

Automatic Fault Control System For Resource Utilization in Desktop Grid Middleware

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Abstract— Desktop grid Grid Computing is extremely concerned and Research aslant Area. Full utilization of Resources is primary objective in desktop grid middleware. In Our Research work, we are focusing on the correct fault free use of accessible Resources. Desktop grid is useful to amass the possible Processing Power. We watch Desktop framework act same as virtual supercomputer. Alchemi Desktop network middleware has most tribulations in programming, middleware and equipment. These tribulations are required to perceive, address, and fathom. Execution of the running desktop network diminishes because of deficiencies and failures. In our exploration, we recognized these shortcomings at executor level in Alchemi desktop grid middleware and proposed programmed framework to control faults in Alchemi desktop grid middleware. This Research work is proposing the product based programmed system in open source Alchemi desktop grid Middleware. Programmed structure Provide the automatic backing to middleware to protect accessible Processing Power Decision of the Alchemi desktop middleware is because of backing for Microsoft window environment. Proposed Programmed system has tried on directly connected nodes in Alchemi desktop middleware. This Research work has built an Automatic Software structure. It can complete its task in milliseconds. It will defeat the manual Procedure for handle the shortcoming in Executor tribulations in Alchemi desktop grid middleware. It will encourage the researchers to develop the automatic code in the area of grid computing to handle the faults automatically.

Keywords- Automatic, Processing Power, Alchemi, Executor, Middleware

I. INTRODUCTION

We are moving forward in network processing in twenty first century .Grid Computing is extremely monstrous part for exploration work. The grid promises to essentially transform the way we believe about and use computing [4]. Alchemi Desktop grid middleware depends on the scattered processing system where unique kind of tribulations can be comprehended. Alchemi Desktop grid middleware is exceptionally particular and noteworthy class in framework [7]. Desktop middleware cannot disregard because of its ease of use. Loads of the advancements created step by step. There is requiring to add to the new programmed structure to control deficiencies in desktop middleware. There is have to utilize the innovation which can work in the current foundation. Desktop network can separate into two classifications .Initial sort is known as nearby kind. In nearby sort desktop frameworks focus on hubs at one spot, where we can use network. The available framework has essential part in development of Desktop Grid. Volunteer desktop framework is second sort .It can work in worldwide environment. Monstrous quantities of hubs contribute in the whole world. Operational area of overall framework is expansive. This Research discovers the desktop network is pragmatic at level of college, establishment and association. On the off chance that we register the asset, then we find enormous number of computational grid is accessible in tremendous number of associations. It is extremely difficult to Proper use of handling force. Force of Desktop grid middleware relies on upon the accessible framework [6]. Asset can enter as benefactor whenever in the desktop network middleware and leave at whatever time in same way. Desktop framework is more adaptable on the grounds that it can use according to necessity. The Grid provides a clear idea of what computational grids are, why we necessitate them, who will utilize them, and how they will be programmed [4]. Supercomputer is huge name in zone of computational world. Supercomputer is known as because of its quick and high limit speed .The principle issue is the expense and the necessity. Each individual can't purchase the supercomputer .In light of the fact that the expense is a lot of and some time our prerequisite is not very enormous with the goal that it require the supercomputing. An assortment of thousand nodes can execute applications that promote can carry out on rapid and expensive supercomputer [11].

II. ALCHEMI DESKTOP GRID

Alchemi middleware [8] assume a critical part in the field of desktop computational grid. Alchemi is .net based desktop registering structure which is useful to build the desktop based network in window environment and give the ground to develop the application [7].Alchemi was the piece of grid bus framework, however give great stage to build the desktop grid for research. Detection method Based on Heartbeat in Grid system use for more

trustworthiness [9]. Basically Alchemi middleware consider asset utilizing and asset sharing to executing the jobs or strings on the diverse executing units.alchemi is open source middleware which have numerous favorable circumstances that is one of the motivations to choose Alchemi middleware in our Research. A percentage of the key focuses below.

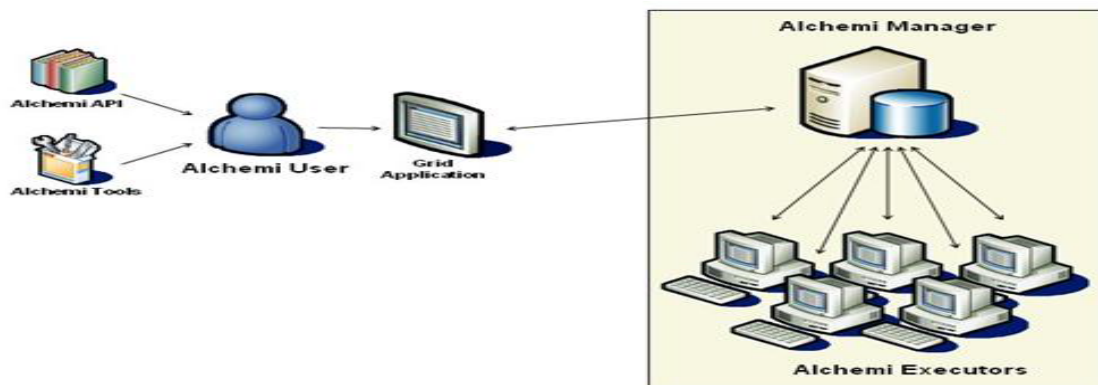


Figure 1 - Desktop grid configuration of Alchemi.net

III. FAULTS IN DESKTOP GRID MIDDLEWARE

A desktop framework based network is an equipment and programming foundation that gives tried and true, steady, pervasive, and give the high computational preparing processing power. In the grid figuring field desktop network is most appreciated. It gives the using so as to raise preparing Power. The bunches of machine for a given issue at viable pace .i.e. preparing processing power is contrarily corresponding to execution time .Higher force implies less execution time. This idea gives a level to execute application by in presence of abnormal state handling processing power. However, computational grid systems are extremely composite and prone to failures [10]. Today accessible PCs are all the more effective. Today desktop machines are fast in the event that we contrast it with past time. The essential inquiry is that where we are utilizing this handling force of the current machines [6]. In grid registering desktop is great stage to utilize the force of assets in neighborhood or at level of the web. The other principle point that it doesn't require to fabricate the new assets i.e. it can work in the current machines .the level of the Processing power will relies on upon the Processing Power gave by the current machines. Deficiencies and disappointment are the basic issue in the grid computing [2]. We know deficiency or disappointment is in charge of making down the any framework in the grid. one primary explanation for that desktop grid depends on the system .even the shortcoming in the system will likewise impact the running network at any level .Harm of the data may be from 0 to 100 percent .so we can't keep running with the current flaws. We can't overlook the current deficiencies .we additionally the flaws are capable for a major disappointment in the desktop network [5]. Nature of issues or disappointment may be diverse which can partitioned into the distinctive catagories.what ever the classification is flaw is perilous for running desktop grid. less will be the shortcomings ,higher will the execution of jobs in grid .It means deficiencies in the desktop grid are the conversely relative to the execution of the desktop network. Assets in the machine in the desktop grid may go down whenever, processor level, memory level which are the benefactor in the framework .so it will likewise diminish the execution of the desktop grid. Users assume additionally great part to make issue in the grid .human blunder might likewise be purpose behind stop the running framework. User can likewise make an error when utilizing the framework, which can interfere with the running grid. Desktop grid depends on the nearby level and volunteer level or worldwide level ,means system assume a critical part in the desktop grid .the greater part of the issues are made in the desktop framework is because of issue in the system. Techniques of Fault tolerance Make of verdict of errors in grid resources and it suggests revival to sanction calculation [3].Controlling the system level issue diminish the likely blames in the running framework. Desktop network depends on the commitment of the numerous machines that as of now exists, machine can end whenever. So less number of assets means less intense desktop grid. Desktop framework middleware depend on the heaps of Forms. Flaw in Executor will affect on the accessible Processing Power in desktop grid middleware. We find in the administration organizations, instruction field, corporate field we have heaps of force of resources. Still we are not utilizing .what is utilization of existing force of asset. A large number of the issues in the exploration range or science territory require high processing to execute the issue or application [5]. Desktop network can assume the helpful part all things considered. Still we are squandering the force that we have, of the assets. Machine level issue can make the issues in the running desktop grid .It can stop the procedures around grid middleware.

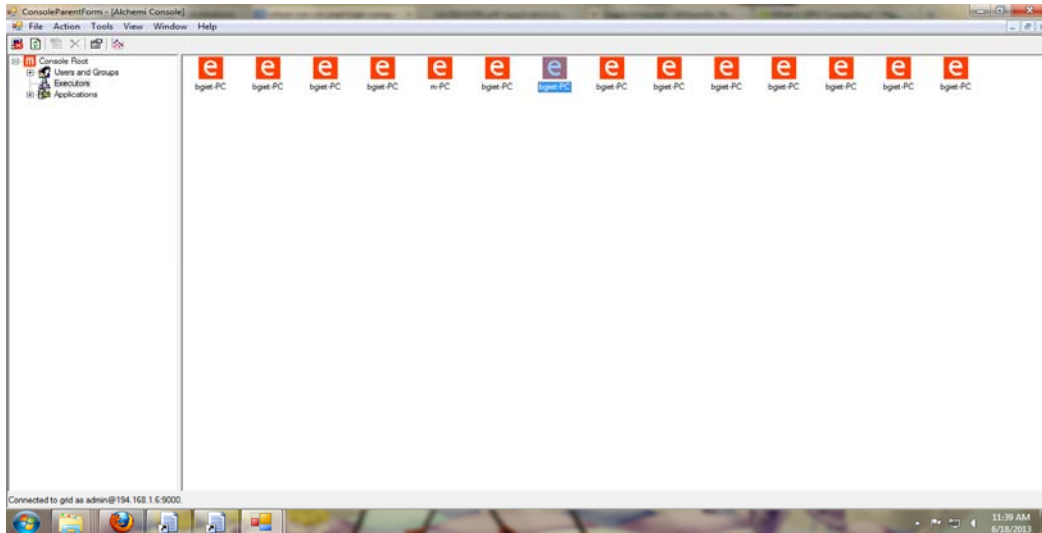


Figure 2- Screen Shot of Alchemi Console 14 Executors in Local Area Network

IV. PSEUDOCODE OF PROPOSED AUTOMATED FRAMEWORK

In our exploration, we are concentrating on utilizing the neighborhood i.e. intranet environment of the desktop framework by utilizing the Alchemi middleware, which can introduced in the exploration lab to make the desktop grid middleware and accommodating to locate the continuous issue in the range of the desktop network. Blames free asset usage will accommodating for the execution of the desktop network. We are utilizing the Alchemi middleware desktop network. Concentrate on the best possible usage of the assets. We are concentrating on outlining the product based system as opposed to human based manual discoveries. Mechanized arrangement will supportive for take the immediate arrangement as indicated by the issue. In our Experiment, we are utilizing the desktop grid middleware. It will utilize the current assets which will cost in exploration .No compelling reason to include or buy any new asset. Commitment of existing assets will cost in the field of the grid computing.

namespace Alchemi

public partial class Form1 Form

public Form1

InitializeComponent

private void Form1 Load (object sender, EventArgs e)

int chk

Text Reader machine Info

string private string[] domains

private string userName

private string password

zero assigned to private int check Remote Process

private string machineName

Computer Name Description Name Priority ProcessID SessionId assigned to

private string column Names

new Hashtable assigned to private Hashtable hs

private Management Scope my Scope

private Connection Options conn Options

private Management Object Searcher obj Searcher

private Management Operation Observer ops Observer

private Management Class manage Class

private Boolean Connect To Remote Machine string user Name string password string machine Name

userName equal to administrator //txt User NameText Trim

password equal to sa //txt Password Text Trim

machineName equal to 193.166.1.2 // cmd Machines In Domain Text

```

try
new Connection Options assigned to conn Options
Impersonation Level Impersonate assigned to conn Options Impersonation
True assigned to conn Options Enable Privileges
if machine Name To Upper equal to Environment Machine Name To Upper
new ManagementScope @ \ROOT\CIMV2 connOptions assigned to my scope
else
machineName + \\ + userName assigned to connOptions Username
password assigned to connOptions.Password
new Management Scope @ \\ + machine Name + @\ROOT\CIMV2 conn Options assigned to my scope
my Scope Connect function
new Management Object Searcher Select from win32 Process assigned to obj Searcher
new Management Operation Observer assigned to opsObserver
my Scope assigned to objSearcher Scope
\n \t assigned to string sep
Zero assigned to checkRemoteProcess
For each Management Object obj in objSearcher Get
obj GetText TextFormat Mof assigned to string caption
caption Split sep StringSplitOptions.RemoveEmptyEntries assigned to string[] split
for int i equal to 0
i less than split Length
i++
if split[i] Split equal to Length greater than 1
split[i].Split('=') assigned to string[] procDetails
procDetails[1] Replace @"""" "" assigned to procDetails[1]
procDetails[1].Replace ';', ' ' assigned to procDetails[1]
switch proc Details[0] Trim To Lower
case caption
procDetails[1] assigned to dr dc[0]
Message Box Show procDetails[1]
private void start Process on Remote PC object str Process Name string user Name string password
string machine Name
try
string userName password machine Name
userName as administrator
password as joomla
machineName as 193.166.1.2
new ConnectionOptions assigned to connOptions
Impersonation Level Impersonate assigned to connOptions Impersonation
True assigned to conn Options Enable Privileges
if machine Name To Upper equal to Environment Machine Name To Upper
new Management Scope @\ROOT\CIMV2 conn Options assigned to my scope
else
machineName + \\ + userName assigned to conn Options Username
password assigned to conn Options Password
new ManagementScope@ \\ + machineName + @\ROOT\CIMV2 conn Options assigned to my scope
my Scope Connect function

```

```
new Management Class my Scope new Management Path Win32_Process new Object Get Options assigned to
manage Class
manage Class InvokeMethod Create str Process Name
catch Exception ex
Message Box Show ex To String
public static void Shut down string machine Name string username string password
null assigned to ManagementScope Scope
null assigned to ConnectionOptions ConnOptions
null assigned to ObjectQuery ObjQuery
null assigned to Management Object Searcher Obj Searcher
try
new ConnectionOptions assigned to ConnOptions
ImpersonationLevel Impersonate assigned to ConnOptions Impersonation
True assigned to Conn OptionsEnable Privileges
local computer
if machine NameTo Upper equal to Environment Machine Name ToUpper
new ManagementScope@ \ROOT\CIMV2 ConnOptions assigned to scope
else
remote computer
User name assigned to Conn Options Username
Password assigned to Conn OptionsPassword
new Management Scope@ \\ + machineName + @ \ROOT\CIMV2 Conn Options) assigned to scope
Scope Connect
new Object Query SELECT FROM Win32 OperatingSystem assigned to ObjQuery new Management Object
Searcher Scope Obj Query assigned to Obj Searcher
foreach Management Object operating System in Obj Searcher Get
Message Box Show Caption operatingSystem Get Property Value Caption
Message Box Show Version operatingSystem Get Property Value Version
Operating System Invoke Method assigned to Management Base Object out Params
Message Box Show
catch Exception ex
Message Box Show ex To String
public void set IP string IP Address string Subnet Mask string Gateway
new Management Class
Win32 Network Adapter Configuration assigned to Management Class obj MC
Obj MC Get Instances assigned to Management Object Collection obj MOC
For each Management Object obj MO in obj MOC
if bool obj MO IP Enabled
continue
try
null assigned to Management Base Object obj New IP
null assigned to Management Base Object obj Set IP
null assigned to Management Base Object obj NewGate
obj MO Get Method Parameters EnableStatic assigned to objNewIP
obj MO Get Method Parameters Set Gateways assigned to objNewGate
Set Default Gateway
new string Gateway assigned to obj New Gate Default IP Gateway
new int assigned to obj New Gate Gateway Cost Metric
```

Set IPAddress and Subnet Mask

```
new string IP Address assigned to obj New IP IPAddress
new string SubnetMask assigned to obj New IP Subnet Mask
obj MO Invoke Method Enable Static obj New IP null assigned to objSetIP
obj MO Invoke Method Set Gateways obj New Gate null assigned to objSetIP
Console Write Line
Updated IPAddress SubnetMask and Default Gateway
catch Exception ex
Message Box Show
static Boolean Start Ping byte argument
ip address assigned to byte gg
new IPAddress(argument) assigned to IPAdress ip //(IPAddress)argument
128 and no fragmentation assigned to set options ttl
new PingOptions128, true assigned to PingOptions options
create a Ping object
new Ping assigned to Ping ping
32 empty bytes buffer
new byte assigned to byte data
new List long assigned to List long response Times
ping Send ip 5000 data options assigned to Ping Reply reply
```

```
if reply not equal to null
switch reply Status
case IP Status Success
return true
case IP Status Timed Out
return false
default
return false
else
return false
```

```
private void button1 Click object sender Event Args e
```

```
private void timer1 Tick object sender Event Args e
```

```
zero assigned to chk
Ip assigned to byte pp
string str
string tokens
if Start Ping
1 assigned to chk
False assigned to timer1 Enabled
```

```
New Stream Reader System Windows Forms Application Startup Path + machine Info txt assigned to machine Info
```

```
Set ip address
while str machine Info Read Line not equal to null
str Split assigned to tokens
C:\Program Files\Alchemi\Executor\Alchemi Executor Exec exe assigned to object ss
Start Process On Remote PC ss tokens [1] tokens [2] tokens [0]
System Diagnostics Process Start
C:\Program Files\Alchemi\Executor\Alchemi.ExecutorExec.exe
```

```

MessageBox.Show
goto
MessageBox.Show
if Connect To Remote Machine administrator joomla 193.166.1.2
Iassigned to chk
false assigned to timer1 Enabled
while str machine Info Read Line not equal to null
str Split assigned to tokens
C:\\Program Files\\Alchemi\\Executor\\Alchemi.ExecutorExec.exe assigned to objectn ss
Start Process On Remote PC ss tokens [1] tokens [2] tokens [0]
System Diagnostics Process Start
C:\\Program Files\\Alchemi\\Executor\\Alchemi.ExecutorExec.exe
goto
MessageBox.Show
pp
if chk equal to 1
MessageBox.Show executer started automatically on the computing node
Application Exit
    
```

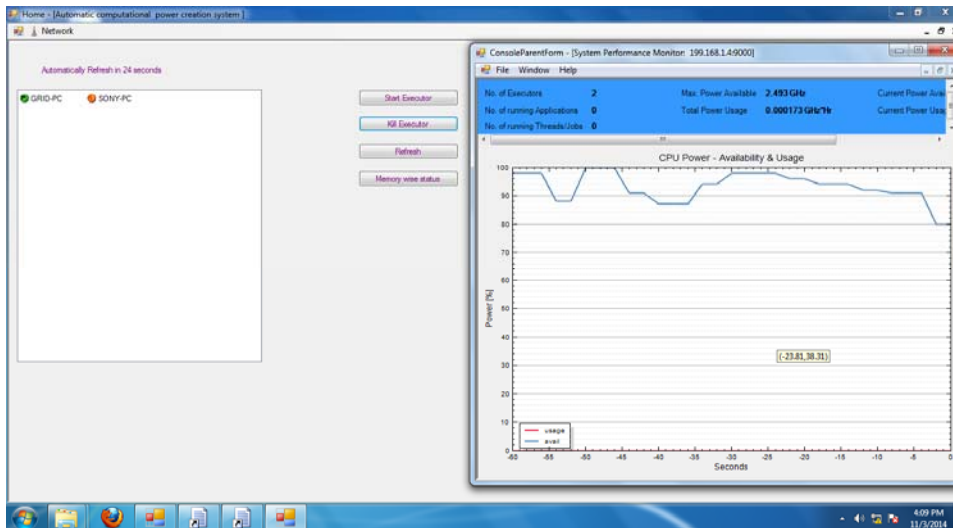


Figure 3-View of Proposed Automatic Computational Power control system with 2.493GHZ Power in Local Area Network

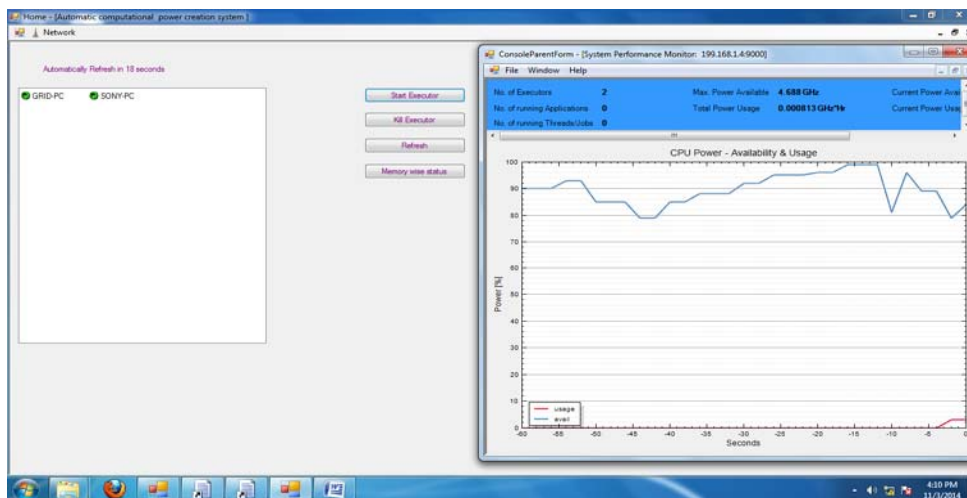


Figure 4-View of Proposed automatic computational power control system (4.688GHZ) after Removal of executor Fault on Remote Machine

Figure 3 is showing that two nodes in which one node (Red Indication) is suffering with executor fault. In Figure 4 Represent the view of Graphical User Interface of Proposed Automated Software System, which is capable to raise the available processing power from 2.493GHZ to 4.688 GHZ in Milliseconds by correct the Executor Fault (Shown in Figure 6).For Example If we want to Enhance the Available Processing Power by 2.493 GHZ, Framework completed Its Task in 118 Milliseconds at as Distance of approximately 15 meter from Source node to Remote Node In Local Area Network. Discover out where the error stays active & correct it devoid of effecting without disturbance [1].

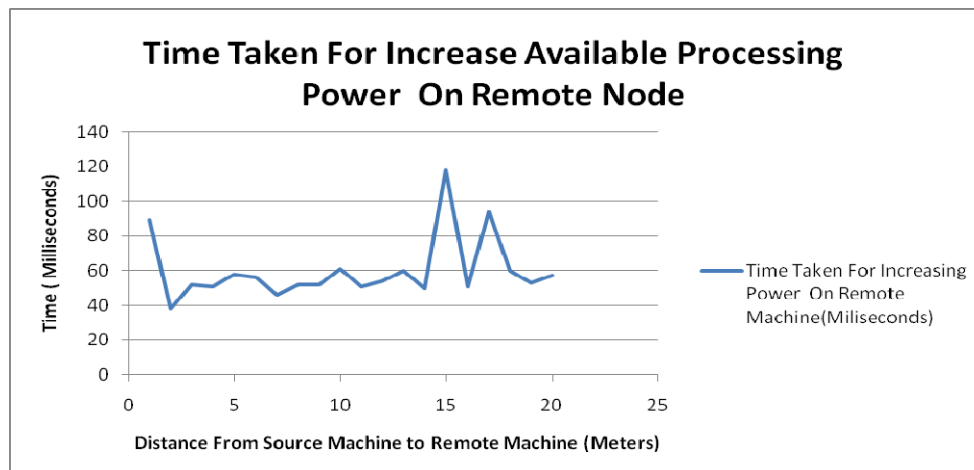


Figure 5-Graph for time Taken by Automatic System for Enhance Processing Power from 2.493GHZ to4.688GHZ

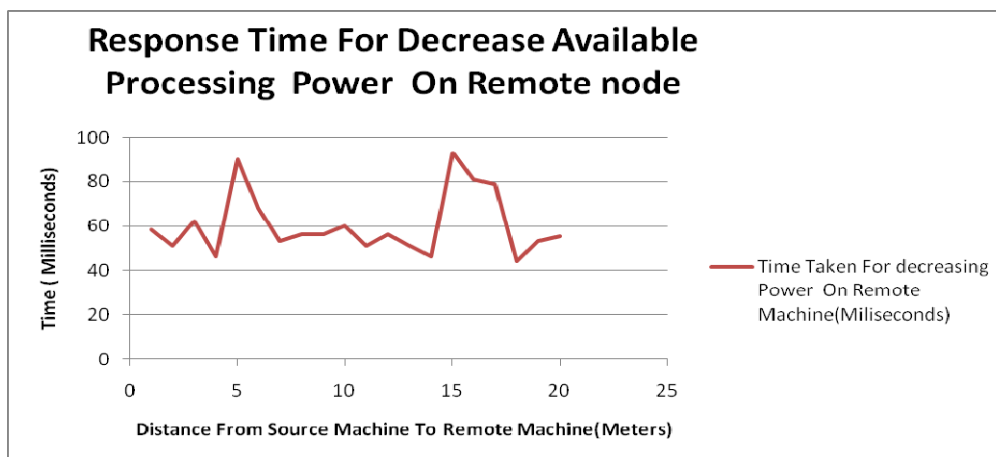


Figure 6-Graph for time Taken by Automatic System for Reduce Processing Power from 4.688GHZ to2.493GHZ

Figure 5 & Figure 6 is showing graphical representation of Performance of Automated framework. After Apply the code in Local area network (Alchemi.net Desktop configuration).Research work observed that automated code has completed task in milliseconds after even variation in the distances in between nodes in Alchemi grid middleware.

V. CONCLUSION

This Research work has decided on to hold the available preparing force in the computational desktop grid middleware if there should arise an occurrence of issues in execution node. Examination think and built up the structure for save the computational Power in Alchemi desktop middleware .This Research work Identified the inconveniences related to Alchemi desktop framework middleware. Graphical client interface based Framework gave exceptionally expedient and straightforward perspective of results .Alchemi middleware is chosen for the desktop grid cause Alchemi.net Middleware can introduced in window based environment.Developed Framework can control the executing Processes rapidly, which can't deal with by the human utilizing manual technique as a part of fast time. Graphical perspective of the Framework is commonsense for the user correspondence with created system. Programming based created structure for control the possible computational force is strong for Handle the Faults. Human endeavors will diminish by use of Software based system. Manual methodology will vanquish by use of programmed procedure to oversee Faults in Alchemi desktop middleware. Brisk Control on the procedure on agent machines collaborates in oversees realistic Processing Power. Agent Based Faults recognize and redress by Framework in rapidly. This Research work Conclude that Development of programmed

Frame work is essentially helpful for deal with the available Processing Power. Execution machines shortcoming can be control rapidly i.e. in milliseconds. Human Efforts in environment of Faults can be shrink by utilizing computerized Software structure. Manual Method can be dispensed with by use the computerized approach.

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