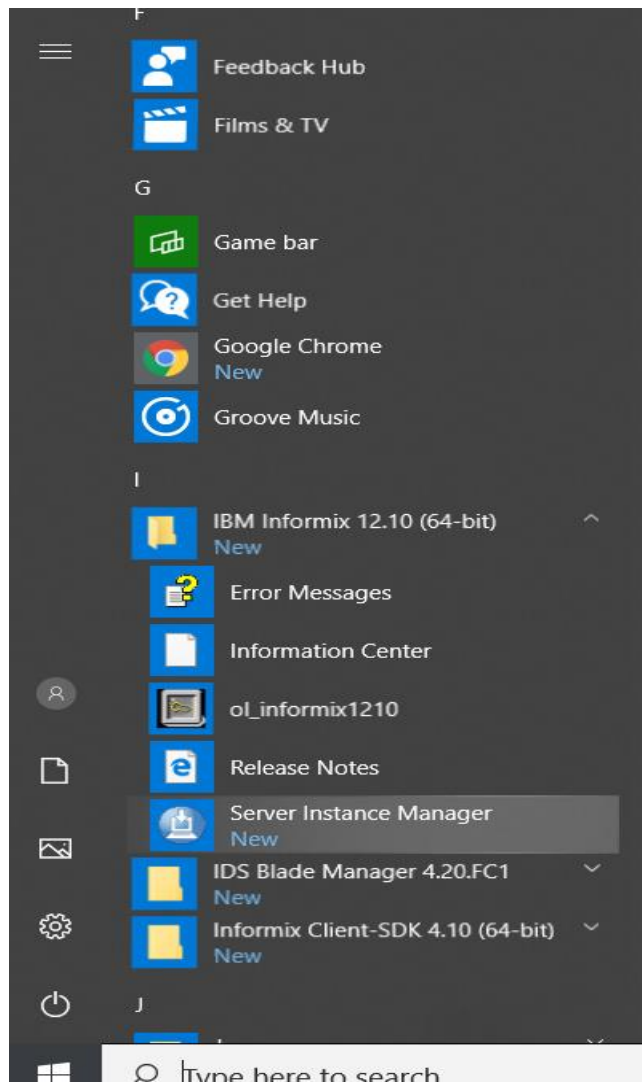


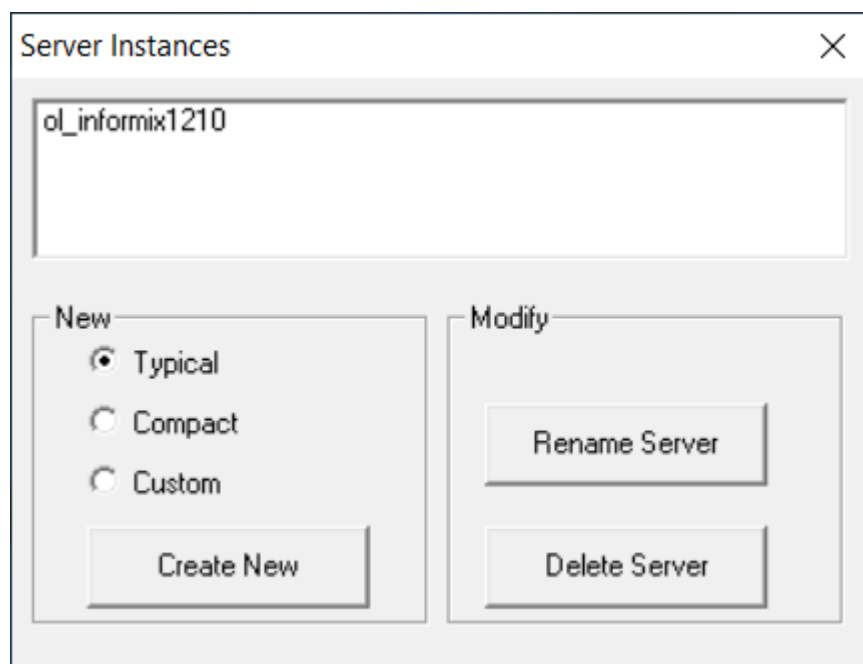
## CSDK/ODBC Windows : Connection Manager configuration and Connection Failover demo

In this scenario, we will create two instances namely “ol\_prim” and “ol\_sds” instances of server. Whereas “ol\_prim” will act as primary and “ol\_sds” as SDS servers. We will configure both the instances of server to be used under Connection Manager arbitrator. Then we will bring down primary and run the same application, now the application will connect to SDS because Connection Manager arbitrator will promote SDS to become primary.

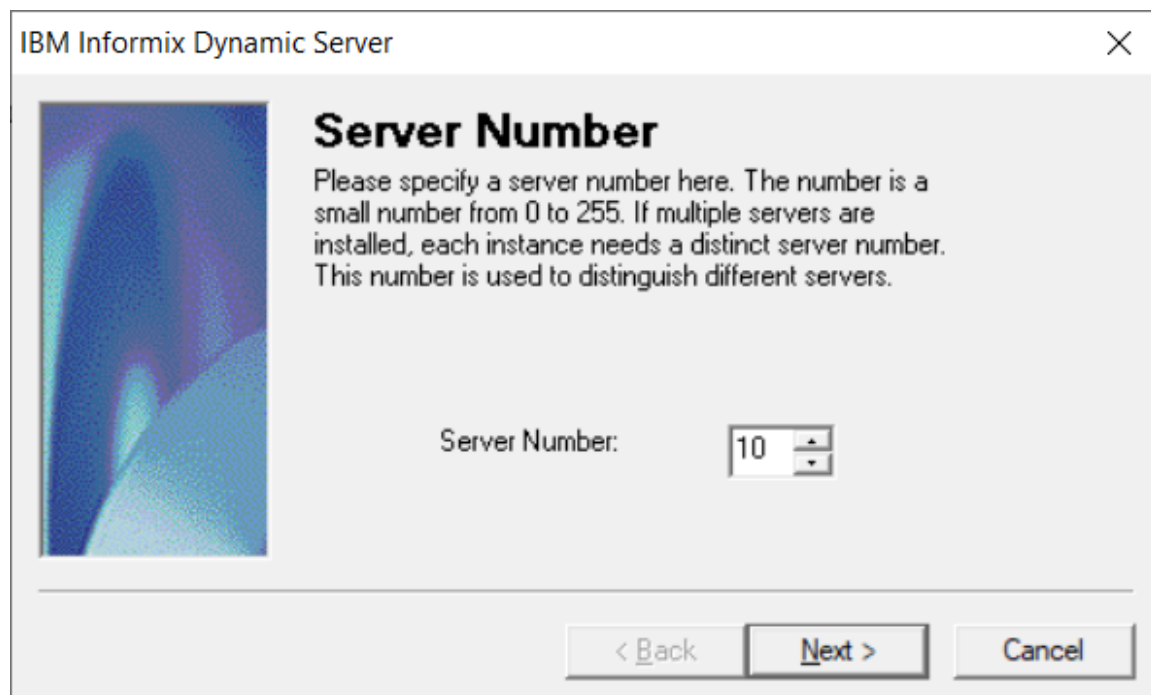
1. Go to Windows symbol at the bottom left corner and locate “IBM Informix 12.10 (64-bit)” entry, expand the same and click “Server Instance Manager”. If it prompts for any user control related consent, press Yes.



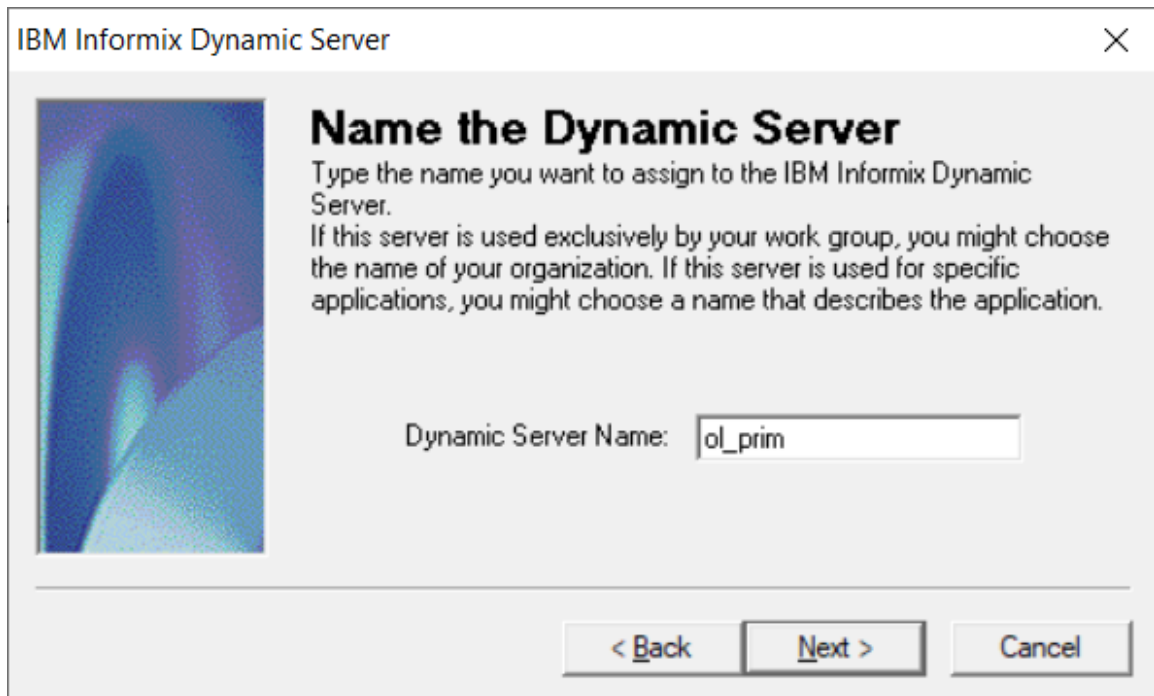
2. Click on “Create New” button



3. Enter 10 for “Server Number”, Click “Next”

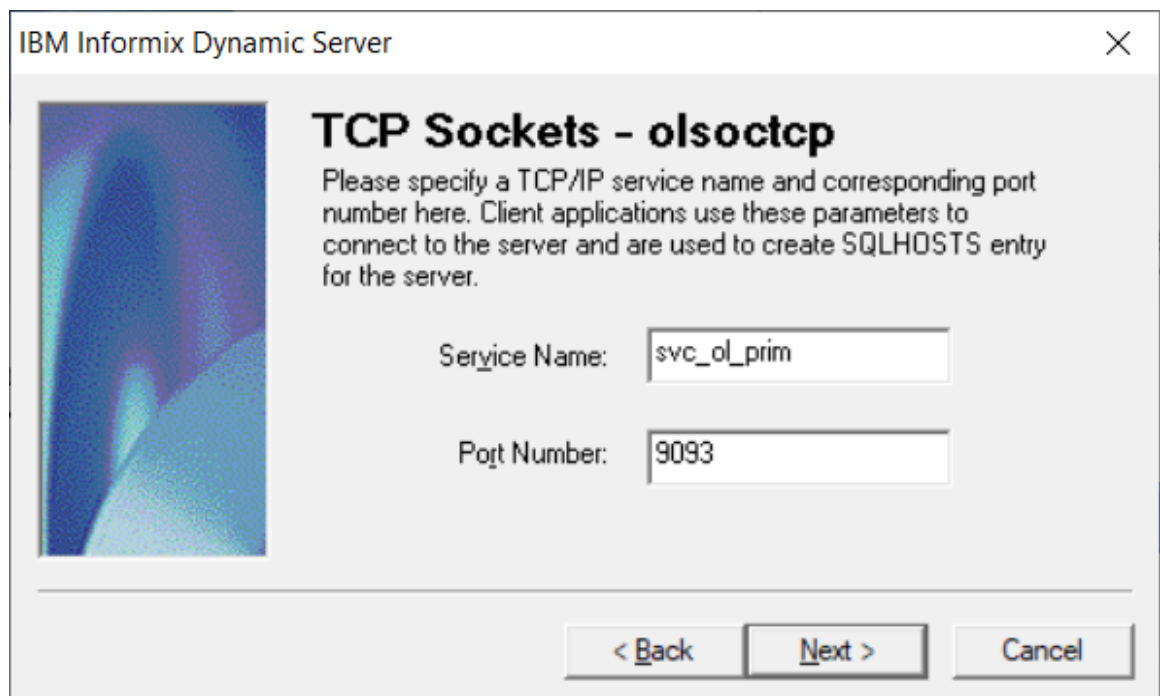


4. Enter “ol\_prim” for “Dynamic Server Name”, Click “Next”



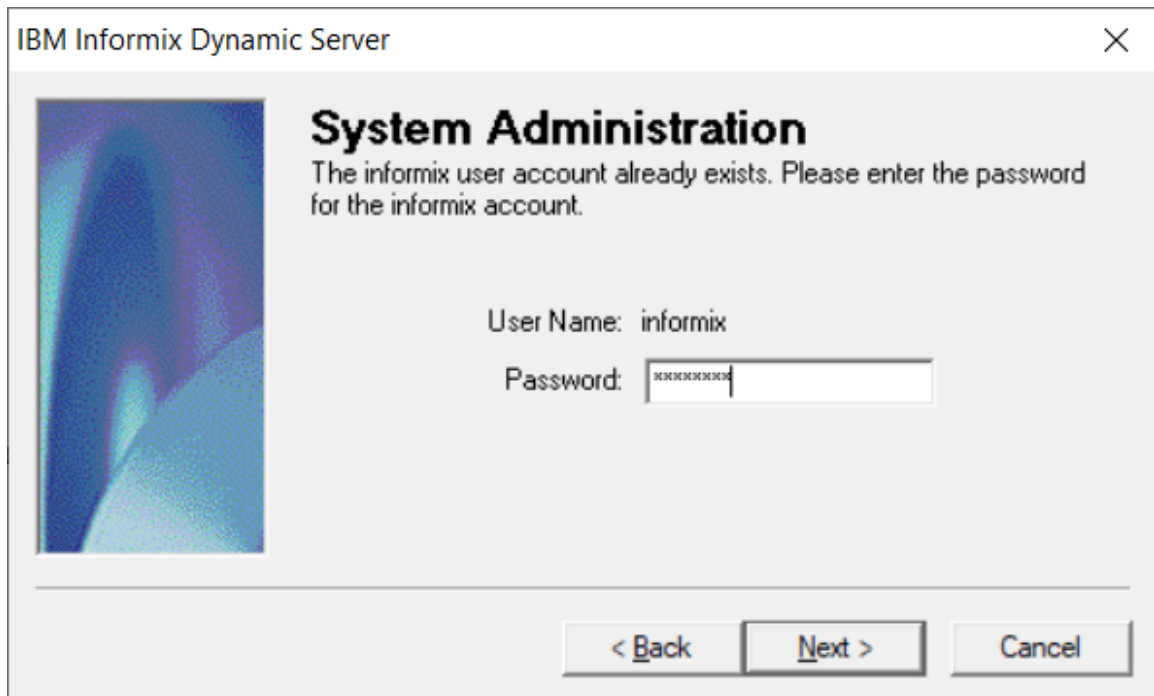
The screenshot shows a dialog box titled "IBM Informix Dynamic Server" with a close button (X) in the top right corner. On the left is a blue abstract graphic. The main heading is "Name the Dynamic Server". Below it, the text reads: "Type the name you want to assign to the IBM Informix Dynamic Server. If this server is used exclusively by your work group, you might choose the name of your organization. If this server is used for specific applications, you might choose a name that describes the application." Below this text is a text input field labeled "Dynamic Server Name:" containing the text "ol\_prim". At the bottom right are three buttons: "< Back", "Next >", and "Cancel".

5. Enter “svc\_ol\_prim” for “Service Name” and 9093 for Port Number, click “Next”



The screenshot shows a dialog box titled "IBM Informix Dynamic Server" with a close button (X) in the top right corner. On the left is a blue abstract graphic. The main heading is "TCP Sockets - olsoc tcp". Below it, the text reads: "Please specify a TCP/IP service name and corresponding port number here. Client applications use these parameters to connect to the server and are used to create SQLHOSTS entry for the server." Below this text are two text input fields. The first is labeled "Service Name:" and contains the text "svc\_ol\_prim". The second is labeled "Port Number:" and contains the text "9093". At the bottom right are three buttons: "< Back", "Next >", and "Cancel".

6. Enter “informix” for password and Click Next



IBM Informix Dynamic Server

**System Administration**

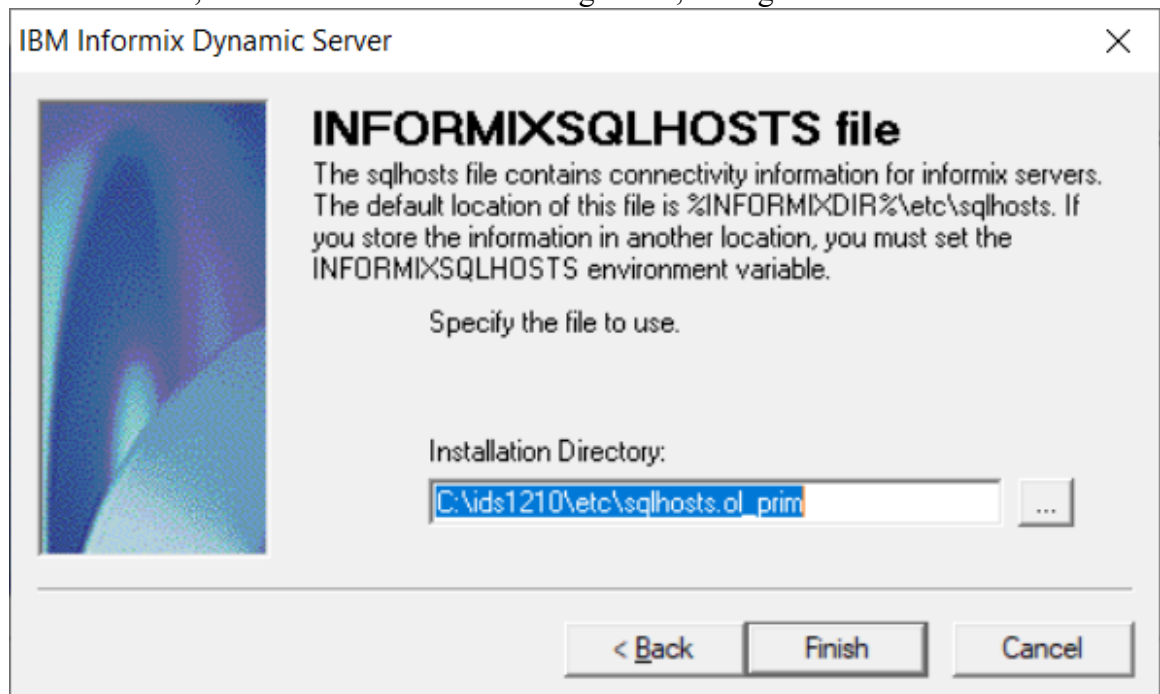
The informix user account already exists. Please enter the password for the informix account.

User Name: informix

Password:

< Back   Next >   Cancel

7. Click “Finish”, You will see some activities go on, let it go on ..



IBM Informix Dynamic Server

**INFORMIXSQLHOSTS file**

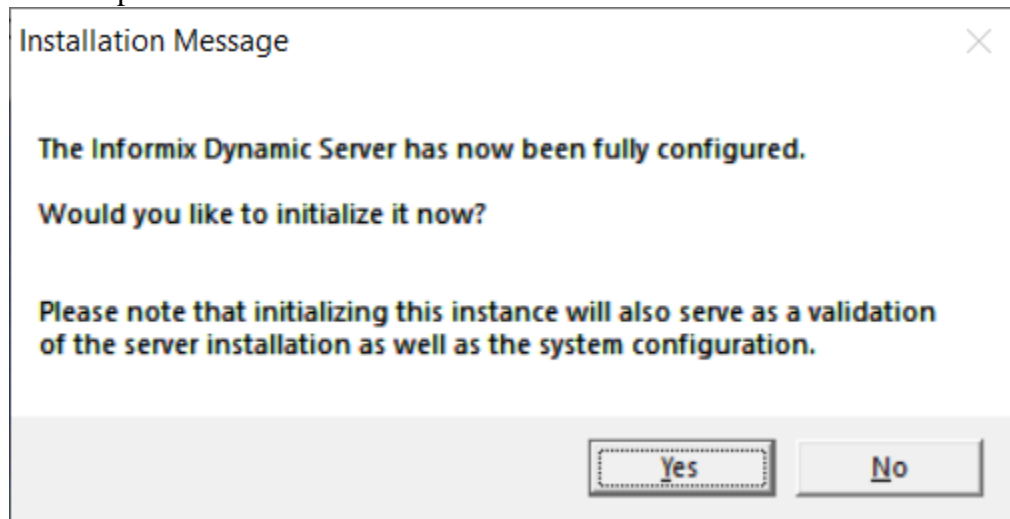
The sqlhosts file contains connectivity information for informix servers. The default location of this file is %INFORMIXDIR%\etc\sqlhosts. If you store the information in another location, you must set the INFORMIXSQLHOSTS environment variable.

Specify the file to use.

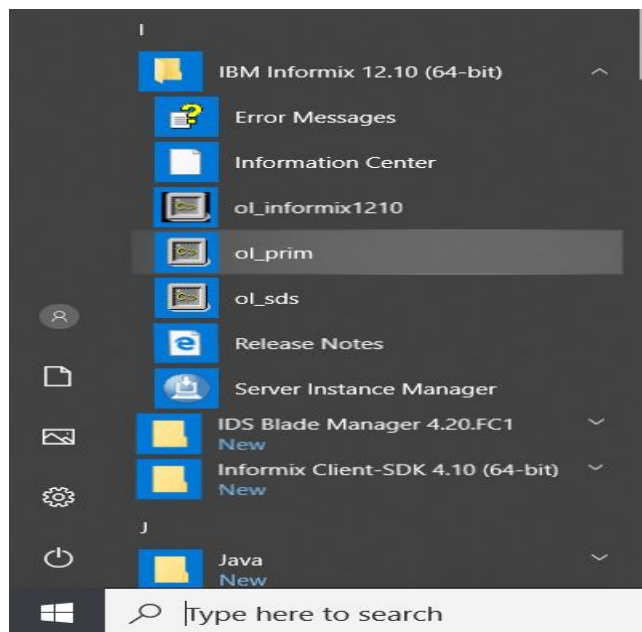
Installation Directory:  
 ...

< Back   Finish   Cancel

8. Following window will appear, Click “Yes”. It will initialize the server. It might take couple of minutes.



9. Similarly follow the above steps to create another server instance called “ol\_sds”, Enter 20 for “Server Number”, Enter “svc\_ol\_sds” for Service Name and 9095 for Port Number. And Initialize the server by clicking “Yes” as you did for “ol\_prim” server instance above.
10. Click on Windows symbol at the bottom left corner and locate “IBM Informix 12.10 (64-bit)”, you will see “ol\_prim” and “ol\_sds” entries are created, as follows.



11. On your desktop there should be “ol\_prim” icon (if not create one by following step 10 above) right click choose “Run as administrator. In this command prompt, Go to “C:\ids1210\etc” by doing “cd C:\ids1210\etc”
12. Bring down primary server by typing following command

```
onmode -ky
```

13. Open ONCONFIG file by typing following command

```
notepad %ONCONFIG%
```

14. In this ONCONFIG file make following changes. After making the changes, save and close the notepad.

DRAUTO 3

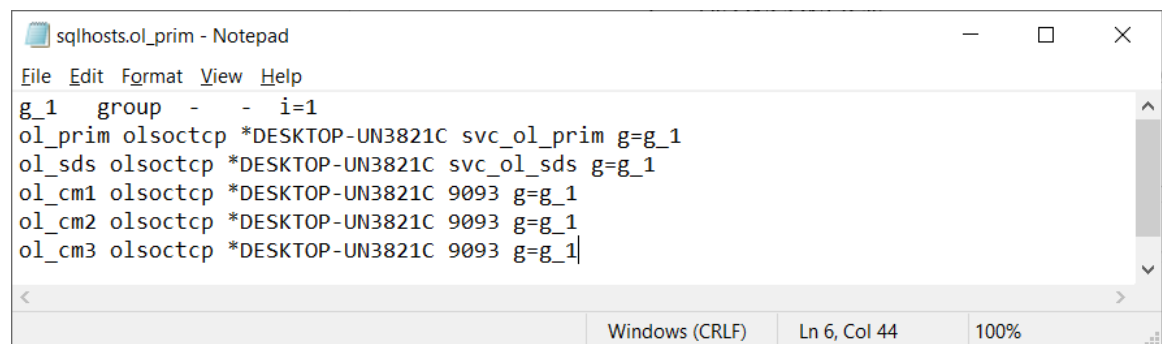
SDS\_TEMPDBS sds\_tempdbs,C:\shesh\IIUG\_CSDK\_Tutorial\Scenario13,4,0,2000

SDS\_PAGING

C:\shesh\IIUG\_CSDK\_Tutorial\Scenario13\page1,C:\shesh\IIUG\_CSDK\_Tutorial\Scenario13\page2

15. On “ol\_prim” command prompt, open SQLHOSTS file by doing “notepad c:\ids1210\etc\sqlhosts.ol\_prim” and make following changes

```
g_1 group - - i=1
ol_prim olsoctcp *DESKTOP-UN3821C svc_ol_prim g=g_1
ol_sds olsoctcp *DESKTOP-UN3821C svc_ol_sds g=g_1
ol_cm1 olsoctcp *DESKTOP-UN3821C 9093 g=g_1
ol_cm2 olsoctcp *DESKTOP-UN3821C 9093 g=g_1
ol_cm3 olsoctcp *DESKTOP-UN3821C 9093 g=g_1
```



16. Similar to “ol\_prim” command window (step #11), open “ol\_sds” command window. In this command prompt, Go to “C:\ids1210\etc” by doing “cd C:\ids1210\etc”

17. Bring down SDS server by typing following command

```
onmode -ky
```

18. Open ONCONFIG file by typing following command

```
notepad %ONCONFIG%
```

19. In this ONCONFIG file make following changes (you can search for respective keywords and change the values accordingly). After making the changes, save and close the notepad.

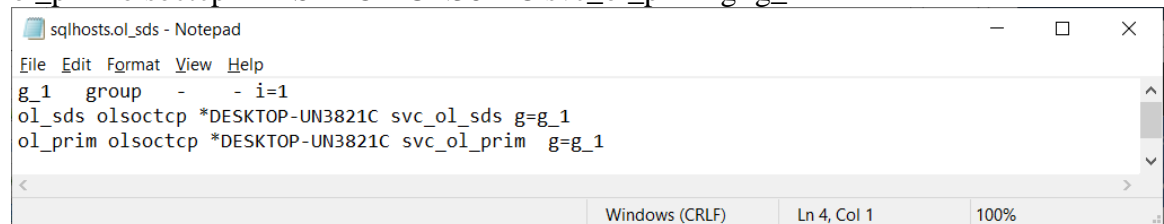
```
ROOTPATH      C:\IFMXDATA\ol_prim\rootdbs_dat.000
DRAUTO 3
SDS_ENABLE 1
SDS_TEMPDBS sds_tempdbs,C:\shesh\IIUG_CSDK_Tutorial\Scenario13,4,0,2000
SDS_PAGING
C:\shesh\IIUG_CSDK_Tutorial\Scenario13\page1,C:\shesh\IIUG_CSDK_Tutorial\Scenario13\page2
```

<Changes complete for ONCONFIG>

respective files(i.e. page1, page2, sds\_tempdbs) are already created (0 bytes). You don't need to create these files.

20. On “ol\_sds” command prompt, open SQLHOSTS file by doing “notepad c:\ids1210\etc\sqlhosts.ol\_sds” and make following changes.

```
g_1 group - - i=1
ol_sds olsoc tcp *DESKTOP-UN3821C svc_ol_sds g=g_1
ol_prim olsoc tcp *DESKTOP-UN3821C svc_ol_prim g=g_1
```

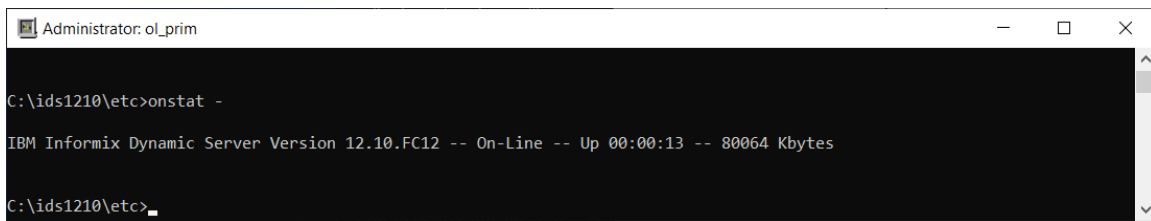


21. On primary server (ol\_prim) command window execute following command, this will bring up primary server.

```
net start ol_prim
```

22. Run “onstat –” command and ensure server is “On-Line”. Then run following command

```
onmode -d set SDS primary ol_prim
```



```
Administrator: ol_prim
C:\ids1210\etc>onstat -

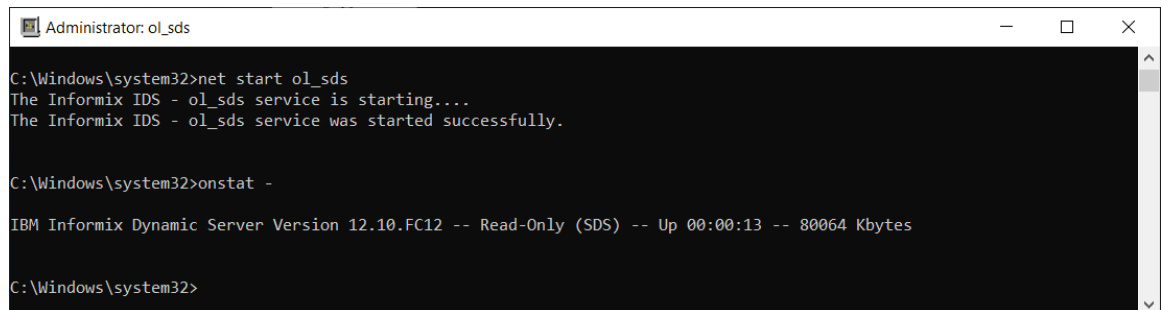
IBM Informix Dynamic Server Version 12.10.FC12 -- On-Line -- Up 00:00:13 -- 80064 Kbytes

C:\ids1210\etc>
```

23. On SDS server (i.e. ol\_sds) command window execute following command

`net start ol_sds`

It should start successfully verify by running “onstat –” command.



```
Administrator: ol_sds
C:\Windows\system32>net start ol_sds
The Informix IDS - ol_sds service is starting....
The Informix IDS - ol_sds service was started successfully.

C:\Windows\system32>onstat -

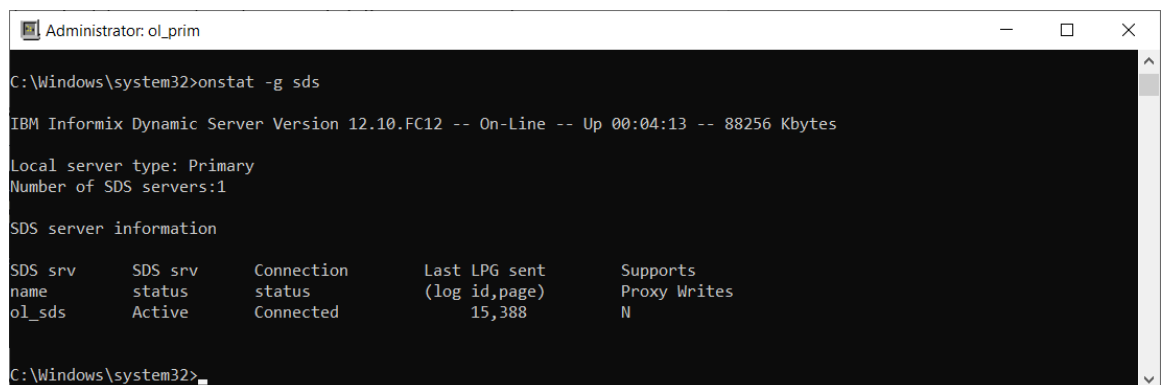
IBM Informix Dynamic Server Version 12.10.FC12 -- Read-Only (SDS) -- Up 00:00:13 -- 80064 Kbytes

C:\Windows\system32>
```

24. To see the SDS setup, run following command on the “ol\_prim” command window

`onstat -g sds`

You will see following output.



```
Administrator: ol_prim
C:\Windows\system32>onstat -g sds

IBM Informix Dynamic Server Version 12.10.FC12 -- On-Line -- Up 00:04:13 -- 88256 Kbytes

Local server type: Primary
Number of SDS servers:1

SDS server information

SDS srv      SDS srv      Connection      Last LPG sent      Supports
name         status       status          (log id,page)      Proxy Writes
ol_sds       Active       Connected       15,388              N

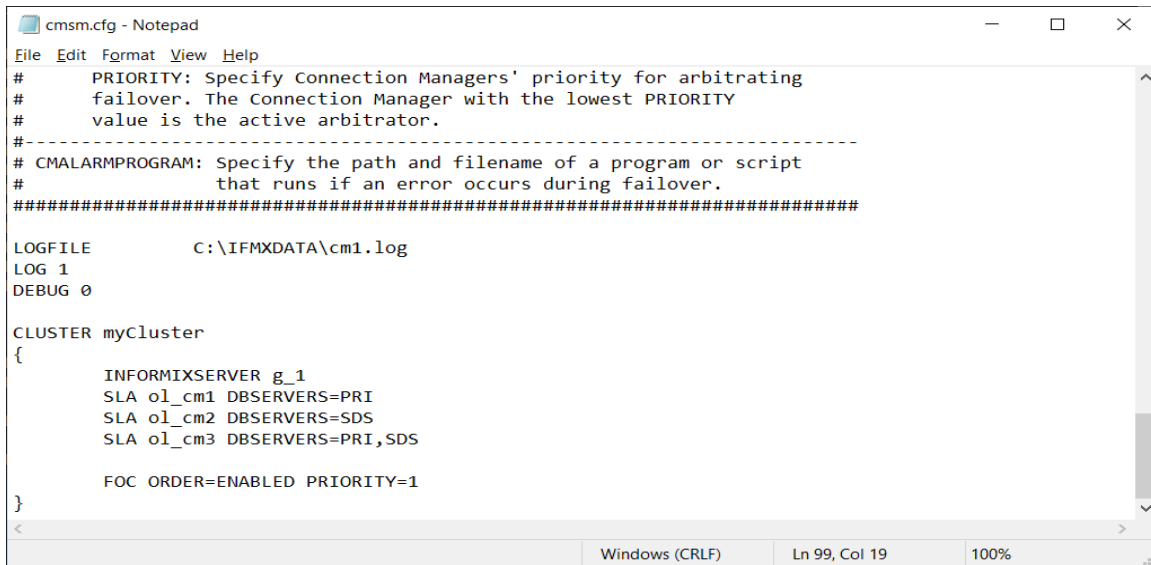
C:\Windows\system32>
```

25. Now, Open VS2015 Window by double clicking on this icon on your desktop and go to c:\csdk410\etc, by doing “cd c:\csdk410\etc” and do as follows



copy cmsm.cfg.sample cmsm.cfg

Open cmsm.cfg in notepad “notepad cmsm.cfg” and make the changes as mentioned in the below screen output. This is very important step, please pay enough care/attention. After making these changes save and close notepad.



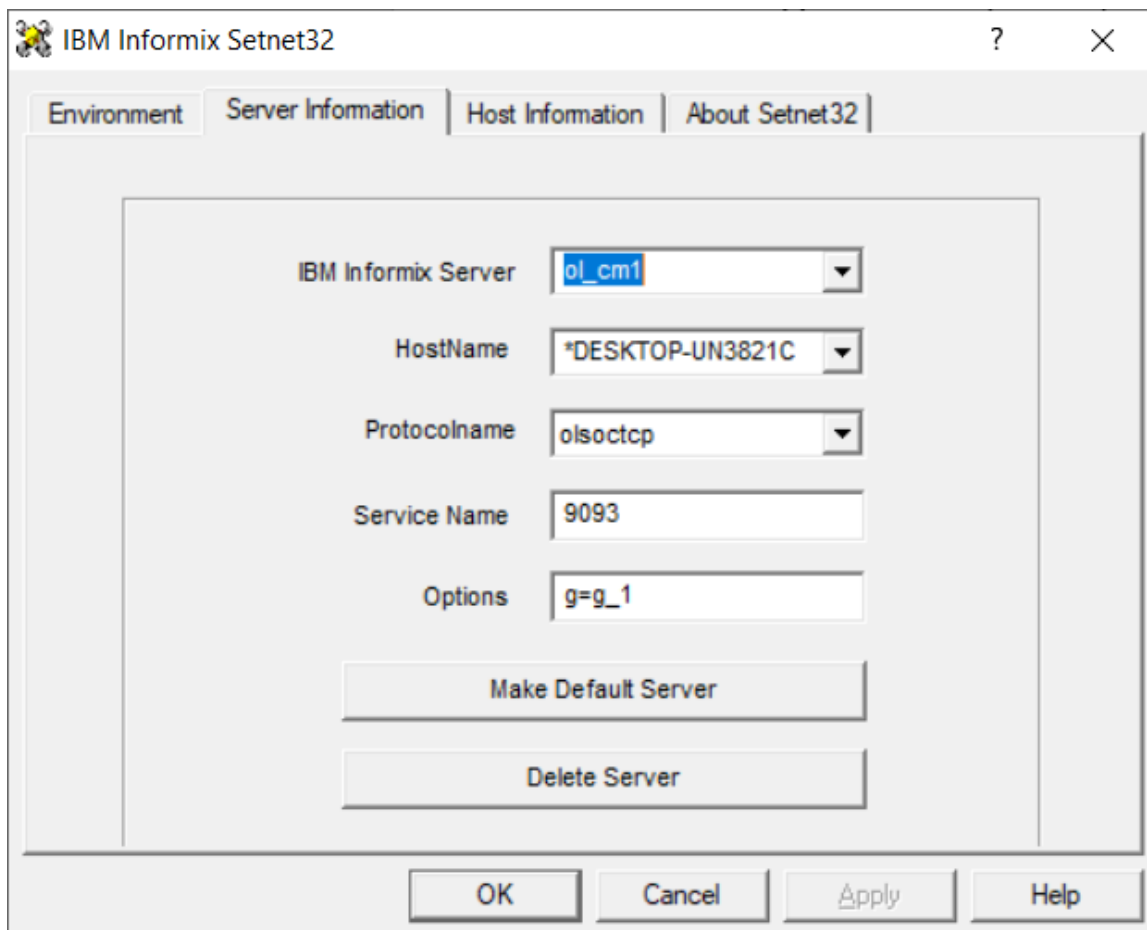
```

cmsm.cfg - Notepad
File Edit Format View Help
#      PRIORITY: Specify Connection Managers' priority for arbitrating
#      failover. The Connection Manager with the lowest PRIORITY
#      value is the active arbitrator.
#-----
# CMALARMPROGRAM: Specify the path and filename of a program or script
#                  that runs if an error occurs during failover.
#####
LOGFILE           C:\IFMXDATA\cm1.log
LOG 1
DEBUG 0

CLUSTER myCluster
{
    INFORMIXSERVER g_1
    SLA ol_cm1 DBSERVERS=PRI
    SLA ol_cm2 DBSERVERS=SDS
    SLA ol_cm3 DBSERVERS=PRI,SDS

    FOC ORDER=ENABLED PRIORITY=1
}
Windows (CRLF) Ln 99, Col 19 100%
```

26. Setnet32 entries for ol\_cm1, ol\_cm2 and ol\_cm3 has already been made. You don't need to do anything here, if you want to check, open setnet32 and look for these entries.



The image shows a screenshot of the 'IBM Informix Setnet32' dialog box. The window has a title bar with the IBM logo, the text 'IBM Informix Setnet32', and standard window controls (minimize, maximize, close). Below the title bar is a tabbed interface with four tabs: 'Environment', 'Server Information', 'Host Information', and 'About Setnet32'. The 'Server Information' tab is currently selected. Inside this tab, there are five labeled input fields: 'IBM Informix Server' (a dropdown menu showing 'ol\_cm1'), 'HostName' (a dropdown menu showing '\*DESKTOP-UN3821C'), 'Protocolname' (a dropdown menu showing 'olsoc tcp'), 'Service Name' (a text box containing '9093'), and 'Options' (a text box containing 'g=g\_1'). Below these fields are two buttons: 'Make Default Server' and 'Delete Server'. At the bottom of the dialog box are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.

IBM Informix Setnet32

Environment | Server Information | Host Information | About Setnet32

IBM Informix Server: ol\_cm1

HostName: \*DESKTOP-UN3821C

Protocolname: olsoc tcp

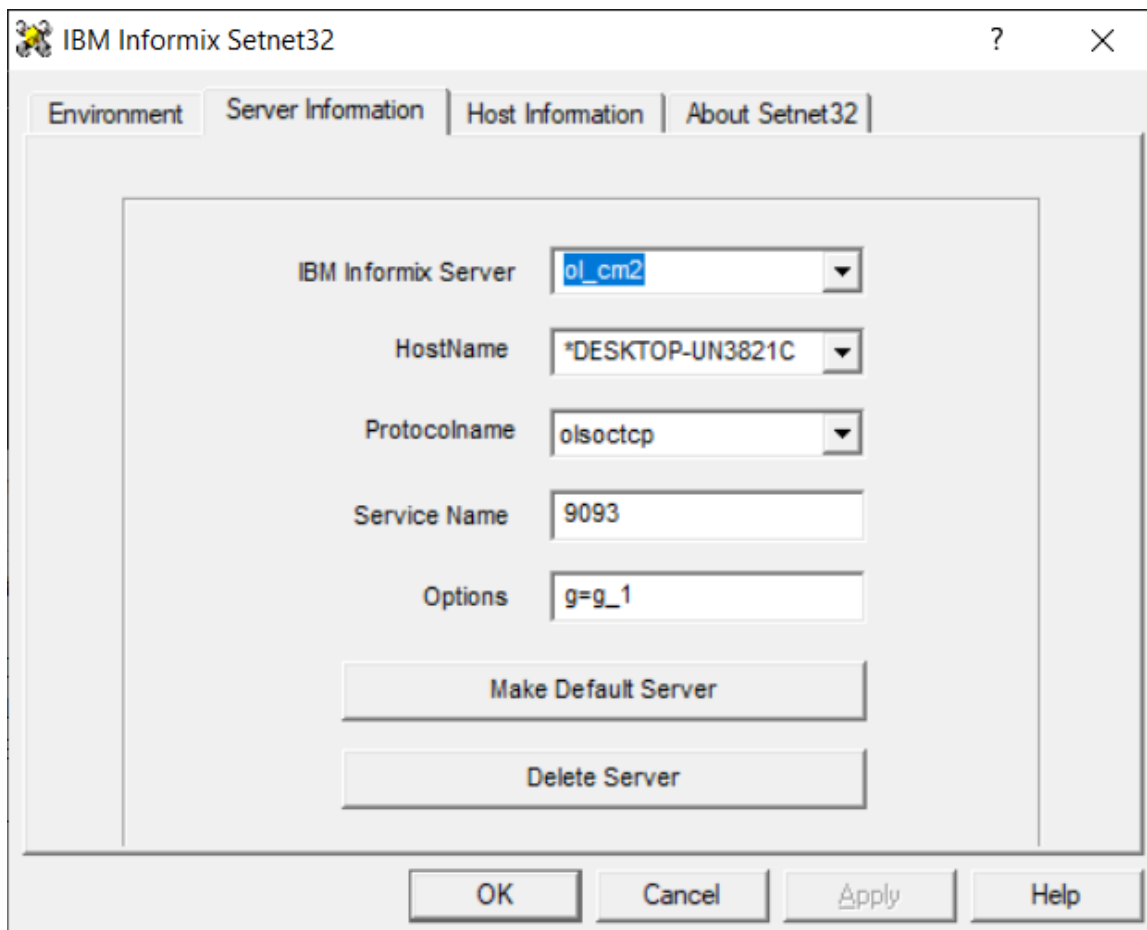
Service Name: 9093

Options: g=g\_1

Make Default Server

Delete Server

OK Cancel Apply Help



The image shows a screenshot of the IBM Informix Setnet32 dialog box. The window has a title bar with the IBM logo, the text "IBM Informix Setnet32", and standard window controls (help, close). Below the title bar is a tabbed interface with four tabs: "Environment", "Server Information", "Host Information", and "About Setnet32". The "Server Information" tab is currently selected. Inside this tab, there are five labeled input fields: "IBM Informix Server" (a dropdown menu showing "ol\_cm2"), "HostName" (a dropdown menu showing "\*DESKTOP-UN3821C"), "Protocolname" (a dropdown menu showing "olsoc tcp"), "Service Name" (a text box containing "9093"), and "Options" (a text box containing "g=g\_1"). Below these fields are two buttons: "Make Default Server" and "Delete Server". At the bottom of the dialog box are four buttons: "OK", "Cancel", "Apply", and "Help".

IBM Informix Setnet32

Environment | Server Information | Host Information | About Setnet32

IBM Informix Server: ol\_cm2

HostName: \*DESKTOP-UN3821C

Protocolname: olsoc tcp

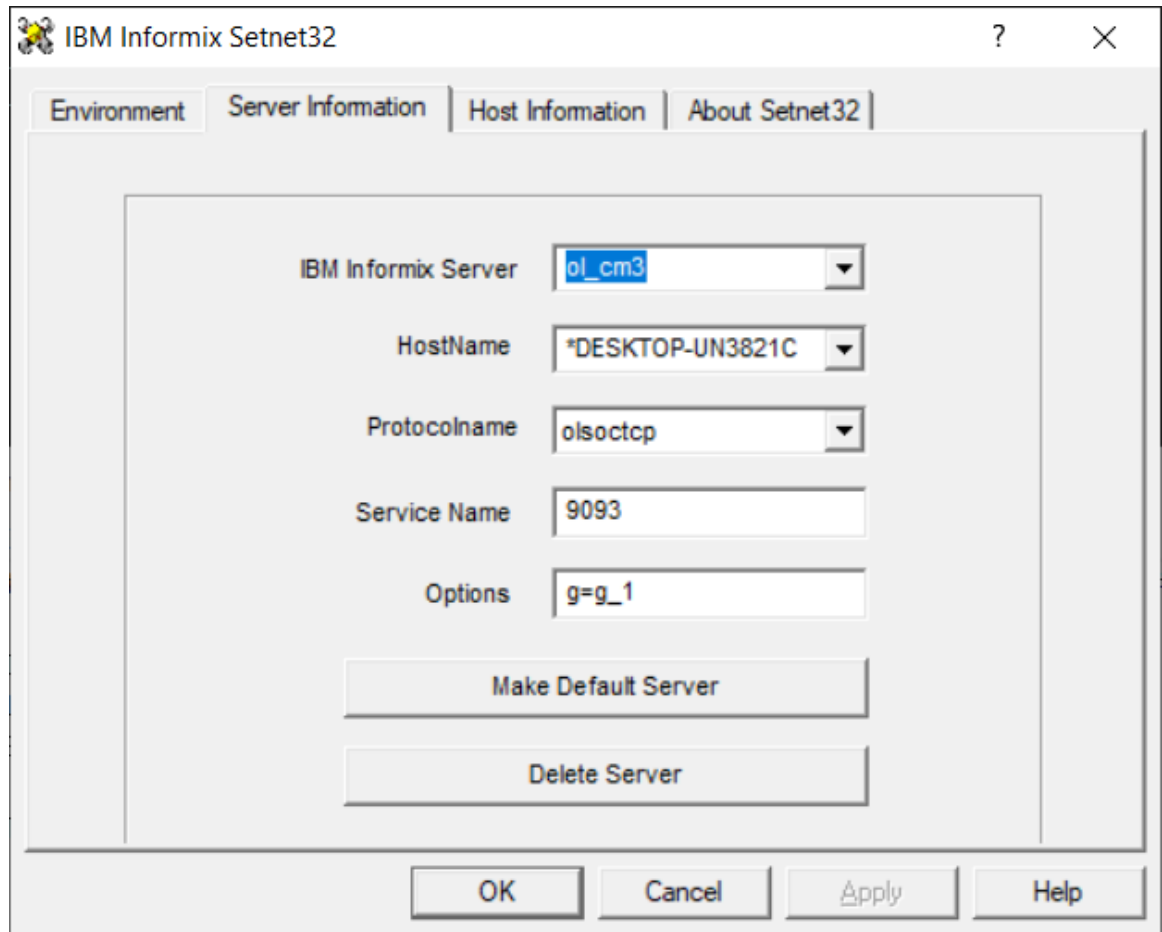
Service Name: 9093

Options: g=g\_1

Make Default Server

Delete Server

OK Cancel Apply Help

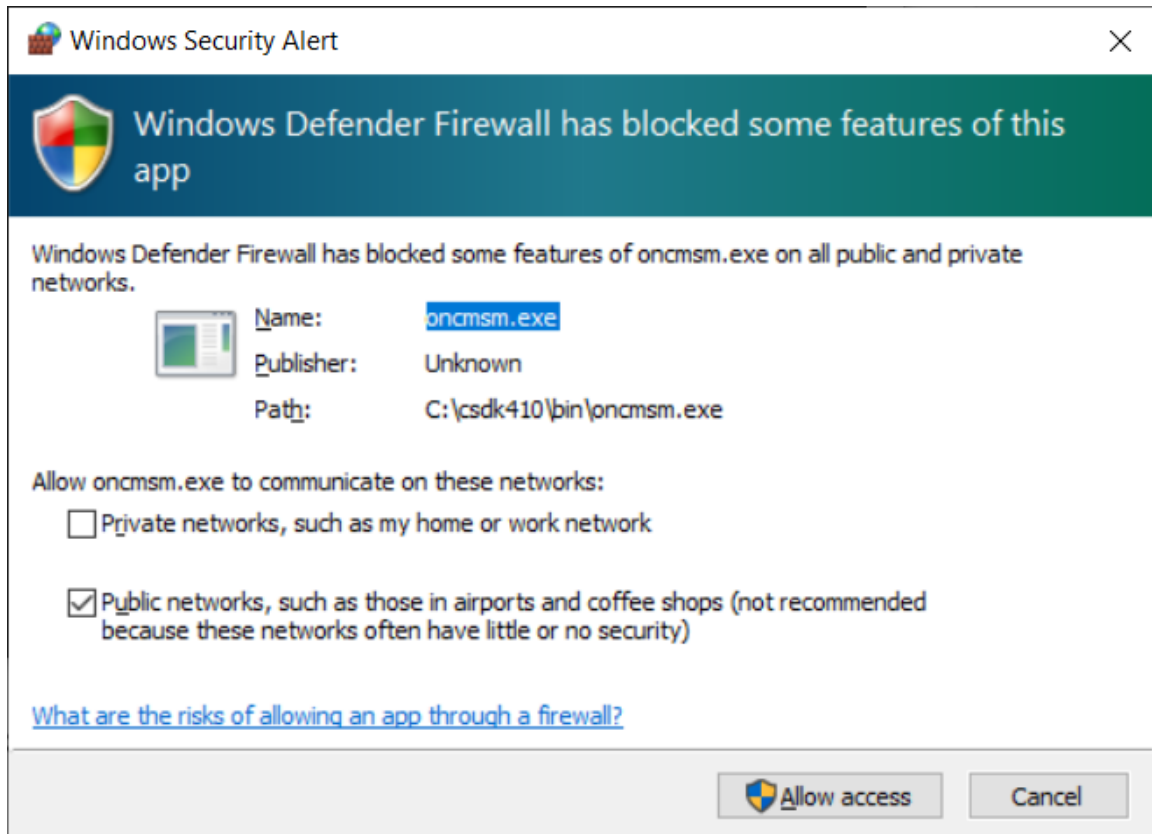


27. On VS2015 command prompt run set INFORMIXSERVER to ol\_prim as follows,

**set INFORMIXSERVER=ol\_prim**

28. In the same window run following Connection Manager command

“oncmism.exe” and let that window be running. DO NOT CLOSE this window. If below prompt appears, click on “Allow access”



29. On “ol\_prim” command window, execute following command you will see now connections has been configured by connection manager on the fly.

“onstat -g cmsm”

```
Administrator: ol_prim
C:\Windows\system32>onstat -g cmsm

IBM Informix Dynamic Server Version 12.10.FC12 -- On-Line -- Up 00:09:22 -- 88256 Kbytes
Unified Connection Manager: mySampleCM                      Hostname: DESKTOP-UN3821C

CLUSTER      myCluster      LOCAL
Informix Servers: g_1
SLA
ol_cm1        Connections    Service/Protocol Rule
ol_cm2        3              9093/olsoctcp    DBSERVERS=SDS
ol_cm3        0              9093/olsoctcp    DBSERVERS=PRI,SDS

Failover Arbitrator: Active Arbitrator, Primary is up
ORDER=SDS,HDR,RSS PRIORITY=1 TIMEOUT=1

C:\Windows\system32>
```

30. Open another VS2015 command window by double clicking on this icon on your desktop, go to “C:\shesh\IIUG\_CSDK\_Tutorial\Scenario13” by doing “cd C:\shesh\IIUG\_CSDK\_Tutorial\Scenario13”

31. Type “connection\_failover.ec” and press Enter, this will open wordpad/VS2015 IDE window. Look at the test, you will notice we are using “**sysmaster@ol\_cm1**” for connection. Compile the same by doing “esql connection\_failover.ec”

```

C:\shesh\IIUG_CSDK_Tutorial\Scenario13>esql connection_failover.ec
IBM Informix CSDK Version 4.10, IBM Informix-ESQL Version 4.10.FC12
Microsoft (R) C/C++ Optimizing Compiler Version 19.00.24215.1 for x64
Copyright (C) Microsoft Corporation. All rights reserved.

connection_failover.c
Microsoft (R) Incremental Linker Version 14.00.24215.1
Copyright (C) Microsoft Corporation. All rights reserved.

-OUT:connection_failover.exe -MAP -SUBSYSTEM:CONSOLE connection_failover.obj
"c:\csdk410\lib\isqlt09a.lib" "c:\csdk410\lib\igl4n304.lib"
"c:\csdk410\lib\iglxn304.lib" "c:\csdk410\lib\igo4n304.lib" netapi32.lib
wsock32.lib user32.lib winmm.lib advapi32.lib ws2_32.lib

C:\shesh\IIUG_CSDK_Tutorial\Scenario13>dir connection_fail*
Volume in drive C has no label.
Volume Serial Number is 42D7-7923

Directory of C:\shesh\IIUG_CSDK_Tutorial\Scenario13

25-10-2018 12:39          732 connection_failover.c
25-10-2018 12:39          732 connection_failover.c_
11-10-2018 22:08          404 connection_failover.ec
25-10-2018 12:39       10,240 connection_failover.exe
25-10-2018 12:39          276 connection_failover.lnk
25-10-2018 12:39       28,406 connection_failover.map
25-10-2018 12:39       2,785 connection_failover.obj
                7 File(s)        43,575 bytes
                0 Dir(s)  13,041,672,192 bytes free

C:\shesh\IIUG_CSDK_Tutorial\Scenario13>

```

32. Run connection\_failover.exe and see the output and come back to this document again.

```

C:\shesh\IIUG_CSDK_Tutorial\Scenario13>connection_failover.exe

Connection Successful
Go ahead and read out your hand out for further instructions
Press Enter ...

```

33. On primary server “ol\_prim” run following command. There you will see few sessions are opened. This means your “connection\_failover.exe” application is connected to “ol\_prim” server instance.

onstat -g ses

```

Administrator: ol_prim
C:\Windows\system32>onstat -g ses

IBM Informix Dynamic Server Version 12.10.FC12 -- On-Line -- Up 00:15:08 -- 88256 Kbytes

session
id      user          tty      pid      hostname      #RSAM  total  used  dynamic
      user          tty      pid      hostname      threads memory memory explain
56      informix      -        0        -              0      16384 12848  off
41      Sheshnarayan -        0        DESKTOP-UN3821C 1      258048 205440 off
30      informix      -        0        -              1      446464 379632 off
29      informix      -        0        -              1      581632 473808 off
28      informix      -        0        -              1      647168 498080 off
27      informix      -        0        -              1      102400 88400  off
5       informix      DESKTOP- 9444   DESKTOP-UN3821C 1      53248  44640  off
4       informix      -        0        -              0      16384  14512  off
13      informix      -        0        -              0      16384  12848  off
2       informix      -        0        -              0      16384  12848  off

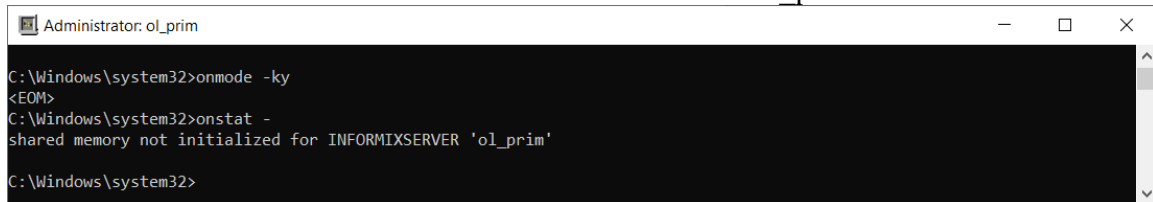
C:\Windows\system32>

```

34. Now bring down the primary “ol\_prim” by executing following command

`onmode -ky`

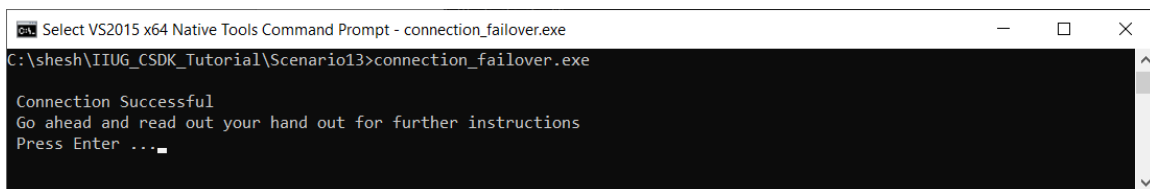
You can then run “onstat -“ command to ensure indeed “ol\_prim” is down.



```
Administrator: ol_prim
C:\Windows\system32>onmode -ky
<EOM>
C:\Windows\system32>onstat -
shared memory not initialized for INFORMIXSERVER 'ol_prim'
C:\Windows\system32>
```

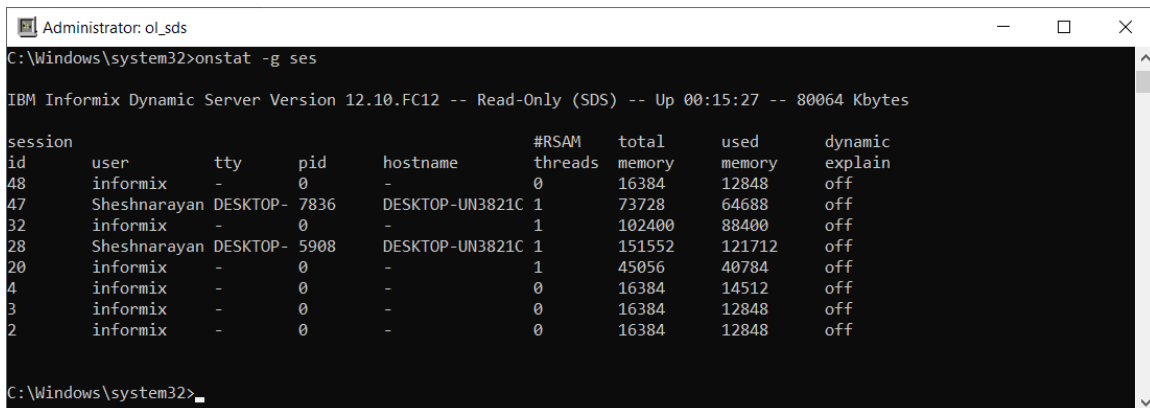
35. Press Enter on your application window if you haven’t already

36. Now run again the same application, this time you will see even though primary is down (i.e. ol\_prim) your connection still goes through and Connection Manager Arbitrator redirects this connection to “ol\_sds”, Which you can see by executing “onstat -g ses” on “ol\_sds” command prompt.



```
Select VS2015 x64 Native Tools Command Prompt - connection_failover.exe
C:\shesh\IIUG_CSDK_Tutorial\Scenario13>connection_failover.exe

Connection Successful
Go ahead and read out your hand out for further instructions
Press Enter ...
```



```
Administrator: ol_sds
C:\Windows\system32>onstat -g ses

IBM Informix Dynamic Server Version 12.10.FC12 -- Read-Only (SDS) -- Up 00:15:27 -- 80064 Kbytes

session
id      user      tty      pid      hostname      #RSAM    total    used    dynamic
      id      user      tty      pid      hostname      threads  memory  memory  explain
48      informix  -        0        -             0         16384    12848   off
47      Sheshnarayan  DESKTOP- 7836    DESKTOP-UN3821C 1         73728    64688   off
32      informix  -        0        -             1         102400   88400   off
28      Sheshnarayan  DESKTOP- 5908    DESKTOP-UN3821C 1         151552   121712   off
20      informix  -        0        -             1         45056    40784   off
4       informix  -        0        -             0         16384    14512   off
3       informix  -        0        -             0         16384    12848   off
2       informix  -        0        -             0         16384    12848   off

C:\Windows\system32>
```