



Raising the standard Upgrading the Series 90-30

October 2015



Series 90-30 - the most versatile controller in history

CPU 311/313/323



- Backplane CPU
- 5 and 10 slot versions
- Mainly used for simple I/O control



CPU
33x/34x/35x/36x

- Modular
- Serial Ports
- Special module (PCM/CMM) Support for additional functionality and communications
- Expansion



CPU 37x

- Built in Ethernet (10/100Mg)
- Highest performance

Now raise your control to an advanced analytical machine!

CPU Model (CPUxxx)	311	313	323	350	360	363	366	367	370	37x
User Memory	6K			32K	240K					
Registers	512	1K		10K	32K					
Discrete I/O	160			4096						
Analog I/O	64 In/ 32 Out			2048 In/ 512 Out						
Boolean Execution (msec/K)	18	0.6		0.22					0.15	
Maximum I/O Slots	5		10	79						
Serial Ports – Includes Power Supply Port	1				1	3 Modbus Master	1			
Built In Ethernet	0						None		1 10/100Mbps	
Built In Profibus							Master V1	Slave V1		
Floating Point Math	No			Yes Firmware					Yes Hardware	
Real Time Clock	No			Yes						
PCM/CMM Support	No			Yes						

Raising the standard is an easy upgrade

All you need to start is a rack, power supply, and a CPU

Improved communications

Integrated Ethernet along with modern USB for serial or memory sticks

Keep your existing footprint – even the screws!
The new racks provides the same footprint and mounting holes.

PACSystems RX3i

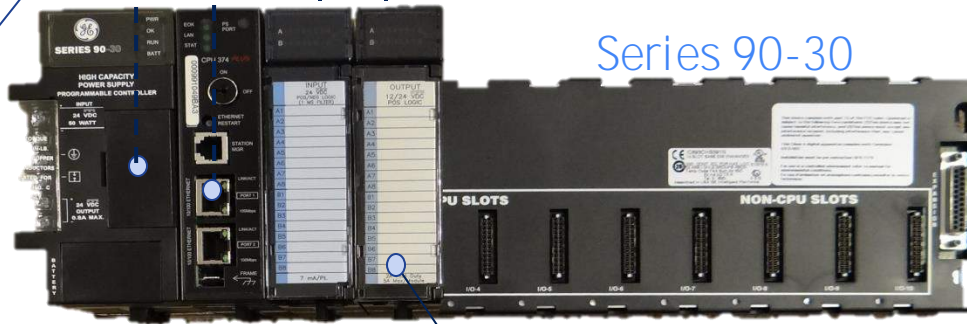


Keep expansion I/O too!

Expansion rack cables plus right into a conversion module that doesn't take up a slot

Grounding Bar for I/O
Reduced wiring

Series 90-30



Additional high speed backplane
Over 100 times faster than Series 90-30 using new modules for RX3i!

I/O module compatibility

Move your I/O from old system to new with out disturbing wires or buying new I/O. Add hot swap capability to many modules!



Safe power
No more lithium batteries – new energy pack efficient, safe and lasts up to 5 years. Plus a connector for isolated 24VDC

Frugal power
Smaller form factor, higher capacity

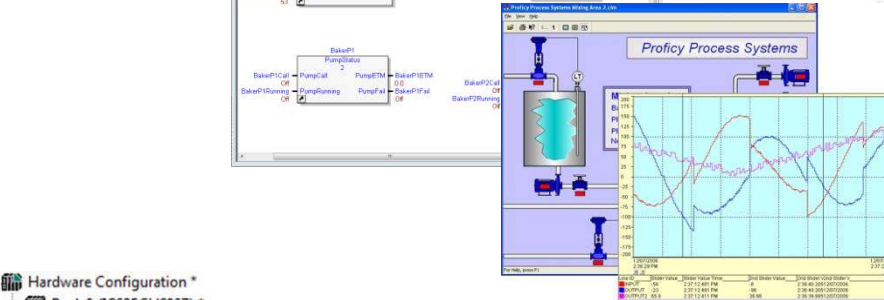
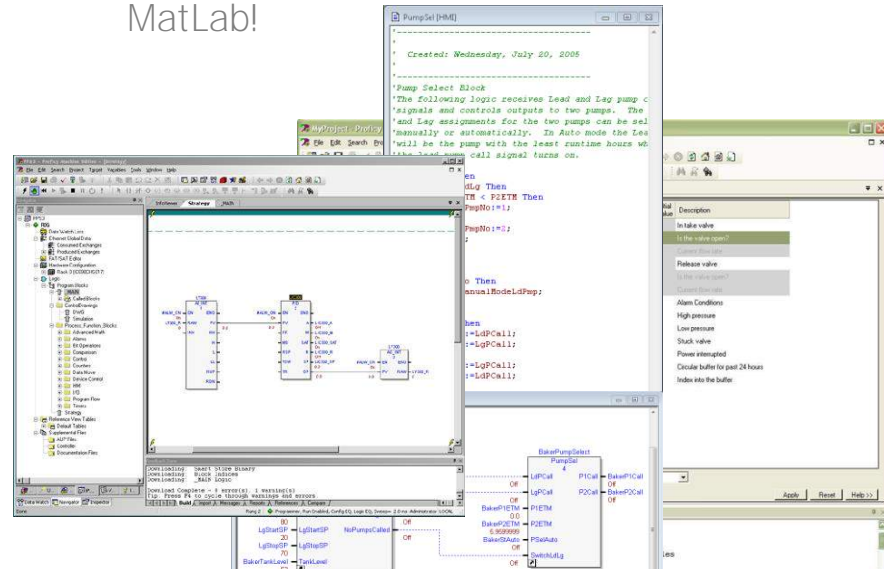
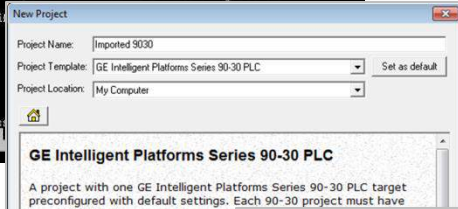
Click and go software upgrade

Everything moves – quickly – a few clicks and go!

Direct import of LM90 program to Proficy Machine edition

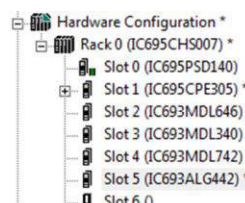
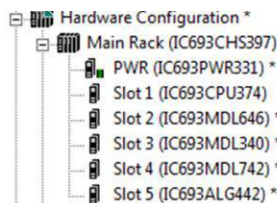
Keep all your logic, hardware I/O configuration, and names

Expand your programming
FBD, Structured Text, “C” – even ask us about MatLab!



Complete conversion with change report details

Any changes or issues highlighted



Advance your process

Take your simple PID loops to a full process control application with Proficy Process Systems

PACSystems RX3i has smart choices



Part No.	IC695CPE305 (CPU with EnergyPack*)	IC695CPE330 (CPU only) IC695CPK330 (CPU with EnergyPack*)	IC695CPE310 (CPU with Energy Pack*)
Speed	1G Atom	1G AMD Dual Core SoC 2+ times faster than CPU320	1G Atom
Storage	5MB	64MB	10MB
Redundancy Support		Yes**	
Ethernet Port	1 - 10/100	1- 10/100/1000 1- 2-port switch 10/100/1000	1 - 10/100
Ethernet Communications	SRTP Client/Server Modbus TCP/IP OPC-UA Server EGD Class 1	SRTP Client/Server Modbus TCP/IP OPC-UA Server EGD Class 1 PROFINET***	SRTP Client/Server Modbus TCP/IP OPC-UA Server EGD Class 1
USB Interface	1 USB-A 2.0	1 USB-A 2.0	1 USB-A 2.0
Memory Card		1 CFast (High speed Compact flash)***	
Other Interface	1 RS-232		1 RS-232 1 RS-485
Environmental	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C

*Energy Pak provides power during power failure while data is written to NV RAM ***Available with a firmware update later



Upgrade communication to simplify, add power

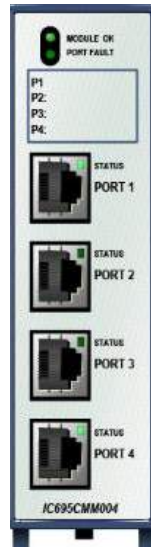
The PACSystems PROFINET advantage

Ethernet where you need it

If you need more connections, additional Ethernet modules are available with built in switch and supporting all your favorite protocols (EGD, Modbus TCP/IP, SRTP, DNP3, IEC-60870-5-104)



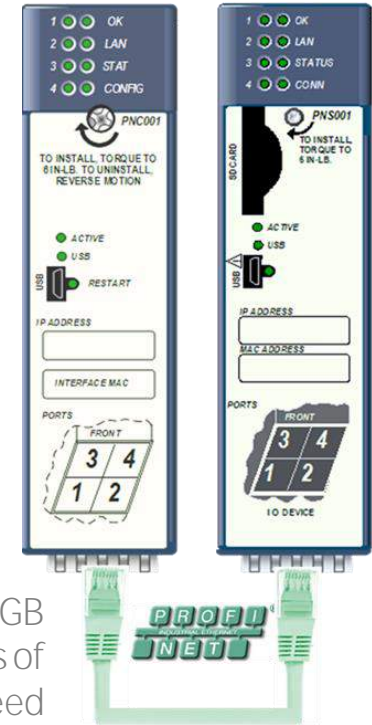
ETM



Talk to more with less effort

Improved Fieldbus and Serial capability give you provide multiple ways to communicate to legacy devices or systems. Use built in advanced algorithms in the CPU to turn data into commands or information.

Ultimate simplicity to distribute I/O vast distances. with integrated switches, cable types, and setup for fast deployment and easy maintenance. Provide high availability with smart synchronization – simple, fast and seamless



Copper or Fiber, up to 1GB SFPs to interchange the types of media to fit your need

Expand your system or use to replace an aging GENIUS infrastructure with an open secure LAN for now and the future



Is your backplane PLC a control or an I/O drop?

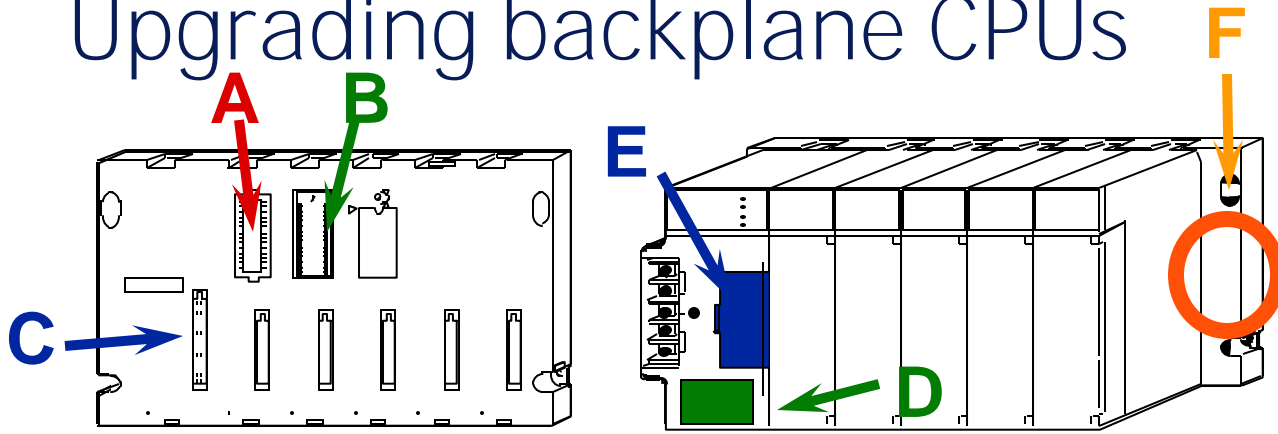


Series 90-30
Backplane CPUs

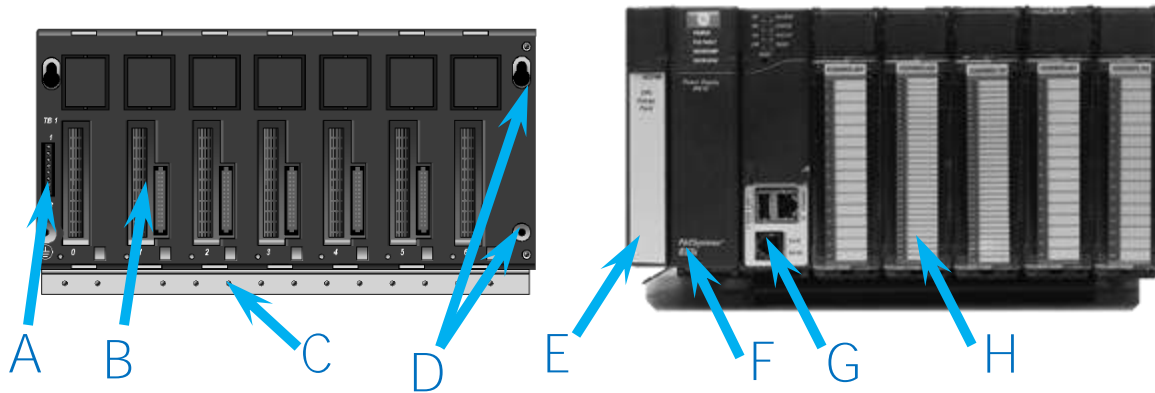
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PCM/CMM Support	No			Yes						



Upgrading backplane CPUs



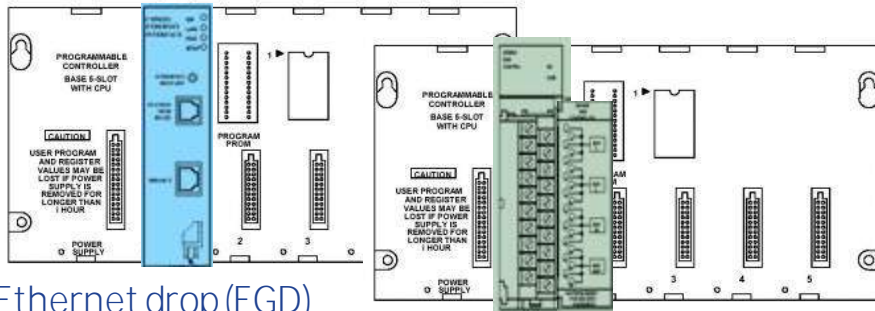
- A. EPROM slot for firmware
- B. EPROM slot for user program up to 6K bytes
- C. Power Supply slot
- D. Battery storage
- E. Serial port connection
- F. No expansion connector



- A. Connections for external 24VDC power for modules
- B. Slot connectors for RX3i high performance modules or Series 90-30 modules
- C. Grounding bar
- D. Mounting holes - the same dimensions as Series 90-30 rack
- E. No battery energy pack for memory backup for 5 years+
- F. Small single slot DC power supply
- G. Single slot CPU with 5MB user memory and onboard Ethernet
- H. Support for Series 90-30 I/O up to 160 discrete points

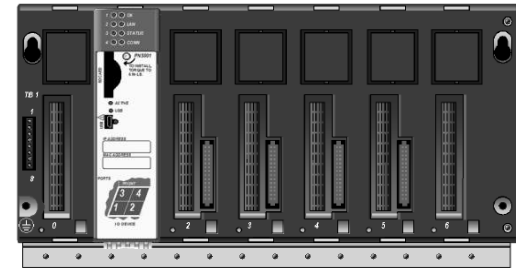
- New IC695CPE305 gives you:
 - Ability to move existing program to directly to new CPU with minimal changes in configuration
 - More performance and room to expand application
 - More storage for data or documentation
 - Instant Ethernet connection for programming and application communication all in a secure manner.
 - Additional built in serial communication for older device connectivity possibly reducing the need for older ASCII/Basic modules or special 3rd party comm modules.
 - Real time clock onboard
- Move your I/O to new backplane with no rewiring or reprogramming with most I/O becoming hot swappable in new rack

Upgrading backplane CPUs used as I/O drops



Ethernet drop (EGD)
with CMM321

GENIUS drop with
BEM331 or CMM302



RX3i with rack and
PROFINET Scanner

CEP with RX3i module
(1 or 2 I/O module drop)



- Backplane CPU as I/O drop with configuration and data handling pre-programmed in USER EPROM
- Communication module takes up 1 slot leaving 4 slots of I/O.
- Conversion is simple and provides more capability in either same space or less
 - Moving from EGD to PROFINET requires no change in wiring but increase speed and capacity
 - No need for program maintenance at drop – all is configured in main controller program and downloaded over network. Only the main controller has a user program.
 - Using a DC power supply can provide an additional slot available for more I/O.
 - With PNS capability to pass thru communications, other functions such as local OI can be run right off the drop.
 - If only need 1 or 2 modules at drop, the CEP offers even lower cost and smaller footprint allowing you more space to advance application
- GCG can also be used to migrate GENIUS drops to PROFINET in a step by step migration plan

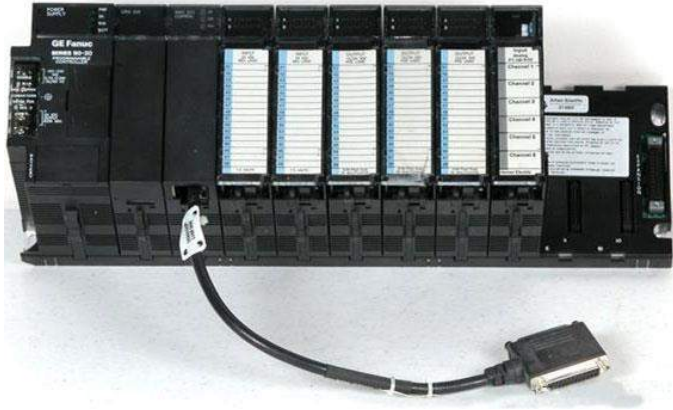
Taking your control to the next level



Modular CPUs

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PCM/CMM Support	No			Yes						

Upgrading is easy as 123 – Step 1



First determine your CPU and connectivity

- With even the low end CPU offering speed and connectivity it is easy to replace a modular Series 90-30. First take a look at your system. Does it have Ethernet on the CPU? Does it have a **PCM/CMM coprocessor module with a “Y” cable like show here?** Does it have standalone Ethernet module?

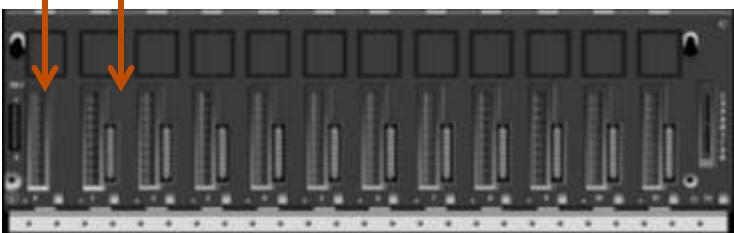
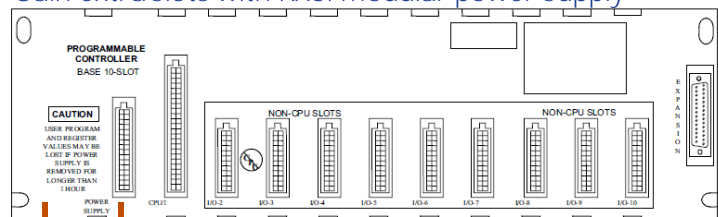


Typical CPU and communications set up	CPE305	CPE310	CEP330
Modular CPU without Ethernet on board and no other communications (1 module)	√		
Modular CPU without Ethernet on board and a PCM/CMM (2)		√	
Modular CPU without Ethernet on board and an Ethernet module (2)	√		
Modular CPU without Ethernet on board and a PCM/CMM and an Ethernet module (3)		√	
Modular CPU with embedded Ethernet (1)	√		
Modular CPU with embedded Ethernet and a PCM/CMM (2)		√	
Modular CPU with embedded Ethernet and an Ethernet module (2)			√
Modular CPU with embedded Ethernet and a PCM/CMM and an Ethernet module (3)			√ Add CMM module



Step 2 – Pick your base rack and power

Gain extra slots with RX3i modular power supply



- The RX3i is set up to mount in exactly the same mounting holes as the Series 90-30 rack
- Racks are replaced as follows
 - IC693CHS391 (10 slot) replaced by IC695CHS012 (12 slot)
 - IC693CHS397 (5 slot) replaced by IC695CHS007 (7 slot)
 - The extra slots come from the ability of the power supply to be located in different positions along the rack.

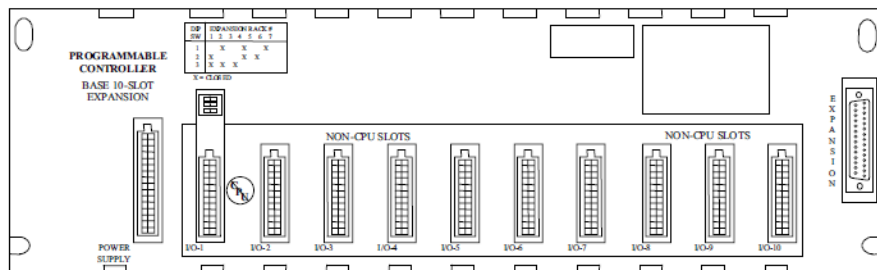
- Power Supplies are replaced as follows:
 - IC693PWR321/330 (100-240VAC) replaced by IC695PSA040 (single supply in rack only) or IC695PSA140 (multi purpose – can have more than 1 in rack for load sharing or redundancy)
 - IC693PWR322/331 (24VDC) replaced by IC695PSD040 (single supply in rack only) or IC695PSD140 (multi purpose – can have more than 1 in rack for load sharing or redundancy)
 - The RX3i AC power supply takes 2 slots similar to the 90-30 AC supply.
 - The RX3i DC power supply takes 1 slot while the 90-30 DC supply took 2. You gain a slot in convergence!
 - If using IC693PWR328 for 48VDC will need to convert to 24VDC supply.
- Move your I/O from older main rack to new rack and gain new capability
 - Nearly all the I/O modules will move directly and become hot swappable – check Installation manual GFK-2314 to see the capability of all modules
 - GENIUS LANs will move directly over. If you are thinking about changing the GENIUS network check out our presentation on Step by Step Upgrade of GENIUS

Connect 90-30 expansion or remote racks easily to new base rack

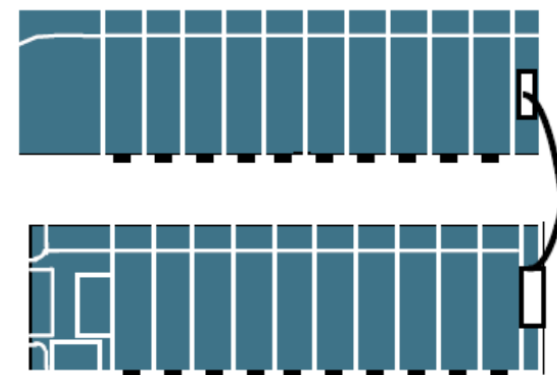


- The RX3i Local/Remote Expansion small module (IC695LRE001) attaches to the RX3i rack without taking a slot.

- Quickly attach your 90-30 expansion/remote 5 or 10 slot racks (IC693CHS398/399/392/393) to a RX3i 12 slot or 16 Slot base using the existing cabling



- The base RX3i 7 Slot rack does not have ability to add the LRE but often a RX3i 12 slot rack can replace the entire system!



Step 3 – Convert your application

Import from Logicmaster 90, CIMPLICITY Control, or simply change a PROFICY Machine Edition target to PACSystems RX3i

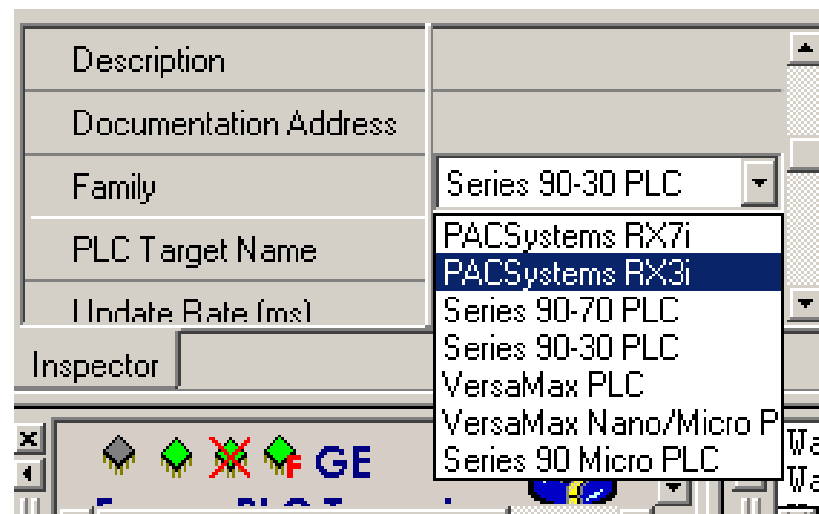
Step by step what happens:

Hardware Configuration Conversion

- Reset to default Rx3i hardware configuration
- Common CPU Parameters copied over (Including Ethernet Parameters)
- EGD converted to new organization
- Supported Modules carried over to Rx3i Racks

Logic Conversion

- Timers and Counters converted if there is room in the grid (PAC has CV Output)
- All non-nested MCR, LABEL, converted to their nested version
- *** No execution differences to report *** Logic execution same as original
- All service request functions reported
- All system variables used that are not supported reported (#SNPXACT - %S17)
- All C blocks removed and reported (add back in or change)
- Any unsupported functions reported (SER)
- All SVC_REQ functions reported



Target Conversion Report

- Displayed in Info Viewer
- Saved in Supplemental Files directory

Optional – Moving GENIUS to PROFINET

Convert GENIUS LAN to PROFINET

Migrate your existing Genius system without re-wiring your I/O. For systems that use Genius I/O blocks we offer the GCG which allows communication via Profinet to existing Genius I/O in a lower-cost, phased migration without rewiring the Genius I/O

Unlock your data. PROFINET connectivity to minimizes disruptions to your operations while giving you greater performance insight.

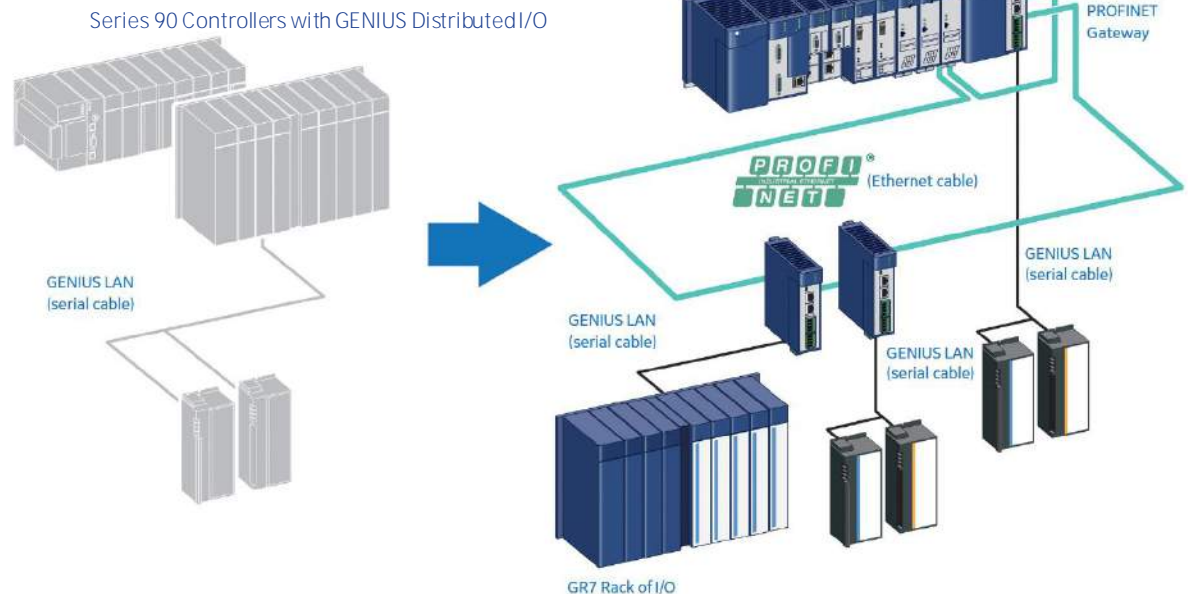
Simplify Migration.
Keep your application program and your data.

Secure your Investment.
Secure your network deployments

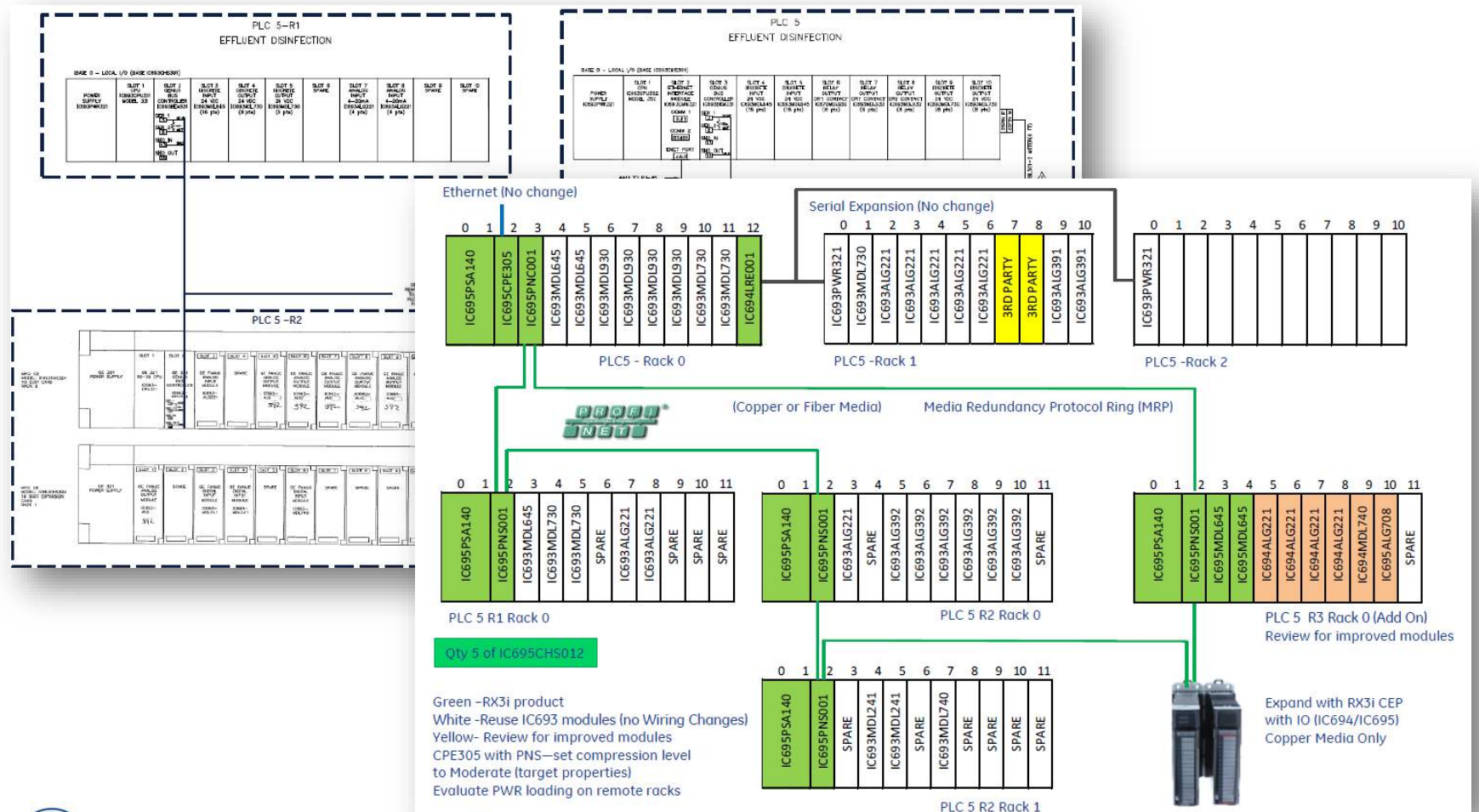
Check out the details on different types of GENIUS architecture conversions



GENIUS Communication Gateway (GCG)



See how easy and low cost it is to upgrade, improve now and later



Raise to a higher standard – RX3i



- Designed with past In mind
- Proven in use
- Setting you up for future
- High performance
- Secure and reliable
- Increased operational Intelligence

