

# ubTools

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## **ubGuard 1.1 for Oracle**

### **Concept and Administration**

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## Introduction (1)

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- What is ubGuard ?
- Architecture
- Features
- Certification
- Environment Variables

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## Introduction (2)

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- Setup Parameters
- Installation
- Starting, Stopping, Monitoring
- Uninstallation
- Third Parties

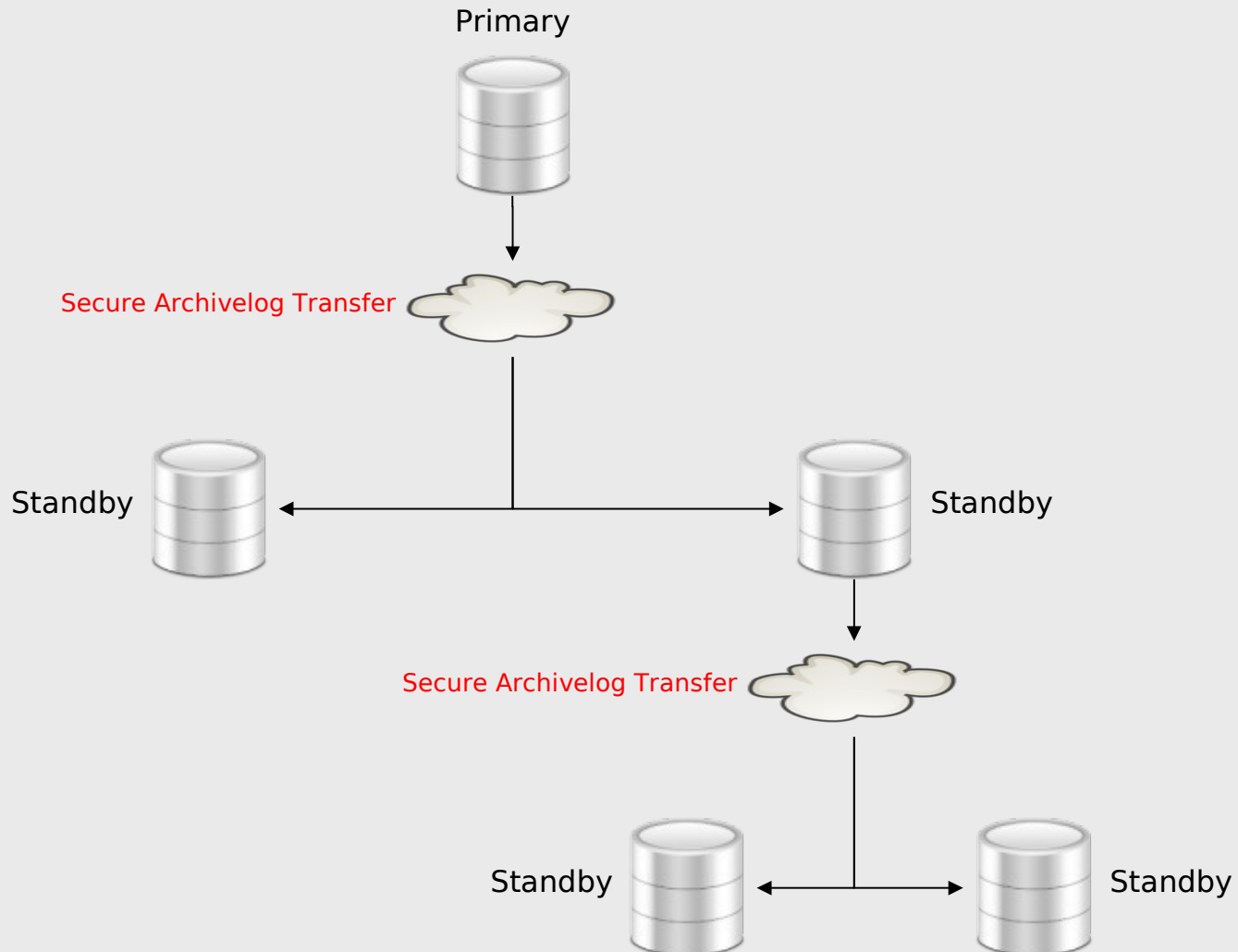


## What is ubGuard ?

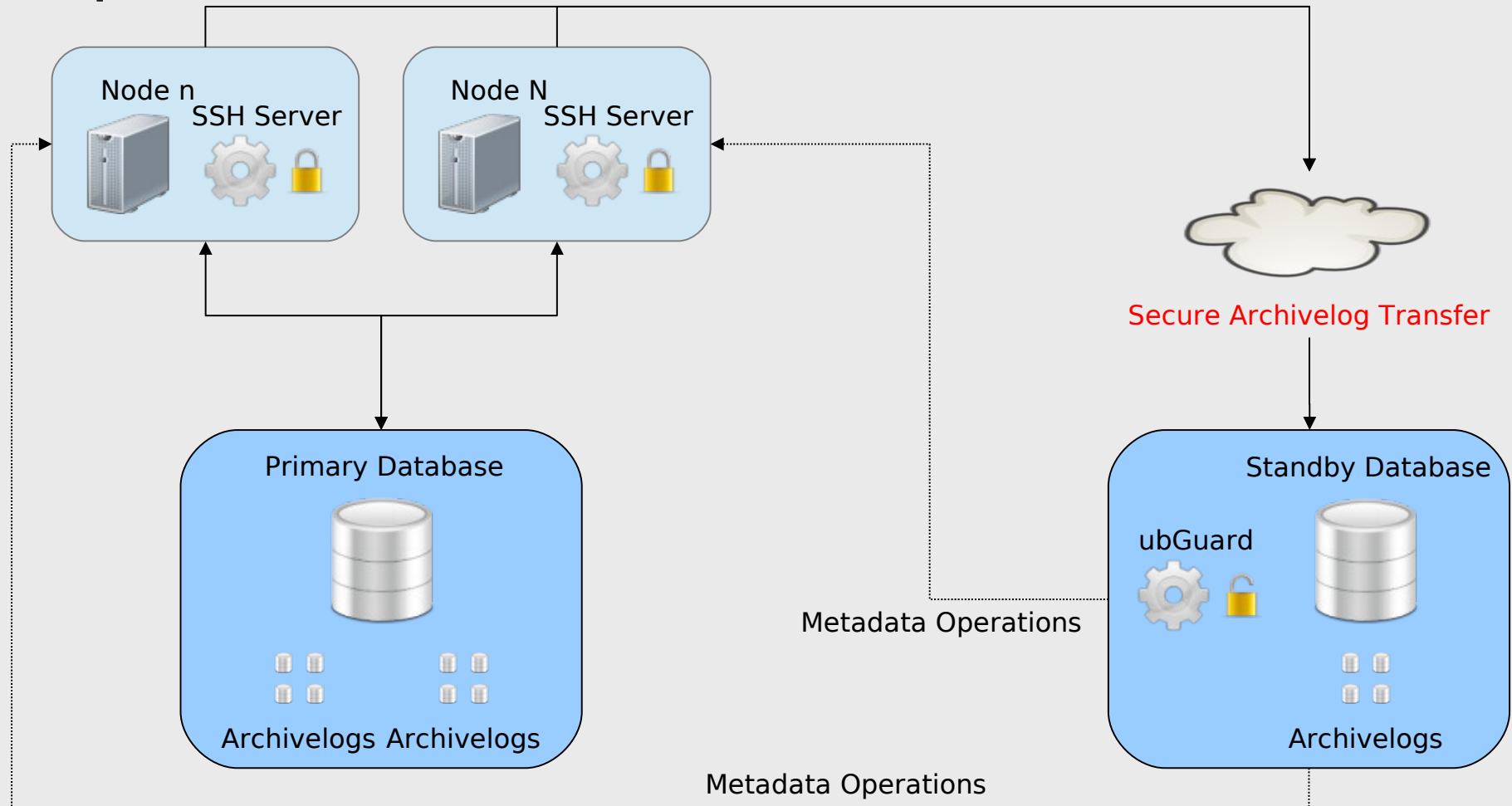
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- Provides Oracle database protection and availability by mirroring primary databases to standby databases.
- Provides quick solution against failures, disasters.

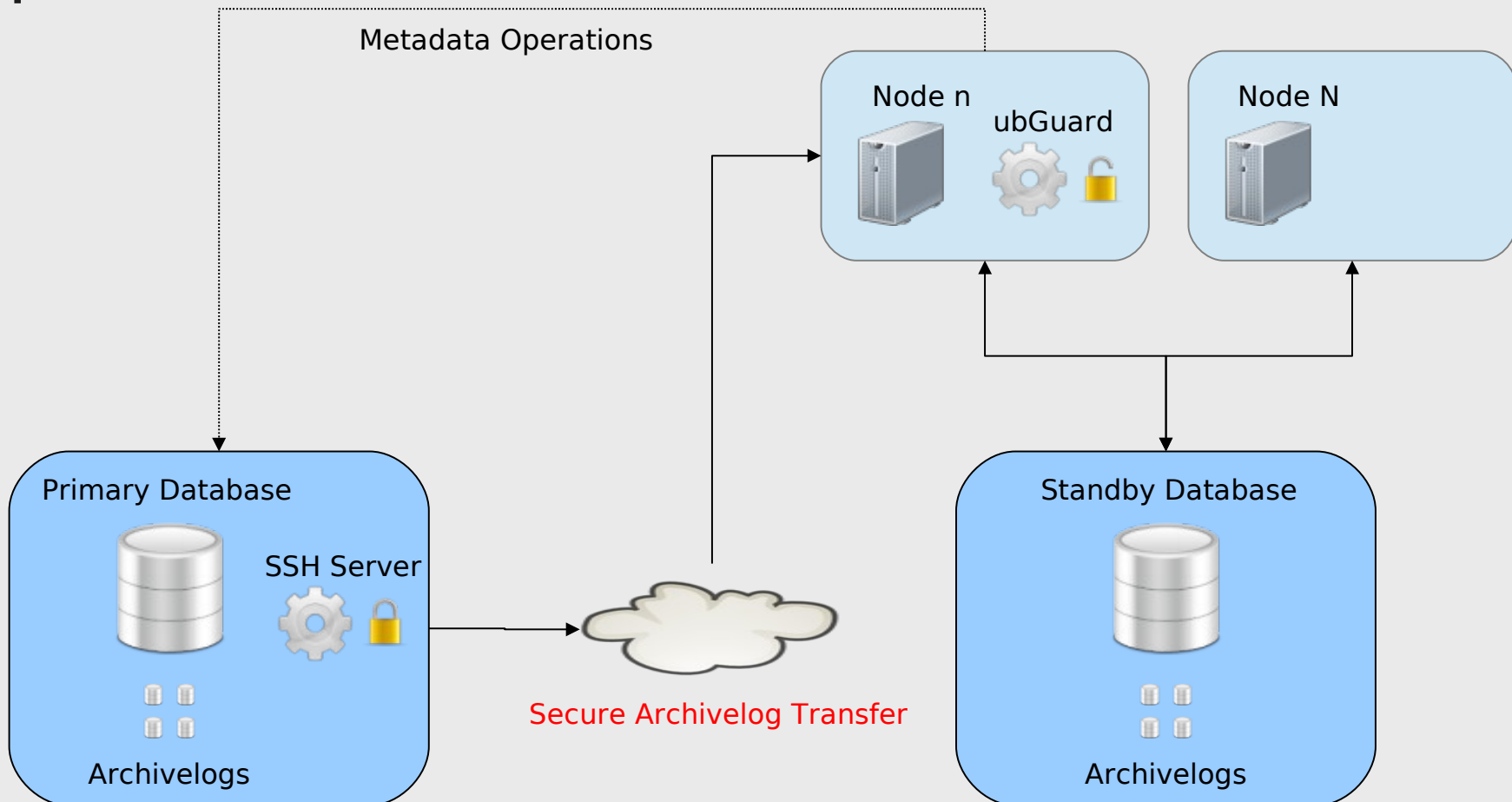
# Architecture: ubGuard Tree



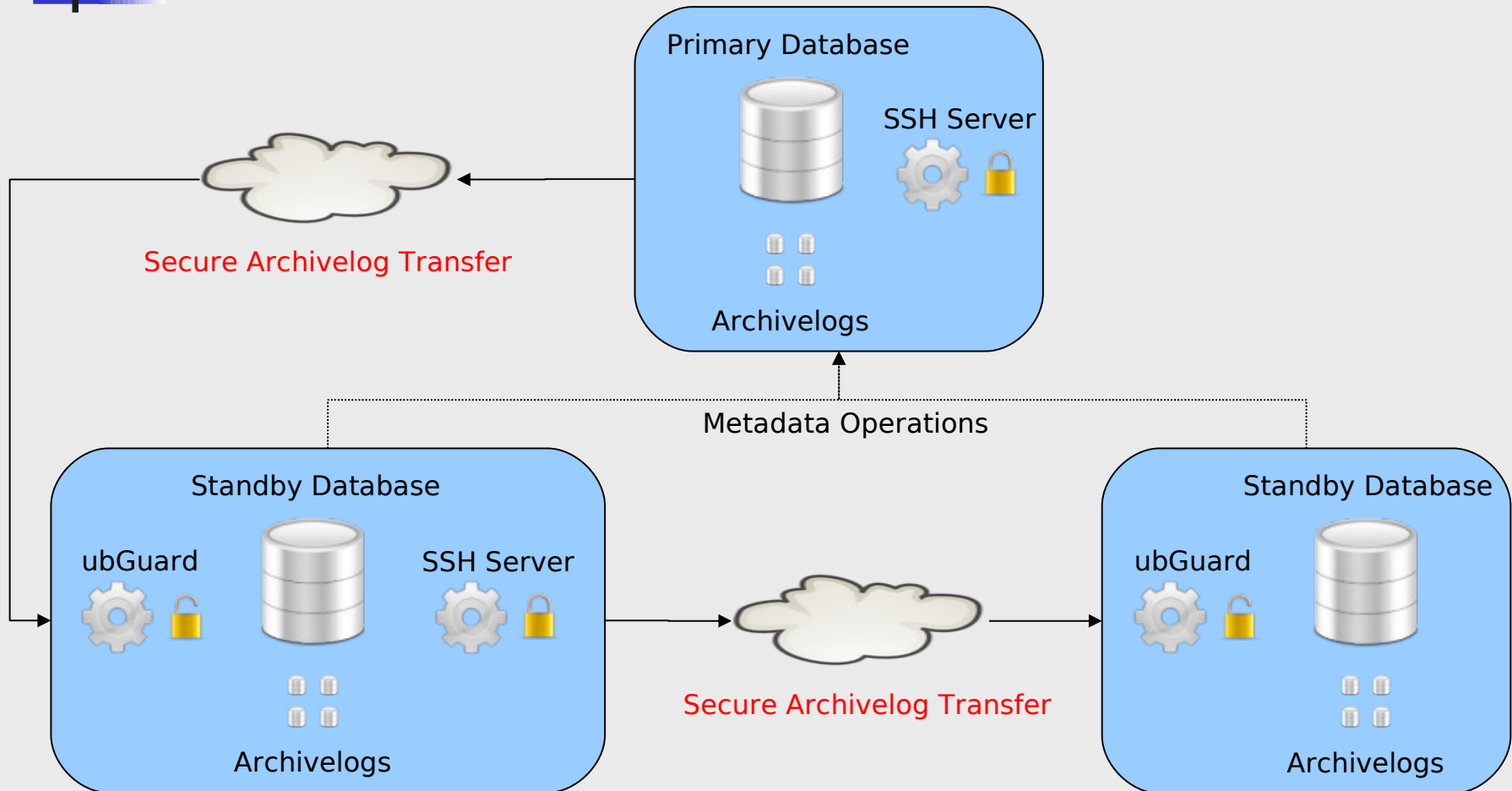
# Architecture: RAC Primary Database



# Architecture: RAC Standby Database



# Architecture: Cascaded Standby Database





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## Features (1)

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- Supports Oracle Enterprise Edition, Standard Edition, Standard Edition One, Personal Edition, Express Edition.
- Supports RAC and single instance databases.
- Supports ASM and regular file systems.
- Supports multiple standby databases.
- Supports cascaded standby databases.

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## Features (2)

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- Platform independent. It works in Java environment.
- Easy to setup in minutes.
- No setup needed in primary servers.
- No need to use an external SSH client utility to transfer archivelogs.
- Transfers archivelogs in compressed format by SSH API.

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## Features (3)

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- Supports fixed and random local SSH port.
- Transfer archivlogs in encrypted format by SSH API.
- Encrypts passwords in repository.
- Updates only its repository.
- Emails and logs errors.



## Features (4)

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- Deletes applied archivelogs from standby servers with a time delay option.
- Runs as a Windows service in Windows platforms.

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# Certification

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- Certified on the following environments:

Product	Version
Database	12.1.0
	11.2.0
	11.1.0
	10.2.0
	10.1.0
Java	1.4.2
	1.5
	1.6
An SSH server	SSH2 Protocol support

- As of the current version, Java is required on standby server and SSH server is required on primary server.

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# Environment Variables

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- Available in *conf/environment.sh* (*conf/environment.bat* for Windows).
- Setting JAVA\_HOME is required.
- If ubGuard runs under a user other than Oracle software owner, set the followings:

ORACLE\_HOME  
PATH

<ORACLE\_HOME>/bin must be in PATH.

## Setup Parameters (1)

- Available in *conf/setup.properties*.
- Used only in ubGuard setup.
- Multiple values are separated by '|' character.

Example:

#	Host1	Host2
#	=====	=====
host	= primhost	stbyhost
#	Primary Database Instance	Standby Database Instance
#	=====	=====
database.host	= primhost	stbyhost
database.instance	= PRIM	STBY

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## Setup Parameters (2)

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- Define just 1 host and database instance of RAC standby database.
- *conf/setup.properties* can be deleted after setup. If not, password parameters should be removed for security.
- Rerun ubGuard setup to change parameters.



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## Setup Parameters: Descriptions (1)

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Name	Description	Multiple Value
host	Hostname/IP of host.	Yes
ssh.port.server	SSH server port.	Yes
ssh.port.client	SSH client port.	Yes
	Random port:0	
ssh.user	SSH user.	Yes
ssh.password	SSH password.	Yes
ssh.compression.level	SSH compression level.	Yes
	No compression:0, Max compression:9, Default compression:-1(that is 6)	

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## Setup Parameters: Descriptions (2)

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Name	Description	Multiple Value
database.instance.alias	Unique database instance alias.	Yes
database.host	Hostname/IP name in which database instance is installed. Its value must be defined in <i>host</i> parameter.	Yes
database.instance	Database instance name.	Yes

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## Setup Parameters: Descriptions (3)

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Name	Description	Multiple Value
database.instance.parent.alias	<p>Database instance alias from which archive logs are transferred.</p> <p>Use ',' as the delimiter for RAC parents that each RAC node is a parent.</p> <p>Value must be defined in <i>database.instance.alias</i>.</p> <p>Don't set any value for primary database instance.</p>	Yes

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## Setup Parameters: Descriptions (4)

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Name	Description	Multiple Value
database.listener.port	Listener port of database instance.	Yes
database.sysdba.user	SYSDBA user of database instance.	Yes
database.sysdba.password	SYSDBA password of database instance.	Yes

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## Setup Parameters: Descriptions (5)

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Name	Description	Multiple Value
database.user.ubguard.password	Password of UBGUARD user.	No
database.user.ubguard.tablespace.default	Default tablespace of UBGUARD user.	No
database.user.ubguard.tablespace temporary	Temporary tablespace of UBGUARD user.	No

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## Setup Parameters: Descriptions (6)

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Name	Description	Multiple Value
database.archivelog.transfer.period	<p>Archivelog transfer period in minute.</p> <p>Values less than 1 disable archivelog transfer.</p> <p>See Oracle ARCHIVE_LAG_TARGET parameter to force archivelog generation.</p>	No

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## Setup Parameters: Descriptions (7)

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Name	Description	Multiple Value
database.standby.archivelog.retention.time	<p>Archivelog retention time in minute.</p> <p>Archivelogs on standby are deleted if they are older than standby database time by this parameter.</p> <p>Values less than 1 deletes all archivelogs if they are older than standby database time.</p>	No

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## Setup Parameters: Descriptions (8)

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Name	Description	Multiple Value
database.repository.retention.time	Repository log retention time in day.  Values less than 1 disable repository log delete.	No



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## Setup Parameters: Descriptions (9)

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Name	Description	Multiple Value
mail.transport.host	Hostname/IP of SMTP server.	No
mail.transport.port	SMTP port. Default port:-1(that is 25).	No
mail.transport.user	SMTP user. Don't set if no authentication is required for SMTP server.	No
mail.transport.password	SMTP user password. Don't set if no authentication is required for SMTP server.	No

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## Setup Parameters: Descriptions (10)

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Name	Description	Multiple Value
mail.from	Email address of FROM.	No
mail.to	Email address of TO.	No
mail.cc	Email address of CC.	No

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# Installation: Prerequisites (1)

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- Check if Oracle version is supported.

Example:

```
SQL> SELECT * FROM v$version;
```

```
BANNER
```

```
-----  
Oracle Database 11g Release 11.2.0.3.0 - 64bit Production  
PL/SQL Release 11.2.0.3.0 - Production  
CORE      11.2.0.3.0      Production  
TNS for Linux: Version 11.2.0.3.0 - Production  
NLSRTL Version 11.2.0.3.0 - Production
```

```
SQL>
```

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## Installation: Prerequisites (2)

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- Most servers have Java installed.
- Check if Java version in JDK or JRE is supported.

in JDK:

```
$ /usr/java/j2sdk1.4.2_19/bin/java -version  
java version "1.4.2_19"  
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2_19-b04)  
Java HotSpot(TM) Client VM (build 1.4.2_19-b04, mixed mode)  
$
```

in JRE:

```
$ /usr/java/j2sdk1.4.2_19/jre/bin/java -version  
java version "1.4.2_19"  
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2_19-b04)  
Java HotSpot(TM) Client VM (build 1.4.2_19-b04, mixed mode)  
$
```

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## Installation: Prerequisites (3)

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- Most UNIX systems have SSH2 servers installed.
- IF no SSH2 server is installed, then:
  - Contact system administrator.
  - Install an SSH2 server.

See [http://en.wikipedia.org/wiki/Comparison\\_of\\_SSH\\_servers](http://en.wikipedia.org/wiki/Comparison_of_SSH_servers) for some SSH servers.

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## Installation: Prerequisites (4)

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- Create physical standby database with the following exceptions:
  - No need to set Oracle Data Guard specific initialization parameters.
  - No need to create standby redologs.
  - Don't start managed recovery.

### Some Resources:

Oracle Note:374069.1 Creating a Standby Database on a new host

Oracle Note:387339.1 MAA - Creating a Single Instance Physical Standby for a RAC Primary

Oracle Note:380449.1 MAA - Creating a RAC Physical Standby for a RAC Primary

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## Installation: Prerequisites (5)

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- Set the following Oracle initialization parameters in standby instance:

Parameter	Value
LOG_ARCHIVE_DEST	Set a regular file system path. ASM path not supported.  <i>This restriction may be removed in a future release.</i>
LOG_ARCHIVE_FORMAT	%t_%r_%s.arch  <i>This restriction may be removed in a future release.</i>
STANDBY_FILE_MANAGEMENT	AUTO
DB_FILE_NAME_CONVERT	Set if primary and standby data/temporary file paths are different.
LOG_FILE_NAME_CONVERT	Set if primary and standby redolog paths are different.



## Installation (1)

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- Copy *ubGuard-a.b.c.zip* to a standby server.
- Unzip *ubGuard-a.b.c.zip*.
- Set setup parameters by editing *conf/setup.properties*.
- Set environment variables by editing *bin/environment.sh* (*bin/environment.bat* for Windows).





## Installation (2)

- Run *bin/ubguard.sh* (*bin/ubguard.bat* for Windows).

Example:

```
$ ./ubguard.sh setup
...
ubGuard-11: ubGuard setup completed.

$
```

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## Installation (3)

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- If there are multiple standby databases in other servers:

Compress installation directory in which setup has completed.

Copy it to other standby servers.

Uncompress there.

Create Windows service as an administrator user for Windows platforms.

Example:

```
C:\Users\dunal\ubGuard\1.1.1\bin> ubguard.bat setup os_service
...
ubGuard-11: ubGuard setup completed.
C:\Users\dunal\ubGuard\1.1.1\bin>
```

## Starting: Command Line

- Run *bin/ubguard.sh* (*bin/ubguard.bat* for Windows).

Syntax: *ubguard.sh start <database.instance.alias>*

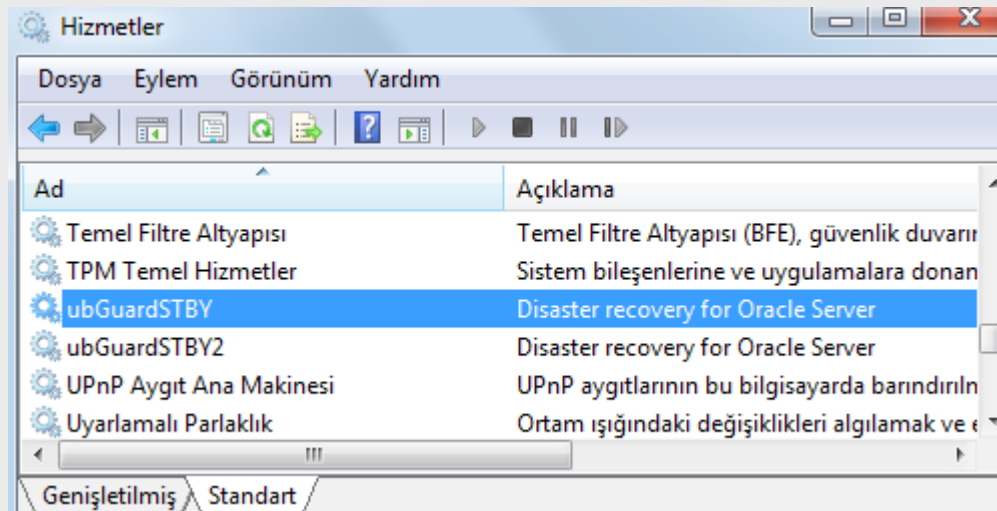
Example:

```
$ ./ubguard.sh start stby
The output will be written to ../../log/ubguardstby.log
$
```

- Check *log/ubguard<database.instance.alias>\*.log* to see if ubGuard is started.
- It is possible to start remote ubGuard instance.

## Starting: OS Service

- Supported in Windows platforms.
- Go to *Control Panels* → *Administrative Tools* → *Services*.
- Start *ubGuard<database.instance.alias>* service.



- Optionally check *log/ubguard<database.instance.alias>\*.log* to see if ubGuard is started.

## Stopping: Command Line

- Run *bin/ubguard.sh* (*bin/ubguard.bat* for Windows).

Syntax: *ubguard.sh stop <database.instance.alias>*

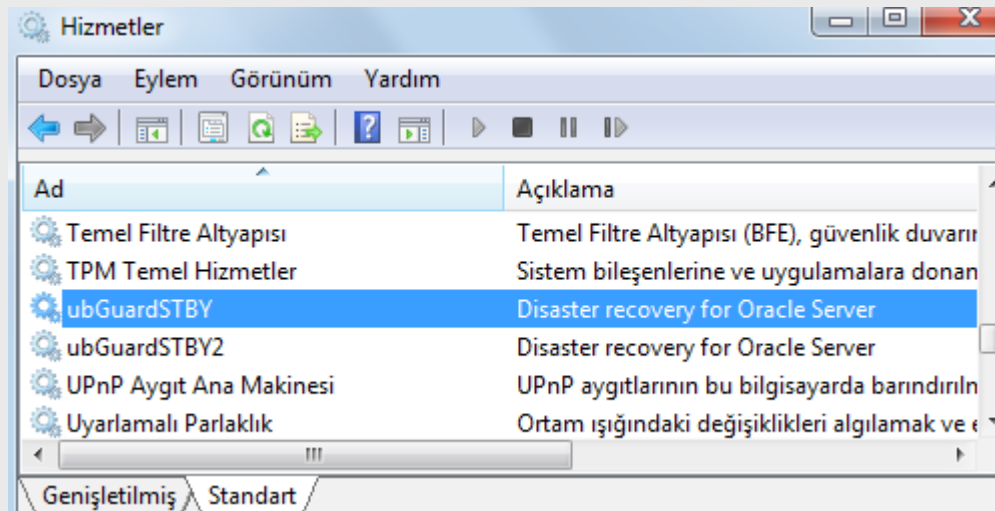
Example:

```
$ ./ubguard.sh stop stby
...
ubGuard-13: ubGuard has stopped.
$
```

- It is possible to stop remote ubGuard instance.

## Stopping: OS Service

- Supported in Windows platforms.
- Go to *Control Panels* → *Administrative Tools* → *Services*.
- Stop *ubGuard<database.instance.alias>* service.



- Optionally check *log/ubguard<database.instance.alias>\*.log* to see if ubGuard is stopped.

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## Monitoring (1)

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- Monitor ALERT LOG of standby instance:

UNIX:

```
$ tail -f alert_STBY.log
...
Mon Dec 17 17:03:53 2012
ALTER DATABASE RECOVER AUTOMATIC STANDBY DATABASE UNTIL CHANGE 1258648
Media Recovery Start
  started logmerger process
Mon Dec 17 17:03:53 2012
Managed Standby Recovery not using Real Time Apply
Parallel Media Recovery started with 4 slaves
Media Recovery Log /home/oracle/oradata/STBY/arch/1_797183117_179.arch
Incomplete Recovery applied until change 1258648 time 12/17/2012 17:03:52
Media Recovery Complete (STBY)
Completed: ALTER DATABASE RECOVER AUTOMATIC STANDBY DATABASE UNTIL CHANGE 1258648
```

Windows:

Open ALERT LOG by an editor or viewer.

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## Monitoring (2)

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- Monitor UBGUARD.ERROR\_LOG.

Example:

```
SQL> SELECT * FROM ubguard.error_log;  
  
no rows selected  
  
SQL>
```

- Check email INBOX. ubGuard emails when an error is encountered.
- Check *log/ubguard<database.instance.alias>\*.log*.



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## Uninstallation (1)

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- Stop ubGuard.
- Drop ubGuard database schema and role:

```
SQL> DROP USER ubguard CASCADE;  
User dropped.  
SQL> DROP ROLE ubguard_role;  
Role dropped..  
SQL>
```

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## Uninstallation (2)

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- Drop database directories for ASM primary databases:

Directory names: *UBGUARD\_TMP\_ARCHIVE\_<a>\_<b>*,  
*UBGUARD\_ASM\_ARCHIVE\_<a>\_<b>*

Example:

```
SQL> DROP DIRECTORY ubguard_asm_archive_prim_stby;
```

```
Directory dropped.
```

```
SQL> DROP DIRECTORY ubguard_tmp_archive_prim_stby;
```

```
Directory dropped.
```

```
SQL>
```

## Uninstallation (3)

- Delete OS service in Windows platforms:

Syntax: *ubguardws.exe delete ubGuard<database.instance.alias>*

Example:

```
C:\Users\dunal\ubGuard\1.1.1\bin> ubguardws.exe delete ubGuardstby  
C:\Users\dunal\ubGuard\1.1.1\bin>
```

- Check *Control Panel* → *Administrative Tools* → *Services* to see if OS service is deleted.
- If an error occurs, check *log/ubguard<database.instance.alias>\*.log*.

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## Uninstallation (4)

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- Delete ubGuard installation directory:

UNIX:

```
$ rm -rf /home/oracle/ubGuard/1.0.0  
$
```

Windows:

Delete by Windows Explorer or other tools.

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## Third Parties (1)

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- Softwares:

API	Version
Oracle JDBC Driver	10.2.0.5
Java Mail	1.4.5
JavaBeans Activation Framework	1.1.1
Java Secure Channel	0.1.49
JZLib	1.0.7
Apache Prunsrv	1.0.15.0

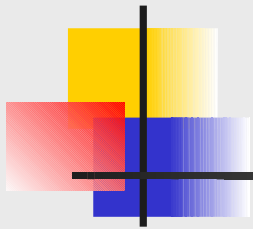
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## Third Parties (2)

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- Images used by this document:

Designer	Address
VisualPharm (Ivan Boyko)	<a href="http://www.visualpharm.com">http://www.visualpharm.com</a>
Asher	<a href="http://kyo-tux.deviantart.com">http://kyo-tux.deviantart.com</a>
Schollidesign	<a href="http://schollidesign.deviantart.com">http://schollidesign.deviantart.com</a>
Schollidesign	<a href="http://schollidesign.deviantart.com">http://schollidesign.deviantart.com</a>
Schollidesign	<a href="http://schollidesign.deviantart.com">http://schollidesign.deviantart.com</a>
New Moon	<a href="http://code.google.com/u/newmoon">http://code.google.com/u/newmoon</a>



# ubTools

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## **ubGuard 1.1 for Oracle**

### **Concept and Administration**