

IBM DB2 Database

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Install: DB2 v9.7 on CentOS

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- RedHat/CentOS 5/6 x86_64
- IBM DB2 v9.7 Server

?????

??????

1. DB2_AESE_97_Linux_x86-64.tar.gz?DB2 ????????????????
2. v9.7fp11_linuxx64_universal_fixpack.tar.gz?DB2 fixpack?????????

CentOS ?????**Minimal Desktop**

????????

NOTE?

- *libstdc++ ?? 32bit ? 64bit ?????*

- *??? 32bit ????????????????????????????????? DVD2 ???????*

- CentOS 7 ? 32bit ????? CentOS-7.-x86_64-**Everything**-??? ISO ???

CentOS 6, 7)

```
# yum install libaio ksh rsh-server pam-devel nfs-utils compat-libstdc++-33
```

```
# yum install libstdc++.i686 pam-devel.i686 compat-libstdc++-33.i686
```

```
# rpm -qa | grep "ksh\|openssh\|rsh-server\|nfs-utils\|libaio\|libstdc++\|libstdc++.i686\|pam-devel\|pam-devel.i686\|compat-libstdc++"
```

```
libstdc++-4.4.7-16.el6.x86_64
nfs-utils-lib-1.1.5-11.el6.x86_64
openssh-clients-5.3p1-111.el6.x86_64
pam-devel-1.1.1-20.el6.i686
libaio-0.3.107-10.el6.x86_64
ksh-20120801-28.el6.x86_64
libstdc++-4.4.7-16.el6.i686
openssh-server-5.3p1-111.el6.x86_64
pam-devel-1.1.1-20.el6.x86_64
nfs-utils-1.2.3-64.el6.x86_64
openssh-5.3p1-111.el6.x86_64
rsh-server-0.17-64.el6.x86_64
```

CentOS 5.11)

```
#> yum install pdksh nfs-utils rsh-server compat-libstdc++-296.i386 compat-libstdc++-33.i386 compat-
libstdc++-33.x86_64 openssh
```

CentOS ?????

☐ SELinux

```
#> setenforce 0
```

```
#> sed -i 's/SELINUX=.*$/SELINUX=disabled/' /etc/selinux/config
```

☐ NetworkManager

```
#> service NetworkManager stop
```

```
#> chkconfig NetworkManager off
```

????

?????

```
tar xzf DB2_AESE_97_Linux_x86-64.tar.gz
cd aese/
./db2prereqcheck
./db2_install -f NOTSAMP
```

-f NOTSAMP : ???? SAMP (System Automation for Multiplatforms)??? CentOS ????????



Default directory for installation of products - /opt/ibm/db2/V9.7

Do you want to choose a different directory to install [yes/no] ?
no

Specify one of the following keywords to install DB2 products.

AESE
CLIENT
RTCL

Enter "help" to redisplay product names.

Enter "quit" to exit.

AESE

??? fixpack ??

?????: v9.7fp11_linuxx64_universal_fixpack.tar.gz

```
tar xzf v9.7fp11_linuxx64_universal_fixpack.tar.gz
cd universal/
./db2prereqcheck
```

??????:

- DBT3534W The db2prereqcheck utility determined that ASLR is set to ON and that this could cause issues with some tools.

?: ?? /etc/sysctl.conf, ?????

kernel.randomize_va_space = 0

?? echo 0 > /proc/sys/kernel/randomize_va_space

- WARNING:

The 32-bit library file libpam.so is not found on the system.

?: ??????

yum install pam-devel pam-devel.i686

- WARNING:

The 32 bit library file libstdc++.so.5 is not found on the system.

```
??yum install compat-libstdc++-33.i686
```

```
./installFixPack
```

Enter full path name for the install directory -

/opt/ibm/db2/V9.7 <== ?? DB2 ???????

????:

ERROR: The installFixPack command is not able to detect if there are any DB2

libraries still loaded in memory in the current installation copy. Unload all DB2 libraries and re-issue the installFixPack command with the '-f db2lib' parameter. Note: All DB2 libraries must be unloaded before re-issuing the installFixPack command with the '-f db2lib' parameter, otherwise, some applications might not work properly and might need to be restarted to function

properly against the updated DB2 instance.

Solution: Reboot the host, alternatively, manually clean up the below processes and rerun the db2prechk command to verify that it returns 0.

For Linux)

```
lsof +D /opt/ibm/db2/V9.7
```

For AIX)

```
/usr/bin/genltd -l | grep -p db2
```

???? Linux ??? Hypervisors (???????)

Product

DB2 Advanced Enterprise Server Edition 9.7

Detailed System Requirements

Report filters

Available Reports

9.7.0.11 maintenance level

Utilities

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Notes

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Operating Systems

Hypervisors

Prerequisites

Supported Software

Hardware

Packaging List

[Show notes](#) | [Hide notes](#)

Linux

Linux

Filter

Operating System	Operating System Minimum	Hardware	Bitness	Product Minimum	Components	Notes	Details
Red Hat Enterprise Linux (RHEL) 5 Advanced Platform	Update 2	IBM z Systems	64-Tolerate	9.7		(3)	View
Red Hat Enterprise Linux (RHEL) 5 Advanced Platform	Update 2	POWER System - Big Endian	64-Tolerate	9.7		(3)	View
Red Hat Enterprise Linux (RHEL) 5 Advanced Platform	Update 2	x86-64	64-Tolerate	9.7		(4)	View
Red Hat Enterprise Linux (RHEL) 5 Desktop editions	Update 2	x86-64	64-Tolerate	9.7		(3) (5)	View
Red Hat Enterprise Linux (RHEL) Server 6	Base	IBM z Systems	64-Tolerate	9.7		(6)	View
Red Hat Enterprise Linux (RHEL) Server 7	Base	IBM z Systems	64-Exploit, 64-Tolerate	9.7.0.10		No	View
Red Hat Enterprise Linux (RHEL) Server 6	Base	POWER System - Big Endian	64-Tolerate	9.7		(6)	View
Red Hat Enterprise Linux (RHEL) Server 7	Base	POWER System - Big Endian	64-Exploit, 64-Tolerate	9.7.0.10		No	View
Red Hat Enterprise Linux (RHEL) Server 6	Base	x86-64	64-Tolerate	9.7		(6)	View
Red Hat Enterprise Linux (RHEL) Server 7	Base	x86-64	64-Exploit, 64-Tolerate	9.7.0.10		No	View
Red Hat Enterprise Linux (RHEL) Workstation 6	Base	x86-64	64-Tolerate	9.7		(6)	View
Red Hat Enterprise Linux (RHEL) Workstation 6	Base	x86-64	64-Tolerate	9.7		(3)	View
SUSE Linux Enterprise Server (SLES) 10	SP2	IBM z Systems	64-Tolerate	9.7		(8) (9)	View
SUSE Linux Enterprise Server (SLES) 11	Base	IBM z Systems	64-Tolerate	9.7		(8)	View
SUSE Linux Enterprise Server (SLES) 10	SP2	POWER System - Big Endian	64-Tolerate	9.7		(8) (9)	View
SUSE Linux Enterprise Server (SLES) 11	Base	POWER System - Big Endian	64-Tolerate	9.7		(2)	View
SUSE Linux Enterprise Server (SLES) 10	SP2	x86-64	64-Tolerate	9.7		(7) (9)	View
SUSE Linux Enterprise Server (SLES) 11	Base	x86-64	64-Tolerate	9.7		(2)	View
Ubuntu 8.04 LTS	Base	x86-64	64-Tolerate	9.7		(4)	View
Ubuntu 10.04 LTS	Base	x86-64	64-Tolerate	9.7		(1)	View

Footnotes

(1) Before installing DB2, please use the "apt-get" command to install the following packages: libaio1, ksh, libstdc++6-4.4-dev and libstdc++6-4.4-pic. [Show in context](#)

(2) **Random DB2 failures may occur on Linux with Address Space Layout Randomization (ASLR)** [Show in context](#)
Some DB2 processes may result in shared memory segment failures due to the Address Space Layout Randomization (ASLR) feature. ASLR is designed to insert random gaps into address space to hinder some types of security attacks. DB2 processes are capable of identifying the correct address of the shared memory segment. However not all processes are able to use that address due to randomization of ASLR. Processes that are known to encounter failures are: db2pd, db2egdt, and db2vend.

ASLR is activated by default on SLES10 and SLES11. To avoid random shared memory conflicts, it is recommended to disable ASLR at the server level. Please refer to [technote ref # 1365583](#) for details.

* The only 32 bit Kernel architecture is x86. Only one install image per architecture is supplied with DB2 9.7. This image will contain native binaries. In the case of 64 bit architectures, 32 bit binaries (required for 32 bit DB2 applications and 32 bit external routine support) will be included.

* DB2 9.7 Enterprise Server Edition is only supported on 64 bit architectures. A 32 bit installation image with trial license is available for evaluation purpose. This image can also be used for testing purpose by installing the Database Enterprise Developers Edition license certificate.

* Known issues when running DB2 9.7 for Linux on Veritas File System. See [Veritas File System may corrupt DB2 SMS temporary files and CPU usage spikes to near 100% during high I/O operations when using Veritas VxFS](#)

(3) For additional installation prerequisites, please see <http://publib.boulder.ibm.com/infocenter/db2luw/v97/topic/com.ibm.db2.luw.qb.server.doc/docr0008865.html> [Show in context](#)

(4) * The only 32 bit Kernel architecture listed above is x86. Only one install image per architecture is supplied with DB2 9.7. This image will contain native binaries. In the case of 64 bit architectures, 32 bit binaries (required for 32 bit DB2 applications and 32 bit external routine support) will be included.
* DB2 9.7 Enterprise Server Edition is only supported on 64 bit architectures. A 32 bit installation image with trial license is available for evaluation purpose. This image can also be used for testing purpose by installing the Database Enterprise Developers Edition license certificate.
* Known issues when running DB2 9.7 for Linux on Veritas File System. See [Veritas File System may corrupt DB2 SMS temporary files and CPU usage spikes to near 100% during high I/O operations when using Veritas VxFS](#) [Show in context](#)

??????

?? DB Instance

```
groupadd db2adm
useradd -g db2adm -c "DB2 Instance User" -d /devinst devinst

cd /opt/ibm/db2/V9.7/instance/
./db2icrt -s ese -u devinst devinst

# for Client only
./db2icrt -s client <app-username>
```

?? Instance

```
cd /opt/ibm/db2/V11.1/instance

# List current instances
./db2ilist

# Remove the instance
# NOTE: The directory sqllib/ is supposed to be deleted after removing instance.
# If it isn't for some reason you have to manually remove the directory sqllib/ in the home directory.
./db2idrop <instance-name-id>
```

?? DB2 ???

????:

- ?? license ???? DB Instance ???
- ??????????????
 - db2aese_c.lic - DB2 Advanced Enterprise Server Edition(aese), CPU License type(_c)
 - db2ese_c.lic - DB2 Enterprise Server Edition(ese), CPU License type(_c)
 - db2wse_c.lic - DB2 Workgroup Server Edition(wse)?CPU License type(_c)
 - db2aese_t.lic - DB2 Advanced Enterprise Server Edition(aese), Trial License type(_t)
- ??????????????
- V9.1 ? V9.7 ????????

TIP

```
_c ? CPU ??  
_t ???  
_u ? USER ???
```

????

```
su - db2inst  
unzip DB2_AESE_CPU_QS_Activation_97.zip  
cd aese_c/
```

????????

```
db2licm -l
```

```
Product name: "DB2 Advanced Enterprise Server Edition"  
License type: "License not registered"  
Expiry date: "License not registered"  
Product identifier: "db2aese"  
Version information: "9.7"
```

```
db2level
```

```
DB21085I This instance or install (instance name, where applicable:  
"mydev")  
uses "64" bits and DB2 code release "SQL0907B" with level identifier  
"080C0107".  
Informational tokens are "DB2 v9.7.0.11", "s150922", "IP23944", and Fix  
Pack  
"11".  
Product is installed at "/opt/ibm/db2/V9.7".
```

????

```
db2licm -a db2/license/db2aese_c.lic
```

LIC1402I License added successfully.

LIC1426I This product is now licensed for use as outlined in your License Agreement. USE OF THE PRODUCT CONSTITUTES ACCEPTANCE OF THE TERMS OF THE IBM LICENSE AGREEMENT, LOCATED IN THE FOLLOWING DIRECTORY: "/opt/ibm/db2/V9.7/license/en_US.iso88591"

?????????

```
db2licm -l
```

Product name: "DB2 Advanced Enterprise Server Edition"

License type: "CPU Option"

Expiry date: "Permanent"

Product identifier: "db2aese"

Version information: "9.7"

Enforcement policy: "Soft Stop"

TIPs:

???????????

```
db2licm -r [Product identifier]
```

DB2 Instance ??

```
#> su - mydev
$> db2 "update dbm cfg using svcename DB2_mydev"
$> db2set DB2COMM=TCPIP
$> db2set DB2CODEPAGE=950
$> db2set DB2AUTOSTART=NO
$> db2start
$> ps -ef | grep db2sysc
```

TIPs:

???????? Port????? /etc/services?

DBM cfg

```
$> db2 "update dbm cfg using HEALTH_MON OFF"
$> db2 "update dbm cfg using DIAGSIZE 50"
```

DB cfg

```
## Turn some AUTO* options off
$> db2 "update db cfg for <db-name> using AUTO_MAINT off"
$> db2 "update db cfg for <db-name> using AUTO_TBL_MAINT off"
$> db2 "update db cfg for <db-name> using AUTO_RUNSTATS off"
$> db2 "update db cfg for <db-name> using AUTO_STMT_STATS off"

## Set the Active Log
$> db2 "update db cfg for DEVMMDB using LOGFILSIZ 12800"
$> db2 "update db cfg for DEVMMDB using LOGPRIMARY 10"
$> db2 "update db cfg for DEVMMDB using LOGSECOND 10"
$> db2 "update db cfg for DEVMMDB using NEWLOGPATH /home/devmm/DEVMMDB/log"
$> db2 "update db cfg for DEVMMDB using BLK_LOG_DSK_FUL YES"

## If enabled HADR
$> db2 "update db cfg for <db-name> using BLOCKNONLOGGED yes"
```

?????? db2dump ??

???? db2dump ??????????????????????????????

```
$> mkdir db2dump
$> chmod 0777 db2dump
$> chmod g+s db2dump
$> chmod o+t db2dump
$> ls -l db2dump
drwxrwsrwt 3 istdw db2adm 4096 Aug 11 16:40 db2dump/
```


Install: DB2 v11 on CentOS

DB2 Database Server v11.1.4fp5

?????

```
# RedHat/CentOS 6/7
yum install libaio ksh rsh-server sg3_utils pam-devel nfs-utils compat-libstdc++-33
yum install libstdc++-i686 pam-devel.i686 compat-libstdc++-33.i686

# RedHat/CentOS 8
yum install libaio ksh sg3_utils pam-devel nfs-utils
yum install libstdc++-i686 pam-devel.i686
```

TIP: ??????????????????
db2prereqcheck??

DBT3507E The db2prereqcheck utility failed to find the following package or file: "sg3_utils".

????

```
tar xzf DB2_AESE_PVU_11.1_Svr_Linux_86-64.tar.gz
cd server_aese_c/
./db2prereqcheck -i
./db2_install -f NOTSAMP
```

```
*****
Install into default directory (/opt/ibm/db2/V11.1) ? [yes/no]

yes <===
```

Specify one of the following keywords to install DB2 products.

SERVER
CONSV
CLIENT
RTCL

Enter "help" to redisplay product names.

Enter "quit" to exit.

SERVER <===

?? FixPack

```
tar xzf v11.1.4fp5_linuxx64_universal_fixpack.tar.gz
cd universal/
./db2prereqcheck -i
./installFixPack
```

Enter the full path of the base installation directory:

/opt/ibm/db2/V11.1 <== ????????

Do you want to choose a different installation directory for the fix pack?
[yes/no]

no <==

???

FAQ

Q: ? Fixpack 6+ ??????? db2prereqcheck ???????

Validating "ipcmni_extend kernel parameter " ...
WARNING : Requirement not matched.

A: ????? RAM ?? 128 GB?????????? RAM ?? 128 GB???? kernel
???????????????????????????????????? kernel ????? ipcmni_extend????????

<https://access.redhat.com/solutions/4968021?>

DB2 ??

???

?????

```
create db MYDB on /db2_home/istv11/MYDB using codeset big5 territory TW collate using identity
USER TABLESPACE MANAGED BY DATABASE USING (FILE '/db2_home/istv11/MYDB/TBS_DMS/userspace_4k_c01'
524288)
TEMPORARY TABLESPACE MANAGED BY SYSTEM USING ('/db2_home/istv11/MYDB/TBS_SMS/tempSPACE1') ;
```

TIP: ???? codeset ?? big5??? utf-8?

TIP: ??? territory TW ????

?? SQL ???????????

```
select 'Begin Time:',char(current date,iso)||' '||char(current time,iso) from sysibm.sysdummy1;
--
--
select 'End Time:',char(current date,iso)||' '||char(current time,iso) from sysibm.sysdummy1;
```

??????????? runstats ??

```
db2 -x "select 'runstats on table',substr(rtrim(tabschema)||'.'||rtrim(tabname),1,35),'with distribution and
detailed indexes all allow write access;'from syscat.tables where type = 'T' and tabschema not in
('SYSIBM','ASN')"
```

 > runstats_all.sql

Kernel parameters

DB2 v11

/etc/sysctl.d/01-db2.conf:

```
# For DB2 server with 30 GB RAM
# - Get the RAM size by following the command 'free -g'
# - Get the PAGESIZE by following the command 'getconf PAGESIZE'
#
# SHMMNI = <RAM in GB> * 256
# SHMMAX = <RAM in bytes>
# SHMALL = <RAM in pages> * 2
# kernel.sem=<SEMMSL> <SEMMNS> <SEMOPM> <SEMMNI>
# kernel.sem = 250 256000 32 256*<size of RAM in GB>
# MSGMNI = 1024*<size of RAM in GB>
#
kernel.shmmni = 7680
kernel.shmmax = 32212254720
kernel.shmall = 15728640
kernel.sem = 250 256000 32 7680
kernel.msgmni = 30720
kernel.msgmax = 65536
kernel.msgmnb = 65536
# IBM Recommended
vm.swappiness = 5
vm.overcommit_memory = 0
```

Update: DB2 v11.1 FP5 to FP6

Files to require

- v11.1.4fp6_aix64_universal_fixpack.tar.gz ---> For AIX
- v11.1.4fp6_linuxx64_universal_fixpack.tar.gz ---> For Linux
- v11.1.4fp6_ntx64_rtcl.exe ---> For Windows Client

FixPack ????

1. ???????? FixPack ???

```
# su - root
# /opt/IBM/db2/V11.1/install/db2ls
```

Install Path	Level	Fix Pack	Special Install Number	Install Date	Installer UID

/opt/IBM/db2/V11.1	11.1.4.5	5		Sun Sep 26 03:57:30 2021 EDT	0

2. ?? FixPack 6

```
# gunzip -dc v11.1.4fp6_aix64_universal_fixpack.tar.gz |tar -xf -
```

3. ? FixPack 6 ???????

```
./installFixPack -b <current-installation-dir> -p <install-FP-dir> -y -l /tmp/db2fp.out
```

```
# cd <FixPack6_path>/universal
# ./installFixPack -b /opt/IBM/db2/V11.1 -p /opt/IBM/db2/V11.1_2 -y -l /tmp/db2fp6.out
```

4. ???????? FixPack ???

```
# /opt/IBM/db2/V11.1/install/db2ls
```

Install Path	Level	Fix Pack	Special Install Number	Install Date	Installer UID
--------------	-------	----------	------------------------	--------------	---------------

/opt/IBM/db2/V11.1	11.1.4.5	5	Sun Sep 26 03:57:30 2021 EDT	0
/opt/IBM/db2/V11.1_2	11.1.4.6	6	Sun Sep 26 04:30:09 2021 EDT	0

5. ?? db2 instance

```
# su - instance_user
# db2stop
```

6. ?? db2 instance

```
# su - root
# cd /opt/IBM/db2/V11.1_2/instance
# ./db2iupdt instance_user
```

7. ?? db2 instance ??

```
# su - instance_user
# db2level
# db2licm -l

# db2start
```

8. Update the system catalog objects (??? Primary DB ??)

```
# su - instance_user
# db2updv111 -d database_name
```

9. Binding bind files after installing fix packs (??? Primary DB ??)

```
# su - instance_user
# db2 connect to database_name

# cd sqllib/bnd
# db2 BIND db2schema.bnd BLOCKING ALL GRANT PUBLIC SQLERROR CONTINUE
# db2 BIND @db2ubind.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
# db2 BIND @db2cli.lst BLOCKING ALL GRANT PUBLIC ACTION ADD
```

Optional: Validate the installation

```
# su - root
# cd /opt/IBM/db2/V11.1_2/bin/
# ./db2val -o
```

DBI1379I The db2val command is running. This can take several minutes.

DBI1335I Installation file validation for the DB2 copy installed at
/opt/IBM/db2/V11.1_2 was successful.

DBI1343I The db2val command completed successfully. For details, see
the log file /tmp/db2val-211005_172717.log.

Q & A

Changed instance name

Instance ??????????????????????

```
$ db2level
SQL10007N Message "-10003" could not be retrieved. Reason code: "3".
```

Solution: ?? `~/sqllib/db2profile`

NOTE: ?????????????????? instance ???

```
...
DB2INSTANCE=<new-account-name>
export DB2INSTANCE
INSTHOME=<new-account-home>
...
```