

LOGIN

software

Alen Prodan

**Standby DB tehnologija na Oracle
SE bazi podataka**

Agenda

- ▶ Uvod u standby database tehnologiju
- ▶ Standby baza podataka na Oracle Standard Edition platformi
- ▶ Automatizacija postupka održavanja standby okoline

Uvod

Što je standby database ?

- ▶ Standby baza je replika primarne produkcijske baze podataka
- ▶ Izrađena je iz backup kopije primarne produkcijske baze podataka
- ▶ Sinhronizira se sa primarnom produkcijskom bazom prenošenjem i apliciranjem redo zapisa
- ▶ Primarna svrha:
 - ▶ Oporavak od ispada (disaster recovery) – dio sustavnog rješenja brzog oporavka informatičkog i komunikacijskog dijela poslovnog sustava
 - ▶ Zaštita od korupcije podataka
 - ▶ Dodatni reporting sustav

Oracle Standard Edition Standby DB

Modaliteti konfiguracije standby baze podataka

- ▶ Standby baza može biti konfigurirana u različitim modalitetima ovisno o načinu:
 - ▶ Prijenosa redo zapisa na standby lokaciju
 - ▶ Metodi aplikacije arhiviranih redo log datoteka na standby bazu podataka

Model upravljanja	Način prijenosa	Modalitet rada standby sustava	Mrežni zahtjevi
Upravljana (Managed)	<ul style="list-style-type: none"> • Automatski • Ručni (u slučaju potrebe) 	<ul style="list-style-type: none"> • Automatski (Managed) recovery • Ručni recovery • Read-only 	Oracle Net
Ne upravljana (Non-Managed)	<ul style="list-style-type: none"> • Ručni 	<ul style="list-style-type: none"> • Ručni recovery • Read-only 	Nema

Oracle Standard Edition Standby DB

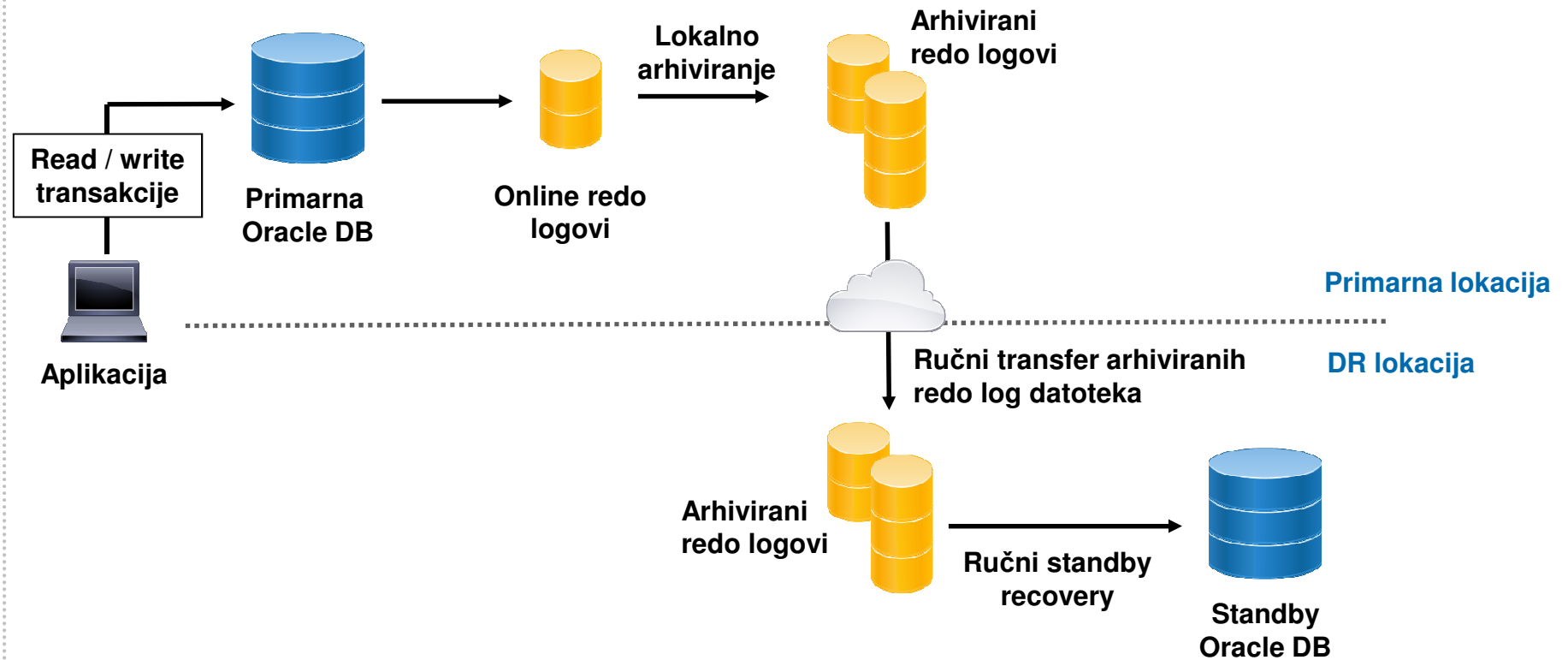
Modaliteti konfiguracije Standard Edition standby baze

- ▶ Oracle Data Guard dostupan je isključivo kao funkcionalnost Oracle DB Enterprise Edicije i ta funkcionalnost nije dostupna u Oracle DB Standard Ediciji
- ▶ Moguće je simulirati standby okolinu na SE bazi podataka
 - ▶ Ručnim transferom arhiviranih redo log datoteka na standby sustav koristeći OS alate ili skripte
 - ▶ Koristiti media recovery za roll-forward standby baze na disaster recovery lokaciji

Model upravljanja	Način prijenosa	Modalitet rada standby sustava	Mrežni zahtjevi
Upravljana (Managed)	<ul style="list-style-type: none"> • Automatski • Ručni (u slučaju potrebe) 	<ul style="list-style-type: none"> • Automatski (Managed) recovery • Ručni recovery • Read-only 	Oracle Net
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Oracle Standard Edition Standby DB

Ručno upravljana standby konfiguracija



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Postupak izrade ručno upravljane standby baze podataka

- ▶ Fizički (user-managed ili rman) backup primarne baze podataka
- ▶ Prijenos fizičkog backupa na standby server
- ▶ Restore primarne baze podataka na standby sustavu
- ▶ Priprema inicijalizacijskih parametara i pokretanje standby oracle instance
- ▶ Mount standby baze
- ▶ Prijenos arhiviranih redo log datoteka
- ▶ Ručni standby recovery

Oracle Standard Edition Standby DB

Fizički (user-managed) backup primarne baze podataka

```
ALTER SYSTEM SET log_archive_dest_1='location=use_db_recovery_file_dest'
SCOPE=SPFILE;
ALTER SYSTEM SET log_archive_dest_2='LOCATION=/u02/arch/';

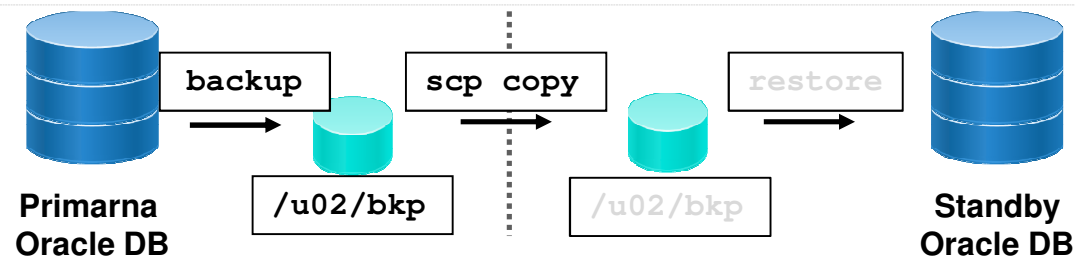
shutdown immediate;
startup mount
alter database archivelog;
alter database open;

alter database begin backup;

cp /u02/oradata/prim/system01.dbf /u02/bkp/
cp /u02/oradata/prim/sysaux01.dbf /u02/bkp
cp /u02/oradata/prim/undotbs01.dbf /u02/bkp
cp /u02/oradata/prim/users01.dbf /u02/bkp

alter database end backup;

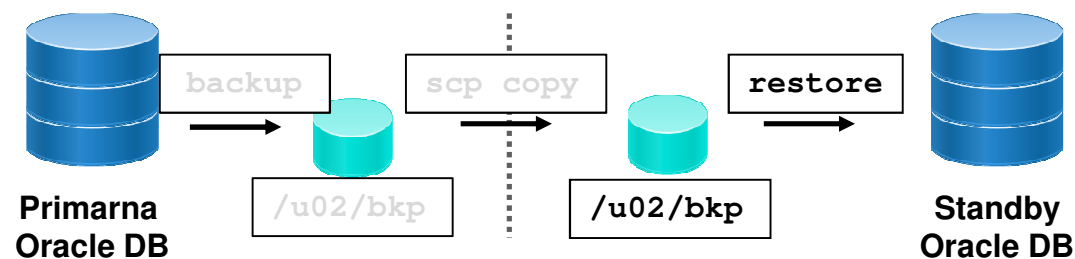
alter database create standby controlfile as '/u02/bkp/standby.ctl' reuse;
scp /u02/bkp/* oracle@dbv2:/u02/bkp
```



Oracle Standard Edition Standby DB

Restore primarne baze podataka na standby sustavu

```
cp /u02/bkp/*.dbf /u02/oradata/stdb/  
cp /u02/bkp/standby.ctl /u02/oradata/stdb/control01.ctl
```



Oracle Standard Edition Standby DB

RMAN backup i restore primarne baze podataka

```
run {
  backup as compressed backupset filesperset 2 format '/u02/bkp/db_%U' database;
  sql 'alter system archive log current';
  backup as compressed backupset filesperset 50 format '/u02/bkp/ar_%U'
  archivelog all;
}

backup current controlfile for standby format '/u02/bkp/standby.ctl';

scp /u02/bkp/* oracle@dbv2:/u02/bkp

run {
  restore standby controlfile from '/u02/bkp/standby.ctl';
  alter database mount;
  restore database;
}

report schema;
```

Oracle Standard Edition Standby DB

Inicijalizacijski parametri Standby instance

```
*.audit_file_dest='/u01/app/oracle/admin/prim/adump'  
*.audit_trail='db'  
*.compatible='12.1.0.0.0'  
*.control_files='/u02/oradata/stdb/control01.ctl'  
*.db_block_size=8192  
*.db_domain=''  
*.db_name='prim'  
*.db_unique_name='stdb'  
*.db_recovery_file_dest='/u02/fra'  
*.db_recovery_file_dest_size=4815m  
*.diagnostic_dest='/u01/app/oracle'  
*.dispatchers='(PROTOCOL=TCP) (SERVICE=primXDB)'  
*.local_listener='LISTENER_STDB'  
*.log_archive_dest_1='location=use_db_recovery_file_dest'  
*.nls_language='CROATIAN'  
*.nls_territory='CROATIA'  
*.open_cursors=300  
*.pga_aggregate_target=300m  
*.processes=300  
*.remote_login_passwordfile='EXCLUSIVE'  
*.sga_target=900m  
*.undo_tablespace='UNDOTBS1'  
*.db_file_name_convert='/u02/oradata/prim', '/u02/oradata/stdb'  
*.log_file_name_convert='/u02/oradata/prim', '/u02/oradata/stdb'
```

Pokretanje
standby
instance



Standby
Oracle DB

Oracle Standard Edition Standby DB

Pokretanje Oracle standby instance

```
startup nomount pfile='/tmp/init_stdb.ora'

alter database mount standby database;

select name,
       open_mode,
       database_role,
       protection_mode,
       protection_level
from v$databases;
```

NAME	OPEN_MODE	DATABASE_ROLE	PROTECTION_MODE	PROTECTION_LEVEL
PRIM	MOUNTED	PHYSICAL STANDBY	MAXIMUM PERFORMANCE	MAXIMUM PERFORMANCE

Oracle Standard Edition Standby DB

Provjera kašnjenja (gap) standby baze

Provjera `current_scn` na STDB:

```
select current_scn from v$database;
```

```
CURRENT_SCN
```

```
-----
```

```
424809
```

Primarna DB:

```
select
```

```
scn_to_timestamp(current_scn)- scn_to_timestamp(424809)
```

```
from v$database;
```

```
SCN_TO_TIMESTAMP(CURRENT_SCN)-SCN_TO_TIMESTAMP(424809)
```

```
-----
```

```
+000000000 01:18:11.000000000
```



**Primarna
Oracle DB**



**Standby
Oracle DB**

Oracle Standard Edition Standby DB

Transfer i apliciranje arhiviranih redo log datoteka

STANDBY:

```
scp /u02/arch/* oracle@dbv2:/u02/arch/
```

```
RECOVER FROM '/u02/arch/' STANDBY DATABASE;  
AUTO
```

```
SQL> select current_scn from v$database;
```

```
CURRENT_SCN  
-----  
          427463
```

PRIMARNA:

```
select scn_to_timestamp(current_scn)- scn_to_timestamp(427463) from v$database;
```

```
SCN_TO_TIMESTAMP(CURRENT_SCN)-SCN_TO_TIMESTAMP(427463)
```

```
-----  
+000000000 00:00:42.000000000
```

Oracle Standard Edition Standby DB

Failover i aktivacija standby baze podataka

STANDBY:

```
SQL> alter database activate standby database;
```

```
select name,open_mode,protection_mode,protection_level,database_role from  
v$databases;
```

NAME	OPEN_MODE	PROTECTION_MODE	PROTECTION_LEVEL	DATABASE_ROLE
PRIM	MOUNTED	MAXIMUM PERFORMANCE	UNPROTECTED	PRIMARY

```
alter database open;
```

```
ACTIVATE STANDBY: Complete - Database mounted as primary  
Completed: alter database activate standby database
```


Oracle Standard Edition Standby DB

Automatizacija mehanizma osvježavanja Standby DB

Vlastite skripte ili komercijalni produkt tipa
Dbvisit Standby ?

Oracle Standard Edition Standby DB

Automatizacija mehanizma osvježavanja Standby DB

- ▶ Ručne skripte nose određene rizike za razliku od zrelog i testiranog produkta u različitim okolinama, potencijalno radno intenzivna opcija
- ▶ Ugrađeni nadzor operativnog statusa, grešaka ili zastoja u radu, te pravovremeno obavješćavanje o problemima
- ▶ Optimizacija potrošnje mrežnog bandwidtha kroz primjenu algoritama kompresije datoteka sa redo zapisima
- ▶ Očuvanje povjerljivosti podataka u tranzitu kroz primjenu kriptografskih alata
- ▶ Automatiziran postupak failovera na standby bazu, te rekonstrukcije primarne baze nakon oporavka od ispada
- ▶ Podrška prilikom migracije na nove verzije Oracle RDBMS softvera ili podrška za različite modalitete instalacija (RAC, ASM, itd.)

Pitanja

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Odgovori

