PUNE INSTITUTE OF COMPUTER TECHNOLOGY
DHANKAWADI PUNE - 43

B.E. PROJECT SYNOPSIS

Department - Information Technology **Academic Year -** 2020-21

Project Group Members -

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Project Title - Distributed Replicated Block Device (DRBD) Network Packet Tracing Module

Sponsorship - Veritas Technologies LLC, Pune

Synopsis -
Problem Statement - Build a packet tracing module on DRBD to track the data packets transferred over a cluster in a network during data replication between multiple block devices and analyse the transfer of packets.

Abstract - DRBD is a distributed replicated storage system for the Linux platform. It is implemented as a kernel driver, several user-space management applications, and some shell scripts. Our objective is to write a kernel module to trace/keep track of logs in memory and on-disk, for DRBD and perform various analytics on this data(like plotting the graph for accuracy, etc.). We also plan to write a utility/ daemon to pull tracing information from the kernel, and parse the data for reporting/debugging problems. The scope of our project is to provide an enterprise grade solution to analyze the packet transfer, to calculate the accuracy of data replicated at multiple nodes in a cluster, to determine the bandwidth required over a network based on the accuracy of the transfer of packets, and to determine the number of replication nodes required in a data cluster.

Application/ Context -

- Provide an enterprise grade solution to analyze the packet transfer in replication phase at multiple data nodes.
- Calculate the accuracy of data replicated at multiple data nodes in a cluster.
- Determine the bandwidth required over a network based on the accuracy of the transfer of packets.
- Determine the number of replication nodes required in a data cluster.

Concept -

- Understand how replication in DRBD works - code flow how/where we put the packet on air in code.
- Writing a kernel module to trace/keep track of logs in memory and on-disk.
- Enable tracing on the modules dynamically.
- Least or no performance impact is desirable.
- Writing utility/daemon to pull tracing information from kernel - parse the data for reporting/debugging problems
- Use a container to run the analyser tool.
- Eg: plot a graph, create sequential logs combining primary and secondary logs.

References -

- LINBIT DRBD 8.4 Repo
- DRBD User Guide -
- https://developer.ibm.com/tutorials/l-drbd/
- https://en.wikipedia.org/wiki/Distributed_Replicated_Block_Device
- https://www.centos.org/
- https://mariadb.com/files/DRBD.pdf
- Installation help: https://youtu.be/zJ42PezwfSk\
- http://derekmolloy.ie/writing-a-linux-kernel-module-part-2-a-character-device/