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PROTECTED INFORMATION RETRIEVAL DESIGNED FORDE CENTRALIZED INTERFERENCE TOLERANT MILITARY NETWORKS

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Abstract:-
Mobilenodesinmilitaryenvironmentssuchasa battlefieldorahostileregionarelikelytosufferfr omintermittentnetworkconnectivityandfrequ entpartitions.Disruption-tolerantnetwork(DTN)technologiesarebecom ingsuccessfulsolutionsthatallowwirelessdevi cescarriedbysoldierstocommunicatewitheach otherandaccesstheconfidentialinformationorc ommandreliablybyexploitingexternalstorage nodes.Disruption-tolerantnetwork(DTN)technologiesarebecom ingsuccessfulsolutionsthatallownodestocom municatewitheachotherintheseextremenetwo rkingenvironments.Typically,whenthereisnoe nd-to-endconnectionbetweenasourceandadestinatio npair,themessagesfromthesourcenode mayneedtowaitintheintermediatenodesforasu bstantialamountoftimeuntil theconnectionwouldbeeventuallyestablished. Theconceptofattribute-basedencryption(ABE)isapromisingapproach thatfulfillstherequirementsforsecuredataretrie valinDTNs.Especially,Ciphertext-PolicyABE(CP-ABE)providesascalablewayofencryptingdata suchthattheencryptordefinestheattributesetth atthedecryptorneedstopossessinordertodecry ptthe ciphertext.Thus,differentusersareallowe dtodecryptdifferentpiecesofdatapertheSecurit ypolicy.

INTRODUCTION

Inmanymilitarynetworkscenarios,connection sofwirelessdevicescarriedbysoldiersmaybete mporarilydisconnectedbyjamming,environm entalfactors,andmobility,especiallywhenthey operateinhostileenvironments.Disruption-tolerantnetwork(DTN)technologiesarebecom ingsuccessfulsolutionsthatallownodestocom municatewitheachotherintheseextremenetwo rkingenvironments[1]–[3].Typically,whenthere is noend-to-endconnectionbetweenasourceandadestinatio npair,themessagesfromthesourcenode mayneedtowaitintheintermediatenodesforasu bstantialamountoftimeuntil theconnectionwouldbeeventuallyestablished. RoyandChuah[5]introducedstoragenodesinD TNswheredataisstoredorreplicatedsuchthaton lyauthorizedmobilenodescanaccessthenecess aryinformationquicklyandefficiently.Manym ilitaryapplicationsrequireincreasedprotection ofconfidentialdataincludingaccesscontrolmet hodsthatarecryptographicallyenforced[6],[7]. Inmanycases,itisdesirabletoprovidedifferenti atedaccessservicessuchthatdataaccesspolicies aredefinedoveruserattributes or roles, whicharemanagedbythekeyauthorities.Forex ample,inadisruption-tolerantmilitarynetwork,acommandermaysto reaconfidentialinformationatastoragenode,wh ichshouldbeaccessedbymembers of“Battalion1”whoareparticipatingin“Region 2.”Inthis

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case,itisareasonableassumptionthatmultiplekey authoritiesarelikelytomanagetheirowndynamicattributesforsoldiersintheirdeployedregionsorechelons,whichcouldbefrequentlychanged(e.g.,theattributerepresentingcurrentlocationofmovingsoldiers)[4],[8],[9].Werefertothis DTNarchitecturewhere multipleauthoritiesissueandmanagetheirown attributekeysindependentlyasadecentralized DTN[10].Theconceptofattribute-basedencryption(ABE)[11]–[14]isapromisingapproachthatfulfillstherequirementsforsecuredataretrievalinDTNs.ABEfeaturesamechanismthatenablesanaccesscontroloverencrypteddatausingaccesspoliciesandascribedattributesamongprivatekeysandciphertexts.Especially,ciphertext-policyABE(CP-ABE)providesascalablewayofencryptingdatasuchthattheencryptordefinestheattributesetthatthedecryptorneedstopossessinordertodecryptttheciphertext[13].Thus,differentusersareallowedtodecryptdifferentpiecesofdataper thesecuritypolicy.

However,theproblemofapplyingtheABEtoDTNsintroducesseveralsecurityandprivacychallenges.Sincesomeusersmaychangetheirassociatedattributesatsomepoint (forexample, Movingtheirregion),orsomeprivatekeysmight becompromised,keyrevocation(orupdate)foreachattributeisnecessaryinordertomakesystemssecure.However,thisissueisevenmoredifficult,especiallyinABEsystems,sinceeachattribute isconceivablysharedbymultipleusers(henceforth,werefertosuchacollectionof usersasanattributegroup).This impliesthatrevocationofanyattributeoranysingleuserinanattributegroupwouldaffecttheotherusersinthegroup.Forexample,ifauserjoinsorleavesanattributegroup,theassociatedattribute keyshouldbechangedandredistributedtoallthe othermembersinthesamegroupforbackwardor forwardsecrecy.Itmayresultinbottleneckduringrekeyingprocedure,orsecuritydegradationduetothewindowsofvulnerabilityifthe previousattributekeyisnotupdatedimmediately.

Anotherchallengeisthekeyescrowproblem.In CP-ABE,ekeyauthoritygeneratesprivatekeysofusersbyapplyingtheauthority'smastersecretkeys tousers'associatedsetofatibutes.Thus,thekeyauthoritycandecrypteveryciphertextaddressedtospecificusersbygeneratingtheirattribute keys.

Ifthekeyauthorityiscompromisedbyadversarieswhendeployedinthehostileenvironments, this could beapotentialthreattothedataconfidentialityorprivacyespeciallywhenthedataishighlysensitive.Thekeyescrowisaninherentproblemevenin themultiple-authoritysystemsaslongaseachkeyauthorityhasthewholeprivilegetogeneratetheirownattributekeyswiththeirownmastersecrets.Sincesuchakeygenerationmechanismbasedonthesinglemastersecretisthebasicmethodformostoftheasymmetricencryptionsystemssuchastheattribute-basedoridentity-basedencryptionprotocols,removingescrowinsingleormultiple-authorityCP-ABEisapivotal open problem.

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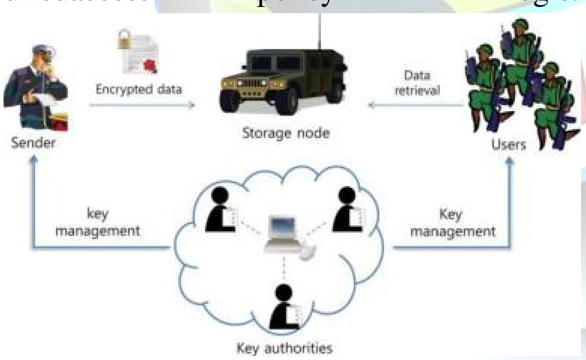
Thelastchallengeisthecoordinationofattributesissuedfromdifferentauthorities.Whenmultipleauthoritiesmanageandissueattributekeystousersindependentlywiththeirownmastersecrets, itisveryhardtodefinefine-grainedaccesspoliciesoverattributesissuedfromdifferentauthorities.Forexample,supposethatattributes“role1”and“region1”aremanagedby theauthorityA,and“role2”and“region2”aremanagedbytheauthorityB.Then,itisimpossibletogenerateanaccesspolicy((“role1”OR“role2”) AND(“region1”or“region2”)) inthepreviousschemesbecausetheORlogicbetweenattributesissuedfromdifferentauthoritiescannotbeimplemented.Thisisduetothefactthatthedifferentauthoritiesgeneratetheirownattributekeysusingtheirownindependentandindividualmastersecretkeys.Therefore,generalaccesspolicies,suchas“-out-of-”logic,cannotbeexpressedinthepreviousschemes,whichisaverypracticalandcommonlyrequiredaccess policy logic.



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1.1ArchitectureOfSecure DataRetrievalIn A Disruption-TolerantMilitaryNetwork

RELATED WORK

Robust Routing in DynamicMANETs

Avarietyofworkhasconsideredtheuseofdisjointroutesinadhocnetworks,including.Inaddition to the overheadcost offindingdisjointpaths,ifanylinkinapathbreaksthenthepathitselfbreaks.Detectionandrecoveryfromfailuresisalsoexpensivesinceitcannotbecarriedoutlocally.Theseconsiderationshavethusmotivatedresearchontheuseofnon-disjointpaths.ThebackuproutingalgorithmofreinforcesthepathselectedbyAODVbyallowingnodesthatoverhearAODVcontrolmessagestobecomepartoftheroutingsubgraph,tobeusedonlywhenlinksontheAODVpathbreak.Proposes ductroutingin mobilepacketradionetworks,wherenodesneighbouringtheprimaryroutemaybeused.Specifically,whensendingpacketstotheithhopnodealongtheprimarypath,oneofeithertheithhopnodeoroneofitsneighbourswillhearthetransmissionfirst.Thefirst nodethathearsthetransmissionwillforwardthepackettothe(i+1)sthopnode;theothernodeswilloverheartheforwardingtransmissionandrefrainfromtransmitting.Consideringanunderwaternetwork,proposesageo-routing meshusingonlynodeswithinagivendistancefromthevectorfromthesourceorcurrentforwardingnodeto thesink. Wenotethat(whenallnodesneighbouringtheprimarypathareused)andbuildroutingsubgraphswhichstructurallycorrespondtowhatwewilldescribeinSectionIVasa1-hopbraid.Braidedmultipathsareproposedintoprotectagainstnodefailure.Abraidedmultipathcorrespondstoselectingaprimary pathandthenaddinganadditionalpathforeachnodeiontheprimarypaththatdoesnotusenode,possiblyreusingpartsoftheprimarypath.Specificallyconsideringreliability,arguesforthereliabilitybenefitsofusingnon-disjointpathsinwirelessmeshnetworks,showinggainsoverdisjointpaths.Considerstheproblemoffindingthemostreliablesubgraphforrouting.Duetothe#P-hardnessofthisproblem,theyproposeamethodtoapproximatelycomputereliabilityandaroutingalgorithmthatleveragesknowncontactprobabilitiesbetweennodepairstoselectaroutingsubgraph.Ideally,foragivensourceanddestination,andspecifiednumberofedgesornodes,wewouldselectthesubgraphthathasmaximum2-terminalreliabilitywhileusingatmostthespecifiednumberoflinksornodes.Computingreliabilityexactly,however,isgenerally#P-complete,asissolvingthecorrespondingoptimization problem.Forall-terminalreliability(theprobabilitythatagraphisconnected),givesarandomizedfullypolynomialtimeapproximationscheme.Forveryreliablegraphs,showsthatonlysmallcutsarelikelytofailandthattherearonlyapolynomialnumberofsuchcuts,otherwiseMonteCarlosimulationmaybeused.The approachincouldpresumablybeusedtoapproximate2-terminalreliability,althoughthis does notefficientlysolvetheoptimizationproblem,norlenditselfeasilytotheoreticalcomparisonsofthereliabilityofdifferentsubgraphs.

Giventhedifficultyofexactlycomputingreliability,exceptforrelativelysimplenetworks,we alsouse Monte Carlo simulationtoestimatereliability.Inadiscrete-timesimulationofatime-varyingnetwork,wecancheckwhetherthereisapathfromthesourcetothedestinationateachtime-step.Theratioofthenumberoftime-stepswhentherewasapathandthetotalnumberoftime-stepssimulatedisthenanestimateoftheprobabilityoftherebeingatleastonepathfromsourcetodestination.Werefertocomputingthereliabilityinthiswayas“computingthereliabilityexperimentally.”

Analysingtheoverheadinmobilead-hocnetworkwithaHierarchicalroutingstructure

InthispaperweevaluateanalyticallytheexpectedoverheadreductiongeneratedbytheroutingprotocolwhenweadoptahierarchicalroutingschemeinMANET.Wespecificallyevaluatetheoverheadincurredbythecurrentroutingprotocols(reactiveandproactive)usedinMANET,then,wemodifytheobtainedmodelstoincludetheparameterstorepresentthehierarchicalstructure(subnet, addressaggregation).Finally,wecomparethesemodelstogetapreliminaryideaof thereductionincurredbyourproposal.ThemainobjectiveofthispaperisnottosolveallthetechnologicalissuesariseninMANETsifsubnettingsolutionsareapproachedbuttoshowthataneffort in that direction is valuable.

Therest of thepaper is organized as follows:agenericdescriptionofthescenariocharacteristicsandthechallengesthatwehavetosolveforintegratingsuccessfully thehierarchicalroutingtoMANETaregivenin

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sectionII.Then,wepresenttheanalyticalmodeloftheoverheadgeneratedbytherouting mechanisms.Finally,wehavetheconclusionsandfuture work.

AntHocNet:AnAdaptiveNature-InspiredAlgorithmforRoutinginMobileAd Hoc Networks

AssimulationsoftwareweuseQualnet.Weranexperimentswithtwodifferentbasesettings.Inthesetting,100nodesarerandomlyplacedinsideanareaof3000_1000m2.Eachexperimentisrunfor900seconds.Datatra_cisgeneratedby20constantbitrate(CBR)sourcessendingone64-bytepacketpersecond.Eachsourcestartssendingatarandomtimebetween0and180secondsafterthestartofthesimulation,andkeepssendinguntiltheend.Atthephysical layeratwo-raysignalpropagationmodelisused.Theradiopropagationrangeofthenodesis300meters,andthedatarateis2Mbit/s.AttheMAClayerweusethe802.11bDCFprotocol.Forthedi_erentexperimentsinthissetting,wevariedthemovementpatternsofthenodes.Wedidtestswiththerandomwaypointmobilitymodel,inwhichwe variedthemaximum speedandthepausetime,andwiththeGauss-Markovmobilitymodel,inwhichweagainvariedthemaximumspeed.TheGauss-MarkovmovementscenariosweregeneratedwiththeBonnMotionsoftware.Parametervalues werekeptasfollows:theupdatefrequencywas2.5,theanglestandarddeviation0.4,andthespeedstandarddeviation0.5.Forthesecondsetting,we usedthesamesetupas wasusedinthescalabilitystudyofAODVperformedbyLee,Belding-RoyerandPerkins.Inthisstudy,thenumberofnodesandthesizeofthesimulationareaarevaried, whilekeepingtheaveragenodedensityconstant (_7:5).Theauthorsdoexperiments with up to 10000 nodes, but duetocomputationalconstraintswelimitedourteststomaximum1500nodes.Theexactvaluesusedforthenumberofnodesandthesizeoftheareaaregiveninintable1.Otherpropertiesofthesimulationsetuparekeptconstantoverthedifferenttestscenarios.Thedatatrafficconsistsof20CBRsourcessendingfour512-bytepacketspersecond.Thenodesmoveaccordingtotherandomwaypointmodel,withaminimumspeedof0m/s,amaximumspeedof10m/s,and apause timeof 30seconds.

Theradiopropagationrangeofthenodesis250meters,andthechannelcapacityis2Mb/s.ThechoiceoftheabovedescribedscenariosisbasedontheresultsobtainedforanearlierversionofAntHocNet,whicharedescribedin.InthatpaperweinvestigatedthebehaviorofAntHocNetinthebasicscenariousedintheinuentialcomparativestudyof. Thisscenario isverydenselypacked,with50nodeswitharadiorangeof300metersinanareaof1500300m2.Insuchanenvironment,withhighinterferenceandveryshortpaths,itisclearthattheadvantagesofmaintainingmultiplepaths,stochasticallyspreadingdata,usinglocalrepair,etc.,donotoutweightheircosts.Asimple,reactiveapproachasAODVisexpectedtobemuchmoree_ective.Inthetestswe ran,itbecameclearthatastheenvironmentbecamemore difficult(more

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mobility,moresparseness,longerpaths),thecharacteristicsofAntHocNetbecameanadvantageoverthoseofAODV,resultinginanincreasingperformancegapinfavorofAntHocNet.Inthispaperwestartfromalargerandsparsernetwork,andinvestigateagaintheeffectofincreasingthemobilityandthesize.Thestudyonlargenetworksisnecessarytovalidatethescalabilityofourapproach.Inthefollowing,algorithmsareevaluated intermsofaverageend-to-enddelayperpacketanddeliveryratio(i.e.,thefractionofsuccessfullydelivereddatapackets).Thesearetwoimportantmeasuresofeffectivenessfor MANETroutingalgorithms.Apartfromthat,wealsoconsiderthedelayjitterandtheroutingoverhead.Delayjittermeasurespacketdelayvariation.ItisametricusedinQoSapplicationsandalsoprovidesameasureofthestabilityofthealgorithm'sresponsetochangesinthenetworktopology.Delayjitteriscalculatedastheaverageofthedifferenceoftheinterarrivaltimebetweensubsequentlyreceivedpackets:ifthelastthreepacketsare receivedrespectivelyatt3;t2;t1,thesession'sjitteriscalculatedasthearithmeticaverageofthe values (t3□t2) □(t2□t1)foralltripletsofreceivedpackets.This definitionofjitterwasproposedin[36]andisusedinQualnetandinanumberofreal-worldroutingdevices.
Theroutingoverheadmeasuresthealgorithm'sinternalefficiencyandiscalculatedas the total numberofcontrolpacketssentdividedbythenumberofdatapacketsdeliveredsuccessfully.

Self-AdaptiveOnDemandGeographicRoutingProtocolsforMobileAdHocNetworks

Theconventionalon-demandroutingprotocols(e.g.,)ofteninvolvefloodinginroutediscovery,whichlimitsthescalability.Toreduceoverhead,LARreducesthefloodingrangebymakinguseofthenodes’positioninformation.Unlike topology-basedroutingprotocols,geographicroutingisbasedonmobilenodes’positions.Existinggeographicroutingprotocolshavemanylimitationsasdiscussedin SectionI.Authorsinattemptedtoremovetheproactivebeaconsingeographicrouting protocols.However,thesimplecontention-basedschemeadoptedmayleadtoredundantpacketforwardingandhighercollisionprobability,andhenceitcannotworkproperlywhenthetraffic loadishigh.Sonetal.Conductsasimulation-basedstudyonthenegativeeffectofmobility-inducedlocationerroronroutingperformance.Instead,weproposetwoon-demandadaptivegeographicroutingprotocolsthatcanmeetdifferentapplicationandtrafficneedsandadapttodifferentconditions.Fixed-intervalbeaconingcommonlyadoptedincurrentgeographicroutingprotocolsmayresultinoutdatedlocaltopologyknowledgeattheforwarding node,whichleadstonon-optimalroutingandforwardingfailure.1)Non-optimalrouting.Fig.1(a)showsanexampleofnon-optimalroutingduetotheoutdatedlocaltopologyknowledge.NodeBjustmovedintoA’stransmissionrange,whichisunknowntoA.WithoutknowinganyneighborclosertothedestinationG,A will

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forwardthepackettonodeCthenDbyusing perimeterforwarding.Theresultedpathhasfive hops,whiletheoptimalpathbetweenAandGshouldhaveonlytwohopsafterB bridgesthevoidbetweenAandG.

2)Forwardingfailure.Inliteraturework,anode willkeepaneighbor'sinformation untiltimeoutevenwhentheneighborhasmoved outofitstransmissionrangeandthetimeoutintervalisoftensetasmultiplebeaconingintervals.Forwardingfailurewillhappenwhenthenodeforwardspacketstosucha"false"neighbor(e.g.,Fig.1 (b))andresultinpacketdroppingorrerouting.Moreseriously,beforedetectingtheunreachability, the continuousretransmissionsatMAClayerwill reducethelinkthroughputandfairness,andincreasethecollisions.Thiswillfurtherincreasedelay andenergyconsumption.Introduce our route optimization schemes.Inbothprotocols,weassumeeverymobilenodeisawareofitsownposition,asourcecan obtainthedestination'spositionthroughsomekindoflocationservice,andpromiscuousmodeisenabledonmobilenodes'networkinterfaces.Inthefollowingpresentation,exceptwhenexplicitly indicated,Frepresentsthecurrentforwardingnode,Disthedestination,NdenotesoneofF'sneighbors,posAisthepositioncoordinatesofAanddis(A,B)isthedistance between nodeAandB.

ACluster-BasedMultipathDynamicSource Routing inMANET

Recently,therehavebeensomeworksonmultipathroutinginadhocnetworks.InTORA,thesourcenodeconstructsmul-tiple routesbyflooding aquerymessage followedbyasetofupdatemessages.However, TORAdoesnothaveanymechanismstoevaluatethequalityofthesemultiplepathsandthisleadstoitspoorperformance.SMRextendsDSRinthe waythatthedestinationcandiscovertwopathsfor eachrouterequest,inwhichoneistheshortestpath,andtheotheristhemaximumdisjointpath.In, A.NasipuriandS.R.DasprovethattheuseofmultiplepathsinDSRcankeepcorrectend-to-endtransmissionforalongertimethanasinglepath.Inotherwords,thefrequencyofsearchingfor newroutesismuch lower ifanodekeeps multiple paths toadestination.ThisisthefirstdeepstudyonperformancebenefitsofmultipathroutinginMANETs.However,theydidnotstudytheperformance improvementofmultipathroutingonnetworkloadbalancing.Theirperformancestudyisbasedontheoreticalanalysis,whereitisdifficulttotakeintoaccounttheinfluenceofnodes'arbitrarymovementsandunreliableradiotransmission.MultipleSourceRoutingprotocol(MSR)proposesaweightedround-robinheuristic-basedschedulingstrategyamongmultiplepaths inordertodistributeload,butprovidesnoanalyticalmodelingofitsperformance.M.R.Perlmanetal.demonstratethatmultipathroutingcanbalancenetworkloadin.Theyalsoproposeadiversityinjectionmethodtofindmorenode-disjointpathscomparedtoDSR.However,their workisbasedonmultiplechannelnetworks,whicharecontentionfreebutmaynotbeavailableinsomeapplicationscenarios.MP-DSRconsidersthedynamicnatureofnetworktopologyaswellastheimportanceto offercontinuous network

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connectionincertainmissioncriticalapplications. Thus,theobjectiveoftheprotocolistoimprovethelevelofservicebyprovidingguaranteewithrespecttoend-to-endreliability,andtoprobabilisticallyguaranteetherequiredconnectionlifetime.Butitdoesnotconsiderthescalabilityproblem.OurCMDSRsolvesthereliabilityproblembyselectivelychoosingmorereliablepathsandbyprovidingsoftguaranteesontheend-to-endreliability.Inaddition,ourprotocolusesthehierarchicalstructurewhichcancopeefficientlywithanincreasingnodedensityandasignificantnumberof nodes.It makes the protocol morescalable.

PROPOSED SYSTEM:

Especially,ciphertext-policyABE(CP-ABE)providesascalablewayofencryptingdatasuchthattheencryptordefinestheattributesetthatthedecryptorneedstopossessinordertodecryptthechiphertext.Thus,differentusersareallowedtodecryptdifferentpiecesofdataperthesecuritypolicy.InCP-ABE,thekeyauthoritygeneratesprivatekeysofusersbyapplyingtheauthority’smastersecretkeystousers’associatedsetofattributes.Thus,thekeyauthoritycandecrypteveryciphertextaddressedtospecificusersbygeneratingtheirattributekeys.Ifthekeyauthorityiscompromisedbyadversarieswhendeployedinthehostileenvironments,thiscouldbeapotentialthreattothedataconfidentialityorprivacyespeciallywhenthedataishighlysensitive.Thekeyescrowisaninherentproblemeveninthemultiple-authoritysystemsas longaseachkeyauthorityhasthewholeprivilege togenerate theirownattributekeyswiththeirownmastersecrets.Sincesuchakeygenerationmechanismbasedonthesinglemastersecretisthebasicmethodformostoftheasymmetricencryptionsystemssuchastheattribute-basedoridentity-basedencryptionprotocols,removingescrowinsingleormultiple-authorityCP-ABEisapivotalopenproblem.

MODULEDESCRIPTION :

1. KeyAuthorities :

Theyarekeygenerationcentersthatgeneratepublic/secretparametersforCP-ABE. Thekeyauthoritiesconsist of a centralauthorityandmultiplelocalauthorities. Weassumethattherearesecureandreliablecommunicationchannelsbetweenacentralauthorityandeachlocalauthorityduringtheinitialkeysetupandgenerationphase.Eachlocalauthoritymanagesdifferentattributesandissues correspondingattributekeys tousers.Theygrantdifferentialaccessrightstoindividualusers basedontheusers’attributes.Thekeyauthoritiesareassumedtobehonest-but-curious.Thatis,theywillhonestlyexecutetheassignedtasksinthesystem,howevertheywouldliketo learninformationofencryptedcontentsasmuch aspossible.

2. Storagenode:

Thisisanentitythatstoresdatafromsendersandprovidecorrespondingaccesstousers.It maybemobileorstatic.Similartothepreviousschemes,wealsoassumethe

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storagenode to besemi-trusted, that ishonest-but-curious.

3. Sender :

Thisisanentitywhoownsconfidentialmessagesordata(e.g.,acommander)andwishestostorethemintotheexternaldatastoragenodeforeaseofsharingorforreliabledeliverytousersintheextremenetworkingenvironments.Asenderisresponsiblefordefining(attributebased)accesspolicyandenforcingitonitsowndatabyencryptingthedataunderthepolicybefore storingit tothe storage node.

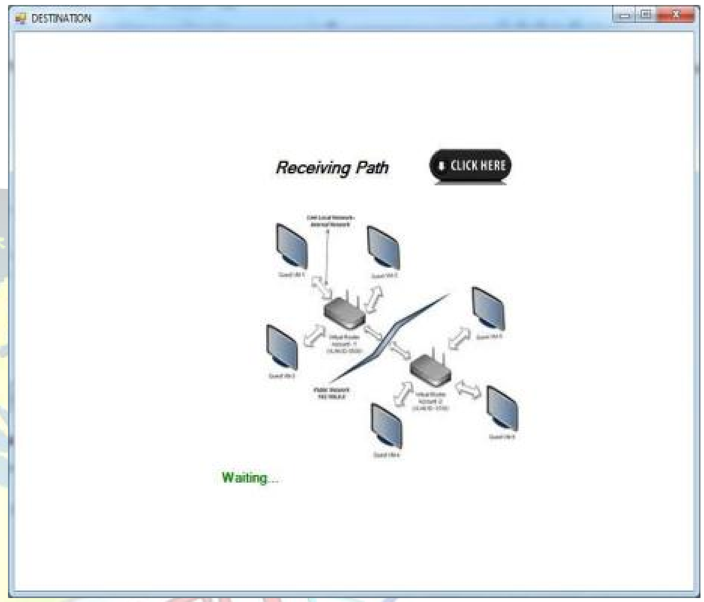
4. Soldier(User) :

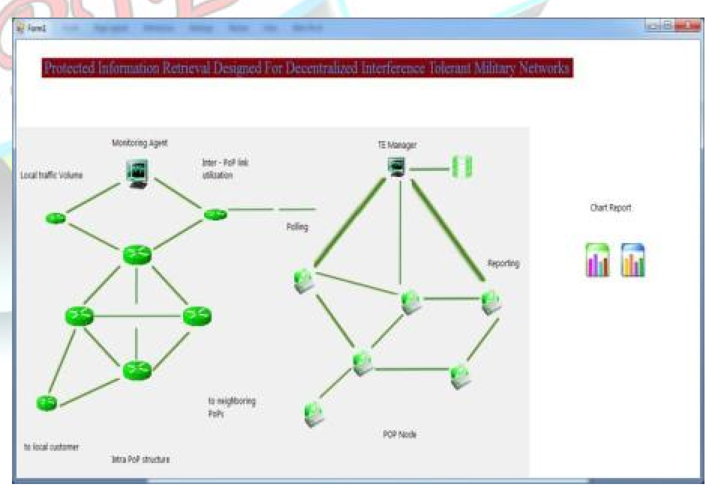
Thisisamobilenodewhowantstoaccessthedatastoredatthestoragenode(e.g.,asoldier). Ifauserpossessesasetofattributessatisfyingtheaccesspolicyoftheencrypteddatadefinedbythesender,andisnotrevokedinanyoftheattributes,thenhewillbeabletodecrypt theciphertextandobtain the data.

5. CP-ABE Method :

InCiphertextPolicyAttributebasedEncryptionscheme,theencryptorcanfixthepolicy, whocandecrypttheencryptedmessage.Thepolicycanbeformedwiththehelpofattributes.InCP-ABE,accesspolicyissentalongwiththeciphertext.Weproposeamethodinwhichtheaccesspolicyneednotbesentalongwiththeciphertext,by whichweareabletopreservetheprivacyoftheencryptor.Thistechniquesencrypteddatacanbekeptconfidentialevenifthestorageserverisuntrusted;moreover,ourmethodsare secureagainstcollusionattacks.PreviousAttribute-BasedEncryption systemsusedattributestodescribetheencrypted dataandbuiltpoliciesintouser'skeys;whileinoursystemattributesareusedtodescribeauser'scredentials,andapartyencryptingdatadeterminesa policyforwhocandecrypt.

SIMULATION





CONCLUSION

DTNtechnologiesarebecomingsuccessfulsolutionsinmilitaryapplicationsthatallowwirelessdevicestocommunicatewitheachotherandaccesstheconfidentialinformationreliablybyexploitingexternalstoragenodes.CP-ABEisascalablecryptographicsolutiontotheaccesscontrolandsecuredataretrievalissues.Inthispaper,weproposedanefficientandsecuredataretrievalmethodusingCP-ABEfordecentralizedDTNs wheremultiplekeyauthoritiesmanagetheirattributesindependently.Theinherentkeyescrowproblemisresolvedsuchthattheconfidentialityofthestoreddataisguaranteedevenunderthehostileenvironmentwherekeyauthoritiesmightbecompromisedornotfullytrusted.Inaddition,thefine-grainedkeyrevocationcanbedoneforeachattributegroup.Wedemonstratehowtoapplytheproposedmechanismtosecurelyandefficientlymanagetheconfidentialdatadistributedinthe disruption-tolerant militarynetwork.

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