

Project ID : CSE235245

Degree/Program	B.Tech	Specialization	Computer Science Engineering
Academic Year	2019	Semester	8
Course Code	15CS496L	Couse Title	Major Project

Name	Register Number	Department	Mobile Number	Email
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Working Title of the Project	Trusted Communication in Software Defined Distributed Systems
Project Site and Location	SRM Institute of Science and Technology
Name and address of the company /organisation(Applicable for projects with industry or industry support)	SRM Institute of Science and Technology

	Supervisor	External Supervisor(if applicable)
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Mission Statment

Product Description

The project aims to develop a Software Defined Network in a distributed environment with scalability, efficiency and security as primary motto. Its second phase aims to focus on securing the network from controller plane (D)Dos attacks.

Assumptions and Constraints

The implementation of this protocol is constrained by the physical availability of networking hardware. Multitude of the nodes in the topology can, thus, only be virtualized using various research oriented tools.

Stakeholders

Naman Arora, Nikhil Gupta

Division of Work and Contributors

From Date	To Date	Activities or Components of the project	Register Number of Individual Contributor	Register Number of Joint Contributors
30/07/2018	02/02/2019	Relay modules (main.c)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (server.h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (sock _{create} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (allocate.h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (tcp _{child} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (broadcast.h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (list.h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Relay modules (snd _{cv} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Controller modules (tcp _{connector} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Controller modules (sock _{create} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Controller modules (snd _{cv} .h)	RA1511003010235	RA1511003010245
30/07/2018	02/02/2019	Controller modules (allocate.h)	RA1511003010235	RA1511003010245

Summary record of major progress meetings with supervisors

Meeting Date	Progress since Last Meeting	Outcome of Meeting	Target Date	Other Issues	Next Meeting
30/07/2018	First Meeting	The project responsibility allotted	20/9/2018		20/9/2018
20/09/2018	Received Attributes to be examined	attributes allotted	1/1/2019		1/1/2019
31/1/2019	Review 1 Presentation check	Proposed changes in presentation	2/2/2019		2/2/2019
04/02/2019	Redesigned topology	A new deadline which must result in values being exhibited	15/02/2019		
01/03/2019	Paper draft shown for review, re-designed topology up for review and values to support feasibility.	Review 2 preparation	02/03/2019		

Worksheet / Data collection / Observation etc

Worksheet/ Data Collection / Observation etc
30 Jul, 2018 1 commit example topology
01 Aug, 2018 5 commits added mininet docker submodule; renamed docker to onos; renamed docker to onos; removed onos-1.12.0.tar.gz dependency, not depending on PKGBUILD; added dockerfile and dependency
02 Aug, 2018 2 commits Research papers; opendaylight dockerfile and karaf dependency added
03 Aug, 2018 2 commits added alias cl=clear in /etc/profile; added tmux to Dockerfile
04 Aug, 2018 1 commit added alias cl=clear in /etc/profile
26 Aug, 2018 4 commits new commits; corrected permissions; added locale generation; added spine leaf python script for mininet
28 Aug, 2018 1 commit; added module ryu
29 Aug, 2018 10 commits; removed opendaylight too; onos not needed anymore; added ryu controller separate from upstram git; removed submodules; moved locations; make topo sub-directory; self made mininet dockerfile, working; removed iwaseyusuke/mininet; papers for attack in sdn; new controller virtualenv updates
03 Sep, 2018 2 commits added ryu controller; removed submodule ryu
11 Sep, 2018 1 commit removed junk
15 Sep, 2018 5 commits removed database integration; updated the makefile; added controller database interation interface; added multicontroller communication paper from onos; coded dbinterface
16 Sep, 2018 6 commits some globally required definitions; added main caller function; made server header and source function; made allocate header and source; made send receive header and source;
22 Sep, 2018 8 commits added relay.bin bindings in makefile; added Makefile for relay; initialised to first <code>bcast_msg_node</code> , <code>bcast_starttoNULL</code> added <code>cleanup</code> , <code>full_aduplex</code> , and <code>newsndsupport</code> ; added <code>snd_pkt_backandcleanup_r</code> functions with
26 Sep, 2018 1 commit added a function to publish connect controllers
28 Sep, 2018 5 commits added binding in Makefile to change main.py permissions; added the function calls from librelay.so in main.py; added main python script; fixes for -Werror; removed -Wall -Werror; makefile fixes for librelay.so; Update Makefile add librelay.so; added topo.py; <code>snd_rcv_{functions}sourceandheader</code> ; <code>client_runs_{sourceandheader}</code> ; <code>makefile</code> added; added <code>sock_createforbcast_socketandserver_socks</code>
02 Oct, 2018 9 commits added <code>tl_{functions}callstotidyup</code> ; <code>madercv_{frm}functionforudp</code> ; <code>readjustedmainwithbindingsforudppre</code>
08 Oct, 2018 4 commits fixed typo for <code>sock_createfromcreate_sockfunction</code> ; <code>workpresentationsfromzerothreview</code> ; <code>splituptl_{fun}</code>
10 Oct, 2018 8 commits added bindings of and created <code>tcp_childwithhelperfunctions</code> ; added <code>list_{en}function</code> to calculate length of fl
13 Oct, 2018 14 commits added bindings for <code>udp_connectorinMakefile</code> ; added <code>udp_connectorandblacklistfunctionalityasinbuilt</code>
19 Oct, 2018 6 commits module to handle tcp connections with relay; initialised <code>get_cconnect_backandcalledudp_connectorbeforesock_create</code> ; made few priliminary changes and created a new function; added <code>delayb</code>

Worksheet/ Data Collection / Observation etc	
20 Oct, 2018 6 commits added <code>bcast_processandserver_processalongwithrespectivefunctionsbcstandserverwithPipe()definition</code> ; removed <code>join</code> from <code>broadcast</code> , <code>unthreadcreation</code> for simultaneous execution	
07 Nov, 2018 6 commits renamed <code>tcp_connector</code> function to <code>get_connection</code> , <code>ack</code> to be consistent with the relay, <code>ib</code> and removed <code>astaryi</code> .	
08 Nov, 2018 7 commits learning, <code>s</code> with now uses <code>sprint</code> statement to know which function is being called along with using <code>importlib</code> to import for parsing; made all definitions under comment explaining them, added <code>blacklist</code> <code>[]</code> <code>global</code> list, <code>makeblacklist</code> , <code>path</code> and <code>relay</code> .	
09 Nov, 2018 2 commits a new switch for testing and development; removed compiler warning by adding <code>define NEEDS_STRUCT</code> and <code>socket</code> related includes	
16 Nov, 2018 6 commits example learning, <code>s</code> with for analysis; <code>pox</code> now mounts <code>librelaydir</code> in <code>/pox/ext/librelay</code> folder; now <code>librelay</code> .	
28 Nov, 2018 10 commits added <code>NEEDS_STRUCT</code> definition to <code>finecontroller</code> struct; added <code>sys/socket.h</code> , <code>netinet/in.h</code> and <code>arpa/inet.h</code> <code>NULL</code> if clause	
29 Nov, 2018 8 commits <code>udpchild</code> now takes 1 argument, ie, <code>pipe</code> name and updated <code>open_pipe</code> function; <code>server_working</code> takes <code>argv[2]</code> as argument	
30 Nov, 2018 1 commit cloned <code>pox</code> repo for reference and added to git ignore	
01 Dec, 2018 11 commits now making sure the struct controller is a linked list as opposed to an array of dynamically allocated memory; removed second argument from <code>server_working</code> call; removed <code>normie_node</code> allocation from <code>allocate</code> ; started <code>rewriting</code> list functionality to handle struct controller and struct <code>bcast_msg_node</code> ; rewritten <code>socket</code> create to <code>element</code> in <code>udp_socket</code> being created; new functionality to monitor child processes; now the union list has struct controller as general type too and removed struct <code>normie_node</code> . <code>.pyc</code> files being made in <code>pox/ext</code>	
03 Dec, 2018 4 commits now <code>tcp_server</code> does not use <code>pthread</code> but for <code>each</code> time new client connects and uses linked list for each new client	
06 Dec, 2018 3 commits removed faulty memory allocation while declaring variables in header files; corrected wrong defines in the header files; added mid-holiday review presentations	
14 Dec, 2018 2 commits updated the review presentation; added overview architecture of the project	
15 Dec, 2018 5 commits added new <code>todo</code> replacing the previous; broadcast is work in progress, debating <code>multiprocess</code> vs <code>multi threads</code> ; removed <code>retval</code> from <code>tcpchild</code> and fixed some bugs with node handling; fixed the argument <code>message</code> in <code>main</code> module; removed <code>udp</code> function of <code>rcv</code> from <code>main</code>	
17 Dec, 2018 10 commits <code>mem_mgr</code> source and header as the <code>UnixDomainServer(TCP)</code> for handling all memory transactions for	
21 Dec, 2018 2 commits working on <code>mem_mgr</code> for handling <code>UD</code> requests; removed <code>uint32_t</code> from <code>allocate</code> and <code>deallocate</code> and added <code>size_t</code>	
22 Dec, 2018 12 commits addition in reviews sub-dir; moving review presentations to a sub-directory; ignoring reference papers from now on; added <code>lock_and_exec</code> and <code>alloc_fcall</code> to aid in mutex locking with struct <code>func</code> call; redesigned <code>tcpchild</code> to support threaded flow; removed <code>socket</code> create	
26 Dec, 2018 14 commits updated the makefile; added broadcast function except <code>bnm</code> feature; changes related to changes broadcast and <code>send_pkt_ack</code> prototypes; added <code>free</code> it flag to <code>snd</code> function; added new function <code>list_element</code> to callables in struct <code>func</code> as an argument; fixed <code>mis-leading</code> comment; due to finer level of synchronization, atomic functions that need locking are <code>add</code> , <code>find</code>	
27 Dec, 2018 19 commits fixed a bug in deleting <code>ctrlr</code> node in <code>cli</code> , <code>un</code> and <code>make</code> mutex call * <code>mcall</code> separate for both broadcast and <code>send_pkt_ack</code> ; defined <code>NEEDS_STRUCT</code> and added <code>sys/socket.h</code> , <code>netinet/in.h</code> and <code>arpa/inet.h</code>	
01 Jan, 2019 2 commits moved <code>relay_architecture</code> to <code>reviews</code> dir; added the architecture of relay in <code>open</code> drawing and <code>PDF/A</code> format	

Worksheet/ Data Collection / Observation etc	
02 Jan, 2019 1 commit moved to linux style tabbing methods	
03 Jan, 2019 1 commit restarted controller side develeopment	
08 Jan, 2019 3 commits removed the need of SNO in all tables of network database; created docker image file for remote database handelling server; added database files for all controllers, networks and user information in form of mysql database	
09 Jan, 2019 9 commits global definitions required by every script; server side chores for handelling clients for DB updation; server side chores for handelling clients for DB up- dation; for papers and reviews related to project, refer documentation branch; removed self _a ddrasitcanbefetchedprogramiticallyandaddeddb _i nterfaceaddresstoglobaldeclarations; addedtheupdate _{ab} functionandge	
01 Feb, 2019 6 commits a redo of the main mininet topology; modified update _{ab} functionfortestingpurposes; removedtheneedtohaveglobalvariabledeclarations; changedglobalipdefinations; chang	
02 Feb, 2019 added time module import	
03 Feb, 2019 trial topology	
11 Feb, 2019 datacenter topology; added trial directories of ryu and mininet to ignore list; entrypoint now makes the container boot directly in /topos; development in ryu controller app	
13 Feb, 2019 1 commit default OF1.3 learning sw application	
13 Feb, 2019 restarted relay in python; default OF1.3 learning sw application	
14 Feb, 2019 restarting the work for ctrlr _h andlerfromscratch; Thefinalmininettology, scalable	
17 Feb, 2019 redundant timeline of execution; added support for database to controller scripts in both re- lay switch and ctrlr domains; generic OF12 learning switch; project is now openflow version independent so 13,withtestingnotrequired; generic12learningswitchwithdatabasesupport; theryuimagenowhasmysqldb – python2support; removedcontrollersdatabaseandnetworkdatabasedumpfile; updatemysqldbasedumpfile; removedunnece	
19 Feb, 2019 added root makefile; added mariadb _c ustomastargetfordatabaseMakefile; modifiedryuMakefiletoremovelibrela	
26 Feb, 2019 ignoring the pyc files from relsw _c trlrandrootsw _c trlrdirectories; removedredundantlinetoprineself _{mac} t _o p _o rtdicta	