EPICS on RTEMS 4.12

H. Junkes (Fritz-Haber-Institut)

Epics was portet to RTEMS 4.12 for MVME6100 and MVME2500 for fast data acquisition. Uses pva for storing ndntarray on archiverAppliance.

Overview of EPICS-based control system for cERL and iBNCT

T. Obina (KEK)

EPICS has been used as control system for the compact Energy Recovery Linac (cERL) at KEK, and for the Ibaraki Boron Neutron Capture Therapy (iBNCT) facility. Overview of the control system of each facility will be reported at first and some of software/hardware development are shown later

Single board computers for EPICS IOC and its reliability at RIKEN RIBF

A. UCHIYAMA (RIKEN Nishina Center)

In accelerator control systems, single board computers typified by Beagle bone black and Raspberry Pi are now utilized as a server, which run EPICS IOC. For network-based control devices in RIKEN RIBF control system, we introduced PC engines WRAP (Wireless Router Application Platform), which is the single board computer, as EPICS IOC in 2006. Currently, PC engines ALIX single board computer as the successor model of WRAP is utilized for soft IOC. In order to build Linux for ALIX, we used the method of LFS (Linux From Scratch). Therefore, we can design the compact Linux minimized for EPICS IOC as one of the features in our system. In April 2017, the control system continues to grow and implements about 30 ALIX single board computers, and the EPICS IOCs manage more than 420 network devices. When using single board computer in EPICS environment, its reliability and lifetime are often considered. Since the operation of the single board computer as EPICS IOC in RIKEN RIBF has already been in implementation for over 10 years, this presentation will be discussed its operational status, reliability from the implementation experience, and the future plan.

LIPAc Project

A. Marqueta (F4E - IFMIF/LIPAc)

The development of IFMIF (International Fusion Material Irradiation Facility) to generate a 14 MeV source of neutrons with the spectrum of D-T fusion reactions is indispensable to qualify suitable materials for the First Wall of the nuclear vessel in fusion power plants. As part of IFMIF validation activities, LIPAc (Linear IFMIF Prototype Accelerator) facility, currently under installation at Rokkasho (Japan), will accelerate a 125mA CW and 9MeV deuteron beam with a total beam power of 1.125MW.

The Design of a Detector Control System Based on EPICS

M. Ye (Institute of High Energy Physics)

The Jiangmen Underground Neutrino Observatory (JUNO) is the second phase of the reactor neutrino experiment. The detector of the experiment was designed as a 20k ton LS with a Inner diameter of 34.5 meters casting material acrylic ball shape. There are approximate 10k monitoring point of temperature and humidity and about 20k channels of high voltage of PMTs, electric crates as well as the power monitoring points. The paper will introduce the design of the framework _based on EPICS. The implementation of the IOCs of the high-voltage crate and modules, stream device drivers, and the embedded temperature firmware will be presented. The software realization and the remote control method will be presented as well as the development of the GUIs by CSS (Control System Studio). The upgrade framework can be widely used in the project with the similar hardware and software interfaces.

EPICS environment at J-PARC neutrino facility

K. Nakayoshi (KEK)

High intensity neutrino beam is produced at the neutrino facility in J-PARC.

EPICS Education at University

M. Iwasaki (Osaka City University)

In this talk, I'd like to introduce the EPICS education in Osaka City University.

Development of MQTT-Channel Access Bridge

J. Fujita (Creighton Universtiy/STAR Experiment)

The integration of the Data Acquisition, Offline Processing and Hardware Controls using MQTT has been proposed for the STAR Experiment at Brookhaven National Laboratory. _This created the need to develop a way to bridge MQTT and Channel Access bidirectionally. _We have developed a prototype for such a MQTT-Channel Access bridge.

ChatOps

M. Clarke (Science and Technology Facilities Council)

As an experiment it was decided to integrate the basic functionality of 'caget' into the popular developer communication tool Slack. This talk provides an overview of what was required to set up a custom Slackbot that allows team members to issue a caget command via Slack.

USB Human Interface Devices and EPICS

K. C. Lang (Argonne National Laboratory)

Human Interface Devices encompass a large variety of useful ways to expose different controls to your users, including Keyboards, Mice, Buttons, Joysticks, and Gamepads. This talk will demonstrate the EPICS Human Interface Device library and how easy it makes incorporating these off-the-rack USB devices into an EPICS _controls setup, as well as enabling the cheap, easy creation of custom controls hardware using HID development boards.

ITER & CODAC Core System - Status Update

R. Lange (ITER Organization)

Within the ITER international organization, 35 nations are collaborating to build the world's largest fusion facility in the South of France. Most contributions are in-kind - integration of more than 200 separately developed plant systems will be the main challenge when building the control system.

Status of fast controller EPICS device supports for ITER Project

V. B. PATEL (ITER Organization)

As a large scale scientific project, ITER presents technological challenges to its control system, e.g. scalability for a highly distributed large system, as well as management challenges, e.g. the distributed manufacturing of subsystems over a very long time span. Standardization is a key feature of the ITER CODAC (Control, Data Access and Communication) system. EPICS has been selected as a software standard, and a catalog with controllers and various PXI/PXIe IO boards has been set up to standardize fast controller hardware. For the supported hardware, EPICS drivers have been developed and are being shipped to ITER domestic agencies and suppliers of ITER components. This talk presents the status of the EPICS device support for ITER fast controller boards.

ITER AC/DC Converter Control System

R. Lee (Dawonsys)

ITER coil power supply system consists of TF converter, 6 CS converters, 6 PF converters and 9 CC converters and they are shared by two contries, Korea and China.

Status of _I&C System Development for ITER Diagnostic Systems in Japan

T. Yamamoto (National Institutes for Quantum and Radiological Science and Technology)

ITER is an experimental nuclear fusion device to validate the engineering design which is basis of a fusion power reactor in future. ITER is being constructed in south France by seven countries and region. Plasma diagnostic systems are very important components of the fusion reactor to control plasma stably. Japan Domestic Agency (JADA) of the ITER project will provide five diagnostic systems to ITER. Design activities for the diagnostics systems are carried out by JADA. All ITER components should be controlled in a same manner to reduce the risk of integration. EPICS was selected for basis of the control software for ITER components to ensure the standardization of the control systems.

Development of local control system for ITER Gyrotron using EPICS

Y. Hashimoto (Japan EXpert Clone Corp.)

In the ITER project, Japan Domestic Agency (JADA) is responsible for development of eight gyrotrons, which produce 170 GHz radio frequency. Sixteen gyrotrons will be developed by Europe, India and Russia Domestic Agencies. Therefore, integration of the gyrotron systems is very important. Plant Control Design Handbook (PCDH) defines rules and guidelines for instrumentation and control (I&C) systems. ITER Organization also provides CODAC Core System (CCS) which is a software tool kit and framework for design and development of I&C systems. CCS is developed based on EPICS. JADA developed a prototype of the local control system of power supplies and super-conducting magnet system for gyrotron operations complying PCDH. PLCs (programmable logic controllers) were selected to monitor and control auxiliary devices such as chillers and vacuum systems. We validated that CCS has enough functionalities to develop the local control system for gyrotron system. We also found issues of CCS during the prototyping and resolved the issues discussing with the ITER staff. We will report our experience and the issues in our development.

CS-Studio Display Builder Update

K. Kasemir (ORNL/SNS)

The display builder is a comprehensive update of the "BOY" panel builder that is now being used on the first SNS beam lines.

Lessons learned implementing a Channel Access gateway in Python with pyuv

D. J. Lauk (Paul Scherrer Institute)

At PSI we use multiple channel access gateways to separate the networks for office, machines, and beamlines. The gateways allow us to use EPICS across network boundaries, while also providing access control, and to some extent, reducing the load on both the network in general and IOCs.

New EVG and EVR features in Delay Compensation capable timing hardware

J. Pietarinen (Micro-Research Finland Oy)

The latest firmware version of the Event Master integrates an Event

Status of migration from Channel Archiver to Archiver Appliance in J-PARC MR.

S. Yamada (KEK / J-PARC)

Archiver Appliance has been deployed for J-PARC Main Ring. We will discuss the status of migration from Channel Archiver, which has been used since operation of J-PARC MR started in 2008.

Introduction of Device and Driver Support for Yokogawa F3RP71

S. Yamada (KEK / J-PARC)

Yokogawa F3RP71 is a linux-based controller for Yokogawa FA-M3 series of PLC. Device and drive support for F3RP71 was ported from its previous model, F3RP61. We will discuss current status of development and utilization in J-PARC MR accelerator control.