TwinCAT BSD

Virtual Machines and Ansible Provisioning

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Beckhoff TwinCAT BSD (Tc/BSD)

A replacement for Windows on your Beckhoff PLCs

TwinCAT/BSD is a TwinCAT3 runtime replacement for Beckhoff PLCs.

- Windows → FreeBSD!

- Remote Desktop → ssh!

- Install .exe for dependency → package manager!

- Click to configure → *version controllable* configuration files!

What could this lead to?

- Centralized management and provisioning.

- EPICS IOCs and other custom software on the PLC.

- Software/hardware-in-the-loop testing.

TwinCAT Engineering (XAE)
Development Environment

ADS Protocol

TwinCAT Runtime
on FreeBSD PLC

TwinCAT BSD Virtual Machines

Virtual machines (VMs) are now simple to create, too!

Using VirtualBox, we can make new PLC VMs in a few simple steps.

- Download a Beckhoff-provided CD image (.iso).

- Run a script to tell VirtualBox the VM details.
  ```
  $ ./create_tc_bsd_vm.sh test-plc-01
  ```

- Follow through with a couple installation steps.

- Reboot and then log in to the VM!

- Download a PLC program through XAE and run it.

TwinCAT BSD and Ansible

Provision the VM or an actual Tc/BSD PLC with Ansible!

With SSH access, we can centrally manage the VM.

We provide an example playbook that allows for:

- Bootstrapping to install required Ansible dependencies.

- Customizing bash to show the system state: config mode/run mode.

- Installing user-specified required libraries, packages, and tools.

- Adding, modifying, or removing ADS routes on the PLC.

- Configuring the firewall to let ADS traffic through.

- Customizing settings such as heap memory and locked memory size.

Thank you for your time.

If this is of interest to you, please stop by my poster!

Sample repository on GitHub:

https://github.com/pcdshub/twincat-bsd-ansible