

Business Continuity Plan

Internet Trading

□ Dawood Equities Limited provides Internet trading facility which depends on following things.

1. Servers
2. ISP Link (for web users)
3. KSE Link

Now we look at each one of them and their remedy in case of their discontinuity.

Failure of Server

Servers

- DEL has five servers running namely:
 1. Production (Database).
 2. Radius (Application server)
 3. Gateway (Linked with KSE)
 4. Web server (Website)
 5. Domain Controller

- DEL has another server for backup.

Servers

- Server disaster can be
 1. Operating System crash.
 2. Hardware crash.

- In case of Operating system crash, our primary objective is not to introduce backup server.
 - Backup server will take position if and only if it is a hardware crash.

Servers

- Settings of each and every server is configured in backup server and these settings are tested in mock sessions.
- All servers communicate each other by IP addresses rather than name so it is easy for us to introduce a backup server by just giving it a same IP as of crashed server.

Servers

- For internet trading facility following servers are very crucial.
 1. **Production** since, it is main database.
 2. **Radius** since, it is application server and clients interface for trading in stocks.
 3. **Gateway** connectivity of our servers to KSE. Order placement, confirmation etc.

Getting Started.

We now look at Plan of each and every server. First we name the plan ID. Our naming convention for plan ID is as follows:-

Recovery Plan(RP)+first(servername,3)+server IP(LastOctet)

Plan IDs

- Recovery Plan of Production (Database).
 - Plan ID: RPPRO1

- Recovery Plan of Radius (Application Server).
 - Plan ID: RPRAD2

- Recovery Plan of Gateway (KSE server).
 - Plan ID: RPGAT3

RPPRO1(Recovery Plan of Production)

Purpose of this plan is to ensure proper working of Database as it is backbone of Online trading system. Personals responsible for accomplishing this plan are IT peoples of DEL.

In case of failure, first we have to understand the reason of failure so that we can insure proper implementation of recovery mechanism.

Since it is our main database so the total online trading software will be stopped and software will not be able to run therefore no connectivity of clients will be possible.

Recovery Time objective of this server will be maximum 30 minutes.

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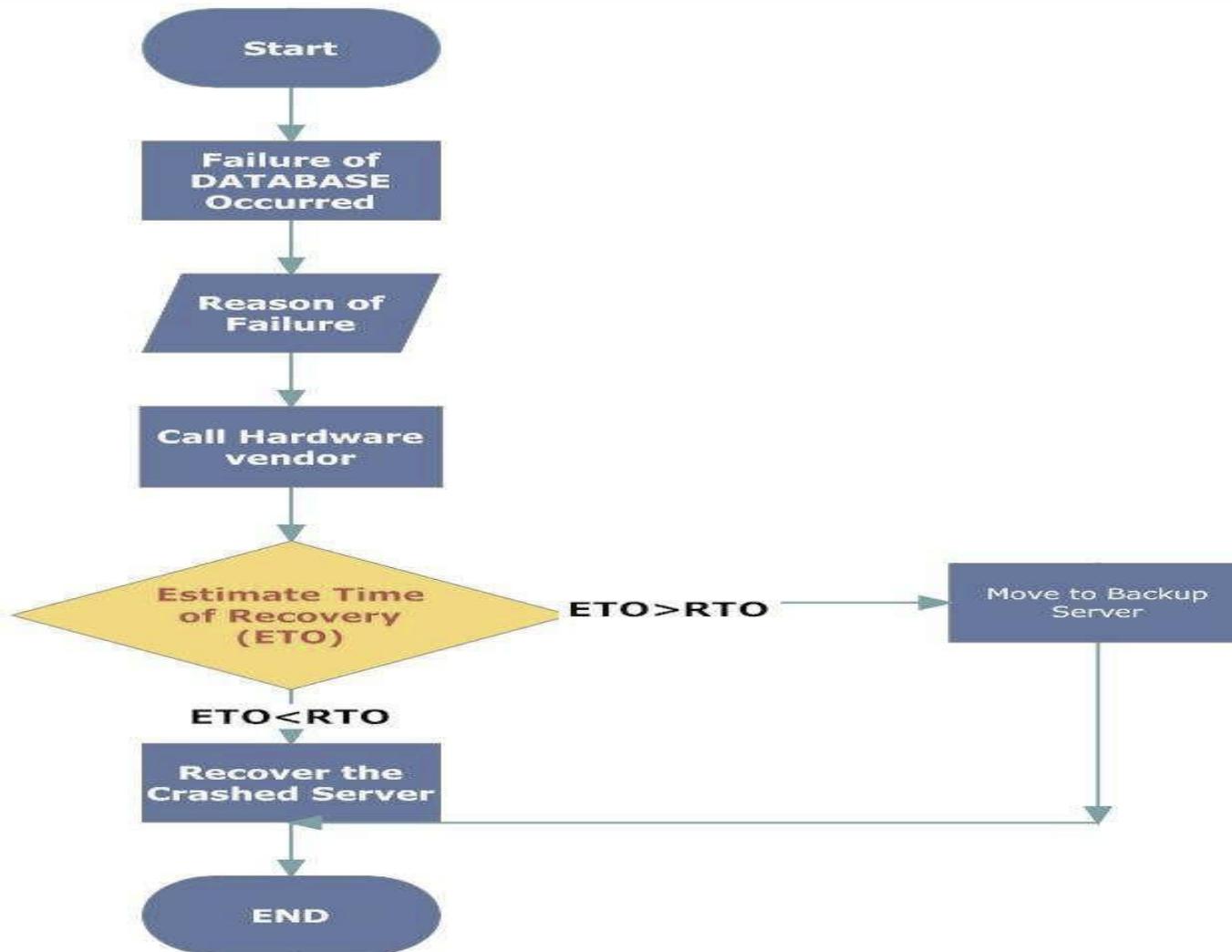
Following person(s) has to be notified.

1. Mr. Iqbal Hassan.

Backup of database is performed two times daily i.e. one after market and other one after posting. Recent backup is placed on three different locations one of that place is backup server

Now our initial response will depend on estimate duration of failure with our RTO which can be understand with the following flowchart.

Plan guideline.



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If the conclusion was to setup a backup server than this is the procedure of introducing a backup server

- Restore the recent backup of database.**
 - In radius (Application Server) make DSN with new Database.**
 - In GATEWAY Server make DSN with new Database. □**
- In WEBSERVER make DSN with new Database as well as change the name of the crashed database with new database in the following file.**
- D:\WEwebsiteLive\global.asa.**

The security and login information are all pre-configured.

This whole setup will take the same time as taken by Database to restore the recent backup.

Radius (Application Server)

- If this server fails then it will take approximately 20 minutes to put backup server online.
- The steps involved are:-
 1. Disjoin from domain
 2. Assign IP of crashed server to backup server by doing this we can save around 10 minutes
 3. execute Radius, message broker, risk manager, market process, market server and feed server in backupserver.

Gateway (Linked with KSE)

- DEL have backup connectivity of gateway link provided by KSE. So to introduce new Gateway server following steps have to be taken:-
 1. Unplug STP from crashed server and plug it into new gateway.
 2. Define path of user data files in OCS source path file in GT folder.
 3. Make DSN with Database.
 4. Change destination and local IPS file in GT folder to destine for Application Server.

Emergency Numbers

In case of failure following vendors have to be contacted.

- Blessing Computers
0345-2201861

Mr. Noor

Connectivity

Connectivity of Clients to DEL servers

Emergency Numbers

□ Cybernet

111-445-566

□ MultiNet Pakistan (pvt) limited

111-021-021

Connectivity

- We are using two redundant links for clients to get connected to ACE servers.
 1. MultiNet Pakistan (pvt) limited
 2. Cybernet (1 Mbps CIR)

- When the word "LINK" is used it means the connectivity of application server to internet and the terminology "LINK DOWN" means that application server has lost its connectivity from internet.

- Therefore we first have to troubleshoot the reason of LINK DOWN then have to work accordingly. If the LINK is DOWN due to our Internet Service Provider, then following measures have to be taken in account.

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1. Set the time frame after which primary link will be recovered. Lets say we have our par value as 2 minutes then after that we will be going to switch to backup link and if it is less then two minutes then we will not going to shift at backup link.
 2. Stop all processes.
 3. Change the ip in file Destination And Local IPS.
 4. Now execute the whole processes again.
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- Time taken to shift the link will be 15 minutes. The reason for that much time taken is due to the market process as it will run the whole market again from start to end. Time can also vary as it depends at which time link goes down if it happened at 10 o'clock then to shift the link is approximately 5 minutes.

Routers and Links



DEL is linked with KSE and with WAN users. For that we have two different Routers.

Link with Karachi Stock Exchange

DEL is connected with KSE on either of two links on single router with two Ethernet interfaces.

If any of the link is down we have to call KSE to shift us on backup link and we have to pull the disaster occurred link's STP from router interface. Time required to shift the link is almost 5 minutes

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The backup of KSE router is not present. If KSE router crashes down then whole connectivity of DEL to KSE will be lost.