

Isolationsstufen

connect to VSISP user vsisp03 update command options using c off	
values current isolation	
db2 => values current isolation 1 -- 1 record(s) selected.	
-- 2. creates the OPK table with five data sets CREATE TABLE OPK (id int, name varchar(255)); INSERT INTO OPK VALUES (1,'name1'); INSERT INTO OPK VALUES (2,'name2'); INSERT INTO OPK VALUES (3,'name3'); INSERT INTO OPK VALUES (4,'name4'); INSERT INTO OPK VALUES (5,'name5'); SELECT * FROM OPK;	
3. update command options using c off list command options	
SELECT appl_id FROM TABLE (SNAPSHOT_APPL_INFO(CURRENT SERVER, -2)) AS t	
select * from opk where id = 1	
attach to vsisl4 user vsisp03 get snapshot for locks for application applid	
db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203	
Application Lock Snapshot	
Snapshot timestamp	= 05/18/2009 15:49:23.503264
Application handle	= 8651
Application ID	= 134.100.11.71.38534.09051810203
Sequence number	= 00031
Application name	= db2bp
CONNECT Authorization ID	= VSISP03
Application status	= UOW Waiting
Status change time	= Not Collected
Application code page	= 1208
Locks held	= 2
Total wait time (ms)	= Not Collected
List Of Locks	
Lock Name	= 0x53514C4332473133B7F3CE3241
Lock Attributes	= 0x00000000
Release Flags	= 0x40000000
Lock Count	= 1

Hold Count = 0
Lock Object Name = 0
Object Type = Internal Plan Lock
Mode = S

Lock Name = 0x0000110100000000000000000054
Lock Attributes = 0x00000000
Release Flags = 0x40000000
Lock Count = 1
Hold Count = 0
Lock Object Name = 273
Object Type = Table
Tablespace Name = SYSCATSPACE
Table Schema = SYSIBM
Table Name = SYSUSERAUTH
Mode = IS

4. set current isolation = RS
select * from opk where id = 1

db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203

Application Lock Snapshot

Snapshot timestamp = 05/18/2009 15:51:25.700863

Application handle = 8651
Application ID = 134.100.11.71.38534.09051810203
Sequence number = 00032
Application name = db2bp
CONNECT Authorization ID = VSISP03
Application status = UOW Waiting
Status change time = Not Collected
Application code page = 1208
Locks held = 4
Total wait time (ms) = Not Collected

List Of Locks

Lock Name = 0x02001103040020BA000000000052
Lock Attributes = 0x00000000
Release Flags = 0x00000001
Lock Count = 1
Hold Count = 0
Lock Object Name = 3122659332
Object Type = Row
Tablespace Name = USERSPACE1
Table Schema = VSISP03
Table Name = OPK

Mode	= NS
Lock Name	= 0x53514C4332473133B7F3CE3241
Lock Attributes	= 0x00000000
Release Flags	= 0x40000000
Lock Count	= 1
Hold Count	= 0
Lock Object Name	= 0
Object Type	= Internal Plan Lock
Mode	= S
Lock Name	= 0x020011030000000000000000054
Lock Attributes	= 0x00000000
Release Flags	= 0x00000001
Lock Count	= 1
Hold Count	= 0
Lock Object Name	= 785
Object Type	= Table
Tablespace Name	= USERSPACE1
Table Schema	= VSISP03
Table Name	= OPK
Mode	= IS
Lock Name	= 0x000011010000000000000000054
Lock Attributes	= 0x00000000
Release Flags	= 0x40000000
Lock Count	= 1
Hold Count	= 0
Lock Object Name	= 273
Object Type	= Table
Tablespace Name	= SYSCATSPACE
Table Schema	= SYSIBM
Table Name	= SYSUSERAUTH
Mode	= IS

Sperrkonflikte

5. Session A (RS)	Session B(CS)
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03
Set isolation = RS	
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5	
	db2 => insert into opk values (6,'name6')

	DB20000I The SQL command completed successfully.
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5 6 name6	

6. Session A (RR)	Session B(CS)
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03
Set isolation = RR	
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5 6 name6	
db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203 Application Lock Snapshot Snapshot timestamp = 05/18/2009 16:06:13.204405 Application handle = 8651 Application ID = 134.100.11.71.38534.09051810203 Sequence number = 00033 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 3 Total wait time (ms) = Not Collected List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x00000000 Release Flags = 0x40000000	db2 => insert into opk values (7,'name7') -- hangs due to S lock on Table OPK

Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S Lock Name = 0x02001103000000000000000054 Lock Attributes = 0x00000010 Release Flags = 0x00000002 Lock Count = 1 Hold Count = 0 Lock Object Name = 785 Object Type = Table Tablespace Name = USERSPACE1 Table Schema = VSISP03 Table Name = OPK Mode = S	
Lock Name = 0x00001101000000000000000054 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 273 Object Type = Table Tablespace Name = SYSCATSPACE Table Schema = SYSIBM Table Name = SYSUSERAUTH Mode = IS	
commit	
	DB20000I The SQL command completed successfully.
db2 => select * from opk ID NAME 1 name1 2 name2 3 name3 4 name4 5 name5 6 name6 7 name7	

7. Session A (RR)	Session B (CS)
connect to VSISP user vsisp03	connect to VSISP user vsisp03

update command options using c off	update command options using c off
Set isolation = RR	Set isolation = CS
select * from OPK where id=1	Update OPK set name = '13name' where id = 13
db2 => get snapshot for locks for application applid 134.100.11.71.51614.09051810383 Locks held = 3 List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S Lock Name = 0x020011030000000000000000054 Lock Attributes = 0x00000010 Release Flags = 0x00000001 Lock Count = 1 Hold Count = 0 Lock Object Name = 785 Object Type = Table Tablespace Name = USERSPACE1 Table Schema = VSISP03 Table Name = OPK Mode = S Lock Name = 0x000011010000000000000000054 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 273 Object Type = Table Tablespace Name = SYSCATSPACE Table Schema = SYSIBM Table Name = SYSUSERAUTH Mode = IS	-- waits for session A
commit	-- Insert actually happens
	commit

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8. CREATE TABLE mpk (id int NOT NULL, name varchar(255));
   ALTER TABLE mpk ADD PRIMARY KEY (id);
   INSERT INTO mpk VALUES (1, 'name1')
   INSERT INTO mpk VALUES (2, 'name2')
   INSERT INTO mpk VALUES (3, 'name3')
   INSERT INTO mpk VALUES (4, 'name4')
   INSERT INTO mpk VALUES (5, 'name5')
   commit

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9. Session A	Session B
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03 update command options using c off
Set isolation = RR	Set isolation = CS
select * from mpk where id=1	Update mpk set name = 'Session B' where id = 5
get snapshot for locks for application applid 134.100.11.71.38534.09051810203 <div>Application Lock Snapshot</div> <div> Snapshot timestamp = 05/18/2009 16:14:02.265443 Application handle = 8651 Application ID = 134.100.11.71.38534.09051810203 Sequence number = 00035 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 4 Total wait time (ms) = Not Collected </div> <div>List Of Locks</div> <div> Lock Name = 0x02001804040020BB0000000052 Lock Attributes = 0x00000010 Release Flags = 0x00000001 Lock Count = 1 Hold Count = 0 Lock Object Name = 3139436548 Object Type = Row Tablespace Name = USERSPACE1 Table Schema = VSISP03 </div>	-- waits for session A

Table Name	= MPK	
Mode	= S	
Lock Name	=	
0x53514C4332473133B7F3CE3241		
Lock Attributes	= 0x00000000	
Release Flags	= 0x40000000	
Lock Count	= 1	
Hold Count	= 0	
Lock Object Name	= 0	
Object Type	= Internal Plan Lock	
Mode	= S	
Lock Name	=	
0x00001101000000000000000054		
Lock Attributes	= 0x00000000	
Release Flags	= 0x40000000	
Lock Count	= 1	
Hold Count	= 0	
Lock Object Name	= 273	
Object Type	= Table	
Tablespace Name	= SYSCATSPACE	
Table Schema	= SYSIBM	
Table Name	= SYSUSERAUTH	
Mode	= IS	
Lock Name	=	
0x02001804000000000000000054		
Lock Attributes	= 0x00000010	
Release Flags	= 0x00000001	
Lock Count	= 1	
Hold Count	= 0	
Lock Object Name	= 1048	
Object Type	= Table	
Tablespace Name	= USERSPACE1	
Table Schema	= VSISP03	
Table Name	= MPK	
Mode	= IS	
commit		-- Insert actually happens
		commit

Deadlocks

10.

A (RR)	B (CS)
Select * from opk where id = 1	Select * from opk where id = 2
db2 => get snapshot for locks for application applid 134.100.11.71.38534.0905181 0203	db2 => get snapshot for locks for application applid 134.100.11.71.51614.0905181 0383
Sequence number = 00020 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 3 Total wait time (ms) = Not Collected	Sequence number = 00022 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 2 Total wait time (ms) = Not Collected
List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S	List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S
Lock Name = 0x020011030000000000000000054 Lock Attributes = 0x00000010 Release Flags = 0x00000001 Lock Count = 1 Hold Count = 0 Lock Object Name = 785 Object Type = Table Tablespace Name = USERSPACE1 Table Schema = VSISP03 Table Name = OPK Mode = S	Lock Name = 0x000011010000000000000000054 Lock Attributes = 0x00000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 273 Object Type = Table Tablespace Name = SYSCATSPACE Table Schema = SYSIBM Table Name = SYSUSERAUTH Mode = IS
Lock Name = 0x000011010000000000000000054	

Lock Attributes = 0x00000000	
Release Flags = 0x40000000	
Lock Count = 1	
Hold Count = 0	
Lock Object Name = 273	
Object Type = Table	
Tablespace Name = SYSCATSPACE	
Table Schema = SYSIBM	
Table Name = SYSUSERAUTH	
Mode = IS	
	update opk set name='neuer name' where id = 1
	-- hangs because of locks hold by session A
update opk set name = 'session A' where id = 2	
commit	
	commit
	B (RS)

11.

A (RR)	B (RS)
Select * from opk where id =1	
	Select * from opk where id = 2
	update opk set name = 'session B' where id = 1
update opk set name = 'session A' where id = 2	
DB21034E The command was processed as an SQL statement because it was not a valid Command Line Processor command. During SQL processing it returned: SQL0911N The current transaction has been rolled back because of a deadlock or timeout. Reason code "2". SQLSTATE=40001	
	commit
commit	

db2 => select * from opk where id < 3

ID NAME
1 session B
2 name2
2 record(s) selected.