device

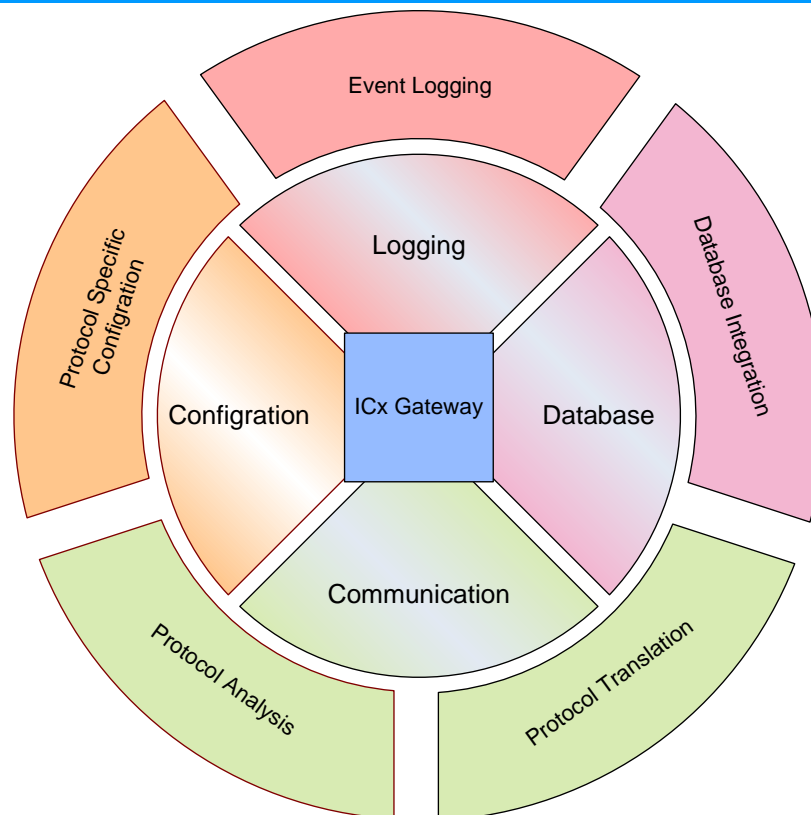
Protocol Converter: ICx Gateway is an ideal solution for the any application where connectivity with different / unsupported protocols is required. The ICx gateway is a powerful protocol translation device designed with both Master and Slave components of various protocols, enabling easy communication to other devices. Example configurations are:

- ⇒ MODBUS Serial (ASCII / RTU) device interfacing with MODBUS TCP/IP Device through ICx Gateway
- ⇒ IEC 60870 – 5 – 101 Device interfacing with IEC 60870 – 5 – 104 device
- ⇒ MODBUS ↔ DNP3 ↔ IEC 870 Protocol Translation and Interfacing
- ⇒ MODBUS / IEC 103 ↔ IEC 61850 Protocol Translation and Interfacing

Data Concentrator: ICx Gateway provides a Single Interface (Slave) for the Master Device, and control / monitor data of the multiple Slave Devices including provision for Protocol Conversion and Data Concentration. Examples are:

- ⇒ MODBUS Serial (ASCII / RTU) device interfacing with Various MODBUS IEDs over RS 485 Link.
- ⇒ IEC 60870 – 5 – 103 Device interfacing with Various MODBUS IEDs over RS 485 Link.
- ⇒ IEC 61850 Device interfacing with Various MODBUS IEDs over RS 485 Link.

ICx Gateway: Modules



Protocol Support

The ICx Gateway supports the following Protocols:

- ⇒ IEC 60870-5-101 Master/Slave
- ⇒ IEC 60870-5-103 Master/Slave
- ⇒ IEC 60870-5-104 Client/Server
- ⇒ IEC 61850 Client/Server
- ⇒ ICCP
- ⇒ SINAUT
- ⇒ DNP3 Serial Master/Slave
- ⇒ DNP3 Network Master/Slave
- ⇒ MODBUS RTU Serial Master/Slave & TCP Master/Slave
- ⇒ Ethernet I/P
- ⇒ Profibus DP Master/Slave
- ⇒ HNZ Master / Slave
- ⇒ DLMS Master/Slave
- ⇒ OPC DA & AE Client / Server
- ⇒ **Custom Protocol Support:** All protocols supported are developed and maintained indigenously. RBH has experienced team and expert domain knowledge to successfully develop and deploy any customer specific protocols.

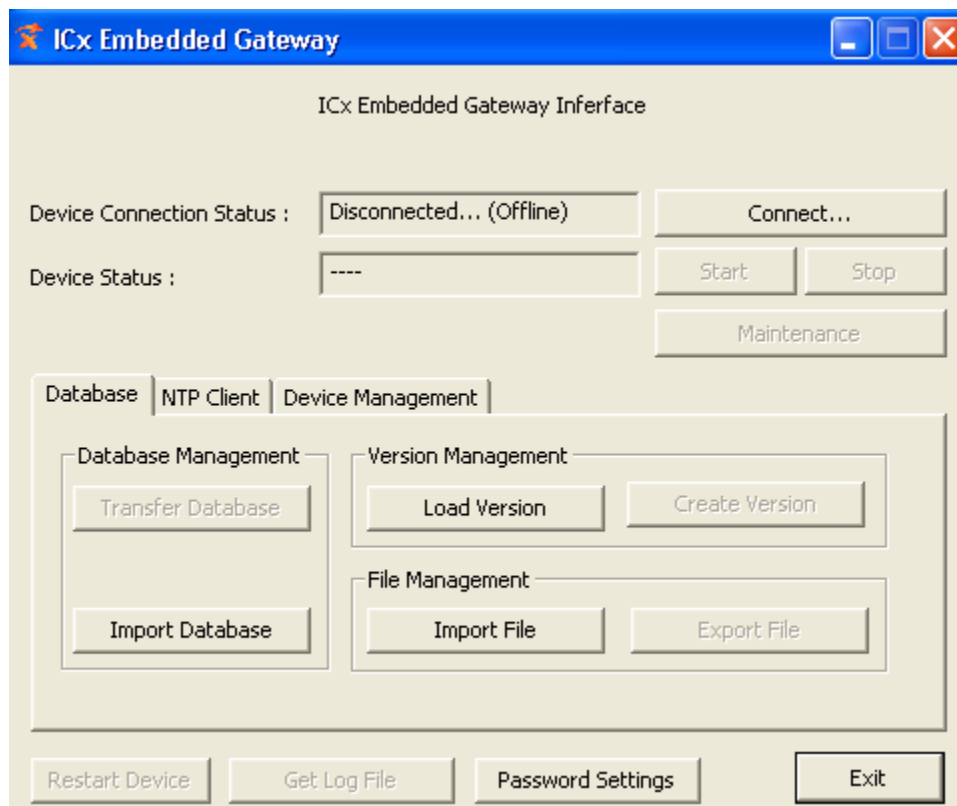
Configuration, Database & Maintenance

Configurator: ICx Gateways comes bundled with WINDOWS based Configuration Tool that allows easy data points (tags) configuration and mapping yet allowing full control over the application and protocol. ICx allows direct integration of MS Excel sheet, enabling faster and user friendly parameter configuration (basic as well as advanced). All protocol mappings and communication related parameters are comprehensively covered in Excel Sheets thus allowing complete and easy management of data points.

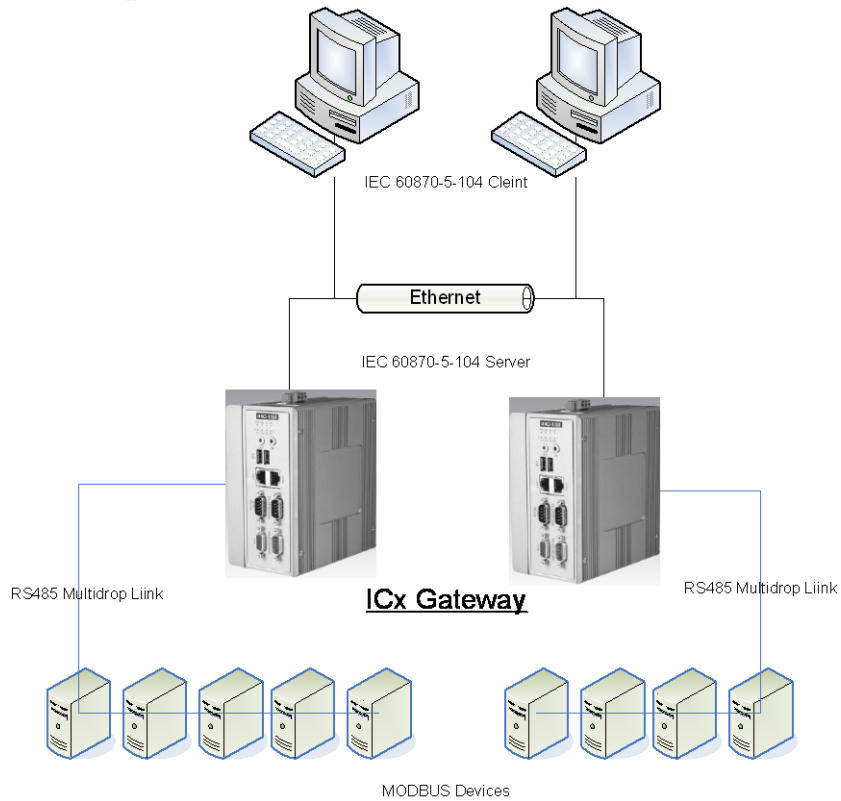
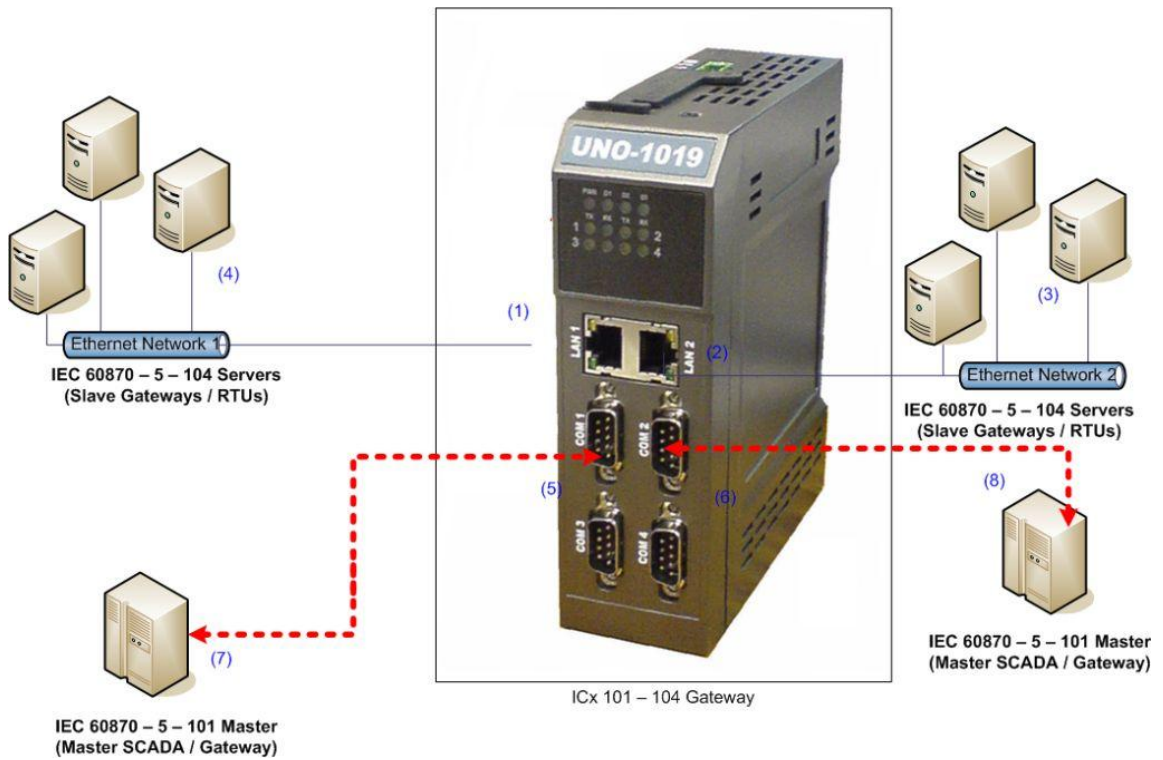
Database Management: When Excel Datasheets are imported into ICx Gateway, new Database is created. ICx allows versioning (with user comments) of the Database and user can switch to any version of the database as per requirements.

Maintenance: ICx Gateways has inbuilt Maintenance and Diagnosis Capabilities. It includes:

- ⇒ Protocol Analyzer: Featuring protocol packet capturing & analysis, and Error Logging
- ⇒ Gateway Start / Stop
- ⇒ Database Management: Database Downloading and Switching



Sample Gateway Applications



Sample Gateway: ICx3074 with 300 Devices

