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INTER-CONTROL CENTER COMMUNICATION PROTOCOL (ICCP)

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ABSTRACT--*The deployment of synchrophasor measurements in power systems is rapidly expanding. Applications of these measurements are less widespread. Synchrophasors currently are routed to large data concentrators in central locations. This data may then be routed back to Independent System Operators (ISOs) and Transmission Owners (TOs) via existing networks such as those based on the Inter-Control Center Communication Protocol (ICCP). Systems configured in this way have considerable communication overhead, and data storage at the central data concentrator is a difficult problem, especially as the number of PMUs increases.*

Keywords: Transmission.Connection.

I. INTRODUCTION

Reliable transport protocols, which detect and attempt to correct transmission errors, are adopted to combat this problem. It is important to consider the characteristics of these protocols. For instance, the Transmission Control Protocol (TCP) is not well suited for synchrophasor data transmission, because high latency can occur on lossy links. Other protocols for improving reliability provide a more robust solution to the problem of synchrophasor transmission over lossy links. Efficient storage of synchrophasor data is also important. Existing databases may require large indexes or considerable time to extract a subset of the data. A new data storage scheme based on simple, flat files eliminates these problems. The problem, therefore, is to develop a system which addresses these issues. A well-designed phasor system should be able to receive, share, and store data efficiently, and serve as a solid foundation upon which synchrophasor applications can be built.

We propose a system, called FIPS for Flexible Integrated Synchro-Phasor System. FIPS contains communication components, a database, and a data alignment engine, permitting it to function as a phasor data concentrator. Also, FIPS contains interfaces to enable the development of applications using the stored and real-time data. Synchrophasors and their applications represent a key part of a future smart grid. Synchrophasors can be used for applications including dynamic line parameter estimation and phasor state estimation. FIPS will enable these applications to be rapidly developed upon a stable base.

II.EXISTING SYSTEM:

The deployment of synchrophasor measurements in power systems is rapidly expanding. Applications of these measurements are less widespread. Synchrophasors currently are routed to large data concentrators in central locations. This data may then be routed back to independent system operators (ISOs) and transmission owners (TOs) via existing networks such as those based on the Inter-Control Center Communication Protocol (ICCP).

LIMITATION:

- In existing synchrophasor systems, networking issues can cause data loss.
- Reliable transport protocols, which detect and attempt to correct transmission errors, are adopted to combat this problem.
- It is important to consider the characteristics of these protocols.
- For instance, the Transmission Control Protocol (TCP) is not well suited for synchrophasor data transmission, because high latency can occur on lossy links.

III.PROPOSED SYSTEM:

Flexible Integrated Synchro-Phasor System is introduced. FIPS contains communication components, a database, and a data alignment engine, permitting it to function as a phasor data concentrator. Also, FIPS contains interfaces to enable the development of applications using the stored and real-time data.

MERITS

- FIPS will provide an important building block in a future distributed synchrophasor measurement system.
- It provides many of the attributes of an ideal phasor processing system in a cohesive, integrated form.

IV.MODULES

1. Topology Creation
2. Generating Database
3. Data Searching
4. Data Transmission Verification

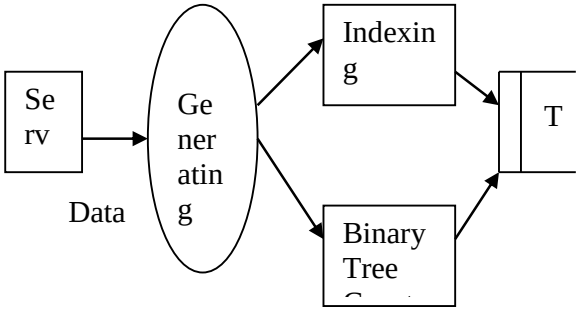
TOPOLOGY CREATION

In this module we are constructing the topology for transmitting data. Based on this topology we are testing our data transmission and data access. For creating the topology here we are using server socket to connect nodes.

Generating Database

Data tables must be indexed to achieve high performance in data extraction. If the tables are not indexed, the entire table must be searched to retrieve data matching the desired criteria. This occurs because the data itself is not stored in an ordered fashion on disk the indexing makes use of a class of data structures known as search trees. For example, let us consider indexing time-tagged data using a simple binary search tree. In a binary search tree, larger values are placed to the right and smaller values are placed to the left as the tree grows. Each node in the search tree contains a pointer to the data which is indexed by that node. For instance, represents a well-constructed binary search tree for a data set. Represents a pathological case, in which data has been inserted into the tree in sorted order. The well-constructed tree has a number of levels on the order of, where is the number of items in the tree. But in the worst case, the tree actually has levels,

increasing the number of operations required to find a given item. To avoid the worst case, database systems use balancing algorithms to keep the trees balanced.



DATA SEARCHING

To find data given a timestamp or range, first the data set is divided in half. The search then proceeds either to the left or to the right of the split, depending on whether the timestamp at the midpoint is greater or less than the timestamp sought. This subset is once again divided in half, and in this fashion, the search continues recursively until either the desired data point is found or all points are eliminated. Because the data is repeatedly divided in half, it can be shown that this search algorithm requires on the order of operations, where is the number of data points.

CONCLUSIONS

During the first phase of the project implementation, the base paper was thoroughly studied to understand the expected features of the proposed project, the various technologies related to the project were identified, the advantages of the proposed project over the existing system was recognized, besides the base paper. The other relevant reference papers were collected and points were taken from them, the suitable platform for implementing the project is chosen to be Java.

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