

Here is another example of Applied Methodologies working with your internal IT staff. This email outlines the protocol analysis results Applied Methodologies provided to its client that was experiencing a serious application issue. The issue was initially believed to be network related, however after a forensic analysis of the applications traffic behavior and login transaction mechanics it was discovered to be application and not network based. The packet traces with the application code issues revealed helped the development team correct the performance issue immediately.

To: Development team
Subject: Project Exchange Oracle Performance
From: Applied Methodologies, Inc.

Folks,

I have completed the packet analysis of the traces we ran against the Project Exchange login function.

I would like to take this time to thank the Development team for their patience and assistance. I am available at your convenience to continue looking into this issue and answer any questions.

Here are my findings. Regards.

Summary:

There are several delays in query response between the Oracle Database server and the Application server. The largest of such delays results in a 4 1/2 minute period in which there is no activity between the two systems. The total amount of all delays result in an average of 6+ minutes just to enter the system and receive a list of projects. A major delay in the Application server occurs when an Oracle SQL statement or stored procedure is parsed and a fast UPI call is made to the server. A **select distinct** command appears to be the culprit. Using a select distinct must be planned carefully for if the conditions of the distinct are not met for certain tables or indices, a full table scan can occur. This is apparent and the result of no data is returned. It was also observed that the Application server sends this query first in two variations at two different times. One variation of this delay is for a 19 second delay and another is for 4 1/2 minutes. This causes the Oracle server to search for data, row by row, for long periods of time, thus resulting in the delay at the Client waiting for a response from the Application server. Another delay of three seconds was noted and is explained in the details section.

However, after the questionable queries are sent and the delay has passed, several other queries execute in milliseconds, including the query that ultimately sends the Application server the data to pass on to the Client. This indicates that the Oracle Server and Network infrastructure are working properly and that the Application server's stored procedures should be looked into carefully.

What was also noticed is that the packet flows between the Client and the Application server are very chatty. This may be due to the Visual Basic overhead to update the display and this also should be looked into if a large scale deployment of this application is planned. I have not had the time to look into this but I did observe some unfamiliar flows and port numbers used.

A review into the Applications server's performance in regard to presenting data to the client once the data is retrieved from the Oracle Server should be conducted to ensure that there are no possible delays at the Applications server once the Oracle issues are resolved. SQL*NET Array Size, SDU and TDU tuning should also be considered from the Application server.

Details:

I have included a significant amount of information for the sake of the developers to ease their understanding of this problem. If this information reads somewhat busy to you I apologize. A complete list of attached files is at the end of this note. It is advised that you follow the remainder of this note opening files when instructed and comparing the information outlined. All of the "**selects**" statements with the exception of the one in the **Good query** section should be reviewed for optimization. Lotus Notes users will notice the use of different colors of the trace details to express certain points. I apologize to those reading this outside of Notes.

There are several files attached which show the details of some of the packets noted in this report and the entire summarized view of the trace, so packet time stamps can be referenced. The traces and packets detailed below were created on the segment where the Application server resides. Traces from the workstation side did reveal the same delays in the packet time stamps, however there are no Oracle packets to be seen (of course) between the Client and the Application server. A trace of the Client side is included at the end of this document.

3 second delay at beginning of logon



Please open the file [Projtcpo](#) to review the entire trace while reading the following:

The first delay is encountered between frames 58 and 176 **before** the following query is executed at frame 178 from the Application server to the Oracle server: **SELECT 1 FROM tlkpTimeStamp**. Many of the frames between 58 and 176 are a conversation between the Application server and Client workstation. You will see that this sequence between the Application server and the Client require 3 seconds to send back to back packets to the Application server in frames 75 and 76.

```
75 00:03.194 220.11.147.177 220.11.108.100 TCP S=1687 D=1560 ACK=3026671875
WIN=14508
```

```
76 00:06.369 220.11.147.177 220.11.108.100 TCP S=1687 D=1560 ACK=3026671875
SEQ=16882342 LEN=150 WIN=14508
```

3 Second delay during load

The next noticeable delay is seen at frame 543, however before this delay is encountered the query at frame 533 was sent

```

0          01-EC 00-00 06 00 00-00 00 00 03 4A 9F 01-01-01-
J
16          03-18-10-A8-01-02-01-B4-00-00-00-00-00-6C-FE-54-
l T
32          02-01-01-00-00-00-00-00-00-00-00-00-00-00-00-00-
48          00-00-00-00-00-00-53-45-4C-45-43-54-20-44-49-53-
SELECT DIS
64          54-49-4E-43-54-20-74-62-6C-41-63-74-69-76-69-74-   TINCT
tblActivit
80          79-2E-66-6C-64-50-72-6F-6A-65-63-74-4B-65-79-20-
y.fldProjectKey
96          2C-74-62-6C-41-63-74-69-76-69-74-79-2E-66-6C-64-
,tblActivity.fld
112         54-61-73-6B-49-64-2C-20-74-62-6C-41-63-74-69-76-   TaskId,
tblActiv
128         69-74-79-2E-66-6C-64-52-65-73-49-44-2C-20-74-62-
ity.fldResID, tb
144         6C-41-63-74-69-76-69-74-79-2E-66-6C-64-41-63-74-
lActivity.fldAct
160         69-6F-6E-44-61-74-65-20-46-52-4F-4D-20-20-74-62-   ionDate
FROM tb
176         6C-41-63-74-69-76-69-74-79-2C-20-74-62-6C-52-65-   lActivity,
tblRe
192         73-6F-75-72-63-65-20-57-48-45-52-45-20-74-62-6C-   source
WHERE tbl
208         41-63-74-69-76-69-74-79-2E-66-6C-64-50-72-6F-6A-
Activity.fldProj
224         65-63-74-4B-65-79-20-3D-20-74-62-6C-52-65-73-6F-   ectKey =
tblReso
240         75-72-63-65-2E-66-6C-64-50-72-6F-6A-65-63-74-4B-
ource.fldProjectK
256         65-79-20-41-4E-44-20-74-62-6C-41-63-74-69-76-69-   ey AND
tblActivi
272         74-79-2E-66-6C-64-52-65-73-49-44-20-3D-20-74-62-   ty.fldResID
= tb
288         6C-52-65-73-6F-75-72-63-65-2E-66-6C-64-52-65-73-
lResource.fldRes
304         49-44-20-41-4E-44-20-20-28-74-62-6C-41-63-74-69-   ID AND
(tblActi
320         76-69-74-79-2E-66-6C-64-53-74-61-74-75-73-20-3D-
vity.fldStatus =
336         20-27-52-27-20-4F-52-20-74-62-6C-41-63-74-69-76-   'R' OR
tblActiv
352         69-74-79-2E-66-6C-64-53-74-61-74-75-73-20-3D-20-
ity.fldStatus =
368         27-72-27-29-20-20-41-4E-44-20-74-62-6C-52-65-73-   'r') AND
tblRes
384         6F-75-72-63-65-2E-66-6C-64-41-64-64-72-65-73-73-
ource.fldAddress
400         20-3D-20-27-31-39-39-38-30-35-32-30-31-34-34-35-   =
'199805201445
416         30-35-5F-30-30-34-37-37-27-20-20-41-4E-44-20-74-   05_00477'
AND t

```

```

432      62-6C-41-63-74-69-76-69-74-79-2E-66-6C-64-44-65-
blActivity.fldDe
448      6C-65-74-65-64-20-3D-20-30-20-20-41-4E-44-20-74-   leted = 0
AND t
464      62-6C-52-65-73-6F-75-72-63-65-2E-66-6C-64-44-65-
blResource.fldDe
480      6C-65-74-65-64-20-3D-20-30-20-01-01               leted = 0

```

```

533      00:09.499 220.11.108.100 206.210.30.208 TCP S=1767
D=58236 ACK=1279164557 SEQ=3023071871 LEN=492 WIN=8735
534      00:09.505 206.210.30.208 220.11.108.100 TCP S=58236
D=1767 ACK=3023072363 SEQ=1279164557 LEN=36 WIN=8760
535      00:09.506 220.11.108.100 206.210.30.208 TCP S=1767
D=58236 ACK=1279164593 SEQ=3023072363 LEN=42 WIN=8699
536      00:09.511 206.210.30.208 220.11.108.100 TCP S=58236
D=1767 ACK=3023072405 SEQ=1279164593 LEN=134 WIN=8760
537      00:09.513 220.11.108.100 206.210.30.208 TCP S=1767
D=58236 ACK=1279164727 SEQ=3023072405 LEN=18 WIN=8565
538      00:09.518 206.210.30.208 220.11.108.100 TCP S=58236
D=1767 ACK=3023072423 SEQ=1279164727 LEN=35 WIN=8760
539      00:09.523 220.11.108.100 206.210.30.208 TCP S=1767
D=58236 ACK=1279164762 SEQ=3023072423 LEN=113 WIN=8530
540      00:09.539 220.11.147.177 220.11.108.100 TCP S=1699
D=1560 ACK=3026928272 WIN=12376
541      00:09.577 206.210.30.208 220.11.108.100 TCP S=58236
D=1767 ACK=3023072536 WIN=8760
542      00:09.580 220.11.108.100 220.11.147.177 TCP S=1560
D=1712 ACK=17138007 WIN=14408
543      00:12.743 206.210.30.208 220.11.108.100 TCP S=58236
D=1767 ACK=3023072536 SEQ=1279164762 LEN=63 WIN=8760

```

The frame(#543) that came 3 seconds later from the Oracle server returned the following:

```

0      00-3F 00-00 06 00 00-00 00 00 04 00 02 05-7B 00-   ?
{
16     00-01-03-00-03-00-00-00-00-00-00-00-00-00-00-00-
32     00-A2-00-01-01-19-4F-52-41-2D-30-31-34-30-33-3A-   ORA-
01403:
48     20-6E-6F-20-64-61-74-61-20-66-6F-75-6E-64-0A   no data
found

```

19 second delay

The next delay occurs at frame #634

```

633 00:13.385 220.11.108.100 220.11.108.105 TCP S=1202 D=139 ACK=34544449
WIN=13788
634 00:32.120 206.210.30.208 220.11.108.100 TCP S=58236 D=1767 ACK=3023073897
SEQ=1279165132 LEN=63 WIN=8760

```

As a reference here is the last query before this delay at frame #603

Frame: 603 Time: 0:00:12.9773541 Length: 1069

```
0      03-EB 00-00 06 00 00-00 00 00 03 4A AA 01-01-01-
J
16     03-18-10-A8-01-02-03-B3-00-00-00-00-00-00-6C-FE-54-
l T
32     02-01-01-00-00-00-00-00-00-00-00-00-00-00-00-00-00-
48     00-00-00-00-00-00-53-45-4C-45-43-54-20-44-49-53-
SELECT DIS
64     54-49-4E-43-54-20-74-62-6C-54-61-73-6B-2E-66-6C-    TINCT
tblTask.fl
80     64-50-72-6F-6A-65-63-74-4B-65-79-20-2C-74-62-6C-    dProjectKey
,tbl
96     54-61-73-6B-2E-66-6C-64-54-61-73-6B-49-64-20-46-
Task.fldTaskId F
112    52-4F-4D-20-20-74-62-6C-54-61-73-6B-2C-20-74-62-    ROM
tblTask, tb
128    6C-41-63-74-69-76-69-74-79-20-57-48-45-52-45-20-    lActivity
WHERE
144    74-62-6C-54-61-73-6B-2E-66-6C-64-50-72-6F-6A-65-
tblTask.fldProje
160    63-74-4B-65-79-20-3D-20-74-62-6C-41-63-74-69-76-    ctKey =
tblActiv
176    69-74-79-2E-66-6C-64-50-72-6F-6A-65-63-74-4B-65-
ity.fldProjectKe
192    79-20-41-4E-44-20-74-62-6C-54-61-73-6B-2E-66-6C-    y AND
tblTask.fl
208    64-52-65-73-49-44-20-3D-20-74-62-6C-41-63-74-69-    dResID =
tblActi
224    76-69-74-79-2E-66-6C-64-52-65-73-49-44-20-41-4E-
vity.fldResID AN
240    44-20-74-62-6C-54-61-73-6B-2E-66-6C-64-54-61-73-    D
tblTask.fldTas
256    6B-49-44-20-3D-20-74-62-6C-41-63-74-69-76-69-74-    kID =
tblActivit
272    79-2E-66-6C-64-54-61-73-6B-49-44-20-41-4E-44-20-    y.fldTaskID
AND
288    20-28-74-62-6C-54-61-73-6B-2E-66-6C-64-53-74-61-
(tblTask.fldSta
304    74-75-73-20-3D-20-27-52-27-20-4F-52-20-74-62-6C-    tus = 'R'
OR tbl
320    54-61-73-6B-2E-66-6C-64-53-74-61-74-75-73-20-3D-
Task.fldStatus =
336    20-27-72-27-20-4F-52-20-74-62-6C-54-61-73-6B-2E-    'r' OR
tblTask.
352    66-6C-64-53-74-61-74-75-73-20-3D-20-27-46-27-20-    fldStatus =
'F'
368    4F-52-20-74-62-6C-54-61-73-6B-2E-66-6C-64-53-74-    OR
tblTask.fldSt
384    61-74-75-73-20-3D-20-27-66-27-29-20-41-4E-44-20-    atus = 'f')
AND
400    20-74-62-6C-54-61-73-6B-2E-66-6C-64-50-72-6F-6A-
tblTask.fldProj
```

```

416      65-63-74-4B-65-79-20-49-4E-20-28-53-45-4C-45-43-      ectKey IN
      (SELEC
432      54-20-66-6C-64-49-74-65-6D-20-46-52-4F-4D-20-74-      T fldItem
FROM t
448      62-6C-47-72-6F-75-70-2C-20-74-62-6C-41-70-70-6C-      blGroup,
tblAppl
464      69-63-61-74-69-6F-6E-2C-20-74-62-6C-50-65-72-6D-      ication,
tblPerm
480      69-73-73-69-6F-6E-2C-20-74-62-6C-50-65-72-6D-69-      ission,
tblPermi
496      73-73-69-6F-6E-54-79-70-65-20-57-48-45-52-45-20-      ssionType
WHERE
512      74-62-6C-50-65-72-6D-69-73-73-69-6F-6E-2E-66-6C-      tblPermission.fl
528      64-54-79-70-65-49-44-20-3D-20-74-62-6C-50-65-72-      dTypeID =
tblPer
544      6D-69-73-73-69-6F-6E-54-79-70-65-2E-66-6C-64-54-      missionType.fldT
560      79-70-65-49-44-20-41-4E-44-20-74-62-6C-50-65-72-      ypeID AND
tblPer
576      6D-69-73-73-69-6F-6E-2E-66-6C-64-41-70-70-49-44-      mission.fldAppID
592      20-3D-20-74-62-6C-50-65-72-6D-69-73-73-69-6F-6E-      =
tblPermission
608      54-79-70-65-2E-66-6C-64-41-70-70-49-44-20-41-4E-      Type.fldAppID AN
624      44-20-74-62-6C-41-70-70-6C-69-63-61-74-69-6F-6E-      D
tblApplication
640      2E-66-6C-64-41-70-70-49-44-20-3D-20-74-62-6C-50-      .fldAppID =
tblP
656      65-72-6D-69-73-73-69-6F-6E-2E-66-6C-64-41-70-70-      ermission.fldApp
672      49-44-20-41-4E-44-20-74-62-6C-47-72-6F-75-70-2E-      ID AND
tblGroup.
688      66-6C-64-47-72-6F-75-70-49-44-28-2B-29-20-3D-20-      fldGroupID(+) =
704      74-62-6C-50-65-72-6D-69-73-73-69-6F-6E-2E-66-6C-      tblPermission.fl
720      64-52-65-73-6F-75-72-63-65-49-44-20-41-4E-44-20-      dResourceID
AND
736      74-62-6C-41-70-70-6C-69-63-61-74-69-6F-6E-2E-66-      tblApplication.f
752      6C-64-41-70-70-4E-61-6D-65-20-3D-20-27-55-70-64-      ldAppName =
'Upd
768      61-74-65-45-6E-74-65-72-70-72-69-73-65-27-20-41-      ateEnterprise' A
784      4E-44-20-74-62-6C-50-65-72-6D-69-73-73-69-6F-6E-      ND
tblPermission
800      54-79-70-65-2E-66-6C-64-4E-61-6D-65-20-3D-20-27-      Type.fldName = '
816      45-64-69-74-20-50-72-6F-6A-65-63-74-27-20-41-4E-      Edit
Project' AN
832      44-20-28-74-62-6C-50-65-72-6D-69-73-73-69-6F-6E-      D
(tblPermission

```

```

848      2E-66-6C-64-52-65-73-6F-75-72-63-65-49-64-20-3D-
.fldResourceId =
864      20-27-31-39-39-38-30-35-32-30-31-34-34-35-30-35-
'19980520144505
880      5F-30-30-34-37-37-27-20-4F-52-20-74-62-6C-47-72-   _00477' OR
tblGr
896      6F-75-70-2E-66-6C-64-52-65-73-6F-75-72-63-65-49-
oup.fldResourceI
912      64-20-3D-20-27-31-39-39-38-30-35-32-30-31-34-34-   d =
'19980520144
928      35-30-35-5F-30-30-34-37-37-27-29-29-20-20-41-4E-
505_00477')) AN
944      44-20-74-62-6C-41-63-74-69-76-69-74-79-2E-66-6C-   D
tblActivity.fl
960      64-44-65-6C-65-74-65-64-20-3D-20-30-20-20-41-4E-   dDeleted =
0 AN
976      44-20-74-62-6C-54-61-73-6B-2E-66-6C-64-44-65-6C-   D
tblTask.fldDel
992      65-74-65-64-20-3D-20-30-20-01-01                   eted = 0

```

This is what is returned 19 seconds later from the database server:

```

      Frame: 634          Time:          0:00:32.0024247  Length: 129
0      00-3F 00-00 06 00 00-00 00 00 04 00 02 05-7B 00-   ?
{
16     00-01-03-00-03-00-00-00-00-00-00-00-00-00-00-00-00-
32     00-AD-00-01-01-19-4F-52-41-2D-30-31-34-30-33-3A-   ORA-
01403:
48     20-6E-6F-20-64-61-74-61-20-66-6F-75-6E-64-0A   no data
found

```

The big killer 4 1/2 minute delay

And now for the big 4 1/2 minute delay sequence. This sequence was confirmed in Oracle TNS frames by observing the sequence numbers for each cursor opened. For this particular sequence of events and to easily decipher the Oracle protocol functions please open the file



Projsum1 while reviewing these details. This file only lists the relevant Oracle TNS packets between the Application and Database servers.

It appears that the start of this delay is attributed to an Oracle query and a fast **UPI call(User to Oracle Request)**.

The TNS sequence numbers for this transactions start at 180 and end at 185 upon closure of the cursor from the Application.

Here is a summary of the two packets showing the delay. Also, there are many packets involved before and after these two that outline this condition. You can see the entire trace of the transaction at the end of this document.

Here is the frame with the UPI call
 The other frames in between are not relevant for this review.

```

Frame: 701           Time:           0:00:32.2814027  Length: 179
Frame Length          113
Frame Chksum          00-00
Type                  6                      Data
Packet Flags         0
Header Chksum        00-00
Data Flags           00000000
                    .....0.              NT Trailer not
requested
                    .....0              Not a request to send
Data Flags           00000000
                    0.....              Immediate Confirm not
reqd.
                    .0.....              Not End of File
                    ..0.....              No more data to come
                    ....0...              Reserved for HDX flag
                    .....0..              Not a confirmation
                    .....0.              No request for
confirmation
                    .....0              Not HDX (send) token
Two Task Common
Basic Operation Code  3                      User-to-Oracle (UPI)
request
Function Type         71                      OALL7 - Fast UPI call
to opial7
Sequence Number    184
Data
  _€P_ ( _ _ ~
  , _ _ T _ _ _
  
```

Finally frame 704 returns to the Application server from the Oracle Server. Note the time stamp.

```

Frame: 704           Time:           0:04:57.2011817  Length: 129
0      00-3F 00-00 06 00 00-00 00 00 04 00 02 05-7B 00-   ?
{
16     00-01-03-00-03-00-00-00-00-00-00-00-00-00-00-00-
32     00-B8-00-01-01-19-4F-52-41-2D-30-31-34-30-33-3A-   ORA-
01403:
48     20-6E-6F-20-64-61-74-61-20-66-6F-75-6E-64-0A   no data
found
  
```

After the above delay the remaining frames for the TNS sequence and cursor operation follow:

```

705   04:57.205   220.11.108.100   206.210.30.208   TNS   C Close
cursor
706   04:57.210   206.210.30.208   220.11.108.100   TNS   R Function
Complete
  
```

The next conditioned noticed was that there were several other queries afterwards that completed in milliseconds. Then the final query that actually provides the Application Server with data to send to the Client workstation.

The good query that produced data:

This query produced the data for the Application server to send to the Client. This following packets show what is finally sent to the Application server from the Oracle server and ultimately to the client. The TNS sequence for this transaction is from 202 through 207. Frames in between are not relevant to explain this event.

```

Frame: 832           Time:           0:04:57.7491935 Length: 1423
Frame Length          1357
Frame Chksum          00-00
Type                  6                      Data
Packet Flags          0
Header Chksum         00-00
Data Flags            00000000
                      .....0.           NT Trailer not
requested
                      .....0           Not a request to send
Data Flags            00000000
                      0.....           Immediate Confirm not
reqd.
                      .0.....           Not End of File
                      ..0.....           No more data to come
                      ....0...           Reserved for HDX flag
                      .....0..           Not a confirmation
                      .....0.           No request for
confirmation
                      .....0           Not HDX (send) token
Two Task Common
Basic Operation Code  3                      User-to-Oracle (UPI)
request
Function Type         74                      OSQL7 - Parse call
Sequence Number    203
Data

```

```

_____ " _____ l_T _____ SELECT DISTINCT tblProj
ect.fldProjectKey, fldProjectDescription, fldProjectType, fldCus
tomText1, fldManager, fldStart, fldFinish, fldEstimatedHours, fl
dDuration, fldActualStart, fldActualFinish, fldActualWork, fldAc
tualDuration, fldCustomText2, fldCustomText3, fldCustomText4, fl
dCustomText5, fldCustomText6, fldCustomText7, fldCustomText8, fl
dCustomText9, fldCustomText10, fldCustomText11, fldCustomNumber1
, fldCustomNumber2, fldCustomNumber3, fldOrigination FROM tblPro
ject, tblProjectInfo WHERE tblProject.fldProjectKey = tblProject
Info.fldProjectKey AND tblProject.fldDeleted <> 1 AND tblProjec
t.fldProjectKey IN (SELECT fldItem FROM tblGroup, tblApplication
, tblPermission, tblPermissionType WHERE tblPermission.fldTypeI
D = tblPermissionType.fldTypeID AND tblPermission.fldAppID = tbl
PermissionType.fldAppID AND tblApplication.fldAppID = tblPermiss
ion.fldAppID AND tblGroup.fldGroupID(+) = tblPermission.fldResou

```

rceID AND tblApplication.fldAppName = 'UpdateEnterp

Four data packets then follow in sequence following TCP sliding window algorithm for data segment processing. This is very efficient:

```
842 05:03.766 206.210.30.208 220.11.108.100 TNS R Row Trx
Header
843 05:03.766 206.210.30.208 220.11.108.100 TNS Data
Len=587
845 05:03.772 206.210.30.208 220.11.108.100 TNS
846 05:03.773 206.210.30.208 220.11.108.100 TNS Data
Len=1024
```

Here is the data returned in detailed:

```
Frame: 842 Time: 0:05:03.7661356 Length: 1526
0 07-FF 00-00 06 00 00-00 00 00 06 02 01 1B 00 01
16 64 00 07-10-39-38-30-38-30-37-31-30-35-35-35-31- d
980807105551
32 37-39-36-36-00-18-41-49-4D-53-20-41-6E-6E-75-61- 7966 AIMS
Annua
48 6C-20-50-72-6F-6A-65-63-74-20-57-6F-72-6B-00-07- l Project
Work
64 50-6C-61-6E-6E-65-64-00-0D-4E-65-77-20-59-6F-72- Planned
New Yor
80 6B-20-4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-69-74- k Life
Moskovit
96 73-20-42-61-72-72-79-00-07-77-C7-01-04-0A-01-01- s Barry w
112 00-07-78-64-03-1B-11-1F-01-00-04-C3-02-2E-06-00- xd
.
128 04-33-31-33-64-00-00-81-01-00-81-01-02-30-68-00- 313d
0h
144 02-30-64-00-01-20-00-03-47-36-35-00-03-48-52-44- 0d G65
HRD
160 00-04-43-4F-52-50-00-03-4E-65-77-00-0B-44-65-76- CORP New
Dev
176 65-6C-6F-70-6D-65-6E-74-00-06-53-6C-65-76-69-6E- elopment
Slevin
192 00-06-59-75-73-74-61-74-00-0A-43-6F-6D-70-6C-69- Yustat
Compli
208 61-6E-63-65-00-18-41-49-4D-53-20-41-6E-6E-75-61- ance AIMS
Annua
224 6C-20-50-72-6F-6A-65-63-74-20-57-6F-72-6B-00-01- l Project
Work
240 80-00-01-80-00-02-C1-02-00-09-4D-53-50-72-6F-6A- MSPProj
256 65-63-74-00-07-10-39-38-30-38-30-37-31-31-32-39- ect
9808071129
272 35-37-31-30-34-35-00-27-41-49-4D-53-20-43-61-66- 571045
'AIMS Caf
```

288	65-74-65-72-69-61-20-44-65-64-75-63-74-69-6F-6E-	eteria
Deduction		
304	20-41-6E-6E-75-61-6C-20-50-72-6F-63-65-73-73-00-	Annual
Process		
320	07-50-6C-61-6E-6E-65-64-00-0D-4E-65-77-20-59-6F-	Planned
New Yo		
336	72-6B-20-4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-69-	rk Life
Moskovi		
352	74-73-20-42-61-72-72-79-00-07-77-C7-01-04-0A-01-	ts Barry w
368	01-00-07-77-C7-0C-1F-11-1F-01-00-03-C2-05-51-00-	w
Q		
384	03-33-32-64-00-00-81-01-00-81-01-02-30-68-00-02-	32d
Oh		
400	30-64-00-01-20-00-03-47-33-39-00-02-43-53-00-04-	Od G39
CS		
416	43-4F-52-50-00-08-42-61-73-65-6C-69-6E-65-00-12-	CORP
Baseline		
432	50-72-6F-64-75-63-74-69-6F-6E-20-53-75-70-70-6F-	Production
Suppo		
448	72-74-00-06-53-6C-65-76-69-6E-00-06-59-75-73-74-	rt Slevin
Yust		
464	61-74-00-0A-43-6F-6D-70-6C-69-61-6E-63-65-00-27-	at
Compliance '		
480	41-49-4D-53-20-43-61-66-65-74-65-72-69-61-20-44-	AIMS
Cafeteria D		
496	65-64-75-63-74-69-6F-6E-20-41-6E-6E-75-61-6C-20-	education
Annual		
512	50-72-6F-63-65-73-73-00-01-80-00-01-80-00-02-C1-	Process
528	02-00-09-4D-53-50-72-6F-6A-65-63-74-00-07-10-39-	
MSPProject 9		
544	38-30-38-30-37-31-31-30-35-35-39-33-39-35-36-00-	
808071105593956		
560	1C-41-49-4D-53-20-45-50-53-49-2F-41-50-53-49-20-	AIMS
EPSI/APSI		
576	41-64-6D-69-6E-20-55-70-67-72-61-64-65-00-07-50-	Admin
Upgrade P		
592	6C-61-6E-6E-65-64-00-0D-4E-65-77-20-59-6F-72-6B-	lanned New
York		
608	20-4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-69-74-73-	Life
Moskovits		
624	20-42-61-72-72-79-00-07-77-C7-01-04-0A-01-01-00-	Barry w
640	07-77-C7-09-1E-11-1F-01-00-03-C2-39-47-00-04-31-	w
9G 1		
656	38-39-64-00-00-81-01-00-81-01-02-30-68-00-02-30-	89d
Oh 0		
672	64-00-01-20-00-03-47-36-36-00-03-48-52-44-00-04-	d G66
HRD		
688	43-4F-52-50-00-03-4E-65-77-00-0B-44-65-76-65-6C-	CORP New
Devel		
704	6F-70-6D-65-6E-74-00-06-53-6C-65-76-69-6E-00-06-	opment
Slevin		
720	59-75-73-74-61-74-00-18-49-6D-70-72-6F-76-65-20-	Yustat
Improve		

736	43-75-73-74-6F-6D-65-72-20-53-65-72-76-69-63-65-	Customer
Service		
752	00-1C-41-49-4D-53-20-45-50-53-49-2F-41-50-53-49-	AIMS
EPSI/APSI		
768	20-41-64-6D-69-6E-20-55-70-67-72-61-64-65-00-01-	Admin
Upgrade		
784	80-00-01-80-00-01-80-00-09-4D-53-50-72-6F-6A-65-	
MSProje		
800	63-74-00-07-10-39-38-30-38-30-37-31-31-32-31-30-	ct
98080711210		
816	37-36-31-38-31-00-19-41-49-4D-53-20-4D-65-72-69-	76181 AIMS
Meri		
832	74-20-52-65-76-69-65-77-20-50-72-6F-63-65-73-73-	t Review
Process		
848	00-07-50-6C-61-6E-6E-65-64-00-0D-4E-65-77-20-59-	Planned
New Y		
864	6F-72-6B-20-4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-	ork Life
Moskov		
880	69-74-73-20-42-61-72-72-79-00-07-77-C7-01-04-0A-	its Barry
w		
896	01-01-00-07-77-C7-0C-1E-11-1F-01-00-04-C3-02-0D-	w
912	60-00-04-32-35-31-64-00-00-81-01-00-81-01-02-30-	251d
0		
928	68-00-02-30-64-00-01-20-00-03-47-36-37-00-03-48-	h Od
G67 H		
944	52-44-00-04-43-4F-52-50-00-07-4F-6E-67-6F-69-6E-	RD CORP
Ongoin		
960	67-00-0B-44-65-76-65-6C-6F-70-6D-65-6E-74-00-06-	g
Development		
976	53-6C-65-76-69-6E-00-06-59-75-73-74-61-74-00-0A-	Slevin
Yustat		
992	43-6F-6D-70-6C-69-61-6E-63-65-00-19-41-49-4D-53-	Compliance
AIMS		
1008	20-4D-65-72-69-74-20-52-65-76-69-65-77-20-50-72	Merit
Review Pr		

Frame: 843 Time: 0:05:03.7669250 Length: 653

0	0B-44-65-76-65-6C-6F-70-6D-65-6E-74-00-06-53-6C-	
Development Sl		
16	65-76-69-6E-00-06-59-75-73-74-61-74-00-18-49-6D-	evin
Yustat Im		
32	70-72-6F-76-65-20-43-75-73-74-6F-6D-65-72-20-53-	prove
Customer S		
48	65-72-76-69-63-65-00-15-41-49-4D-53-20-4E-65-77-	ervice
AIMS New		
64	20-45-6E-68-61-6E-63-65-6D-65-6E-74-73-00-01-80-	
Enhancements		
80	00-01-80-00-01-80-00-09-4D-53-50-72-6F-6A-65-63-	
MSProjec		
96	74-00-07-10-39-38-30-38-30-37-31-31-30-39-32-39-	t
980807110929		

112	38-35-32-35-00-1F-41-49-4D-53-20-50-65-6E-73-69-	8525	AIMS
Pensi			
128	6F-6E-20-53-79-73-74-65-6D-20-4F-75-74-73-6F-75-	on	System
Outsou			
144	72-63-69-6E-67-00-07-50-6C-61-6E-6E-65-64-00-0D-	rcing	
Planned			
160	4E-65-77-20-59-6F-72-6B-20-4C-69-66-65-00-0F-4D-	New	York
Life M			
176	6F-73-6B-6F-76-69-74-73-20-42-61-72-72-79-00-07-	oskovits	
Barry			
192	77-C7-01-04-09-01-01-00-07-77-C7-07-1E-11-1F-01-	w	w
208	00-03-C2-37-4C-00-04-31-34-36-64-00-00-81-01-00-	7L	146d
224	81-01-02-30-68-00-02-30-64-00-01-20-00-03-47-37-	0h	0d
G7			
240	30-00-03-48-52-44-00-04-43-4F-52-50-00-03-4E-65-	0	HRD
CORP Ne			
256	77-00-0B-44-65-76-65-6C-6F-70-6D-65-6E-74-00-06-	w	
Development			
272	53-6C-65-76-69-6E-00-06-59-75-73-74-61-74-00-18-	Slevin	
Yustat			
288	52-65-64-75-63-65-20-4F-70-65-72-61-74-69-6E-67-	Reduce	
Operating			
304	20-45-78-70-65-6E-73-65-00-1F-41-49-4D-53-20-50-	Expense	
AIMS P			
320	65-6E-73-69-6F-6E-20-53-79-73-74-65-6D-20-4F-75-	ension	
System Ou			
336	74-73-6F-75-72-63-69-6E-67-00-01-80-00-01-80-00-	tsourcing	
352	01-80-00-09-4D-53-50-72-6F-6A-65-63-74-00-07-10-		
MSProject			
368	39-38-30-38-30-37-31-31-32-36-32-34-36-39-31-30-		
9808071126246910			
384	00-12-41-49-4D-53-20-54-61-78-20-52-65-70-6F-72-	AIMS	Tax
Repor			
400	74-69-6E-67-00-07-50-6C-61-6E-6E-65-64-00-0D-4E-	ting	
Planned N			
416	65-77-20-59-6F-72-6B-20-4C-69-66-65-00-0F-4D-6F-	ew	York
Life Mo			
432	73-6B-6F-76-69-74-73-20-42-61-72-72-79-00-07-77-	skovits	
Barry w			
448	C7-01-04-0A-01-01-00-07-77-C7-0C-1F-11-1F-01-00-		w
464	05-C3-02-08-3F-33-00-04-32-35-32-64-00-00-81-01-	?3	
252d			
480	00-81-01-02-30-68-00-02-30-64-00-01-20-00-03-47-	0h	0d
G			
496	34-37-00-03-43-46-44-00-04-43-4F-52-50-00-03-4E-	47	CFD
CORP N			
512	65-77-00-0B-44-65-76-65-6C-6F-70-6D-65-6E-74-00-	ew	
Development			
528	06-53-6C-65-76-69-6E-00-06-59-75-73-74-61-74-00-	Slevin	
Yustat			
544	0A-43-6F-6D-70-6C-69-61-6E-63-65-00-12-41-49-4D-	Compliance	
AIM			
560	53-20-54-61-78-20-52-65-70-6F-72-74-69-6E-67-00-	S	Tax
Reporting			

576 01-80-00-01-80-00-01-80-00-09-4D

M

Frame: 845 Time: 0:05:03.7728475 Length: 1526

0 08-00 00-00 06 00 00-00 00 00 53-50-72-6F-6A-65-
 SProje
 16 63-74-00-07-10-39-39-30-31-30-37-31-30-33-34-30- ct
 99010710340
 32 30-33-36-34-30-00-21-43-6F-6D-70-6C-69-61-6E-63- 03640
 !Complianc
 48 65-2F-52-65-70-6F-72-74-69-6E-67-20-45-6E-68-61- e/Reporting
 Enha
 64 6E-63-65-6D-65-6E-74-73-00-04-4F-70-65-6E-00-0D- ncements
 Open
 80 4E-65-77-20-59-6F-72-6B-20-4C-69-66-65-00-15-43- New York
 Life C
 96 61-72-73-6F-6E-20-4A-72-2E-20-44-6F-75-67-6C-61- arson Jr.
 Dougla
 112 73-20-52-2E-00-07-77-C7-01-16-01-01-01-00-07-77- s R. w
 w
 128 C7-06-16-01-01-01-00-03-C2-05-29-00-00-81-01-00-)
 144 81-01-00-81-01-00-81-01-00-81-01-01-20-00-03-49-
 I
 160 35-33-00-03-43-46-44-00-04-43-4F-52-50-00-07-4F- 53 CFD
 CORP O
 176 6E-67-6F-69-6E-67-00-0B-44-65-76-65-6C-6F-70-6D- ngoing
 Developm
 192 65-6E-74-00-06-53-6C-65-76-69-6E-00-06-59-75-73- ent Slevin
 Yus
 208 74-61-74-00-01-20-00-21-43-6F-6D-70-6C-69-61-6E- tat
 !Complian
 224 63-65-2F-52-65-70-6F-72-74-69-6E-67-20-45-6E-68-
 ce/Reporting Enh
 240 61-6E-63-65-6D-65-6E-74-73-00-01-80-00-01-80-00- ancements
 256 02-C1-04-00-11-45-6E-74-65-72-70-72-69-73-65-50-
 EnterpriseP
 272 72-6F-6A-65-63-74-00-07-10-39-38-31-31-31-32-31- roject
 9811121
 288 36-32-33-34-30-32-37-36-38-00-15-47-65-6E-65-72- 623402768
 Gener
 304 61-6C-20-53-75-70-70-6F-72-74-20-2D-20-43-53-44- al Support
 - CSD
 320 00-04-4F-70-65-6E-00-0D-4E-65-77-20-59-6F-72-6B- Open New
 York
 336 20-4C-69-66-65-00-12-53-74-72-61-73-73-62-75-72- Life
 Strassbur
 352 67-65-72-20-53-75-73-61-6E-00-07-77-C6-0B-0C-01- ger Susan
 w
 368 01-01-00-07-77-C7-01-08-01-01-01-00-02-C1-19-00- w
 384 00-81-01-00-81-01-00-81-01-00-81-01-00-81-01-01-01-
 400 20-00-03-45-38-32-00-02-43-53-00-04-43-4F-52-50- E82 CS
 CORP

416	00-08-42-61-73-65-6C-69-6E-65-00-0F-47-65-6E-65-	Baseline
Gene		
432	72-61-6C-20-53-75-70-70-6F-72-74-00-06-53-6C-65-	ral Support
Sle		
448	76-69-6E-00-06-59-75-73-74-61-74-00-18-52-65-64-	vin Yustat
Red		
464	75-63-65-20-4F-70-65-72-61-74-69-6E-67-20-45-78-	uce
Operating Ex		
480	70-65-6E-73-65-00-15-47-65-6E-65-72-61-6C-20-53-	pense
General S		
496	75-70-70-6F-72-74-20-2D-20-43-53-44-00-01-80-00-	upport -
CSD		
512	01-80-00-02-C1-02-00-11-45-6E-74-65-72-70-72-69-	
Enterpri		
528	73-65-50-72-6F-6A-65-63-74-00-07-10-39-38-31-31-	seProject
9811		
544	31-32-31-35-34-32-33-37-35-31-36-32-00-21-47-65-	
121542375162 !Ge		
560	6E-65-72-61-6C-20-53-75-70-70-6F-72-74-20-2D-20-	neral
Support -		
576	45-6D-70-6C-6F-79-65-65-20-48-65-61-6C-74-68-00-	Employee
Health		
592	04-4F-70-65-6E-00-0D-4E-65-77-20-59-6F-72-6B-20-	Open New
York		
608	4C-69-66-65-00-13-51-75-69-6A-61-64-61-20-56-69-	Life
Quijada Vi		
624	63-74-6F-72-69-61-20-53-2E-00-07-77-C6-0B-0C-01-	ctoria S.
w		
640	01-01-00-07-77-C6-0B-0C-01-01-01-00-02-C1-09-00-	w
656	00-81-01-00-81-01-00-81-01-00-81-01-00-81-01-01-	
672	20-00-03-30-34-36-00-03-45-48-44-00-04-43-4F-52-	046 EHD
COR		
688	50-00-08-42-61-73-65-6C-69-6E-65-00-0F-47-65-6E-	P Baseline
Gen		
704	65-72-61-6C-20-53-75-70-70-6F-72-74-00-06-53-6C-	eral
Support Sl		
720	65-76-69-6E-00-06-59-75-73-74-61-74-00-01-20-00-	evin
Yustat		
736	20-47-65-6E-65-72-61-6C-20-53-75-70-70-6F-72-74-	General
Support		
752	20-2D-20-45-6D-70-6C-6F-79-65-65-20-48-65-61-6C-	- Employee
Heal		
768	74-00-01-80-00-01-80-00-01-80-00-11-45-6E-74-65-	t
Ente		
784	72-70-72-69-73-65-50-72-6F-6A-65-63-74-00-07-10-	
rpriseProject		
800	39-38-31-31-31-32-31-35-34-35-34-34-39-33-30-30-	
9811121545449300		
816	00-15-47-65-6E-65-72-61-6C-20-53-75-70-70-6F-72-	General
Suppor		
832	74-20-2D-20-48-52-44-00-04-4F-70-65-6E-00-0D-4E-	t - HRD
Open N		
848	65-77-20-59-6F-72-6B-20-4C-69-66-65-00-12-53-74-	ew York
Life St		

864	72-61-73-73-62-75-72-67-65-72-20-53-75-73-61-6E-	rassburger
Susan		
880	00-07-77-C6-0B-0C-01-01-01-00-07-77-C6-0B-0C-01-	w
w		
896	01-01-00-02-C1-09-00-00-81-01-00-81-01-00-81-01-	
912	00-81-01-00-81-01-00-81-01-03-30-34-38-00-03-48-	
048	H	
928	52-44-00-04-43-4F-52-50-00-08-42-61-73-65-6C-69-	RD CORP
Baseli		
944	6E-65-00-0F-47-65-6E-65-72-61-6C-20-53-75-70-70-	ne General
Supp		
960	6F-72-74-00-06-53-6C-65-76-69-6E-00-06-59-75-73-	ort Slevin
Yus		
976	74-61-74-00-00-81-01-15-47-65-6E-65-72-61-6C-20-	tat
General		
992	53-75-70-70-6F-72-74-20-2D-20-48-52-44-00-01-80-	Support -
HRD		
1008	00-01-80-00-01-80-00-11-45-6E-74-65-72-70-72-69	
Enterpri		

Frame: 846 Time: 0:05:03.7736961 Length: 1334

0	66-69-74-73-20-43-61-72-72-69-65-72-00-01-80-00-	fits
Carrier		
16	01-80-00-01-80-00-09-4D-53-50-72-6F-6A-65-63-74-	
MSPProject		
32	00-07-10-39-38-31-32-30-34-31-32-34-36-32-35-39-	
9812041246259		
48	30-31-35-00-08-4F-76-65-72-68-65-61-64-00-04-4F-	015
Overhead	O	
64	70-65-6E-00-0D-4E-65-77-20-59-6F-72-6B-20-4C-69-	pen New
York Li		
80	66-65-00-12-53-74-72-61-73-73-62-75-72-67-65-72-	fe
Strassburger		
96	20-53-75-73-61-6E-00-07-77-C6-0C-04-01-01-01-00-	Susan w
112	07-77-C6-0C-04-01-01-01-00-02-C1-29-00-00-81-01-	w
)		
128	00-81-01-00-81-01-00-81-01-00-81-01-01-20-00-03-	
144	30-30-30-00-03-4F-48-44-00-05-41-44-4D-49-4E-00-	000 OHD
ADMIN		
160	08-42-61-73-65-6C-69-6E-65-00-0F-47-65-6E-65-72-	Baseline
Gener		
176	61-6C-20-53-75-70-70-6F-72-74-00-08-43-61-6D-70-	al Support
Camp		
192	62-65-6C-6C-00-08-43-61-6D-70-62-65-6C-6C-00-01-	bell
Campbell		
208	20-00-08-4F-76-65-72-68-65-61-64-00-01-80-00-01-	Overhead
224	80-00-01-80-00-11-45-6E-74-65-72-70-72-69-73-65-	
Enterprise		
240	50-72-6F-6A-65-63-74-00-07-10-39-38-30-35-32-32-	Project
980522		
256	31-34-31-38-34-36-38-35-31-39-00-20-50-65-72-73-	1418468519
Pers		

272	6F-6E-6E-65-6C-20-42-65-6E-65-66-69-74-73-20-43-	onnel
Benefits C		
288	6C-69-65-6E-74-20-53-65-72-76-65-72-00-07-50-6C-	lient
Server Pl		
304	61-6E-6E-65-64-00-0D-4E-65-77-20-59-6F-72-6B-20-	anned New
York		
320	4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-69-74-73-20-	Life
Moskovits		
336	42-61-72-72-79-00-07-77-C7-01-04-0A-01-01-00-07-	Barry w
352	77-C7-0C-1F-11-1F-01-00-03-C3-04-4F-00-05-31-38-	w
O 18		
368	39-30-68-00-00-81-01-00-81-01-02-30-68-00-02-30-	90h
Oh 0		
384	68-00-01-20-00-03-45-35-32-00-03-48-52-44-00-04-	h E52
HRD		
400	43-4F-52-50-00-07-4F-6E-67-6F-69-6E-67-00-0B-44-	CORP
Ongoing		
416	65-76-65-6C-6F-70-6D-65-6E-74-00-06-53-6C-65-76-	evelopment
Slev		
432	69-6E-00-06-59-75-73-74-61-74-00-00-81-01-20-50-	in Yustat
P		
448	65-72-73-6F-6E-6E-65-6C-20-42-65-6E-65-66-69-74-	ersonnel
Benefit		
464	73-20-43-6C-69-65-6E-74-20-53-65-72-76-65-72-00-	s Client
Server		
480	01-80-00-01-80-00-01-80-00-09-4D-53-50-72-6F-6A-	
MSProj		
496	65-63-74-00-07-10-39-38-31-31-31-36-30-38-35-37-	ect
9811160857		
512	35-35-30-32-30-33-00-1C-50-72-6F-64-20-53-75-70-	550203
Prod Sup		
528	70-20-2D-20-48-52-44-20-28-45-6E-74-65-72-70-72-	p - HRD
(Enterpr		
544	69-73-65-29-00-04-4F-70-65-6E-00-0D-4E-65-77-20-	ise) Open
New		
560	59-6F-72-6B-20-4C-69-66-65-00-12-53-74-72-61-73-	York Life
Stras		
576	73-62-75-72-67-65-72-20-53-75-73-61-02-A8-00-00-	sburger
Susa		
592	06-00-00-00-00-00-6E-00-07-77-C7-01-04-01-01-01-	n w
608	00-07-77-C7-06-17-01-01-01-00-02-C1-41-00-00-81-	w
A		
624	01-00-81-01-00-81-01-00-81-01-00-81-01-01-20-00-	
640	03-30-37-37-00-03-48-52-44-00-04-43-4F-52-50-00-	077 HRD
CORP		
656	08-42-61-73-65-6C-69-6E-65-00-12-50-72-6F-64-75-	Baseline
Produ		
672	63-74-69-6F-6E-20-53-75-70-70-6F-72-74-00-06-53-	ction
Support S		
688	6C-65-76-69-6E-00-06-59-75-73-74-61-74-00-01-20-	levin
Yustat		
704	00-15-50-72-6F-64-20-53-75-70-70-2F-4D-61-69-6E-	Prod
Supp/Main		
720	74-20-2D-20-48-52-44-00-01-80-00-01-80-00-01-80-	t - HRD

736	00-11-45-6E-74-65-72-70-72-69-73-65-50-72-6F-6A-	
EnterpriseProj		
752	65-63-74-00-07-10-39-39-30-37-32-38-31-34-34-38-	ect
9907281448		
768	33-39-30-35-38-34-00-0A-53-72-69-27-73-20-54-65-	390584
Sri's Te		
784	73-74-00-04-4F-70-65-6E-00-0D-4E-65-77-20-59-6F-	st Open
New Yo		
800	72-6B-20-4C-69-66-65-00-0F-4D-6F-73-6B-6F-76-69-	rk Life
Moskovi		
816	74-73-20-42-61-72-72-79-00-07-77-C7-07-1C-09-01-	ts Barry w
832	01-00-07-77-C7-0A-13-12-01-01-00-03-C2-08-15-00-	w
848	03-36-30-64-00-00-81-01-00-81-01-02-30-68-00-02-	60d
Oh		
864	30-64-00-00-81-01-03-46-31-31-00-03-49-50-53-00-	0d F11
IPS		
880	03-49-2F-4F-00-07-4F-6E-67-6F-69-6E-67-00-0B-44-	I/O
Ongoing D		
896	65-76-65-6C-6F-70-6D-65-6E-74-00-08-48-61-6A-64-	evelopment
Hajd		
912	75-63-65-6B-00-08-41-73-67-61-72-61-6C-69-00-00-	ucek
Asgarali		
928	81-01-16-31-30-33-35-20-45-78-63-68-61-6E-67-65-	1035
Exchange		
944	20-54-72-61-63-6B-69-6E-67-00-01-80-00-01-80-00-	Tracking
960	01-80-00-09-4D-53-50-72-6F-6A-65-63-74-00-07-10-	
MSProject		
976	39-38-30-38-30-34-31-37-34-32-32-39-35-34-39-33-	
9808041742295493		
992	00-11-57-65-6C-6C-20-50-61-74-68-20-53-75-70-70-	Well Path
Supp		
1008	6F-72-74-00-04-4F-70-65-6E-00-0D-4E-65-77-20-59	ort Open
New Y		

Here is a summary of the entire sequence of the 4 1/2 minute delay. Notice that after the delay all of the subsequent queries and the final one that returns actual data are executed in milliseconds. My comments are in BLACK...

Questionable transaction begins

692	00:32.242	220.11.108.100	206.210.30.208	TNS	C Open cursor
694	00:32.247	206.210.30.208	220.11.108.100	TNS	R Return OPI
					Parm
695	00:32.251	220.11.108.100	206.210.30.208	TNS	C Parse call
696	00:32.260	206.210.30.208	220.11.108.100	TNS	R Return
					Status
697	00:32.262	220.11.108.100	206.210.30.208	TNS	C Describe
					array
698	00:32.267	206.210.30.208	220.11.108.100	TNS	R Return OPI
					Parm
699	00:32.269	220.11.108.100	206.210.30.208	TNS	C Execute
					statement

```

700 00:32.276 206.210.30.208 220.11.108.100 TNS R Return
Status

*** Delay start***
701 00:32.281 220.11.108.100 206.210.30.208 TNS C Fast UPI
call to opial7
704 04:57.201 206.210.30.208 220.11.108.100 TNS R Return
Status
*** Delay ends***
705 04:57.205 220.11.108.100 206.210.30.208 TNS C Close cursor
706 04:57.210 206.210.30.208 220.11.108.100 TNS R Function
Complete

```

Questionable transaction ends

Several other transactions complete successfully and in milliseconds

```

752 04:57.423 220.11.108.100 206.210.30.208 TNS C Open cursor
753 04:57.428 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
754 04:57.430 220.11.108.100 206.210.30.208 TNS C Parse call
755 04:57.435 206.210.30.208 220.11.108.100 TNS R Return
Status
756 04:57.436 220.11.108.100 206.210.30.208 TNS C Describe
array
757 04:57.441 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
758 04:57.442 220.11.108.100 206.210.30.208 TNS C Execute
statement
759 04:57.447 206.210.30.208 220.11.108.100 TNS R Return
Status
760 04:57.449 220.11.108.100 206.210.30.208 TNS C Close cursor
761 04:57.454 206.210.30.208 220.11.108.100 TNS R Function
Complete
762 04:57.456 220.11.108.100 206.210.30.208 TNS C Open cursor
763 04:57.461 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
764 04:57.463 220.11.108.100 206.210.30.208 TNS C Parse call
765 04:57.468 206.210.30.208 220.11.108.100 TNS R Return
Status
766 04:57.469 220.11.108.100 206.210.30.208 TNS C Describe
array
768 04:57.475 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
769 04:57.476 220.11.108.100 206.210.30.208 TNS C Execute
statement
770 04:57.481 206.210.30.208 220.11.108.100 TNS R Return
Status
771 04:57.485 220.11.108.100 206.210.30.208 TNS C Fast UPI
call to opial7
772 04:57.491 206.210.30.208 220.11.108.100 TNS R Row Trx
Header
773 04:57.494 220.11.108.100 206.210.30.208 TNS C Close cursor

```

```

774 04:57.499 206.210.30.208 220.11.108.100 TNS R Function
Complete
820 04:57.702 220.11.108.100 206.210.30.208 TNS C Open cursor
821 04:57.707 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
822 04:57.709 220.11.108.100 206.210.30.208 TNS C Parse call
823 04:57.714 206.210.30.208 220.11.108.100 TNS R Return
Status
824 04:57.716 220.11.108.100 206.210.30.208 TNS C Describe
array
825 04:57.721 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
826 04:57.722 220.11.108.100 206.210.30.208 TNS C Execute
statement
827 04:57.727 206.210.30.208 220.11.108.100 TNS R Return
Status
828 04:57.729 220.11.108.100 206.210.30.208 TNS C Close cursor
829 04:57.733 206.210.30.208 220.11.108.100 TNS R Function
Complete

```

Transaction that actually returns data to the Application server and Client begins

```

830 04:57.738 220.11.108.100 206.210.30.208 TNS C Open cursor
831 04:57.743 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
832 04:57.749 220.11.108.100 206.210.30.208 TNS C Parse call
(SQL Query)
833 04:57.756 206.210.30.208 220.11.108.100 TNS R Return
Status
834 04:57.758 220.11.108.100 206.210.30.208 TNS C Describe
array
835 04:57.764 206.210.30.208 220.11.108.100 TNS R Return OPI
Parm
836 04:57.774 220.11.108.100 206.210.30.208 TNS C Execute
statement
838 04:57.779 206.210.30.208 220.11.108.100 TNS R Return
Status
840 04:57.825 220.11.108.100 206.210.30.208 TNS C Fast UPI
call to opial7

```

Data returned from Oracle Server notice the consecutive transfers, very optimal

```

842 05:03.766 206.210.30.208 220.11.108.100 TNS R Row Trx
Header
843 05:03.766 206.210.30.208 220.11.108.100 TNS Data Len=587
845 05:03.772 206.210.30.208 220.11.108.100 TNS
846 05:03.773 206.210.30.208 220.11.108.100 TNS Data Len=1024

```

End of data transfer from Oracle Server to Application server

```

848 05:03.824 220.11.108.100 206.210.30.208 TNS C Close cursor
849 05:03.829 206.210.30.208 220.11.108.100 TNS R Function
Complete

```

Transaction completed

All files for review:

The files with the numbers contain just one packet for easier review.



Projtcpo This file is a complete trace of the logon from the Application Server side using the full ARPA stack

These files below are just single packet details(det) or data(dat) some were displayed in the report above. These can be used by the developers to correct any SQL errors.



49dat



533dat



543dat



603dat



634dat



695dat



695det



701dat



704dat



832dat



832det



842dat



843dat



845dat



846dat



Projall This file is a complete trace of the logon from the Application Server side just show the Oracle TNS frames.



Projloc This file is a complete trace of the logon from the Client side using the full ARPA stack.



Projsum1 This is the trace of just Oracle TNS packets starting from the transaction that causes the major delay.



178dat Another packet file.