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Monitoring and Resolving Db2 Operational Problems

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Objectives

Monitoring and Resolving Db2 Operational Problems

In this module, you will look at the Db2 commands used to display the status and attributes of Db2 databases and associated components and how to interpret the messages produced by these commands.

You will also be introduced to Db2 commands that can be used to start and stop Db2 components and modify their attributes.

After completing this module, you will be able to:

- Display the Status and Attributes of Databases, Buffer Pools, Logs, Utilities and Threads
- Start and Stop Db2 Databases
- Modify Attributes Associated With Buffer Pools, Logs, Utilities and Threads

How can you display the status of DB2 database components?

Which DB2 commands can be used to stop a database?



How do you start a database?

With Db2 up and running there is usually only a minimal amount of monitoring that is required by the operator. The Db2 commands described in this section are used when there is a scenario that requires you to display the status or attributes of Db2 databases or they need to be stopped or restarted.

```
INFLIGHT=0, IN ABORT=0, POSTPONED ABORT=0
DSNG007I -DB1A DB2 CATALOG LEVEL (1110) CODE LEVEL (1110) MODE (NFM)
DSNR002I -DB1A RESTART COMPLETED
-DB1ARECOVER POSTPONED
DSNV434I -DB1A DSNVRP NO POSTPONED ABORT THREADS FOUND
DSN9022I -DB1A DSNVRP 'RECOVER POSTPONED' NORMAL COMPLETION
DSNL003I -DB1A DDF IS STARTING
DSN3029I -DB1A DSN3RRRS RRS ATTACH PROCESSING IS AVAILABLE
DSNL519I -DB1A DSNLILNR TCP/IP SERVICES AVAILABLE
          FOR DOMAIN S0W1.DAL-EBIS.IHOST.COM AND PORT 5025
DSNL004I -DB1A DDF START COMPLETE
          LOCATION DALLAS9
          LU        USASDV02.DB1ALU1
          GENERICLU -NONE
          DOMAIN   S0W1.DAL-EBIS.IHOST.COM
          TCPPORT  5025
          SECPORT  0
          RESPORT  5026
          IPNAME   -NONE
DSN9022I -DB1A DSNYASCP 'START DB2' NORMAL COMPLETION

IEE612I CN=C01   DEVNUM=160 SYS=PROD
-db1a display database(*)
IEE163I MODE= RD
```



While you may use several tools to measure how your Db2 database is performing, the DISPLAY DATABASE command is capable of providing a good snapshot of your database structure and activity.

Type **-DB1A DISPLAY DATABASE(*)** and **press Enter** to display details of all databases associated with the DB1A Db2 subsystem.

```

-DB1A DISPLAY DATABASE(*)
DSNT360I -DB1A *****
DSNT361I -DB1A * DISPLAY DATABASE SUMMARY
          * GLOBAL
DSNT360I -DB1A *****
DSNT362I -DB1A DATABASE = DSNDB01 STATUS = RW
          DBD LENGTH = 14200
DSNT397I -DB1A
NAME     TYPE PART STATUS          PHYERRLO PHYERRHI CATALOG PIECE
-----
DBD01   TS      RW,RECP
SPT01   TS      RW
SCT02   TS      RW,UTRW
SYSUTLX TS      RW
SYSLGRNX TS      RW
DSNSCT02 IX      RW
DSNSPT01 IX      RW
DSNSPT02 IX      RW
DSNLUX01 IX      RW
DSNLUX02 IX      RW
IEE612I CN=C01  DEVNUM=160
IEE163I MODE= RD

```

The status field can return many different values. Some of the more common ones are:

- RO - the object has been started for read-only activity.
- RW - the object has been started for read and write activity.
- CHKP - the object is in check pending status.
- GRECP - A failed group buffer pool has resulted in a marked recovery pending status.
- RBDP - the object is in rebuild pending status.
- RECP - the object is in a recovery pending status.
- RESTP - the object is in a restart pending state.
- STOP - the object is stopped.
- UT - the object is started for utility processing only.
- WEPR - There is physical damage to a page or range of pages used by this object.

This command will display information relating to table spaces and index spaces that are defined to the databases that form the Db2 subsystem.

If this command was entered as a result of a performance issue then you will want to look at the status information. A status of RO (read only) or RW (read write) may be acceptable but other statuses could indicate that an object requires some attention.

Mouse-over the response for an explanation of items displayed.

```
SYSEBCDC TS      RW
SYSGPAUT TS      RW
SYSGROUP TS      RW
SYSGRTNS TS      RW
SYSHIST  TS      RW
SYSJAUXA LS      RW
SYSJAUXB LS      RW
SYSJAVA  TS      RW
SYSOBJ   TS      RW
SYSPKAGE TS      RW
SYSPLAN  TS      RW
SYSPLUXA LS      RW
SYSROLES TS      RW
SYSRTSTS TS      RW
SYSSEQ   TS      RW
SYSSEQ2  TS      RW
SYSSTATS TS      RW
***** DISPLAY OF DATABASE DSND06 TERMINATED *****
DSNT311I -DB1A MESSAGE LIMIT EXCEEDED. DISPLAY IS TERMINATED.
DSN9023I -DB1A DSNTDDIS 'DISPLAY DATABASE' ABNORMAL COMPLETION

IEE612I CN=C01  DEVNUM=160 SYS=PROD
IEE163I MODE= RD
```

As the response to this command scrolls through, the highlighted messages indicate that the number of messages created has exceeded a defined maximum.

If you need to control the amount of information produced by Db2 commands, then a LIMIT option can be added to the command. In this scenario, the -DB1A DISPLAY DATABASE(*) LIMIT(*) command can be used to display the response using the maximum amount of space available.



This command will only display databases, table spaces and index spaces with a restricted status, that is, those objects that have been stopped, are in read-only status or started for utility only processing.

A number of variations can be specified with the DISPLAY DATABASE command that allows you to view more specific information.

Mouse-over the examples above for a description of that command.

```
SYSUTILX TS      RW
SYSLGRNX TS      RW
DSNSCT02 IX      RW
DSNSPT01 IX      RW
DSNSPT02 IX      RW
DSNLUX01 IX      RW
DSNLUX02 IX      RW
DSNLLX01 IX      RW
DSNLLX02 IX      RW
***** DISPLAY OF DATABASE DSNCB01 ENDED *****
DSN9022I -DB11 DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION
$HASP249 COMMAND RECEIVED FROM AUTO COMMAND ID=0012 342
$POJOBQ,READY,Q=D
$HASP686 OUTPUT(ETPSTOP) OUTGRP=2.1.1 CANCELLED
$HASP686 OUTPUT(SMFDUMPS) OUTGRP=2.1.1 CANCELLED
$HASP249 COMMAND RECEIVED FROM AUTO COMMAND ID=0007 345
$OS(1-9999)
$HASP003 RC=(52),o 346
$HASP003 RC=(52),o S(1-9999) - NO SELECTABLE ENTRIES FOUND
$HASP003 MATCHING SPECIFICATION

IEE612I CN=C01 DEVNUM=160 SYS=PROD
-db11 display database(dsng11a) locks
IEE163I MODE= RD
```



Another useful option that can be specified on the -DISPLAY DATABASE command is the LOCKS option. If a problem has occurred where access to a particular table space or index space is not possible because another entity has locked it for use, then this option will display details relating to that lock.

Type -DB11 DISPLAY DATABASE(DSNG11A) LOCKS and **press Enter** to display the locks for database DSNG11A.



```
$HASP249 COMMAND RECEIVED FROM AUTO COMMAND ID=0007
$OS(1-9999)
$HASP003 RC=(52),0
$HASP003 RC=(52),0 S(1-9999) - NO SELECTABLE ENTRIES FOUND
$HASP003          MATCHING SPECIFICATION
-DB11 DISPLAY DATABASE(DSNG11A) LOCKS
DSNT360I -DB11 *****
DSNT361I -DB11 * DISPLAY DATABASE SUMMARY
* GLOBAL LOCKS
DSNT360I -DB11 *****
DSNT362I -DB11 DATABASE = DSNG11A STATUS = RW
DBD LENGTH = 14200
DSNT397I -DB11
NAME      TYPE PART  STATUS  CONNID  CORRID  LOCKINFO
-----
DSNG11BE TS          RW      TSO     GHP108  H-IS,S,C
DSNG11BE TS          RW      TSO     LTE555  H-IX,S,C
DSNG11TT TS    0001  RW
-THRU 0003
DSNG11XT TS          RW
IEE612I CN=C01  DEVNUM=160 SYS=PROD
IEE163I MODE= RD
```

The CONNID field describes the connection identifier for the thread. In this example it is a thread from a TSO terminal.

LOCKINFO
H-IS,S,C
H-IX,S,C

The CORRID field displays the name associated with the thread, which in this case shows two TSO user IDs.

The output displayed here shows information that describes the lock status, lock state, lock type and lock duration for objects in the specified database. In this example the LOCKINFO data indicates the following:

- H - the lock is held by the agent or the Db2 member.
- IS - it is a lock with read intentions. IX is a lock with update intentions.
- S - the lock type is a table space logical lock.
- C - the lock is freed at commit time.

```

$HASP003 RC=(52),0
$HASP003 RC=(52),0 S(1-9999) - NO SELECTABLE ENTRIES FOUND
$HASP003          MATCHING SPECIFICATION
-DB11 DISPLAY DATABASE(DSNG11A) LOCKS
DSNT360I -DB11 *****
DSNT361I -DB11 * DISPLAY DATABASE SUMMARY
* GLOBAL LOCKS
DSNT360I -DB11 *****
DSNT362I -DB11 DATABASE = DSNG10A STATUS = RW
          DBD LENGTH = 14200
DSNT397I -DB11
NAME      TYPE PART  STATUS      CONNID  CORRID  LOCKINFO
-----
DSNG11BE TS          RW          TSO      GHP108  H-IS,S,C
DSNG11BE TS          RW          TSO      LTE555  H-IX,S,C
DSNG11TT TS    0001  RW          TSO
-THRU 0003
DSNG11XT TS          RW
***** DISPLAY OF DATABASE DSNG11A ENDED *****
DSN9022I -DB11 DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION

IEE612I CN=C01  DEVNUM=160 SYS=PROD
-db11 stop database(*)
IEE163I MODE= RD

```



Step 1 of 3

If a database problem has been identified, you may be required to temporarily stop the database so that maintenance activity can be performed. Rather than bring down the entire Db2 subsystem, the STOP DATABASE command can be used to stop one or more databases or database components, preventing applications from using them.

Type -DB11 STOP DATABASE(*) and **press Enter**, to stop all databases for the DB11 Db2 subsystem.



```
DSNT360I -DB11 *****
DSNT361I -DB11 * DISPLAY DATABASE SUMMARY
* GLOBAL LOCKS
DSNT360I -DB11 *****
DSNT362I -DB11 DATABASE = DSNG11A STATUS = RW
DBD LENGTH = 14200
DSNT397I -DB11
NAME      TYPE PART  STATUS      CONNID  CORRID  LOCKINFO
-----
DSNG11BE TS          RW          TSO      GHP108  H-IS,S,C
DSNG11BE TS          RW          TSO      LTE555  H-IX,S,C
DSNG11TT TS    0001  RW          TSO
-THRU 0003
DSNG10XT TS          RW
***** DISPLAY OF DATABASE DSNG11A ENDED *****
DSN9022I -DB11 DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION
-DB11 STOP DATABASE(*)
DSN9022I -DB11 DSNTDDIS 'STOP DATABASE' NORMAL COMPLETION
DSNT736I -DB11 ASYNCHRONOUS STOP DATABASE COMMAND
HAS COMPLETED FOR COMMAND: STOP DB(*)

IEE612I CN=C01  DEVNUM=160 SYS=PROD
-db11 display database(*)
IEE163I MODE= RD
```

Step 2 of 3

The messages shown here indicate that the execution of the command has been successful.

Type **-DB11 DISPLAY DATABASE(*)** and **press Enter** so you can see the status now displayed for the databases within the DB11 Db2 subsystem.



```
DSNT360I  -DB11 *****
DSNT362I  -DB11      DATABASE = DSNDB07  STATUS = RW
                DBD LENGTH = 4028
DSNT397I  -DB11
NAME      TYPE PART  STATUS          PHYERRLO PHYERRHI CATALOG  PIECE
-----
DSN32K00  TS        RW
DSN4K00   TS        RW
***** DISPLAY OF DATABASE DSNDB07 ENDED *****
DSNT360I  -DB11 *****
DSNT362I  -DB11      DATABASE = ADBDCH  STATUS = STOP
                DBD LENGTH = 8066
DSNT397I  -DB11
NAME      TYPE PART  STATUS          PHYERRLO PHYERRHI CATALOG  PIECE
-----
ADBSCH   TS        RW
ADBCHKX1 IX        RW
***** DISPLAY OF DATABASE ADBDCH ENDED *****
DSNT360I  -DB11 *****
DSNT362I  -DB11      DATABASE = DSNADMDB  STATUS = STOP

IEE612I  CN=C01   DEVNUM=160  SYS=PROD
IEE163I  MODE= RD
```

Step 3 of 3

The information shown here only displays a cross section of the responses. It shows that several databases have been stopped, but not database DSNDB07.

The -DB11 STOP DATABASE(*) command will not automatically shutdown databases DSNDB01, DSNDB06, and DSNDB07, but they can be stopped individually using a command such as:

```
-DB11 STOP DATABASE(DSNDB07)
```





```
-STOP DATABASE(DTSPATDB) SPACENAM(GSERGEOM)
-STOP DATABASE(DSN8D10A) SPACENAM(DSN8S10E) PART(4)
-STOP DATABASE(DB2OSC) SPACENAM(DSNR1A77) AT(COMMIT)
-STOP DATABASE(DSN00003) SPACENAM(UTPRCX01) CLONE
```

A specific table space or index space can be targeted with the stop database command by using the SPACENAM option. This command might be useful if an object needs to be restored and it first needs to be made unavailable. Wildcard characters can also be specified as part of the name.

A number of variations are possible with the STOP DATABASE command depending on the problem but you would be unlikely to use them unless instructed by the systems programmer.

Mouse-over the commands for a description of its purpose.





If a database or one of its components has been stopped and is now ready to be restarted, the START DATABASE command can be invoked.

Note that if the DSNDB01, DSNDB06, or DSNDB07 databases have been specifically stopped, then they will need to be individually started using a command such as `-START DATABASE(DSNDB06)`.



```
DSNJ016E DB11 DSND04 WARNING -SYSTEM CHECKPOINT PROCESSOR MAY  
HAVE STALLED. LAST CHECKPOINT WAS TAKEN 11.022 14:06:23
```

```
DSNU060I DB11 DSNU060I - USER GH557 NOT AUTHORIZED  
FOR LOAD UTILITY ON DATABASE DSN0001D
```

```
DSNB601I BUFFER POOL BP8K0 FULL
```

```
DSNJ317I ARCHIVE LOG QUIESCE PERIOD EXPIRED.  
NUMBER OF OUTSTANDING UR'S = 1. ARCHIVE LOG PROCESSING WILL BE  
TERMINATED, AND UPDATE ACTIVITY AGAINST DB2 RESOURCES WILL BE  
RESUMED. 13:30:04
```

In this section you will look at a number of Db2 display commands that can assist you in obtaining Db2 component or object status and attribute details. This information can then be used to assist you in resolving a Db2 problem or might be required when escalating a problem to a Db2 specialist.

```

DSNB601I BUFFER POOL BP8K0 FULL
DSNT397I -DB11 801
NAME      TYPE PART  STATUS          PHYERRLO PHYERRHI CATALOG  PIECE
-----
DSN32K00 TS          RW
DSN4K00  TS          RW
***** DISPLAY OF DATABASE DSNDB07 ENDED *****
DSN9022I -DB11 DSNTDDIS 'DISPLAY DATABASE' NORMAL COMPLETION
IEA631I  OPERATOR GHPROD NOW INACTIVE, SYSTEM=S0W1 , LU=TCP00004
$HASP395 GHPROD ENDED
$HASP250 GHPROD PURGED -- (JOB KEY WAS C6A824AF)
IEA989I  SLIP TRAP ID=X33E MATCHED. JOBNAME=*UNAVAIL, ASID=003C.
$HASP249 COMMAND RECEIVED FROM AUTO COMMAND ID=0012
$POJOBQ,READY,Q=D
$HASP686 OUTPUT(SMFDUMPS) OUTGRP=2.1.1 CANCELLED
$HASP249 COMMAND RECEIVED FROM AUTO COMMAND ID=0007
$OS(1-9999)
$HASP003 RC=(52),O 810
$HASP003 RC=(52),O S(1-9999) - NO SELECTABLE ENTRIES FOUND
$HASP003          MATCHING SPECIFICATION

IEE612I CN=C01  DEVNUM=160 SYS=PROD
-db11 display bufferpool
IEE163I MODE= RD

```



Step 1 of 2

If performance statistics indicate an issue with a buffer pool or an error message indicates a problem with this resource, then your first action should be to display the current status and characteristics of the buffer pool.

Type `-DB11 DISPLAY BUFFERPOOL` and **press** **Enter** to display information for all active buffer pools.


```

-DB11 DISPLAY BUFFERPOOL
DSNB401I -DB11 BUFFERPOOL NAME BP0, BUFFERPOOL ID 0, USE COUNT 17
DSNB402I -DB11 BUFFER POOL SIZE = 20000 BUFFERS AUTOSIZE = NO
          ALLOCATED = 20000 TO BE DELETED = 0
          IN-USE/UPDATED = 9790 BUFFERS ACTIVE = 1428
DSNB406I -DB11 PGFIX ATTRIBUTE -
          CURRENT = NO
          PENDING = NO
          PAGE STEALING METHOD = LRU
DSNB404I -DB11 THRESHOLDS -
          VP SEQUENTIAL = 80
          DEFERRED WRITE = 30 VERTICAL DEFERRED WRT = 5, 0
          PARALLEL SEQUENTIAL =50 ASSISTING PARALLEL SEQT= 0
DSNB401I -DB11 BUFFERPOOL NAME BP8K0, BUFFERPOOL ID 100, USE COUNT 2
DSNB402I -DB11 BUFFER POOL SIZE = 1000 BUFFERS AUTOSIZE = NO
          ALLOCATED = 1000 TO BE DELETED = 0
          IN-USE/UPDATED = 1000 BUFFERS ACTIVE = 1000
DSNB406I -DB11 PGFIX ATTRIBUTE -
          CURRENT = NO
          PENDING = NO

IEE612I CN=C01 DEVNUM=160 SYS=PROD
IEE163I MODE= RD

```



Step 2 of 2

The information displayed as a result of issuing this command would usually be passed to the system programmer or DBA who may be required to modify the buffer pool attributes to resolve the issue.

If information is required for a specific buffer pool, then the `-DB11 DISPLAY BUFFERPOOL(buffer pool name)` command can be used. If information is required for all active and inactive buffer pools then the `-DB11 DISPLAY BUFFERPOOL(*)` command can be issued.

The highlighted messages displayed here show that there are a 1000 allocated buffers for buffer pool BP8K0 and that they all contain data.



```

DSNB402I  -DB11 BUFFER POOL SIZE = 0  BUFFERS  AUTOSIZE = NO
          ALLOCATED      =      0  TO BE DELETED =      0
          IN-USE/UPDATED =      0  BUFFERS ACTIVE =      0
DSNB406I  -DB11 PGFIX ATTRIBUTE -
          CURRENT = NO
          PENDING = NO
          PAGE STEALING METHOD = LRU
DSNB404I  -DB11 THRESHOLDS -
          VP SEQUENTIAL   = 80
          DEFERRED WRITE  = 30  VERTICAL DEFERRED WRT = 5, 0
          PARALLEL SEQUENTIAL =50  ASSISTING PARALLEL SEQT= 0
DSNB464I  -DB11
PAGE SET/PARTITION LIST INFORMATION
          TS  USE
DATABASE SPACE NAME  INST PART IX COUNT
=====
DSNB463I  -DB11 * * * NO OBJECTS MATCHED LIST/LSTATS SELECTION CRITERIA
DSNB468I  -DB11 GBPDEP KEYWORD IS IGNORED FOR NON-DATA SHARING SYSTEMS
DSN9022I  -DB11 DSNB1CMD '-DISPLAY BUFFERPOOL' NORMAL COMPLETION

IEE612I  CN=C01  DEVNUM=160  SYS=PROD
-db11 display utility(*)
IEE163I  MODE= RD

```



Step 1 of 2

If you are responsible for running or monitoring Db2 utilities used for purposes such as reorganizing file structures, copying Db2 VSAM files or compressing table spaces or indexes, then the progress of these utilities can be tracked using the DISPLAY UTILITY command.

Type `-DB11 DISPLAY UTILITY(*)` and **press** **Enter** to display the status of all utility programs known to Db2.

```
-DB11 DISPLAY UTILITY(*)
DSNU100I  -DB11 DSNUGDIS - USERID = GH2DBA
          MEMBER = DB11
          UTILID = REORG.SYSPKAGE
          PROCESSING UTILITY STATEMENT 3
          UTILITY = REORG
          PHASE = RELOAD  COUNT = 100689
          NUMBER OF OBJECTS IN LIST = 1
          LAST OBJECT STARTED = 1
          STATUS = STOPPED
DSN9022I  -DB11 DSNUGCCC '-DISPLAY UTILITY' NORMAL COMPLETION

IEE612I  CN=C01  DEVNUM=160 SYS=PROD
IEE163I  MODE=  RD
```



Step 2 of 2

The information displayed here can assist you with monitoring the progress of the utility through the PHASE and COUNT details.

If there is a problem with the utility then it should be passed to the system programmer or DBA for further action or you may be required to delete the utility yourself using the `-TERM UTILITY` command.

In this example, the utility has stopped in the RELOAD phase.

```

-DB11 DISPLAY LOG
DSNJ370I -DB11 DSNJC00A LOG DISPLAY
CURRENT COPY1 LOG = DSN110.DB11.LOGCOPY1.DS03 IS 79% FULL
CURRENT COPY2 LOG = DSN110.DB11.LOGCOPY2.DS03 IS 79% FULL
H/W RBA = 00042CFD8269
H/O RBA = 00042B57FFFF
FULL LOGS TO OFFLOAD = 0 OF 6
OFFLOAD TASK IS (AVAILABLE)
DSNJ371I -DB11 DB2 RESTARTED 17:20:50 NOV 29, 2014
          RESTART RBA 00042CFBA000
          CHECKPOINT FREQUENCY 50000 LOGRECORDS
          LAST SYSTEM CHECKPOINT TAKEN 03:20:50 NOV 30, 2014
DSNJ3022I -DB11 DSNJC001 '-DISPLAY LOG' NORMAL COMPLETION
-DB11 DISPLAY ARCHIVE
DSNJ322I -DB11 DISPLAY ARCHIVE REPORT FOLLOWS-
          COUNT          TIME
          (TAPE UNITS)    (MIN,SEC)
DSNZPARN      2          0,00
CURRENT       2          0,00
=====
IEE612I CN=C01  DEVMUM=160 SYS=PROD
IEE163I MODE= RD

```

Restart and checkpoint data that is logged.

Name of the active log data set and the availability of space within it.

Status of the task that offloads data to the archive logs.

Archive log values specified during installation (DSNZPARN) and current settings.

The Db2 logs are important as they contain details of data changes and major events that occur. If you receive messages indicating that there is a problem with the logs, then the DISPLAY LOG or DISPLAY ARCHIVE commands may be of assistance.

```
H/w RBA = 00042CFD8269
H/O RBA = 00042B57FFFF
FULL LOGS TO OFFLOAD = 0 OF 6
OFFLOAD TASK IS (AVAILABLE)
DSNJ371I -DB11 DB2 RESTARTED 17:20:50 NOV 29, 2014
RESTART RBA 00042CFBA000
CHECKPOINT FREQUENCY 50000 LOGRECORDS
LAST SYSTEM CHECKPOINT TAKEN 03:20:50 NOV 30, 2014
DSN9022I -DB11 DSNJC001 '-DISPLAY LOG' NORMAL COMPLETION
-DB11 DISPLAY ARCHIVE
DSNJ322I -DB11 DISPLAY ARCHIVE REPORT FOLLOWS-
COUNT          TIME
(TAPE UNITS)    (MIN,SEC)
DSNZPARM         2          0,00
CURRENT          2          0,00
=====
ADDR STATUS CORR-ID VOLSER DATASET_NAME
NO ARCHIVE READ ACTIVITY
END OF DISPLAY ARCHIVE REPORT.
DSN9022I -DB11 DSNJC001 '-DISPLAY ARCHIVE' NORMAL COMPLETION

IEE612I CN=C01  DEVNUM=160 SYS=PROD
-db11 display thread(*)
IEE163I MODE= RD
```



If you are attempting to stop Db2 but it is not complying, it may be that there are still some active threads. The DISPLAY THREADS command can be used to display active, inactive, indoubt, or postponed threads for a specified connection or all connections.

Type **-DB11 DISPLAY THREAD(*)** and **press Enter** to show the status and attributes of all threads.



Displaying Db2 Component Status > Displaying the Status of Threads

```
-DB11 DISPLAY THREAD(*)
DSNV401I -DB11 DISPLAY THREAD REPORT FOLLOWS -
DSNV402I - ACTIVE THREADS -
NAME      ST  A   REQ ID      AUTHID  PLAN   ASID  TOKEN
SERVER    RA  3   144  java      TS10977  DISTSERV 0029  30
V437-WORKSTATION=9.28.121.100, USERID=TS10977,
APPLICATION NAME=java
V445-ACE181FE.F79E.00E330DF712E=13809 ACCESSING DATA FOR 9.28.121.100
SERVER RA * 144 java TS10977 DISTSERV 0029 30
DISPLAY ACTIVE REPORT COMPLETE
DSN9022I - DSNVDT '-DIS THD' NORMAL COMPLETION

IEE612I CN=C01  DEVNUM=160 SYS=PROD
IEE163I MODE= RD
```

This field will normally display the plan name associated with the thread but because this thread is using application-directed access from a non-Db2 requester, DISTSERV is displayed.

The results from this command can be varied showing threads with a number of different statuses.

Mouse-over the details shown here for an explanation of that message.



You can display a list of active DB2 threads.

You can track the status of any utilities running within DB2.

You can display the status and attributes of the current active log and archive log.



You can identify the attributes of buffer pools that have been defined to DB2.

In this section you have been introduced to a number of Db2 commands that can be used to gather information about Db2 activity and connectivity. This information in turn may be able to assist you in diagnosing and resolving Db2 operational problems, or may be escalated to a specialist for further investigation.

How do you terminate a utility that is running?

Which buffer pool defaults can you modify?

Why would you need to cancel a thread, and what command is used to perform this task?



Which commands can you use to control logging?


This section introduces you to some of the Db2 commands you may be expected to invoke if it is your responsibility to diagnose Db2 messages or enter Db2 commands at the request of the DBA or system programmer. The commands focus on the Db2 components discussed previously in this module.


```
-DB11 DISPLAY THREAD(*)
DSNV401I -DB11 DISPLAY THREAD REPORT FOLLOWS -
DSNV402I - ACTIVE THREADS -
NAME      ST  A  REQ ID          AUTHID  PLAN   ASID  TOKEN
SERVER    RA  *   144  java          TS10977  DISTSERV 0029  30
V437-WORKSTATION=9.28.121.100, USERID=TS10977,
APPLICATION NAME=java
V445-ACE181FE.F79E.00E330DF712E=13809 ACCESSING DATA FOR 9.28.121.100
SERVER RA * 144  java  TS10977  DISTSERV 0029  30
DISPLAY ACTIVE REPORT COMPLETE
DSN9022I - DSNVDT '-DIS THD' NORMAL COMPLETION
```



```
-DB11 CANCEL THREAD(30)
```

If an active or suspended thread needs to be removed from Db2 processing, the `-CANCEL THREAD` command can be issued. To invoke this command you will need to know the token for the thread, which is displayed when entering the `-DISPLAY THREAD` command.



DB2

```
-CANCEL DDF THREAD(DSND10P.APPLPM01.3011003B2121)
-CANCEL THREAD(30) DUMP
-CANCEL THREAD(46) NOBACKOUT
CANCEL THREAD(12) FORCE
```



When a thread is cancelled, DB2 will normally attempt to recover from any work in progress by performing backout processing. If this is not the action you require, then a NOBACKOUT option can be specified. Note that this will leave objects in an inconsistent state and further recovery action will be required.

Several variations to the -CANCEL THREAD command can be issued depending on the type of thread, the output you want produced and the action to be taken by the thread as a result of the cancel command.

Mouse-over the commands above for a description of their purpose.



```
NAME      ST A  REQ ID      AUTHID      PLAN      ASID  TOKEN
SERVER    TR *  443 dmsproc.exe GHPRD4      DISTSERV 0012  67
V437-WORKSTATION=*, USERID=ghprd4,
APPLICATION_NAME=dmsproc.exe
V445-ACE181FE-F79E.00E330DF712E=13809 ACCESSING DATA FOR 9.28.121.100
V447--LOCATION          SESSID      A ST TIME
V448--9.28.121.100    5001:3105    N A4 0129500418340
```

Canceling a TCP/IP distributed thread

```
D TCPIP, ,NETSTAT,CONN,IPADDR=9.28.121.100
```

Identify the TCP/IP connection ID using the IP address shown in the -DISPLAY THREAD response.

```
V TCPIP, ,DROP,CONN=0000010A
```

Use the connection ID with this command, to terminate the connection.

If the thread becomes hung within the network then you may need to cancel the thread using a VTAM or TCP/IP command. In the display shown here, the highlighted N, indicates that the conversation is active in the network.



```
NAME      ST A  REQ ID      AUTHID  PLAN  ASID TOKEN
BATCH    TR *  22 SYSADM   SYSADM  DSNESPRR 0017  25
V444-ACCOUNTING=GHTST
V436-PGM=DSNESP RR.DSNESM91, SEC=2, STMT=9
V444-BBE18110,SYF721.CC1004DF003E=30 ACCESSING DATA AT
      ( 1)USI145Y-SYF1E00A
V447--INDEX  SESSID      A ST TIME
V448-- ( 1)  00BE101090EA023 N R1 2201403352328
```

Canceling an SNA distributed thread

```
D NET ID=SYF721,SCOPE=ACT
```

The active VTAM sessions can be displayed using this command.

Characters 3 to 15 of the SESSID field should match one of the active VTAM sessions displayed from the command above.

```
V NET,TERM,SID=3E101090EA023
```

Cancel the SNA session.

A similar process is used to cancel an SNA distributed thread.





```
-DB11 TERM UTILITY(SQ#11.RUNTS)
DSNU166I -DB11 DSNUGIER - RUNSTATS UTILITY,
          UTILID = SQ#11.RUNTS NOT EXECUTING,
          CLEANUP COMPLETE
DSN9022I -DB11 DSNUGCC ' -TERM UTIL ' NORMAL COMPLETION
```

On successful completion, all resources used by the utility will be released.

If an active utility needs to be terminated, either because it has stopped processing, is running longer than is acceptable or needs to be removed to allow for recovery activity, then the `-TERM UTILITY(utility ID)` command can be issued. All utilities can be terminated using the `-TERM UTILITY(*)` command.

In this example, the RUNSTATS utility was found to be stopped when the request to terminate was issued.



- SET LOG CHKTIME(0)
- SET LOG LOGLOAD(50000)
- SET BOTH CHKTIME(15) LOGLOAD(1000000)**
- SET LOG SUSPEND
- SET LOG NEWLOG(DSNC110.LOGCOPY1.DS01) COPY(1)
- SET LOG NEWLOG(DSNC110.LOGCOPY2.DS01) COPY(2)



This command is used to specify that both the LOGLOAD and CHKTIME parameters are to be used when determining when a checkpoint is taken. When the first criteria of either item is met, the checkpoint will be taken and both thresholds will be reset. In the example here, a checkpoint will be taken either when 15 minutes has elapsed or 1000000 log record writes have occurred, since the last checkpoint. To revert back to using only one of these criteria, the BOTH parameter can be replaced with SINGLE. For example, the -SET LOG SINGLE LOGLOAD(1000000) command will invoke a checkpoint using only the number of log records.

Temporary modifications, such as changing the frequency of checkpoints and suspending logging activity, can be made to the log using the -SET LOG command. These changes will only remain until a Db2 restart is performed or another -SET LOG command is issued to override the change.

Mouse-over the commands for an example of their purpose.



```
DSNB601I -DB11 BUFFER POOL BP12 FULL
-DB10 DISPLAY BUFFERPOOL(BP12)
DSNB401I -DB11 BUFFERPOOL NAME BP12, BUFFERPOOL ID 12, USE COUNT 350
DSNB402I -DB11 BUFFER POOL SIZE = 20000 BUFFERS AUTOSIZE = NO
          ALLOCATED      = 20000   TO BE DELETED   = 0
          IN-USE/UPDATED = 20000   BUFFERS ACTIVE  = 1428
DSNB406I -DB11 PGFIX ATTRIBUTE -
          CURRENT = NO
```

```
-DB11 ALTER BUFFERPOOL(BP12) VPSIZE(50000)
```

```
-DB11 ALTER BUFFERPOOL(BP12) VPSIZE(50000)
DSNB522I -DB11 VPSIZE FOR BP12 HAS BEEN SET TO 50000
DSN9022I -DB11 DSNB1CMD '-ALTER BUFFERPOOL' NORMAL COMPLETION
```

If performance statistics indicate an issue with buffer pools or an error message indicates a problem with this resource, you may be instructed to alter the attributes of buffer pools.

The VPSIZE option displayed here is used to change the size of the buffer pool. If a buffer pool needs to be deleted altogether, then the buffer pool size can be set to zero, which will quiesce activity to it and then delete it. Many of the other buffer pool attributes that can be modified will most likely be managed by your Db2 performance and tuning team.

I can cancel a thread that is hung or has stopped.

I can increase the size of a buffer pool.

I can use the `-TERM UTILITY` command to terminate an active utility.



I can stop and start logging and modify the logging checkpoint attributes.

In this section you have been introduced to several scenarios where the operator needs to enter Db2 commands to resolve problems. Many of these commands require that you are issuing them from a source that has appropriate authority.