



**Rockwell
Automation**

Smart manufacturing Meeting the growing demand

The Modernization of PLC-5 Controllers and 1771 I/O to ControlLogix



Achieving an integrated plant-wide architecture that enables a Connected Enterprise

The solid design of the PLC-5[®] programmable logic controller made it a valuable part of our portfolio for more than 30 years. With its discontinuance in June 2017, it's time to modernize your control system to the Allen-Bradley[®] ControlLogix[®] platform.

This high-performance platform allows you to converge your production disciplines (discrete, motion, process and safety), including extreme environments and high availability applications, into an integrated plant-wide architecture that enables you to achieve a Connected Enterprise. Information shared between Information Technology (IT) and Operations Technology (OT) across a secure network enables:

- greater production visibility, for quicker response to customer demand
- higher profit margins through improved inventory management, cycle times and quality control
- improved capacity and asset utilization, leading to greater Overall Equipment Effectiveness (OEE)
- regulatory compliance and reduced exposure to security risks



Active: most current offering within a product category.

Active mature: Product is fully supported but a newer product family exists. Gain value by migrating.

End of life: Discontinued date announced – execute migration projects and last time buys. Product generally orderable until the discontinued date.

Discontinued: New product no longer manufactured or procured. Repair/exchange services may be available.

What do you stand to gain?

Modernizing to the ControlLogix platform can help you meet your long-term business goals. Rockwell Automation is the right partner to help you do this. We have the products, tools and resources to help you outline and implement a plan that fits your application needs, budget and long-term goals. Whether you choose to modernize all at once or in phases, we have everything from self-service tools, to hardware and software conversion utilities, to a wide range of modernization services to help guide you through the transition.

- Grater equipment utilization
- More production, flexibility and scalability
- Higher performance
- Access to plant-wide information
- Increased integration for plant-wide control
- Increased ability to meet global standards
- Increased competitive advantage
- Reduced maintenance and energy costs
- Reduced operations costs
- Reduced risk
- Reduced spares for obsolete equipment

Let's get started

We recommend beginning with a lifecycle analysis of your production equipment and spares inventory. A thorough review of this information will help you prioritize your modernization needs and goals. You can do this yourself or partner with Rockwell Automation to assess your installed base and identify any risks.

Knowing the current lifecycle status of your existing control and information equipment makes it easier to plan the transition to leading-edge technologies. Our online **Product Lifecycle Status tool** can help you determine the lifecycle data of your existing equipment

Our Installed Base Evaluation™ (IBE® service) provides a thorough lifecycle analysis of your critical plant assets and their condition. This site-delivered service provides detailed reports by site, area, line, machine and panel. Learn more about the **Installed Base Evaluation** and digitally enabled asset management through My Equipment.



As you plan your PLC-5 modernization, contact your local authorized Allen-Bradley distributor or Rockwell Automation sales office to learn of your options to help mitigate the growing risk of operating obsolete equipment. Such options include modernization and remanufacturing services.

WHAT ARE YOUR OPTIONS?

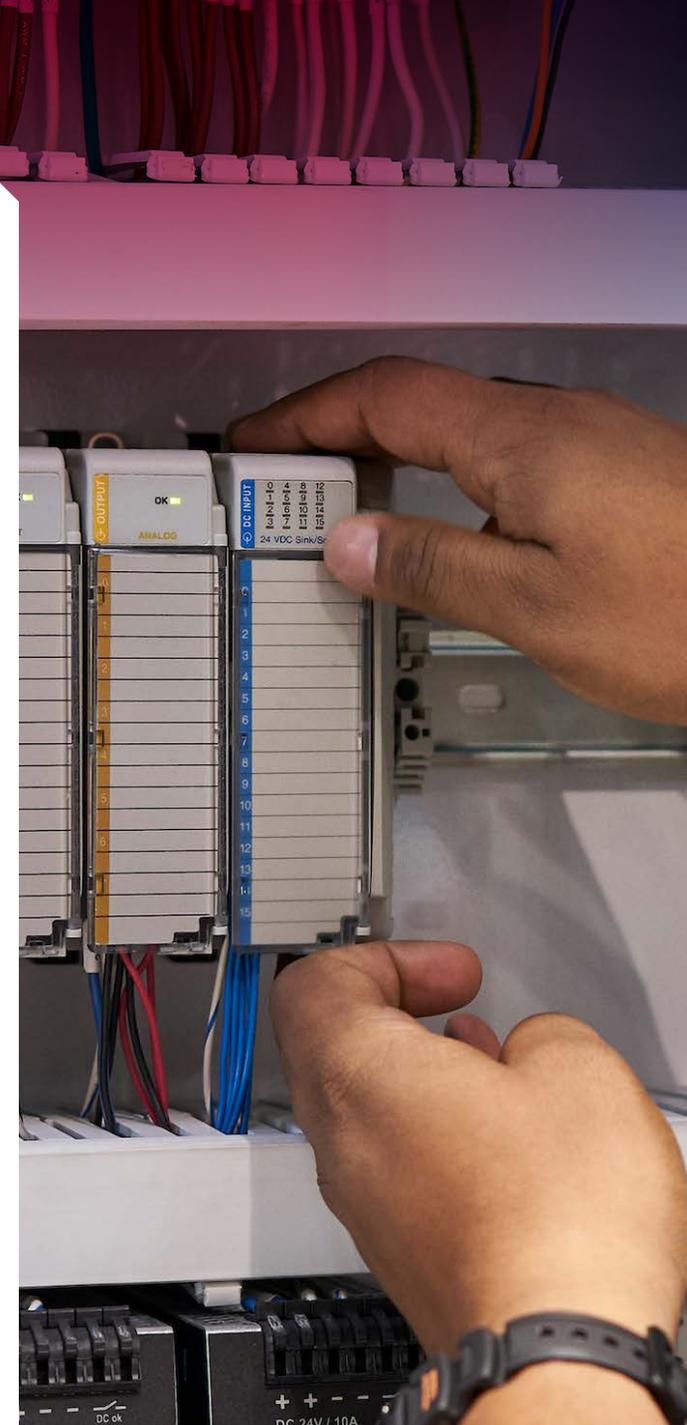
When planning your modernization, you can evaluate options to develop a proactive lifecycle plan, including our unique phased approach.

From complete, custom turnkey solutions to providing you with the tools to do it yourself, we will help you get the highest possible return on your automation investment.

Modernization resources available from Rockwell Automation

- Our LifecycleIQ™ Services provide modernization and migration engineering support to help you realize the benefits of the ControlLogix system and a modern control architecture.
- Our factory-trained field service professionals are experienced and prepared to provide on-site assessments, modernization planning, and start-up and commissioning of your modernized control architecture.
- From project management to start-up, we will help define and implement an effective modernization strategy for your facility that can help optimize your operations.
- Learn more about our [Modernization Services](#).

If you prefer to modernize from PLC-5 controller and 1771 I/O to ControlLogix system without assistance, Rockwell Automation provides several tools free of charge to help you plan and modernize with as little disruption as possible.



Tools to plan and execute the migration

Rockwell Automation provides migration tools for hardware selection, code conversion and hardware conversion that practically eliminate the need to modify any field device wiring. These are available free of charge and include the following – click the headings to learn more about each tool.

Product Lifecycle Status

The online Product Lifecycle Status tool can help you determine the lifecycle of your existing equipment and identify the most contemporary Rockwell Automation products, bringing you advancements in performance, flexibility and security. Having this knowledge makes it easier to plan and manage the transition from legacy or obsolete equipment to leading-edge technologies.

Integrated Architecture Builder

The Integrated Architecture Builder (IAB) is a graphical, user-friendly software tool that allows you to automatically define and configure a contemporary ControlLogix based architecture including a detailed bill of materials based on your current PLC-5 based control system. Simply enter the legacy PLC-5 based bill of materials into the tool and it automatically generates the new system bill of materials.

RSLogix Project Migrator

The RSLogix™ Project Migrator tool is a standalone software tool for converting an RSLogix 5 or 500 project export file for import into the Studio 5000 Logix Designer® application. By launching the RSLogix Project Migrator tool you are only steps away from converting your application.

Controller and I/O Wiring Conversion Systems

I/O conversion modules provide a fast and efficient method for converting from legacy I/O to contemporary I/O. The I/O conversion is accomplished without removing any field wires from the existing Bulletin 1771 Swing Arm, virtually eliminating the risk of wiring errors. The existing Bulletin 1771 Swing Arms fit directly onto the edge connector of the Bulletin 1492 Conversion Modules.

Network Interface Modules

The 1756-RIO (Remote I/O Network) Module enables communication and data transfer between a ControlLogix controller and other devices on your existing RIO network. It can be used to upgrade an existing PLC-5, PLC-3® or SLC™ system to a ControlLogix system. The advantages of using the 1756-RIO Module in a phased modernization include allowing the existing Remote I/O network to remain in place – allowing the new application to be tested before switch over – and to switch back to the old application in minutes.

All tools, phases and migration packages are available regardless of who performs the migration:
Rockwell Automation | A System Integrator | You Do-It-Yourself

Moving forward: executing your project

Whether you choose to migrate all at once or in phases, we have the tools and experience to guide you through the transition.

Our approach to modular automation coupled with backward compatibility allows you to maintain productivity as you upgrade portions of your automation system. Migrate in phases at a pace that's right for you.

Using the I/O Wiring Conversion System can save you hours and eliminate the risk of costly rewiring mistakes.

01



1771 I/O chassis

02



Remove the 1771 swing-arms from the 1771 modules.

03



Remove the 1771 chassis from the cabinet.

04



Install the I/O conversion base plate in the control panel. Attach conversion base plate.

05



Install conversion modules into the base plate.

06



Insert the 1771 swing-arm with attached field wires to the conversion module.

07



Attach the Bulletin 1492 conversion interface cable to the conversion module and 1756 I/O module.

08



Converted system

PHASE 1

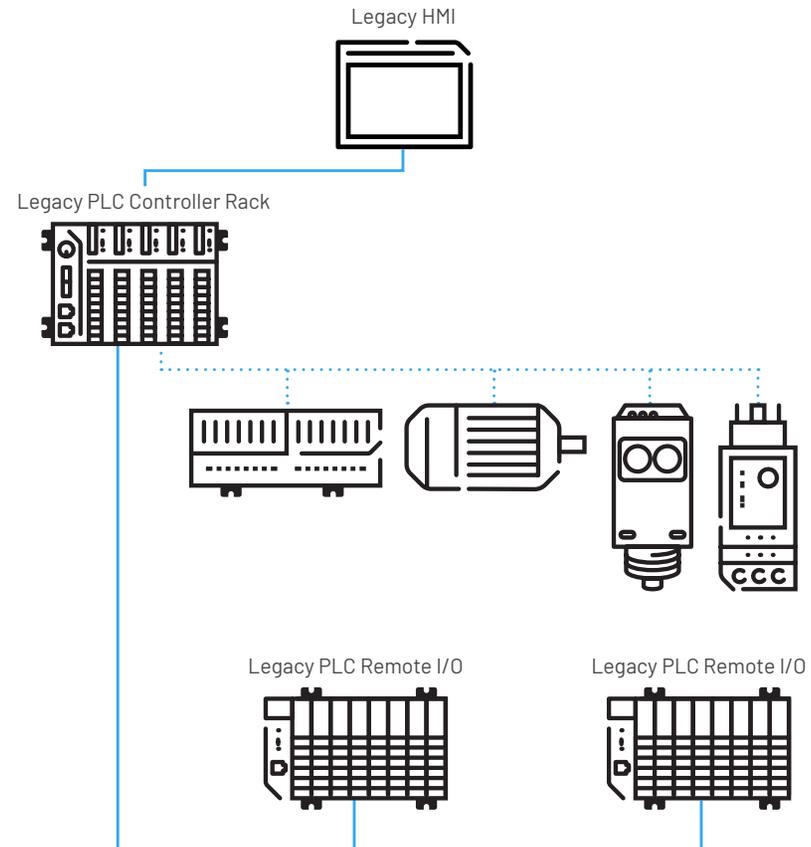
Application Code Conversion

Phase 1 often begins by converting PLC-5 processor code to Logix code. Our free logic and tag database conversion utility, RSLogix Project Migrator, will help you quickly upgrade your processor code allowing you to take full advantage of the Allen-Bradley Logix family of Programmable Automation Controllers (PAC). Once the converted code has been downloaded to the Logix PAC, the new 1756-RIO Remote I/O module can be used as the network interface to the 1771 I/O over the existing Remote I/O network.

Phase 1 tools: Logic Code Conversion Services and 1756-RIO Module

BENEFITS

- Develop and confirm your modernization plan
- Test application code before implementation
- Convert 80-100% of code using automated code conversion (may need to manually convert messages, special instructions, such as PID, and potential timing/scan differences)
- Take advantage of powerful constructs and features (like structures and integrated motion) that you can leverage to improve the application



PHASE 2

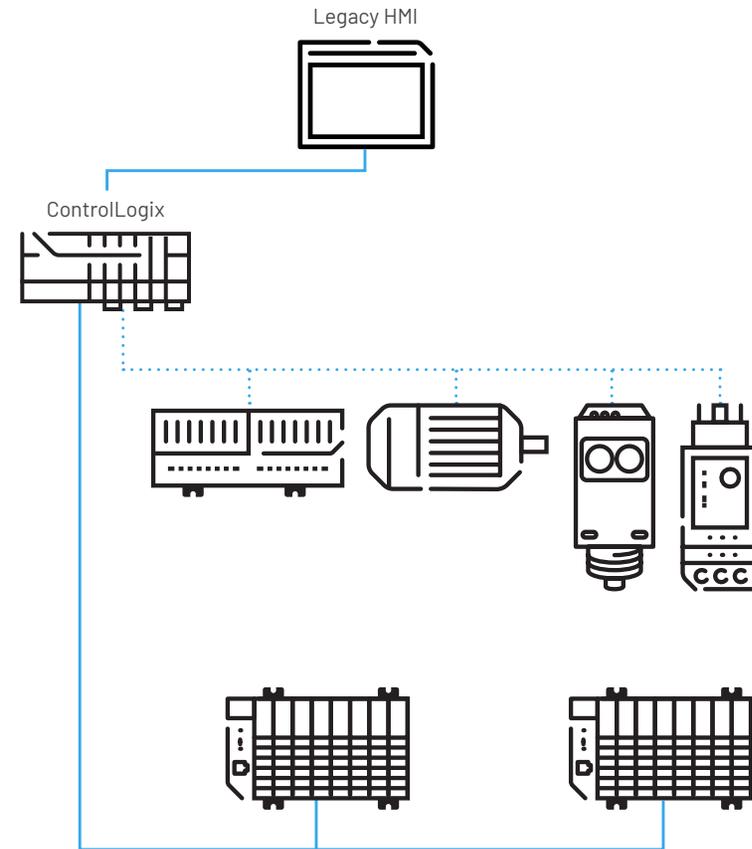
Replace PLC-5 Controllers

Phase 2 involves replacing the existing PLC-5 controller(s), while continuing to use the 1771 Remote I/O. This is also called a Rack Zero Migration. Replace the PLC-5 controller with the Logix PAC and the 1756-RIO module. The same 1756-RIO module used in Phase I is now configured to perform as the master instead of the monitor. The Logix PAC can now control any I/O that resides in the local and distributed 1771 chassis.

| **Phase 2 tools:** 1756-RIO module

BENEFITS:

- Maintain existing field wiring
- Minimize commissioning time and effort
- Ability to return to PLC-5 control, if needed



PHASE 3

HMI/EOI Migration

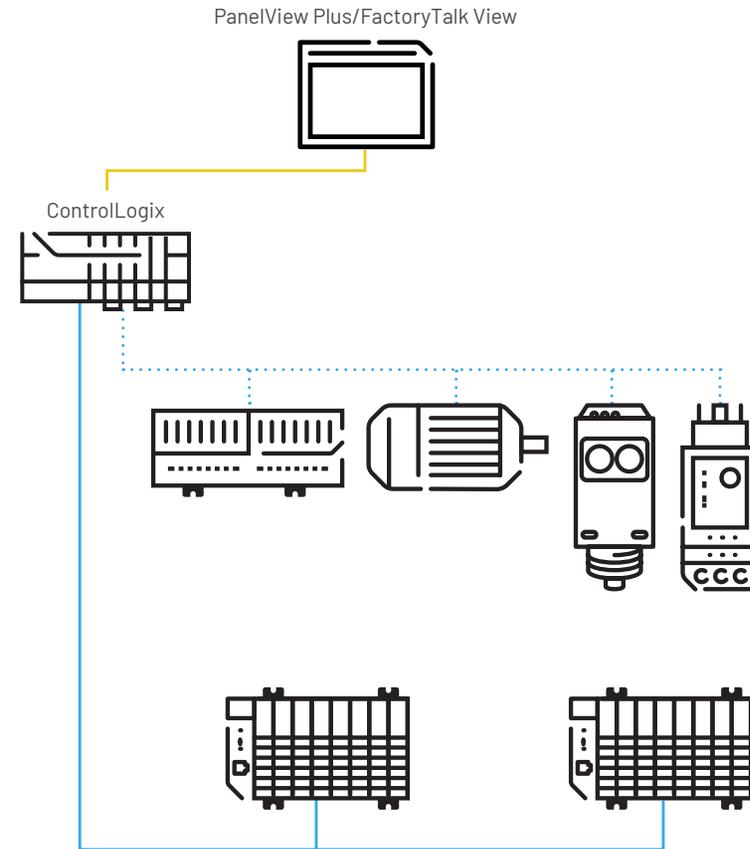
During this phase of the migration, existing HMIs or EOIs can be replaced with FactoryTalk® View products using an Application Conversion Program (ACP). ACPs not only make operator interface conversion much more cost effective, but give you greater flexibility regarding the final product. This means that you can account for how operators use your equipment and design interfaces that help maximize their productivity. In the end, this will allow you to give your operators the tools they need to get quality product to your customers.

Rockwell Automation currently offers free conversion from WonderWare and Intellution iFIX HMI interfaces. [Click here to learn more.](#)

Phase 3 tools: HMI Application Conversion Utility (ACU)

BENEFITS:

- 80% of the time no further modification is required
- Utility generates conversion log identifying features not supported by new hardware selected
- Option to take advantage of enhanced features and graphics
- Better integration with controllers



PHASE 4 I/O Replacement

In the final phase of the migration process, the I/O Wiring Conversion System is used to replace the 1771 I/O with the ControlLogix I/O. Because I/O replacement represents a large investment, we provide an approach that's right for your schedule and budget.

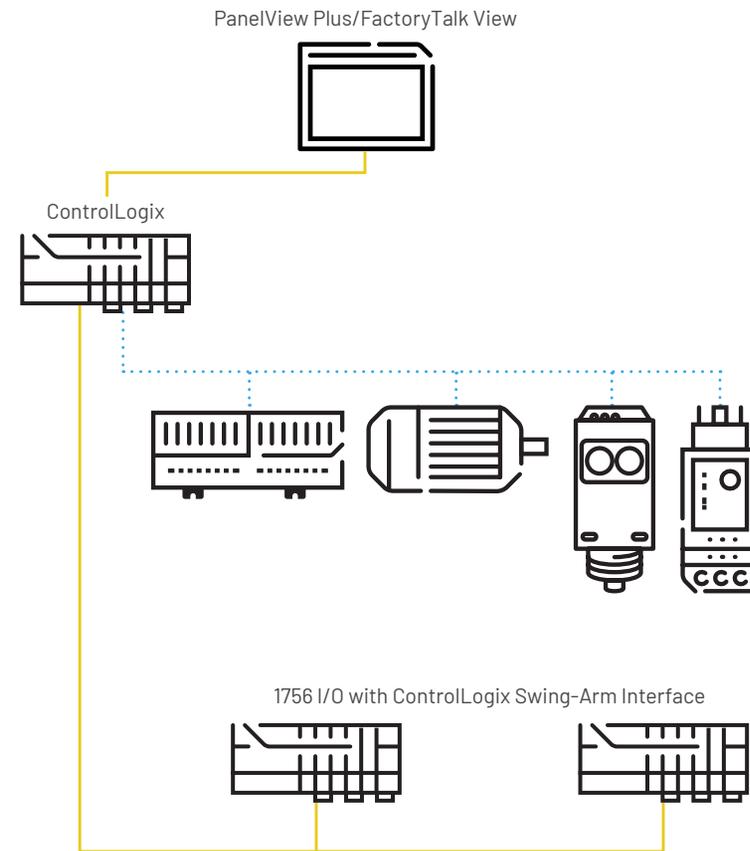
The I/O Wiring Conversion System provides a method to connect the existing 1771 I/O wiring to the 1756 I/O modules without disturbing the field wiring connections, dramatically reducing labor time and eliminating the potential for downtime that could result from wiring mistakes during the migration.

Planning your migration is more manageable as I/O can be swapped one rack at a time or all at once based on your schedule and budget. In either case, you can run both new and old I/O networks simultaneously. Additionally, I/O cross reference documentation assures correctness and provides historical back-up for future troubleshooting or diagnostics.

Phase 4 tools: I/O Wiring Conversion System and ProposalWorks Selection Software

BENEFITS:

- Maintain existing field wiring
- Minimize commissioning time and effort
- Cross reference documentation to assure correct selection and historical back-up for future troubleshooting and/or diagnostics and graphics



CASE STUDY

Proven results

CommScope, a leading cable manufacturer, needed to find a cost-effective way to modernize their production line and incorporate new equipment. When Rockwell Automation first began working with CommScope, the facility was controlled only by Allen-Bradley PLC-5 controllers and 1771 I/O. After the migration, the facility uses ControlLogix PACs, 1756 chassis I/O and FLEX™ I/O on EtherNet/IP™.

"I didn't know how long this transition would take when we first started the project, but going from mechanical drawings to product in just four months with only a few days of downtime was faster than I thought it could be done," said King Lewis, control engineering supervisor at CommScope. "The Rockwell Automation migration tools obviously helped make the process relatively fast and painless."

To stay competitive, CommScope needed the ability to produce multiple types of cables. This required precision and flexibility as lines change over frequently. Lewis said, "Our sister plants and competitors overseas can run single cables for a long period of time at low costs to the customer. We have to keep our plant up to date, so we can push product through more quickly and maintain the best quality. This system migration not only allowed us to produce a new cable, saving more than \$6 million in shipping costs annually, but it also improves production on the other five to ten types of cable we make on this same line."

"Using EtherNet/IP means we don't have to deal with gateways and can more easily share information throughout the company. We've removed push buttons and added functionality. And all the migration support and tools from Rockwell Automation reduced the risk of our transition," Lewis said.

“These new products allow us to shrink our equipment footprint, move equipment around and cut installation and maintenance costs.”

King Lewis -
control engineering supervisor at CommScope

Are you ready?

To request a migration quote, please contact your local authorized **Allen-Bradley distributor** or **Rockwell Automation sales representative**.

Learn more about PLC-5 migration and watch an informational webinar.

Connect with us.

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expanding **human possibility**[®]

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