

IEI COMPUTING SYSTEMS

Modern day automation and control doesn't always mean using a PLC, PAC or DCS system. With remote addressable I/O and OpenSource operating systems other options do exist. With superior reliability, no purchase or annual licensing fees the Linux operating system provides an excellent alternative to off the shelf automation equipment. With the ability to run a firewall, data storage and retrieval, perform backups, automated scripting and remote access it's hard to beat Linux as a modern day solution to your control needs.



We specialize in using modern day resources to solve your control system needs. We can integrate your existing off the shelf PLC's with Linux to create a system that a PLC based system could never do!

CAPABILITIES

COMPUTING

- Linux Servers
- Embedded Linux
- Server Virtualization
- Database Systems
- OpenSource Software



HARDWARE

- Single-board Computers
- Embedded
- Remote Addressable I/O
- OpenSource Hardware

SOFTWARE

- C/C++
- PHP
- MySQL
- HTML
- PERL
- Python
- Scripting

```
367
368 int lcd_create_map_value_to_map
369 {
370     memset(empty,0,0);
371     int i = 0;
372     int tmp;
373
374     tmp = percent1 / 10;
375     printf("percent1 = %d, tmp = %d\n", percent1, tmp);
376     for(i = 7; i >= 0; i--)
377     {
```

CASE STUDY: GAS UTILITY SCADA

BACKGROUND: We were approached by a newly created gas utility to provide a means of monitoring underground gas lines. The new company did not have an IT staff and would need a solution that after initial setup would run without any supervision.

SOLUTION: Provide a master server that would poll a PLC in the field over a cellular LTE network. Server would provide operator access as well as alarming through email and text. This would alert operator's to real-time problems such as a leak or a "back-hoe" fade.

SYSTEM: Used the Linux operating system as the polling master. Had MySQL to store and retrieve data, HTML/PHP to allow operator's to access data and run email server for alarm notifications.

RESULT: Over 3 years later the system has run without any IT supervision. Uptime has been 100%.

IEI LABS

We have created a Learning Lab to teach, research and explore various solutions.

Please visit:

www.ieilabs.com



Linux makes a perfect platform for an embedded or distributed control system. If you have an existing PLC system overlaying a Linux server on top can add new dimensions of coordinated control. This allows you to add new capability to your controls while continuing to use hardware that your are already familiar with.

CASE STUDY: RURAL WATER DISTRIBUTION CUSTOMER KIOSKS

BACKGROUND: We were approached by a company that ran a rural water distribution system. In this town there were many households without running water and the cost of installing a well was too expensive or not practical. Their business provided customers without city provided running water a place to pay cash and fill bulk water containers. The customer wanted to provide a system for his customers that would give them the ability to add cash to their account and then use that credit to buy water as needed. The caveat was they had an Allen-Bradley based PLC system which monitored the cash installed and dispensed the water based on the credit.

SOLUTION: Overlay a Linux based server that would keep record of customer accounts and credit through a MySQL database. The customer would interface with the server through an HID key fob for security and a keypad to enter the number of gallons to dispense. The server would direct the PLC to how many gallons to dispense and then debit the account and record the transaction. The customer could also add cash directly at the Kiosk to be added to their account. A webpage was created for operators and accounting to access customer accounts to add credit as well as monitor customer accounts.

SYSTEM: Used the Linux operating system as the server, MySQL database, PHP and HTML for user access and RaspberryPI as a serial port gateway in the TCP/IP communications.

RESULT: Over 100k+ transactions later both the customer and their customer's are extremely happy with the solution.

FOR MORE INFORMATION
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