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ORNL Accelerator EPICS Controls Running Buildroot on uTCA Systems

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As the uTCA chassis started to replace our obsolete VME/VxWorks control systems at ORNL we found that each chassis was turning into a custom Linux installation. When a new chassis was brought online, a commercial Linux OS was installed and customized. These customizations were not well documented and would take many hours to re-create in the event of a system failure.

We decided a new approach was needed that would minimize the boot image size and optimize recovery time. A smaller, standard image could be loaded over the network and would restart each custom IOC automatically.

A Buildroot created embedded Linux image optimally suites these requirements. This small, embedded image of around 34M could easily be loaded across the network. Most systems usually restart to a running IOC in about a minute. System customization like IP addresses and DMA size declarations are passed in on the kernel command line. Once booted, the procserv and startup files finished the system setup to recover to a running chassis. Buildroot provides all the necessary tools, libraries and many applications needed to complete the distribution.

This presentation will present the details for setting up Buildroot to run a uTCA EPICS IOC control system.

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