

Distinguish Certification Mobile IP to Ranked Mobile IP

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Abstract- Cellular phone IP represents the essential Transportability administration protocol to backing the Transportability in IP-based machines. Although, Cellular phone IP isn't capable for quarantine sensitive Applications. The Quick Certification Cellular phone IP protocol (QICA) is usually recommended to dodge the problems of Cellular phone IP and to contest the necessities of time period Applications. So, QICA doesn't want hierarchic specification as is that the container with best mini Transportability administration protocols, e.g. Rank Cellular phone IP (RCIP). A study show that QICA accomplish kind of like RCIP though the Cellular Nodule (CN) shift inside a site reside of 2 hierarchic slabs solely and surpass RCIP Rather. During the one paper we have a tendency to evolve a close exemplary to examine QICA and distinction it to RCIP. Our subject targets a distinction of the signal price of the 2 protocols. Our study displays that QICA plainly surpass RCIP with honor to the bundle cargo value. What is more, the region amend value though increasing QICA is commensurate to the region amend price exploitation RCIP. Therefore QICA is bigger productive than RCIP with honor to the entire signal price.

Keywords- Index Terms- Fast handout, Transportability administration, Cellular phone IP, Wi-Fi.

I. INTRODUCTION

Most Applications square measure very swamped by the interruption of the communication throughout the amendment from one telephone to alternative. Still, because the user Transportability of IP based Cellular grows and also the telephone size of the machines shrinks, handouts can cause common service layoffs. Consequently the evolvement of Transportability administration solutions is massive dispute in expected IP-based Cellular networks.

Though the Cellular Nodule (CN) respect that the present corporation purpose (CP) is not any longer accessible, it starts to examine the midway for alternative away there rate. At the moment the CN substantiates and re-associates itself with the recently detected CP. The above mentioned process-es square measure referred to as Slab2 handout.No further processes square measure needed if the new CP exits to a similar subnet.

Still, if the new CP exits to alternative subnet, the CN should sight the new Alien Agent (AA) portion the one subnet, sign and substantiate itself with the house Agent (HA) or alternative agent over the one AA. The particular

further processes square measure referred to as Slab3 handout.

There square measure varied outlines to decrease the handout recess over away the amendment betwixt the telephone s. The define to backing Transportability will be principally divided into four categories. The primary category supports international Transportability that is termed giant Transportability. The second category aims at the cut of the time needed to sign with the network by deal with the handout method regionally, e.g. Victimization stratified specification. The one category supports mini Transportability administration. The third category tries to decrease the address call time applying Slab2 knowledge to quicken the Slab3 handout. The fourth category associates the third category with the second category to decrease the address call times and to backing mini Transportability administration.

The remainder of the paper is developed because the succeeding: partly II we tend to support the background and also the relevant work. At the moment we tend to depict the Quick Certification Cellular phone IP protocol (QICA) partly III. The careful exemplary to evolve the signal value is elucidated partly IV. Careful results distinction QICA to stratified telephone information science (RCIP) is given partly V.

II. RELEVANT WORK

In procedure to appliance the Slab3 handout, varied protocols are recommended. With cell phone science version four (MIPv4) [1], [2] or version six (MIPv6) [3], the CN needs to be signed and verified by the angular distance whenever it shift from one subnet to dispartate. The one present more recess to the communication, notably though the angular distance is much removed from the AA. Moreover, the production of hidden keys [4] for the protection corporation betwixt the angular distance and therefore the present AA, and/or betwixt the one AA and therefore the CN is dispartate reason for recess. Even if the one can be ex gratia with CIP, it's extra ordinarily suggested for security reasons. Additionally, the above mentioned keys area unit necessary for a few enlargement of CIP, e.g. CIP with defeat overpoweringly development [5].

Therefore CIP is just appropriate for the administration of world (large)Transportability. So as to dodge the above mentioned sources of extra recess, varied Accesses area unit prompt to backing native (mini) Transportability.

In [6] associate degree Access to use associate degree Anchor AA (AAA) has been prompt. If the CN is far

from the house network, it's going to be originally signed by the angle. Throughout the one registration a common secret betwixt the CN and conjointly the AA (KCN-AA) is entrenched. The AA then acts as associate degree abdominal aneurism. So, in subsequent registrations, the CN is signed at the one abdominal aneurism rather than the angle as long as a result of it remains among identical realm the abdominal aneurism exits to. Throughout the one Access there ought not to get larger hidden keys to substantiate the CN, and no have to be compelled to set up a subway betwixt the angle and conjointly the one AA. Rather, a further subway from the abdominal aneurism to the present AA is entrenched. Nevertheless, the uphold detention on the down link more over as a result of the communication, i.e. the route from angle via abdominal aneurism and present AA to CN and contrariwise, grows contrasted to CIP. A further opposite subway is needed from the one AA to the abdominal aneurism. What's a lot of a subway from the previous AA to the present AA is needed among the case the sleek handout is backed [7].

In a local registration for MIPv4 and in stratified telephone IPv6 are prompt. With the above mentioned protocols the angular distance isn't tuned in to each modification of the purpose of attachment. The one can be because of the actual case that the handout processes are refined regionally by a special nodule, e.g. an Entree Alien Agent (EAA) or Transportability Anchor purpose (TAP), though the CN shift within an exact realm. So, the CN communicates with the angular distance providing it switches the one special nodule. Nevertheless the above mentioned protocols would like stratified spec.

Outline for low recess handouts use a trigger originating from block a combine of (S2-trigger) to anticipate handouts before a transparent stage of the communication system. In ways for pre-registration, post-registration and a combined technique are suggested. So, a Slab3 handout is generate by a S2-trigger. With the pre-registration technique, the CN examines the midway for various cycles if the strength of the signal received from the one CP degrades or if the fault rate grows. If various CP is procurable and the one CP exits to various subnets, a S2-trigger is discharged. The one trigger includes the information science address of the new AA or various address from that the information science address is evolved, e.g. the Macintosh address.

The one prompts the CN to sign with the new AA over the previous one. So, the Slab3 handout is performed whereas the CN accomplish Slab2 handout. The S2-trigger is additionally discharged not alone by the CN, but in addition by the one AA or even a replacement AA, The post-registration technique works as follows: if

the CN respect that the link with the one CP is not able and it's to maneuver to various CP, it starts to examine the offered cycle. Simply just in case the detected CP exits to various subnets, a S2-trigger is discharged. The one trigger informs the one AA concerning the getable modification and thus the CN accomplish a Slab2 handout alone. If the link betwixt the one AA and thus the CN breaks down (receiving a Slab2 Link Down trigger – S2-LD), a two-way subway is entrenched betwixt the previous AA and thus the new one. As a result the bundles destined to the CN are shipped to the new AA over the previous one. Although the Slab2 handout is completed, the CN can sign with the new AA whereas receiving the bundles. So, the CN accept the bundles before the registration. With the combined technique, the CN initial tries to use the pre-registration technique although a S2-trigger is received. If the one fails, the CN employs the post-registration technique to verify a sleek handout.

The simulation results indicate that the temporal property of the trigger choices a significant influence on the handout recess still as a results of the bundle lose rate. Raised recess results if the S2-trigger for pre-registration is detention. Merely simply just in case the Registration Request (RegReq) is born, it's realizable that the one method resorts to the fundamental Slab3 handout ways that, e.g. CIP or RCIP. Additionally, the causes for recess of CIP still keep that's because of the uphold detention betwixt the AA and then the angular distance. Prepared it post-registration is quicker than pre-registration; the impact of detention S2-triggers with post-registration is that constant like pre-registration. Because of the missing CIP registration with the post-registration Access, the bundle detention is larger (uplink and downlink).The combined methodology derives the problems of each Accesses.

In procedure to dodge the negative impact of temporal procedure issues, associate improved Access has been counseled. Throughout the one Access the CN informs the one AA regarding the modification and signs with the new AA over the recent one, quite just like the pre-registration Access. Withal, the recent AA aheads the bundles on to the new AA where as not expecting a S2-LD trigger. So, the negative impact of the temporal procedure of the S2-trigger is smaller than with the alternative waythat.

The Seamless mobile phone field (S-CIP), steered decreases verbal description field registration time by suggests that of a hierarchal spec. what is more it uses the Slab2 data to quicken the Slab3 handout. S-CIP presents a spanking new entity called decision Engine (DE) to control the handout methodology. Though the CN reaches the boundary of the telephone, it informs the one

corporation Router (CR) regarding the modification and regarding the addresses of the new detected CRs. the one metallic element informs the primary State and additionally the new CRs regarding the modification. Succeeding the one, the modification of the CN is half-tracked by the primary State to accurately conceive to that metallic element the CN will move. Though the primary State determines the new metallic element it informs the recent metallic element and additionally the choice collaborating CRs regarding the selection. Then the bundles square measure shipped to the recent and additionally the new metallic element until the primary State is abreast of by the new metallic element that the CN has finished the handout.

III. CELLULAR PHONE IP QUICK CERTIFICATION PROTOCOL

In procedure to dodge the issues of CIP with no ought to insert middle knots betwixt the AA and conjointly the hour angle, fast Certification mobile phone science protocol (QICA) has been steered. The Primary arrange of QICA is that the hour angle delegates the certification to the AA. As a result the CN substantiates itself with the AA and with the hour angle. Withal the one happens at intervals the AA. That the CN sends RegReq to the AA, that in turn precisely replies by feat a Registration Reply message (RegRply) to the CN. Once receiving the RegRply, the CN can resume the communication on the communication. In downlink a subway is entrenched to ahead the bundles, incoming at the previous AA, to the new AA until the hour angle is acquainted regarding modification and a subway from the hour angle to the one AA is entrenched to ahead the bundles on to the new AA. That the detention versatile from the communication betwixt the new AA and conjointly the hour angle is eliminated, a similar because the mini Transportability protocols. What is more the time needed to create degree IPsec subway, if needed, is dodged.

The native certifications by AAs rely upon on class of neighboring AAs. every AA characterizes a collection of neighboring AAs referred to as a Slab3 Common Handout Region (S3-CHR).The above mentioned S3-CHRs is work away statically by suggests that of Primary algorithms (e.g. neighbor graph or others), or dynamically by the network itself, by perceptive the switches of central nervous system. Usually the S3-CHR of a AA consists of a tiny low range of AAs contrasted to the complete range of AAs the CN might hook up with. Each AA characterizes its own S3-CHR. The S3-CHR

doesn't essentially encompass all of the adjacent AAs, e.g. within the case of physical obstacles betwixt the areas that stop a move betwixt the adjacent AA areas.

There is a security corporation betwixt the AAs in every S3- CHR. The one security corporation is entrenched statically, e.g. by the network administrator, or dynamically, e.g. by the network itself as represented in [4], [5].

Figure. One describes the essential operation of QICA. Where as the CN communicates with the present AA, the one AA sends announcements to all or any of the AAs within the S3-CHR the present AA exits to. The above mentioned announcements contain the protection corporations betwixt the CN and therefore the AAs during the one S3-CHR on one aspect and betwixt the AAs and therefore the hour angle on the opposite aspect. The one security corporations square measure recorded in soft state and can be employed by one in all the AAs within the expected and deleted from the others. What is more the above mentioned announcements contain the attributes of the hour angle and therefore the certification costs (betwixt the CN and therefore the HA) the CN needs to generate within the next registration with expected AA. The above mentioned announcements square measure corroborated by suggests that of the protection corporations entrenched betwixt the AAs.

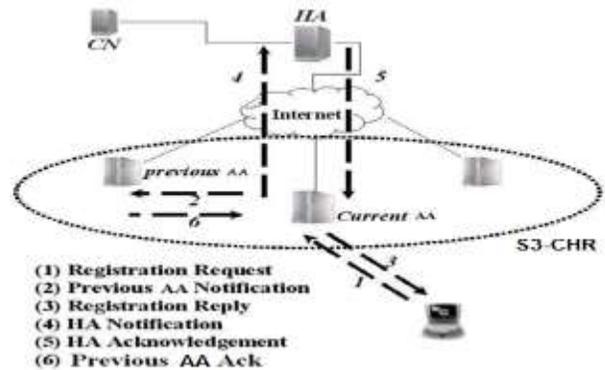


Figure. 1. Primary operation of QICA

Although the CN shift to a minimum of one in every of the AAs inside the S3-CHR, to it the previous AA exits to, it sends a RegReq message to the present AA. The one new AA first checks the certification betwixt itself and conjointly the CN.

The certification is checked applying the protection corporation sent from the previous AA with the announcement. Later on, the new AA checks the QICA data that displays the certification data betwixt the CN and conjointly the angular distance. The new AA then checks if the requirements requested from the angular distance is happy. The one can be done applying the attributes of the angular distance received

with the announcement. If the certification succeeds, the AA builds a previous AA Announcement message to inform the previous AA that it's to ahead the bundles, sent to the CN, to the new AA. Afterwards the new AA sends Registration Reply to the CN. At presently the CN can resume communication in communication. What is more the new AA sends a angular distance Announcement message to inform the angular distance concerning the new conclusive. In turn the angular distance establishes a replacement subway to the new AA. The angular distance subways the bundles to the new AA. As a result of the announcement of the previous AA, the time to inform the angular distance concerning the new conclusive and to set up a replacement subway is hidden from the appliance.

In an elaborate exemplary to gauge the accomplishment of QICA contrasted to RCIP has been given. The one study show that the handout recess of QICA is freelance of the space betwixt the new AA and also the HA. QICA accomplish almost like RCIP though the realms consists of 2 graded slabs solely, i.e. an EAA at the primary level and also the AAs at the second level, and surpass RCIP or else. The most advantage of QICA is that QICA doesn't want graded spec as RCIP will. Moreover, QICA progress the handout method regionally while not introducing any middle nodule betwixt the AA and also the HA. Therefore QICA may be a protocol to manage international Transportability, almost like CIP, yet as native Transportability, almost like RCIP.

IV. SIGNAL FUNCTION

In the one half we tend to are attending to evolve the signal value perform to gauge the impact of QICA on the network and to distinction it to RCIP. The complete signal costs encompass the region amend value and so the bundle uphold aloft. We tend to tend to oversight the repeated conclusive sent from the CN to refresh the cache at intervals the AA for every protocol, QICA and RCIP.

IV.A Primary Hypothesis

In structure exemplary the signal price we tend to tend to believe that the CN shift at intervals two realms, realm a and b. the amount of knots of the above mentioned two realms is D. we tend to tend to believe that each realm include D/2 knots. Each nodule symbolizes a Transportability agent, i.e. AA

So as to exemplary RCIP, the Transportability agents in each realm square measure structured in associate passing stratified aspect. Each

Transportability agent is disciplined by one in each of the 9 Regional Alien Agents (RAA). The above mentioned RAAs unit of measurement disciplined by a EAA. So we have three stratified slabs reside of the Transportability agents, the RAAs, and conjointly the EAA. If the CN shift betwixt two Transportability agents disciplined by constant RAA, the CN ought to amend its conclusive throughout the one RAA alone. All the same, the CN ought to amend its conclusive at intervals the EAA although it shift betwixt two Transport-ability agents disciplined by all completely disparate RAAs at intervals the realm. The CN ought to contact its angle to switch the Care-of-Address (CoA) although it switches the realm. Fig. 2 describes the stratified configuration for D=18 and 9=3.

So as to exemplary the QICA protocol, the Transportability agents unit of measurement divided into S3-CHRs. each Transportability agent characterizes a precise S3-CHR. the amount of Transport-ability agents in eachS3- CHR rely upon on the state of the one Transportability agent and may not be constant for all of the S3-CHRs. we tend to tend to characterize that the amount of the Transportability agents in each S3-CHR is N where zero < N <= D. Fig. 3 displays the configuration divided into S3-CHRs for D=18.

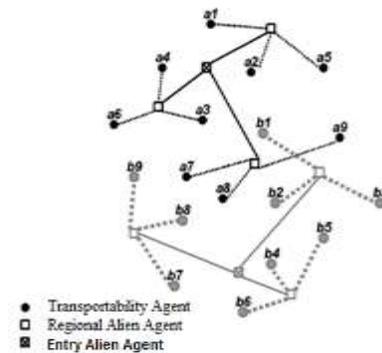


Figure. 2. Ranked stratified configuration

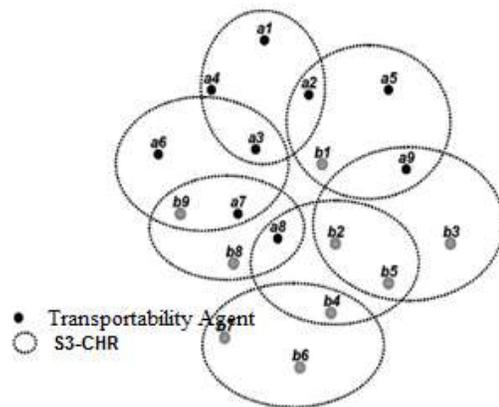


Figure. 3. Stratified configuration divided into S3-CHRs

Although the CN shift from a precise Transportability agent to dispartate, the likelihood that the CN can move to 1 of the opposite D-1 knots isn't an equivalent. Really the system can prohibit their modification to 1 of the Transportability agents settled within the neighborhood despite the used configuration. So as to judge the signal price of RCIP relating to the one, we tend to believe that the CN will move from a given Transportability agent to N-1 others. We tend to believe that K away of the N Transportability agents belong to an equivalent realm and N-K Transportability agents belong to dispartate realm. We tend to believe that c of the K Transportability agents area unit disciplined by an equivalent RAA, whereas K-c Transportability agents area unit disciplined by dispartate RAAs within the realm. Figure. Four show the hierarchal configuration for N=9, K=6 and c=3.

We infer that the CN can move in discriminatedly betwixt N subnets with a equal likelihood. The CN might visit the subnet larger than once and it will recede and forth betwixt 2 subnets. We tend to infer that the common time the CN can pay within the region of every Transportability agent is tantulum.

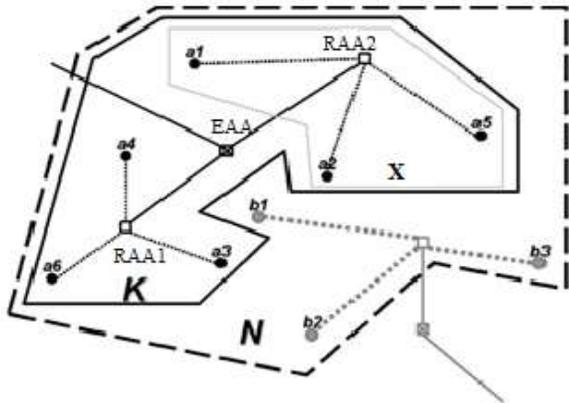


Figure. 4. Neighbouring Transportability agents

IV.B Region Amend Value

We characterize the succeeding guideline to cipher the region amend value: 100 10, y symbolize the communication price of a district amend betwixt nodule x and nodule y. D x, y denotes the area betwixt the two knots x and y with honor to the number of hops. Ax symbolize the refinement price of the region amend at nodule x.

b. 1 Region Amend Value for RCIP

The CN might amend its conclusive within the RAA, EAA or angular distance throughout the amendment in an exceedingly sure realm. Denote the

price of the conclusive amend within the RAA as X_{H-LU-R} , within the EAA as X_{H-LU-G} and within the angular distance as X_{H-LU-H} . The terms X_{H-LU-R} , X_{H-LU-G} and X_{H-LU-H} are given in (1), (2) and (3), independently.

$$X_{H-LU-R} = 2*(X_{CN,AA} + X_{AA,RAA}) + 2*a_{AA} + a_{RAA} \quad (1)$$

$$X_{H-LU-G} = 2*(X_{CN,AA} + X_{AA,RAA} + X_{RAA,EAA}) + 2*(a_{AA} + a_{RAA}) + a_{EAA} \quad (2)$$

$$X_{H-LU-H} = 2*(X_{CN,AA} + X_{AA,RAA} + X_{RAA,EAA} + X_{EAA,HA}) + 2*(a_{AA} + a_{RAA} + a_{EAA}) + a_{HA} \quad (3)$$

The communication value $X_{x,y}$ on the wired network is comparable to the distance $D_{x,y}$ with comparable constant δ_D . So we can write

$$X_{x,y} = \delta_D * D_{x,y} \quad (4)$$

Nonetheless, the communication value times larger than on the wired link. So, on the Wi-Fi link is ρ we will write the one value as in (5).

$$X_{CN,AA} = \rho * \delta_D \quad (5)$$

The regions amend value for the three cases précised by (1), (2), and (3) are as follows:

$$X_{H-LU-R} = 2* \delta_D (\rho + D_{AA,RAA}) + 2*a_{AA} + a_{RAA} \quad (6)$$

$$X_{H-LU-G} = 2* \delta_D (\rho + D_{AA,RAA} + D_{RAA,EAA}) + 2*(a_{AA} + a_{RAA}) + a_{EAA} \quad (7)$$

$$X_{H-LU-H} = 2* \delta_D (\rho + D_{AA,RAA} + D_{RAA,EAA} + D_{EAA,HA}) + 2*(a_{AA} + a_{RAA} + a_{EAA}) + a_{HA} \quad (8)$$

We characterize the activity the CN assassinate though exciting from one subnet (or Transportability agent) to varied a "switch". The one modification is sculptured as a separate system. Believe a variant M denoting the amount of switches of a CN betwixt Transportability agents. The switch's m is numbered one to M. once modification one the CN can reside in one of the D knots. If the one nodule is nodule one, thus throughout modification a attempt of the CN can move to a minimum of 1 in each of the N-1 neighboring knots. If the one nodule is nodule a attempt of. Nodule a attempt of may well be a nodule disciplined by identical RAA, that additionally oversight nodule one, or a nodule disciplined by numerous RAA Nevertheless identical EAA, or a nodule from numerous realm, i.e. disciplined by numerous EAA. We've got an inclination to tend to believe that the CN can move to a minimum of 1 in each of the above mentioned N-1 knots with equal probability $(1/N-1)$.

The possibility that the CN can amend its conclusive at intervals the angle at modification m=1 is $P_{HA-1}=1$,

where as the one chance at modification $m=2$ is $P_{HA-2}=(N-k/N-1)$. The likelihood that the CN can amend its conclusive at intervals the EAA at modification $m=1$ is $P_{EAA-1}=0$. All identical, the one chance at modification $m=2$ is $P_{EAA-2}=(k-c/N-1)$. The likelihood that the CN can amend its conclusive at intervals the RAA at modification $m=1$ is $P_{RAA-1}=0$, whereas the one chance at modification $m=2$ is $P_{RAA-2}=(c-1/N-1)$.

IV.C.Bundle cargo value:

So as to live the bundle product value, we have a bent to believe the succeeding guideline: $T_{x,y}$ denotes the communication value of the bundle product betwixt nodule x and nodule y . V_x symbolize the refinement value of the bundle product at nodule x .

IV.C.1 Bundle cargo value for RCIP:

Although increasing RCIP, the bundles square measure shipped from the Comparable Nodule (CN) to the angle, that deflect and subways them to the signed EAA. The EAA in turn deflect the above mentioned bundles, de-subways them, and aheads the above mentioned bundles over a replacement subway to the portion RAA that in turn aheads them to the one AA.

The one AA de-subways the bundles and sends them on the Wi-Fi link to the CN. So, there is a lot of value for the bundle wares due to the one trilateral defeat irresistibly. The bundle wares value includes the communication value and so the purify-cation value needed by the engage entities to route, subway, and de-subway the bundles. We've got an inclination to ponder the bundle wares value a bundle incurs on its route from the CN to the CN. That the bundle wares values accomplish $X_{RCIP-PD}$ could also be given in(9):

$$X_{RCIP-PD} = V_{HA} + V_{EAA} + V_{RAA} + V_{AA} + T_{CN,HA} + T_{HA,EAA} + T_{EAA,RAA} + T_{RAA,AA} + T_{AA,CN} \quad (9)$$

Similar to the Hypothesis pretended among the region amend price, the communication price $T_{x,y}$ on the wired link is comparable to the gap $D_{x,y}$ with comparable constant δU . So we'll write the communication price per live as in(10):

$$T_{x,y} = \lambda_a * \delta U * D_{x,y} \quad (10)$$

As pretended on huge off, we've associate degree inclination to believe that the communication value on the Wi-Fi link is ρ times bigger than on the wired link. The refinement value at the EAA includes the

encapsulating of the subway bundles shipped from the angle, checking the human list to set up if the CN has accolade entry, re encase the bundles to ahead's them to the portion RAA, and administration of the defeat irresistibly to the one portion RAA. The refinement costs on the EAA rely upon on the amount of the system at intervals the realm and on the amount of RAAs it serves, whereas the refinement value on the RAA rely upon on the amount of the central system a nervous add prepared from it and on the amount of the AAs it oversight. If the amount of the central system a nervous in each subnet is w on the common, the amount of AAs prepared by every RAA is ϵ , so the vary of RAAs prepared by the EAA is ϑ . that the complexness of the EAA human list search is comparable to $w * \vartheta * \epsilon$, whereas the complexness of the RAA human list search is comparable to $w * \epsilon$.

The data science defeat irresistibly table search rely upon on the tall adjunct identical. So, for the roomy used ancient Patricia tire the complexness of information science address lockup is comparable to log of the length of the defeat irresistibly table. As a result the bundle refinement value functions at the EAA so the RAA per unit of it slow is computed from (11) and (12) independently.

$$V_{EAA} = \xi_1 * \vartheta * \lambda_a * (\alpha_1 * w * \vartheta * \epsilon + \beta_1 * \log(\vartheta)) \quad (11)$$

$$V_{RAA} = \xi_2 * \epsilon * \lambda_a * (\alpha_2 * w * \epsilon + \beta_2 * \log(\epsilon)) \quad (12)$$

Where λ_a is that the barrival rate of the CN. α and area unit weight AA actors of traveler list and defeat irresistibly ξ table lookups. May be a constant and precise the information measure distributed value. The purification price at the hour angle and also the AA per quantity, which ends from the encapsulating, de-capsulation, and uphold of the bundles are often evolved from (13) and (14) independently.

$$V_{HA} = \eta_1 * \lambda_a \quad (13)$$

$$V_{AA} = \eta_2 * \lambda_a \quad (14)$$

Where η_1, η_2 square measure constants that categorical the bundle cargo value at the HA and therefore the AA, independently. That the Complete bundle cargo value per unit time is:

$$X_{RCIP-PD} = \lambda_a * (\eta_1 + \eta_2 + \xi_1 * \vartheta * (\alpha_1 * w * \vartheta * \epsilon + \beta_1 * \log(\vartheta)) + \xi_2 * \epsilon * (\alpha_2 * w * \epsilon + \beta_2 * \log(\epsilon))) + \delta U * (D_{CN,HA} + D_{HA,EAA} + D_{EAA,RAA})$$

$D_{RAA,AA+\rho}$) (15)

IV.C.2 Bundle cargo value for QICA:

The bundle cargo value although using QICA is the equal as although using CIP. So we can precise the one value as in (16):

$$X_{QICA-PD} = V_{HA} + V_{AA} + T_{CN,HA} + T_{HA,AA} + T_{AA,CN} \quad (16)$$

Where the refining value at the HA and at the AA can be evolved from (13) and (14), while the communication value can be evolved from (10)

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