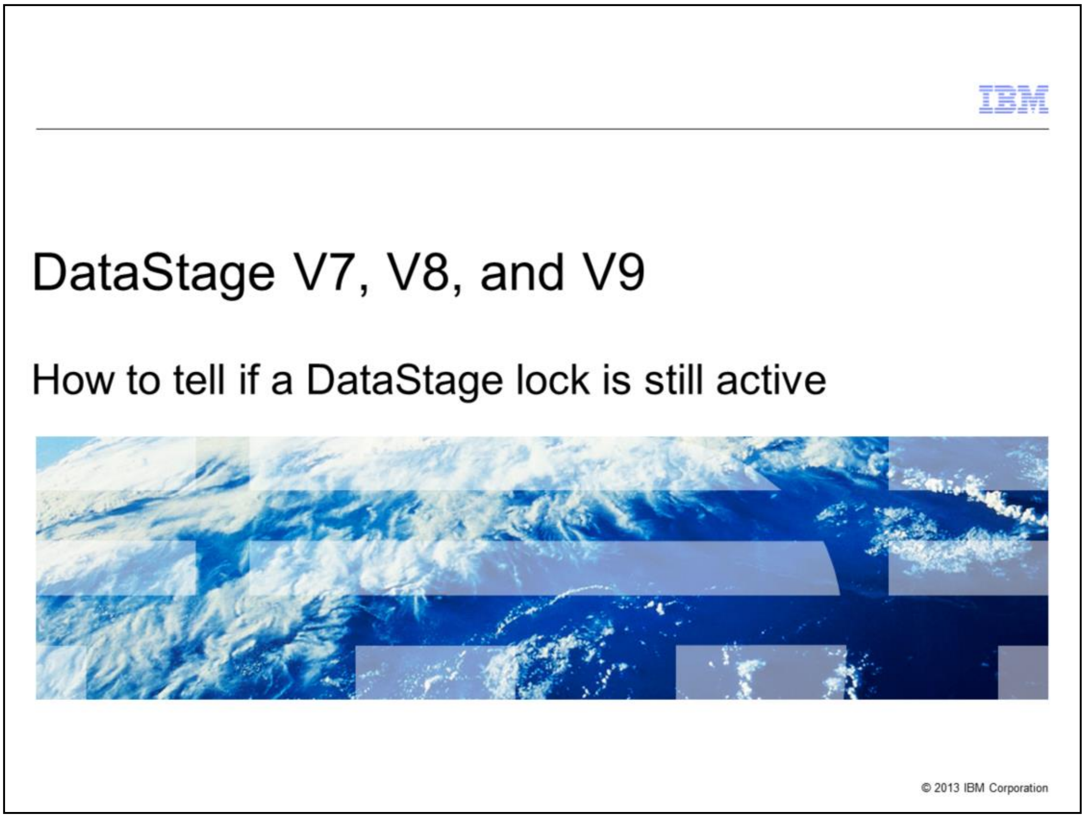
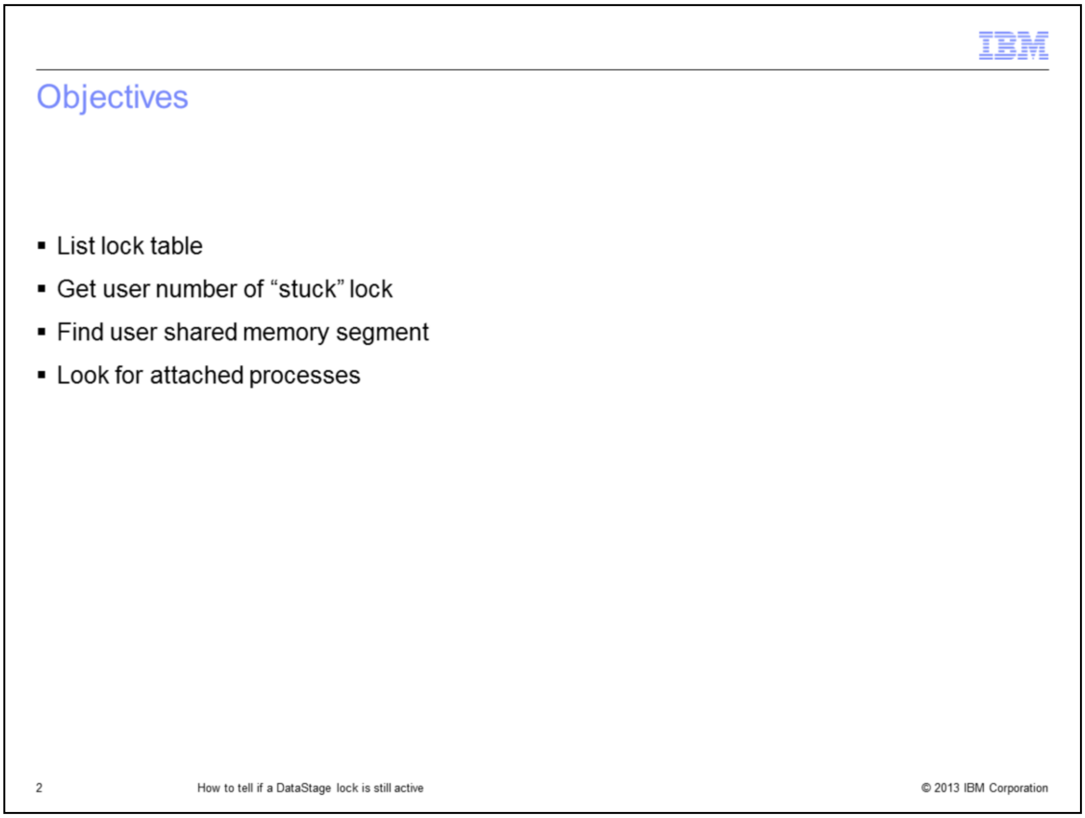


DataStage V7, V8, and V9

How to tell if a DataStage lock is still active

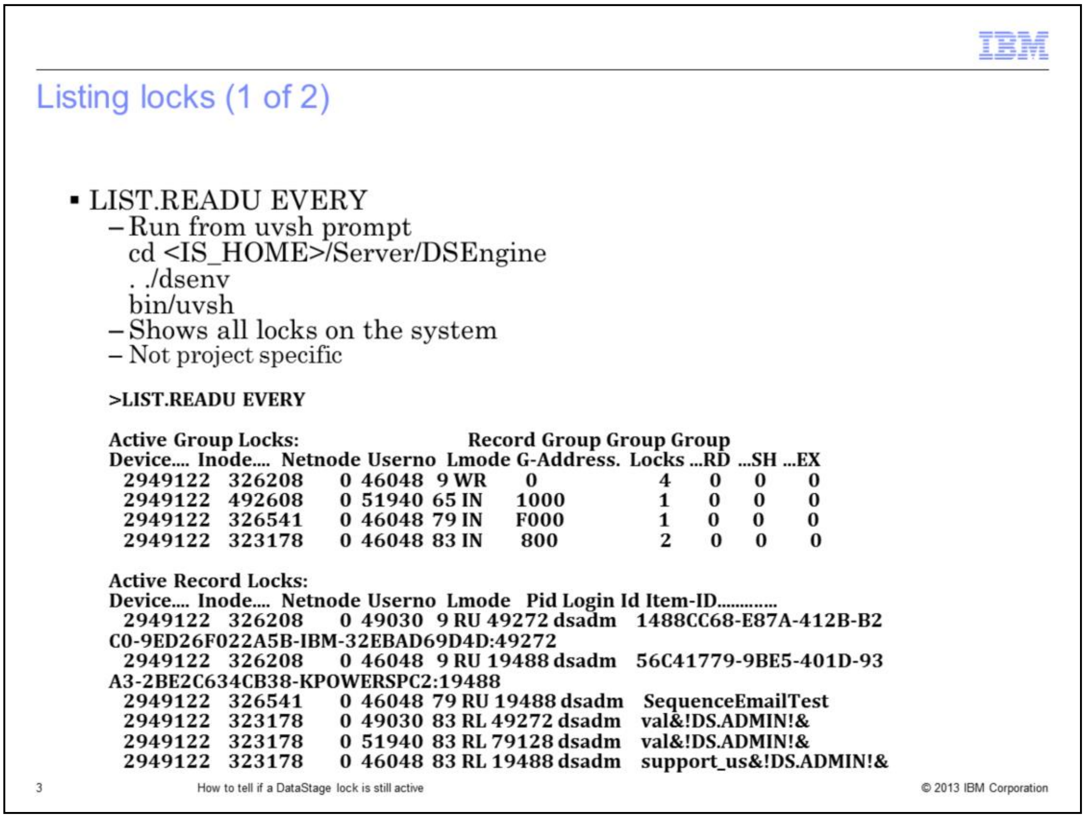
This presentation will discuss how to tell if a DataStage® lock on the local repository can be safely unlocked. This module is relevant for all versions of DataStage on UNIX® and Linux®.



Objectives

- List lock table
- Get user number of “stuck” lock
- Find user shared memory segment
- Look for attached processes

The objectives of this presentation are to show how to list the local lock table, how to determine the user number of a lock that is presumed to be hung, and determine the associated user shared memory segment. The presentation also shows how to tell if there are any active processes still holding that lock.



Listing locks (1 of 2)

- LIST.READU EVERY
  - Run from uvsh prompt
    cd <IS_HOME>/Server/DSEngine
    . ./dsenv
    bin/uvsh
  - Shows all locks on the system
  - Not project specific

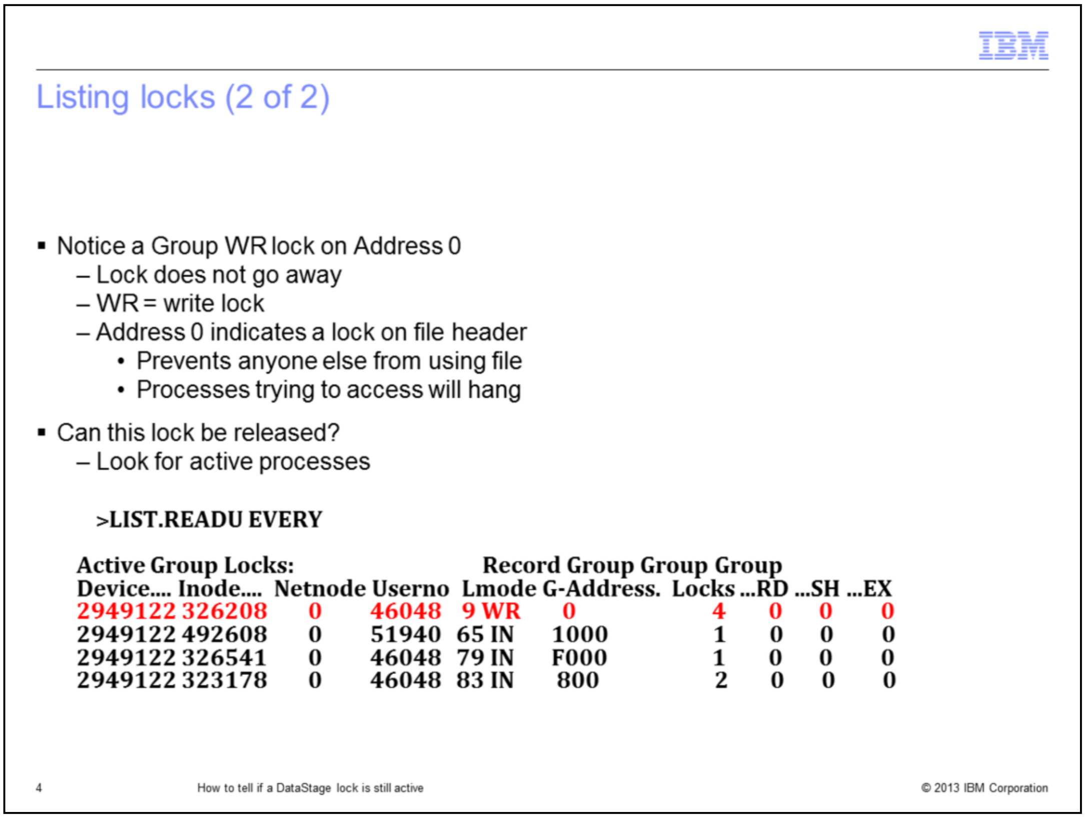
```
>LIST.READU EVERY

Active Group Locks:                         Record Group Group Group
Device.... Inode....  Netnode Userno  Lmode G-Address.  Locks ...RD ...SH ...EX
  2949122   326208      0 46048  9 WR      0               4     0     0     0
  2949122   492608      0 51940 65 IN   1000               1     0     0     0
  2949122   326541      0 46048 79 IN   F000               1     0     0     0
  2949122   323178      0 46048 83 IN    800               2     0     0     0

Active Record Locks:
Device.... Inode....  Netnode Userno  Lmode   Pid Login Id Item-ID.............
  2949122   326208      0 49030  9 RU 49272 dsadm   1488CC68-E87A-412B-B2
C0-9ED26F022A5B-IBM-32EBAD69D4D:49272
  2949122   326208      0 46048  9 RU 19488 dsadm   56C41779-9BE5-401D-93
A3-2BE2C634CB38-KPOWERSPC2:19488
  2949122   326541      0 46048 79 RU 19488 dsadm    SequenceEmailTest
  2949122   323178      0 49030 83 RL 49272 dsadm   val&!DS.ADMIN!&
  2949122   323178      0 51940 83 RL 79128 dsadm   val&!DS.ADMIN!&
  2949122   323178      0 46048 83 RL 19488 dsadm   support_us&!DS.ADMIN!&
```

3 How to tell if a DataStage lock is still active © 2013 IBM Corporation

Before releasing any DataStage locks, it is important to first determine if the lock still has active processes attached to it. Unlocking a lock with active processes still attached may lead to file corruption. The LIST.READU EVERY command will list out all of the local DataStage repository locks. This command may be run from a uvsh prompt and is not project specific. The output from this command displays all the local locks being held for the entire DataStage installation.



Listing locks (2 of 2)

- Notice a Group WR lock on Address 0
  - Lock does not go away
  - WR = write lock
  - Address 0 indicates a lock on file header
    - Prevents anyone else from using file
    - Processes trying to access will hang
- Can this lock be released?
  - Look for active processes

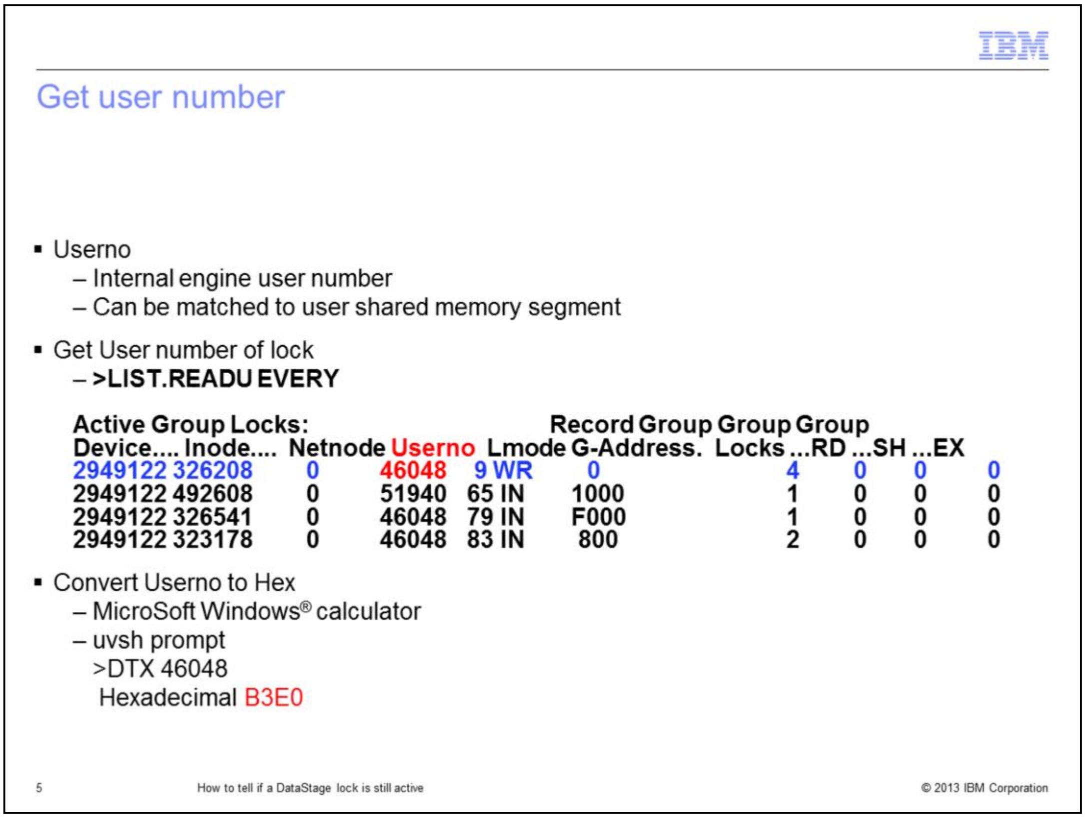
```
>LIST.READU EVERY

Active Group Locks:                          Record Group Group Group
Device.... Inode....  Netnode Userno  Lmode G-Address.  Locks ...RD ...SH ...EX
2949122 326208    0     46048   9 WR      0           4     0     0     0
2949122 492608    0     51940   65 IN     1000        1     0     0     0
2949122 326541    0     46048   79 IN     F000        1     0     0     0
2949122 323178    0     46048   83 IN     800         2     0     0     0
```

4 How to tell if a DataStage lock is still active © 2013 IBM Corporation

When listing the lock table to determine if a lock is stuck, it is good practice to run the LIST.READU EVERY command multiple times. The reason for this is that group locks should be short lived. As the command is run multiple times, the group locks will constantly change. An indication of a lock that is “stuck” is a group lock that remains after multiple iterations of the LIST.READU EVERY command. In this example, there is a group write lock stuck on address 0 of a file. This is significant because address 0 is the header of the file. If a lock is hung on group 0 with a WR lock, all other attempts to access this file will hang. This is the cause of many client hangs at start up time.

Before releasing a lock that is presumed to be hung or dead, steps must be taken to ensure no processes are still attached.



Get user number

- Userno
  - – Internal engine user number
  - – Can be matched to user shared memory segment
- Get User number of lock
  - – **>LIST.READU EVERY**

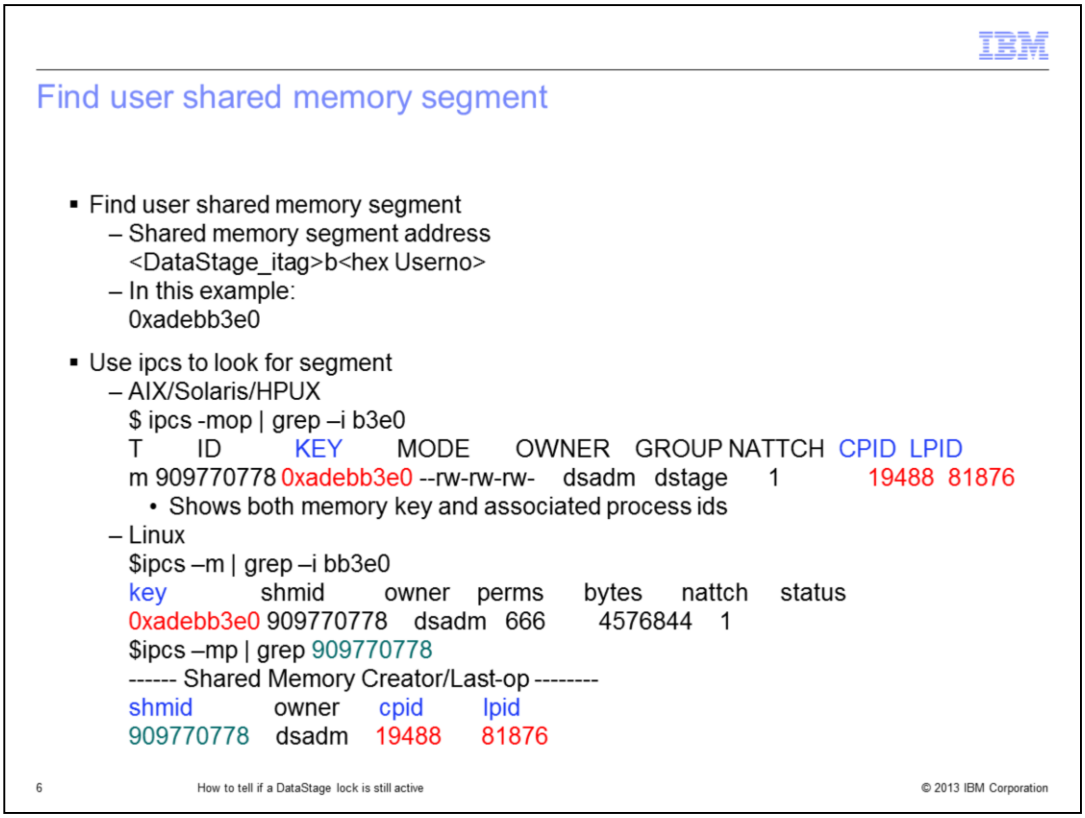
```
Active Group Locks:                      Record Group Group Group
Device.... Inode....  Netnode Userno  Lmode G-Address.  Locks ...RD ...SH ...EX
2949122 326208         0      46048    9 WR     0          4     0     0     0
2949122 492608         0      51940   65 IN   1000         1     0     0     0
2949122 326541         0      46048   79 IN   F000         1     0     0     0
2949122 323178         0      46048   83 IN    800         2     0     0     0
```

- Convert Userno to Hex
  - – MicroSoft Windows® calculator
  - – uvsh prompt

```
>DTX 46048
 Hexadecimal B3E0
```

5 How to tell if a DataStage lock is still active © 2013 IBM Corporation

The first step in this process is to get the user number that is holding the lock in question. This will show up in the Userno column of the LIST.READU output. This user number is an internal engine user number and not related to the operating system's user numbers. Once the user number is found, the next step is to convert that number to hexadecimal. From a uvsh prompt, the command DTX can be used to convert the decimal number, 46048 in this example, to hex. The Windows calculator may also be used to do this conversion. For this example, the hex representation of the user number is B3E0.



IBM

Find user shared memory segment

- Find user shared memory segment
  - Shared memory segment address <DataStage_itag>b<hex Userno>
  - In this example: 0xadebb3e0
- Use ipcs to look for segment
  - AIX/Solaris/HPUX

```
$ ipcs -mop | grep –i b3e0
T      ID          KEY       MODE      OWNER   GROUP NATTCH  CPID  LPID
m 909770778 0xadebb3e0 --rw-rw-rw-   dsadm  dstage    1       19488  81876
```

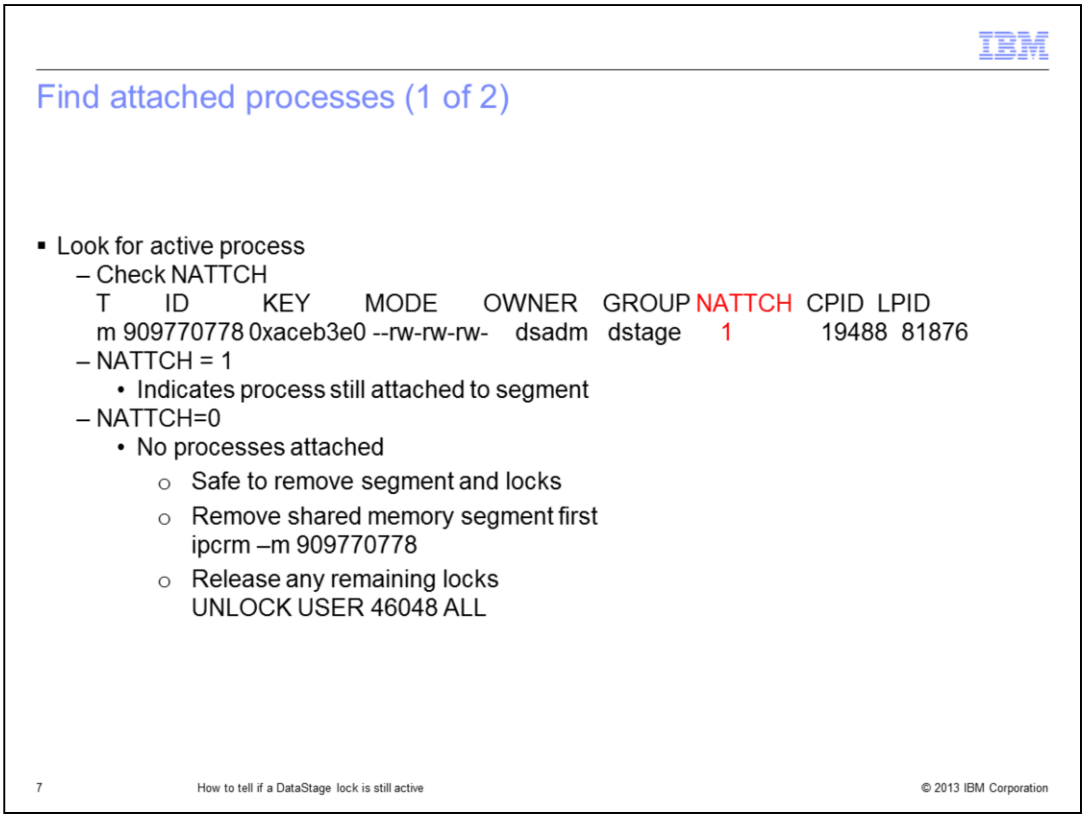
    - Shows both memory key and associated process ids
  - Linux

```
$ipcs –m | grep –i bb3e0
key           shmid       owner   perms    bytes    nattch    status
0xadebb3e0 909770778   dsadm  666      4576844   1
$ipcs –mp | grep 909770778
------ Shared Memory Creator/Last-op --------
shmid           owner     cpid        lpid
909770778   dsadm   19488     81876
```

6 How to tell if a DataStage lock is still active © 2013 IBM Corporation

The next step is to find the user’s shared memory segment. When a client connects to DataStage, each connection is given it’s own user shared memory segment. This is also referred to as the printer shared memory segment. The key for this segment is made up of the DataStage itag, the letter “b” indicates it is a user segment and not the main segment, and the hex version of the user number. In the example displayed on this slide, the user’s shared memory segment key is 0xadebb3e0.

Use the ipcs command to see if the user’s shared memory segment still exists. The ipcs commands for the different platforms are listed on this slide. Linux has a slightly different syntax than UNIX platforms and requires two steps to get the shared memory segment and the processes that are attached to it.



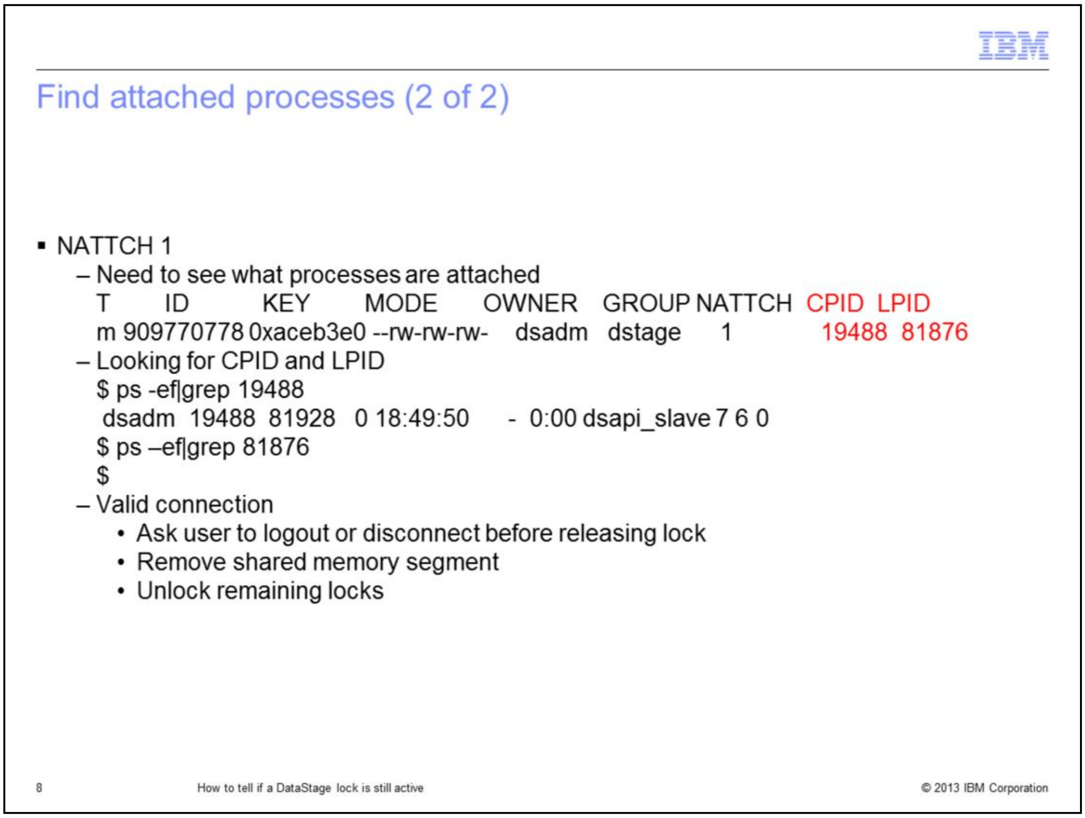
Find attached processes (1 of 2)

- Look for active process
  - Check NATTCH

```
T      ID        KEY       MODE      OWNER   GROUP NATTCH  CPID  LPID
m 909770778 0xaceb3e0 --rw-rw-rw-   dsadm  dstage    1      19488 81876
```

  - NATTCH = 1
    - Indicates process still attached to segment
  - NATTCH=0
    - No processes attached
      - Safe to remove segment and locks
      - Remove shared memory segment first
ipcrm –m 909770778
      - Release any remaining locks
UNLOCK USER 46048 ALL

If the shared memory segment no longer exists, it is safe to release any locks held by that user. If the shared memory segment still exists, the next step is to look at the column for NATTCH. This column shows whether any processes are still attached to the segment. If NATTCH is 0, then all the processes are gone and the locks and shared memory segment for that user are safe to release. Remove the shared memory segment first with the ipcrm command displayed on this slide. You must be root or the owner of the segment to remove it. Next, run LIST.READU EVERY again and see if the lock in question still exists. If the lock is still there, remove it using the uvsh command UNLOCK USER usernumber ALL. In this example, the NATTCH is 1 which indicates that there is still a process attached. The next step is to see what process is still attached to the segment.



Find attached processes (2 of 2)

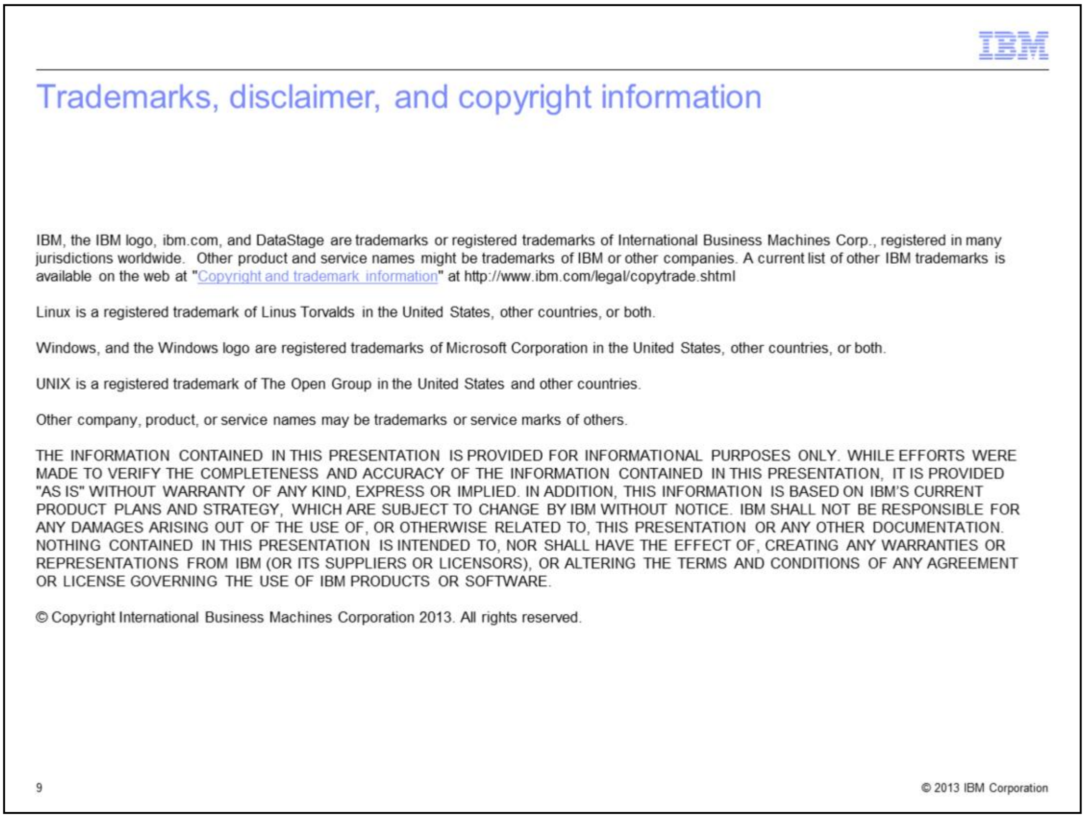
- NATTCH 1
  - Need to see what processes are attached

    ```
    T      ID         KEY        MODE       OWNER   GROUP NATTCH  CPID  LPID
    m 909770778 0xaceb3e0 --rw-rw-rw-   dsadm   dstage     1         19488  81876
    ```
  - Looking for CPID and LPID

    ```
    $ ps -ef|grep 19488
     dsadm  19488  81928   0 18:49:50     -  0:00 dsapi_slave 7 6 0
    $ ps –ef|grep 81876
    $
    ```
  - Valid connection
    - Ask user to logout or disconnect before releasing lock
    - Remove shared memory segment
    - Unlock remaining locks

8 How to tell if a DataStage lock is still active © 2013 IBM Corporation

The CPID is the process that created the shared memory segment. Use the ps command as displayed on the slide to find the process that is attached to that segment and holding the lock. In this case, it is the client dsapi_slave process. The LPID is the last process that was created by the CPID. This process may or may not still exist. Check both to get an idea of what is running. Once it has been determined what process is holding the lock, attempt to cleanly disconnect the client connection. Once the process is gone, check if the shared memory segment is still there. If the segment is still there and the NATTCH is 0, remove the shared memory segment with the ipcrm command. Once the shared memory segment is gone, check if the lock still exists. If the lock is still there, it is now safe to unlock it using the UNLOCK command on the previous slide.



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