ATLAS SUBSYSTEMS REQUIREMENTS

HARDWARE REQUIREMENTS

Ethernet networks require a unique MAC address associated to each physical port. Therefore, SoC that will interface directly with ATCN must have a MAC address associated to each port.

The MAC address associated with the Ethernet ports shall be either:

- uniquely allocated by the Vendor
- individually configurable for each SoC and each port

TDAQ REQUIREMENTS

The ATLAS Trigger and Data Acquisition (TDAQ) system plays a crucial role in the online processing of live data streaming from the ATLAS experiment at the Large Hadron Collider (LHC) at CERN

1.Functionality and Purpose:

- The TDAQ system processes direct data readout from 100 million channels on the ATLAS detector.
- It operates through multiple trigger levels, selecting interesting events for analysis while reducing the data rate by a factor of 10^7.
- Most of the functionality is implemented on approximately 3000 servers that make up the online farm.

2.Computing Environment:

- Due to the critical functionality of the TDAQ system, an improved computing environment is maintained.
- This environment covers the online farm, ATLAS control rooms, and various development and testing labs.
- Dedicated applications are developed for system configuration and maintenance.
- Open Source tools like Puppet and Quattor are used to centrally configure the operating systems.

3.Health Monitoring and User Management:

- The health monitoring of TDAQ system hardware and operating systems performs 60 thousand checks every 5 minutes.
- Monitoring tools include Nagios, Ganglia, and Icinga.
- The system adopts An improved user management approach based on Active Directory infrastructure and integrated with Access Manager.
- Role-Based Access Control (RBAC) ensures controlled user rights from external access down to specific user actions.

4.Ongoing Activities:

- The SysAdmin group is responsible for daily monitoring, troubleshooting, and maintenance of the online system.
- They handle storage and farm upgrades and prepare systems for an upgrade to Scientific Linux 6.
- The team ensures global integration, configuration, optimization, and necessary hardware updates

DCS REQUIREMENTS

The Detector Control System (DCS) for the ATLAS experiment plays a crucial role in ensuring the proper functioning and monitoring of various subsystems

1.Hardware Requirements:

- Specifies the necessary hardware components for the DCS.
- Includes details about memory, storage, and other critical components

2.Functional Requirements:

- Describes the expected behavior and functionality of the DCS.
- Covers tasks such as transferring the detector to different operating states, monitoring parameters, and detecting deviations.

3.Operational Requirements:

- Outlines the operational aspects, including how the DCS interacts with other subsystems and technical infrastructure.
- Ensures seamless coordination across the experiment

4.Modes and/or State Requirements:

- Defines the different modes or states in which the DCS must operate.
- Specifies how it transitions between these states

5.Lifetime Requirements:

- Addresses the lifespan of the DCS components, considering factors like wear and tear.
- Ensures long-term reliability

6.Monitoring of Non-Critical Components:

- Describes how non-critical components are monitored.
- Balances resource usage while maintaining system integrity.