

# INtime® for Windows\* Enables Multi-function Software Platform for Fueling Centers

Enables a significant decrease in software complexity and an increase in reliability.



“The INtime Software operating environment allows us to offer the best of all worlds: stability, reliability and performance from the real-time environment.”



**Figure 1. With the right software platform, one multi-core PC in a fueling center can perform the functions that would have required multiple computers in the past.**

With the right software environment, one multi-core PC can perform the functions that would have required multiple computers in the past. The result is a significant decrease in software complexity and an increase in reliability. An example is an innovative software platform for fueling centers (see figure 1) that is enabled by TenAsys® INtime® for Windows\* software. Besides large fueling centers with convenience stores attached, Allied Electronics’ AEGIS system provides an integrated computing environment for unattended commercial fleet card-lock fueling centers, where a single AEGIS processor platform runs all the functions of the center, including ‘back office’ computing functions.

## Overview

The engineering team of Allied Electronics, Inc. of Bristol, Pennsylvania, has developed a solution that will help fueling centers consolidate the various software applications they must run onto a single computing platform, thereby simplifying software operations and improving system reliability. Allied’s AEGIS system incorporates a PC-compatible single-board computer (SBC) with a dual-core AMD\* processor and an I/O interface module that supports a wide range of electrical protocols. The system boots WES 8\* or Windows POS Ready 7\* on one processor core and INtime for Windows by TenAsys Corp. on the other (see Figure 2).

## Challenge

There’s a wide spectrum of processing applications that are required to operate at fueling centers. There’s the point of sale (POS) system, credit card processor and fraud management software, possibly a separate database processor that links purchases with the fueling company’s customer loyalty points program. Then there are one or more computers that run the pumps and the system that updates the gas prices, and controllers that interrogate tank gauges and truck RFID transponders. When a new service is added, or a new feature is added to the mix, often a separate computer would be networked in to implement it.

The result can be an eclectic assembly of computing power that is hard to integrate and expensive and difficult to maintain because of hardware/software incompatibilities and ‘turf battles’ between the various suppliers.

A better solution would be to integrate all the various software environments onto a single platform. The integration of heterogeneous processing workloads brings with it some difficult software challenges, however. For example, by itself, Windows isn’t designed to support real-time processing.

## Solution

Why is there a real-time computing requirement at fueling centers? “The real-time nature of many of the applications we run stems not from the fact that there are so many transactions being handled, but because the typical method that systems use to interface to the devices,” said Lou Seitchik, Allied’s Lead Architect. Many of the devices must be polled, meaning a central control system must repeatedly ask them if there is an action required by the system. For example, credit/debit card readers must be periodically asked if a card has been read since the last poll was done. The longer that it takes between polling contacts, the longer that a customer must wait for his or her fueling transaction to be acted upon, which at busy stations can create a customer service problem. “At a truck stop there may be 48 locations to poll,” said Seitchik.

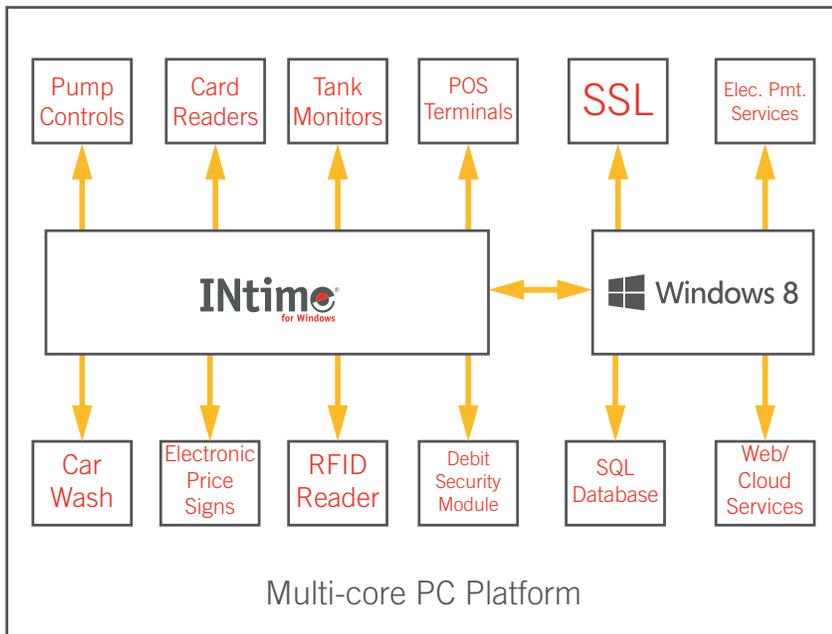
In Allied’s AEGIS system, applications running INtime for Windows handle all the I/O monitoring and control functions in the fueling center, including polling all of the appropriate hardware devices, while Windows applications handle the database processing and any Web-enabled functions. The partitioned system provides isolation between the native Windows functionality and the mission critical services based in the INtime real-time operating environment.

## Results

TenAsys’ technique for integrating the Windows platform with the real-time control system (which the company calls embedded virtualization) allows off-the-shelf Windows software to be run on the system without modification. “In the past, when our platform didn’t support Windows, we had to say ‘no’ to being able to run standard software such as SSL (Secure Socket

Layer) or Web Services,” said Seitchik. Using a standard platform makes it easier for Allied to partner with other software vendors to offer a more complete solution. “For example, we have partners that do electronic payment software that we want to host on the Windows system. There’s also fraud management software,” said Seitchik. “Running these applications via AEGIS will eliminate an additional PC at the station for each application, reducing cost and complexity.”

“The INtime Software operating environment allows us to offer the best of all worlds: stability, reliability and performance from the real-time environment, but also access to the Windows applications and Web services that our customers will want both now and in the future,” continued Seitchik. “And the quality of integrated services including technology, documentation and support available from TenAsys made INtime for Windows the best solution. for our diverse needs.”



AEGIS System

**Figure 2. The Allied Electronics AEGIS system runs INtime Software alongside Windows to combine the functionality that used to require many different computers in a fueling center. INtime for Windows ensures that the fueling center’s I/O interfaces are accessed in a deterministic manner.**