



## Advantages of the Custom DeltaV Licensing Strategy

The purpose of this paper is to help you understand the strategy behind DeltaV licenses and explain why software licenses make up a large portion of the total price of a DeltaV system.



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## Introduction

Many of our customers have commented that software is a major percentage of the cost of a DeltaV digital automation system. The question, "Why do I pay so much for software?" is a frequent one. This is an obvious question to ask when comparing an itemized bill of material of a DeltaV system with one of a competitive system. For the DeltaV system, the bill of material clearly shows the software license prices can be as much as 50% of the total system price, whereas the competitors' systems have 10% to 15% of their system price directly related to software licenses. Why is that?

We believe these questions are the result of process manufacturers' transitioning from the traditional legacy process control system (which consisted of proprietary console hardware and proprietary I/O hardware) to today's process control systems, (consisting of off-the-shelf PC hardware with scalable operator station software, I/O hardware, and busses).

It is important that our customers make this transition and understand and appreciate why they are purchasing software licenses to define their systems, because the evolution of process automation is progressing. The day has come when hardware is the platform upon which to run system software, in which resides all the functionality of the system. Flexibility is defined and provided by software.

In the near future, communication to and from field devices will be achieved through radio frequency (RF) communication. Defining the size of a system will no longer be the result of counting I/O connections. System size will soon be determined by the impulses recorded from antennae on controllers, valves, and transmitters.

## The Evolution of Process Control

During the early conceptual design stages of the DeltaV system, it became evident that a successful new process control system had to be built to work seamlessly with I/O busses such as FOUNDATION fieldbus, Profibus, AS-I bus, etc. The new system also had to be built around an open architecture which enables the use of the latest technology at highly competitive prices provided by off-the-shelf products such as PCs and network communication products such as hubs and switches.

Another evolution was the capability of running controller software in low-cost PCs. This software is very useful to customers, in some cases offering significant value. It makes sense to see a controller in today's world not as a physical entity, but rather as a software package running in a wide variety of physical housings. Identifying the value associated with this soft controller presented challenges that had to be overcome. In the early days of the DeltaV development effort, we studied this problem along with the challenge posed with the introduction of I/O busses where the I/O could not be counted by counting the physical channels on a card.

With these changes came another realization. How could Emerson deliver the full warranty and support for a DCS where all the hardware is supplied by others (this is a possible DeltaV configuration)? The answer is obvious: by charging for the primary value delivered by Emerson. Obviously, it is our software that is important. This theory was cross-checked by examining the business models of Microsoft, SAP and Oracle. We have become a supplier of software for precision process control. And it became clear in early days that we had to develop a means to price and deliver software that provided the required functionality and capabilities to our customers, and at competitive prices. DeltaV software licenses meet these objectives.

## Pricing a Modern Digital Automation System

This section describes the challenges associated with assessing the size of a modern digital automation system and the challenge of assessing the value of the system.

### *Traditional Legacy Process Control System*

The traditional ways to define the size of an automation system were:

- Counting I/O and field devices
- Counting measured variable from transmitters and controlled variables from valves
- Counting the operators running the system

Using this method, the price of a system would be the result of the number of I/O channels plus the number of operator consoles. (See figure 1 below.)

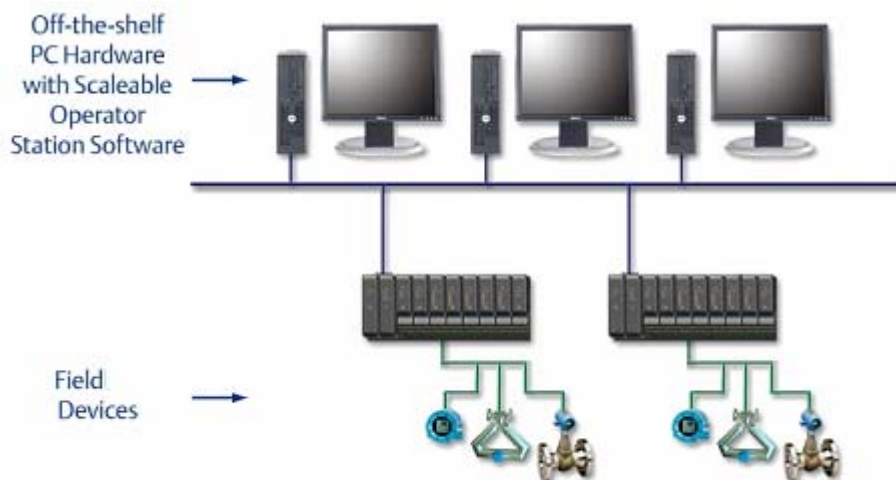


Figure 1 Traditional Legacy Process Control System

### *Today's DeltaV Process Automation System with Busses, OPC, and RF I/O*

In the industry, it is still common to use the I/O count as a reference to the size of the system. This measure of system size has been used for decades. To get an indication of system size, one counted I/O references on P&IDs—a practice that continues today. One could cross-check reality with the P&IDs by counting channels in the installed system. But today this has changed dramatically as illustrated in Figure 2 (page 5).

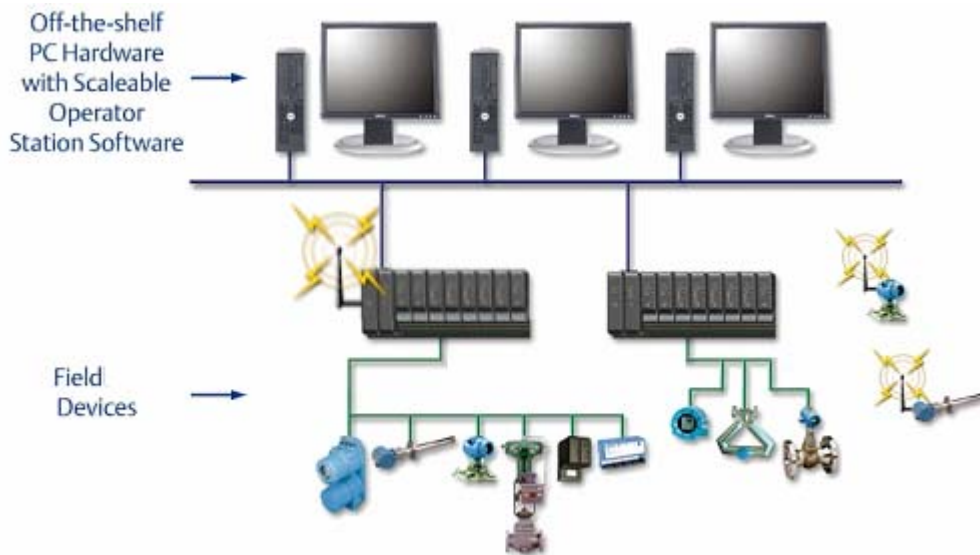


Figure 2 Modern Digital Automation System

Major changes have occurred:

- With the adoption of digital busses, the practice of counting I/O channels to arrive at an I/O count is not possible because the bus interface card has a port with multiple I/O. For example, a single ported AS-i card can accommodate as much as 500 discrete signals.
- New multivariable devices (HART, AS-i, DP, DeviceNet, fieldbus) now deliver many PVs per device per connection point.
- I/O may be brought into the system using common standards such as OPC.
- Wireless devices result in the elimination of I/O as a physical wiring medium of any kind.

These changes created the need for assessing system size in some way other than counting I/O. An efficient method for accomplishing this is counting device signal tags (DSTs). DSTs are a measure of the number of controlled and measured variables, regardless of the connection media or protocol. DSTs may be via:

- Traditional I/O
- OPC
- HART (wired or wireless)
- Fieldbus
- Profibus
- DeviceNet
- Modbus (ethernet or serial)



To count the DSTs in a system, one had only to count the indicator tags on a P&ID. The practice of the past thus continues. The DeltaV system identified these tags in the system, delivering a virtual IO count to match the P&ID count.

As one would expect, the larger the system—the larger the price. This is also the case with the DeltaV system.

The second principle came from customer demand and common principles: “*Do not charge me for software I do not need*”. Obviously a user with a continuous process has no need for batch software and thus would not see fairness in being charged for additional batch software. This is an obvious case. More subtle cases are those instances where users place no value in features that others deem very valuable. Some examples include:

- **Model Predictive Control.** Simple processes may be handled with regulatory control. Others have process dependencies and may need technology to handle these difficult process problems.
- **Unit Alarm Management.** Some customers see the need for alarm management when units are taken in and out of service. Others have very few units and see no need for this.
- **OPC.** Many customers have a need to connect their control system to the enterprise. Others do not.

This list of examples could continue. But when presented in this fashion, it is obvious that one needs to partition software into components that can be priced separately from one another according to customer value.

The concept of a base set of software necessary to implement a base system took shape. Then the concept of delivering a set of layered applications that customers can pick from became clear. This represents the license structure of the DeltaV system today.

The base DeltaV system is priced according to two dimensions: system size (based on DSTs) and the number of operators (operator workstation count). These are simple counts that should be known very early in scoping the size of the system.

In keeping with software pricing norms established by the consumer industry, layered applications are priced according to the type of application and the quantity consumed.

## ***DeltaV Licenses***

As is the case with software purchased in the consumer products arena, Emerson charges for software accordingly. Each user purchases the right to use the software in the form of a license.

Use of DeltaV functionality is enforced in the following way. A customer buys the automation system, then configures it to handle the process he or she is manufacturing. DeltaV software automatically checks that the licenses consumed in the configuration match the size of the configuration.

A very significant advantage to this licensing structure is flexibility. With traditional systems, functionality had to be added with the addition of hardware, which had to be shipped and installed into the existing system. With the DeltaV system, one can purchase additional functionality at any time with no fuss allowing you to manage your budget better. In the hypothetical case that a customer missed some capability such as fuzzy logic at startup, with DeltaV flexible licensing, there is no need to spend time ordering, shipping and installing. Your DeltaV system can be expanded and the new functionality activated—*without shutting down your process*.



Important note: Consider the case where a user has a running system and added more configurations, inadvertently exceeding the licenses capacity. In no way does this mismatch have any impact on the running system. The user is prevented from expanding the system. The last download to the system is allowed should an engineer need to reset a controller.