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The Identity Security Company™

PAM Administration

Disaster Recovery

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Agenda

By the end of this session, you will be able to:

1. Describe the **CyberArk PAM Disaster Recovery** solution
2. Configure and test Disaster Recovery

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Disaster Recovery

- DR architecture
- Setup DR
- Vault failover
- Component failover
- Return to primary site

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Architecture

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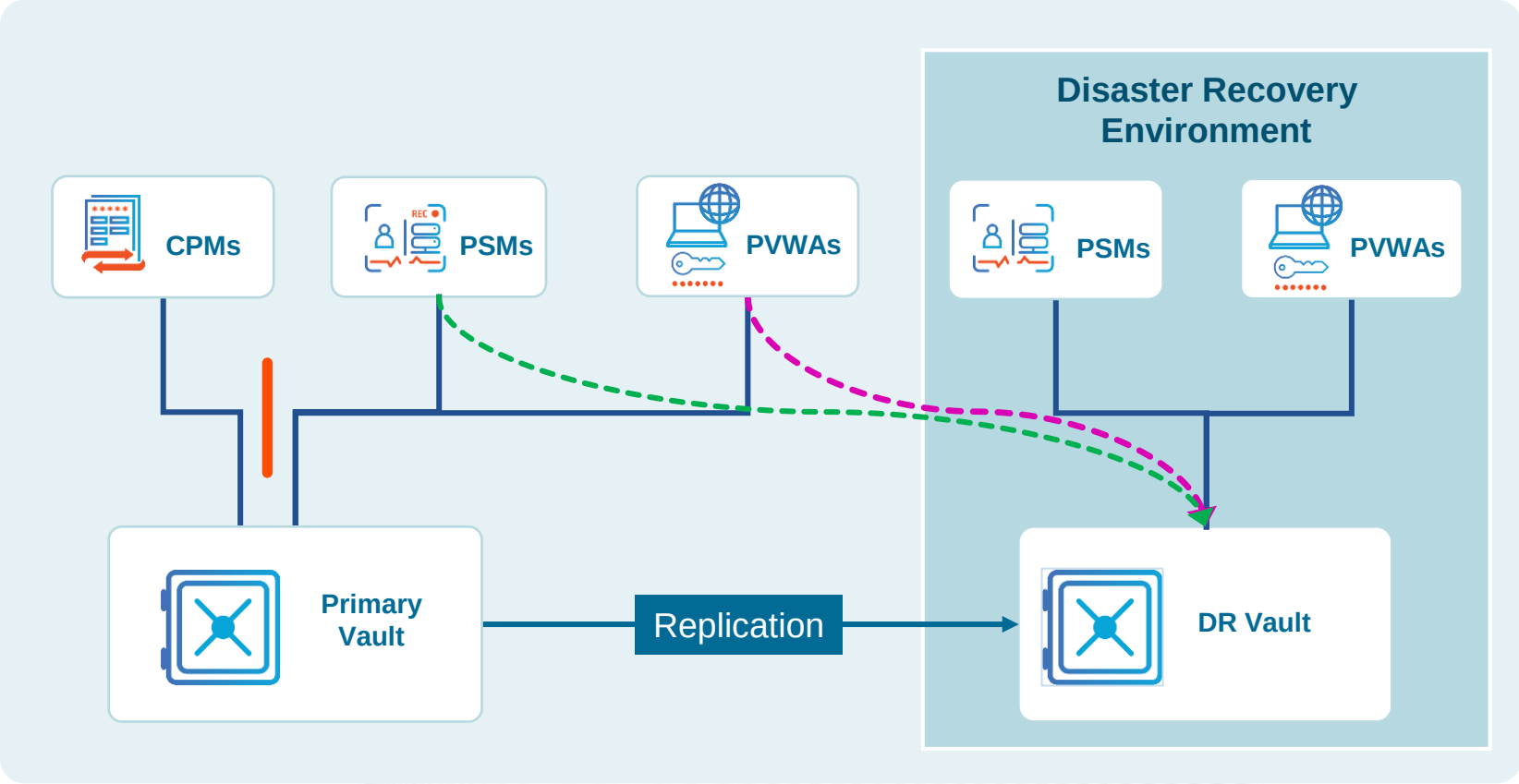
Disaster Recovery Architecture

- The ***Disaster Recovery* (DR) Vault** is a standalone or clustered Vault server with an extra software component installed: the DR service
- PSM and PVWA should be deployed at the DR site to provide access to users in the event of a disaster
- The CPM should never be configured for automatic failover



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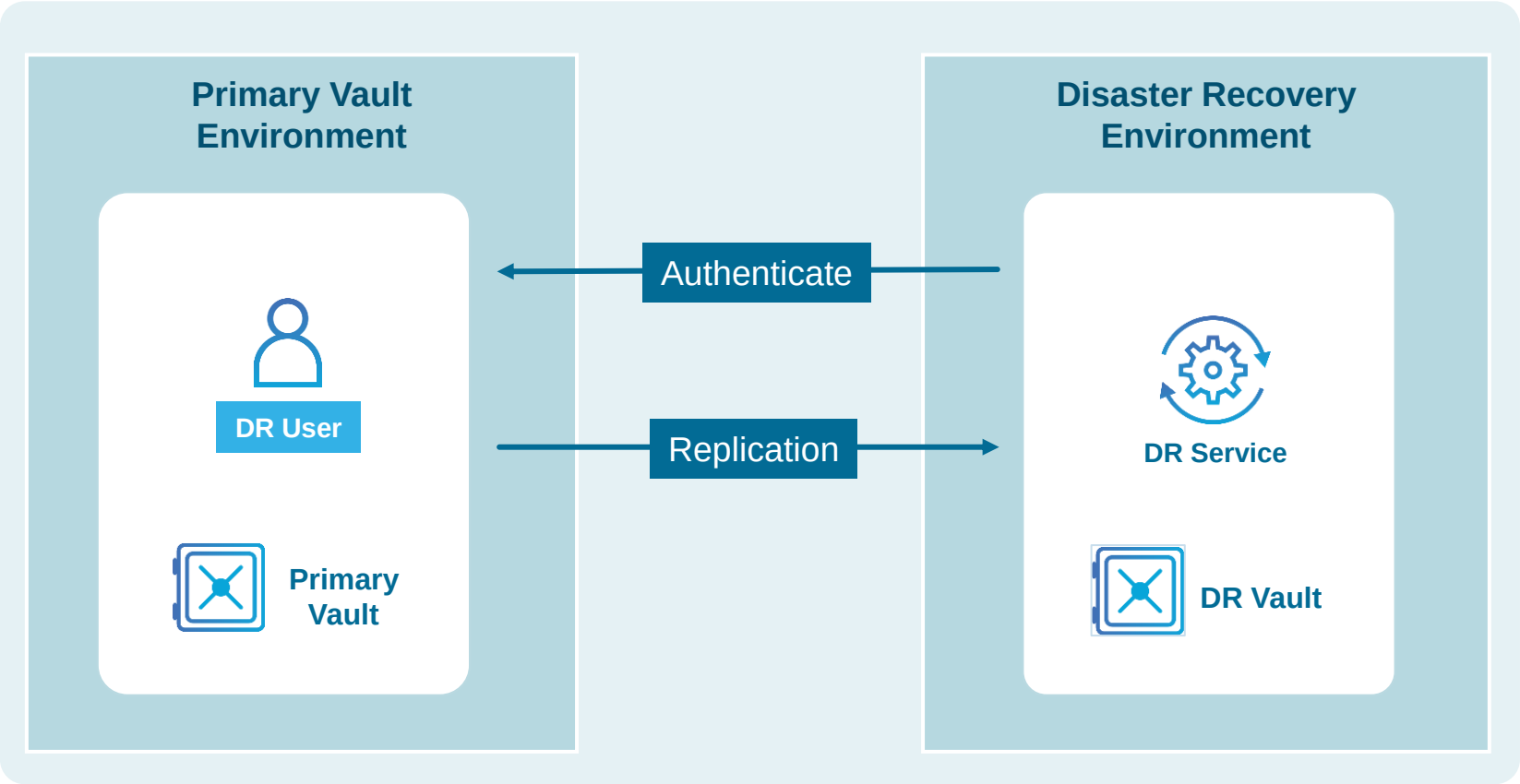
DR User

- The DR user is created automatically
- The DR service is installed on the DR Vault
- The DR service on the DR Vault authenticates to the Primary Vault using the credentials of the DR user to replicate data from the Primary Vault to the DR Vault



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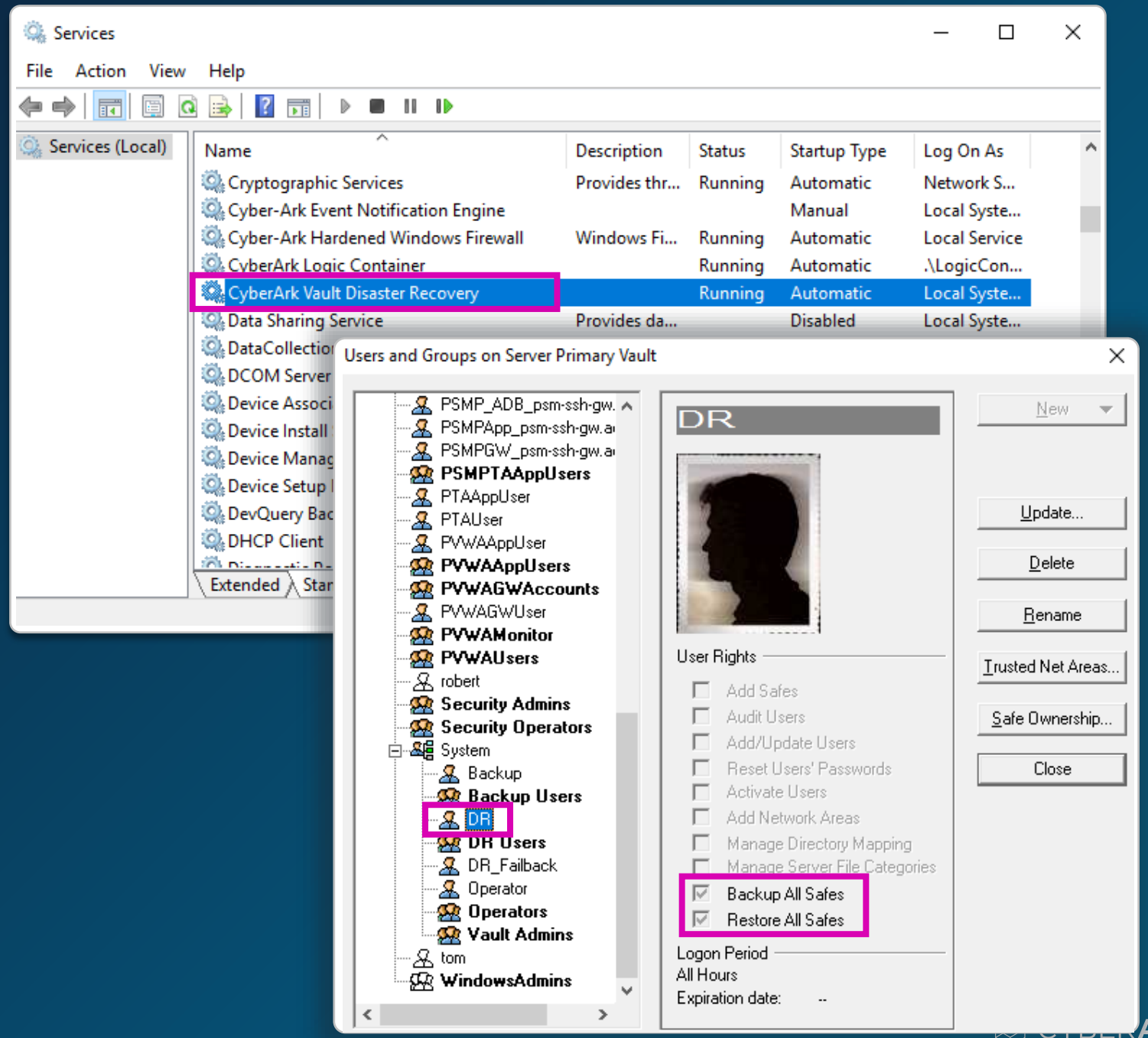
The DR Service and User

- The **DR** service runs on the **DR Vault**

- The **DR** user authenticates to the **Primary Vault** from the **DR Vault** as a user with permissions to:
  - ***Backup All Safes***
  - ***Restore All Safes***

- The built-in **DR** user has these permissions by default



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Enhanced DR Replication

- In the past, the replication of passwords was done based on an interval defined in the DR configuration file
- In version 9.3, the DR replication process was enhanced to ensure faster replication of passwords and improved consistency between production and DR sites
- Replicating the current passwords to DR sites is now done instantly and in parallel to files/recordings replication in order to avoid delays
- In the new replication mechanism, metadata (which includes the current passwords) is pushed from the production Vault to the DR sites as it is created

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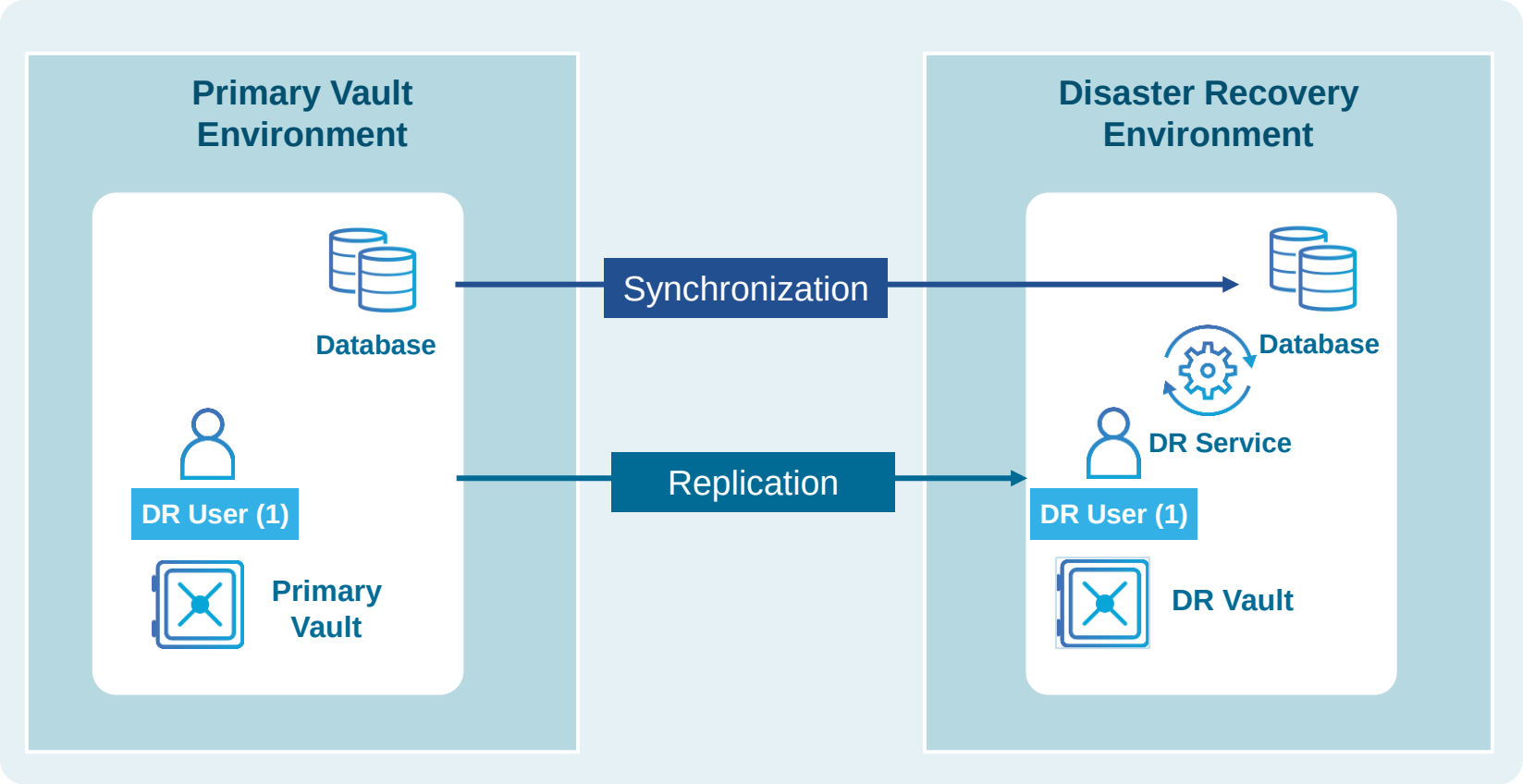
Enhanced DR Replication

- Database synchronization
- Near real-time



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Set up Disaster Recovery

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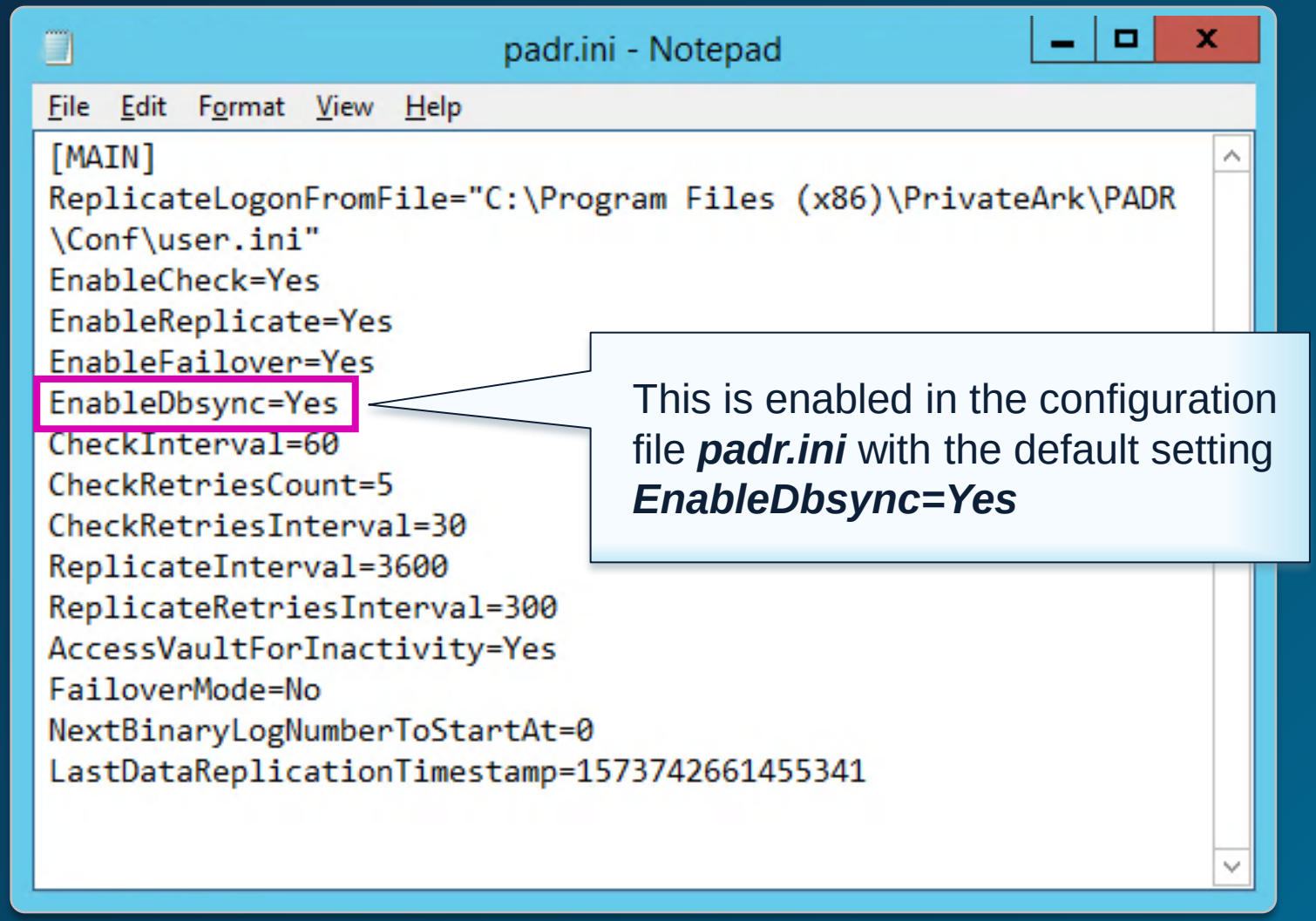
Enable Data and Metadata Synchronization

When a failover occurs (automatic or manual), the DR service first synchronizes the information in its database with the information in the Safe data files



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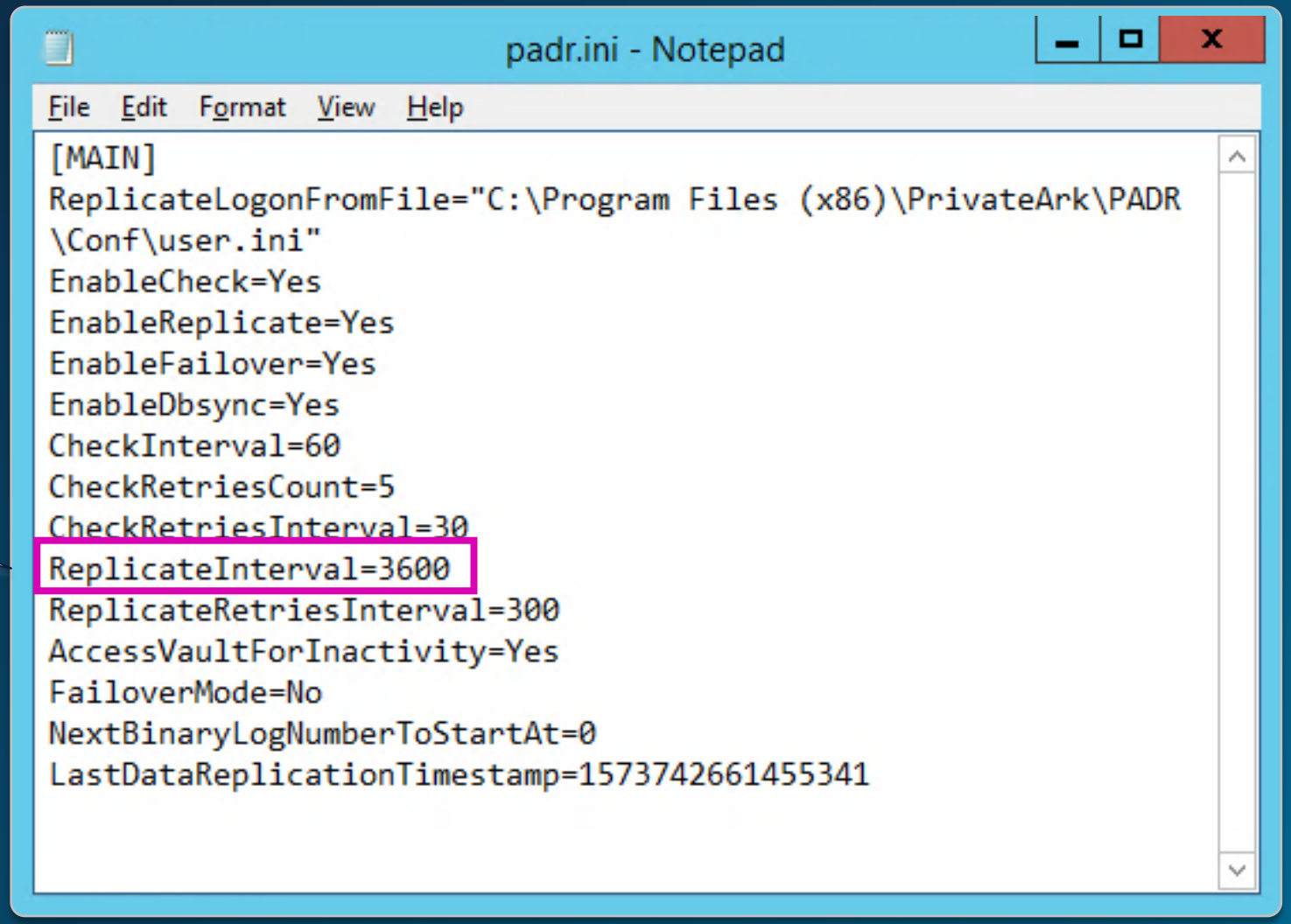
Setup Data Replication Interval

The ***ReplicateInterval*** parameter determines the length of time between synchronizations of the **Vault** file system, which by default is 3,600 seconds (or one hour)



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Vault Failover

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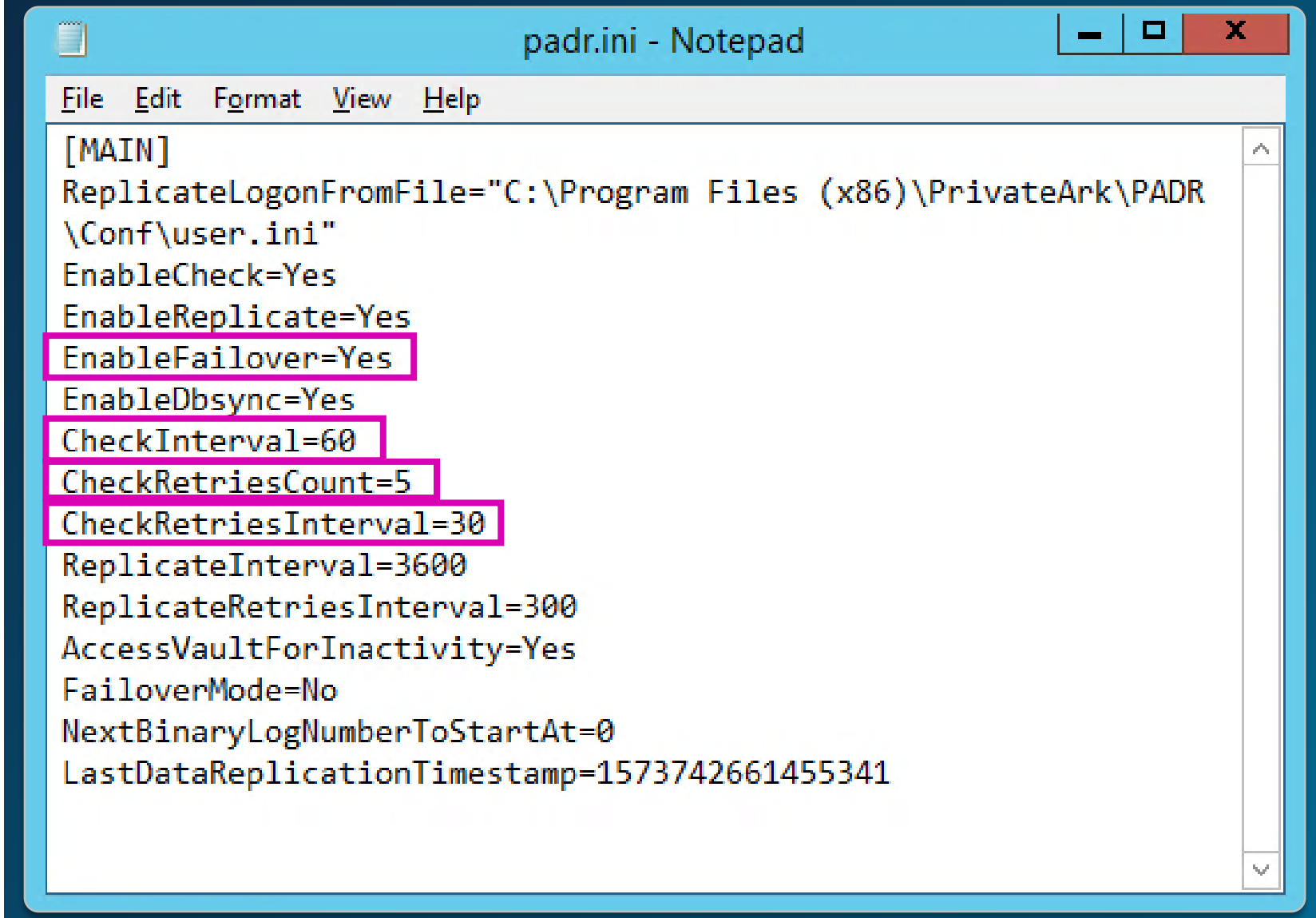
Automatic Failover

- Automatic failover is switched on with the parameter ***EnableFailover=Yes***
- The CheckInterval indicates the **DR Vault** will contact the **Primary Vault** every 60 seconds. If it fails…

  it will try again 4 times…

  once every 30 seconds

After which, the **DR Vault** considers that the **Primary** is down and it goes into DR mode



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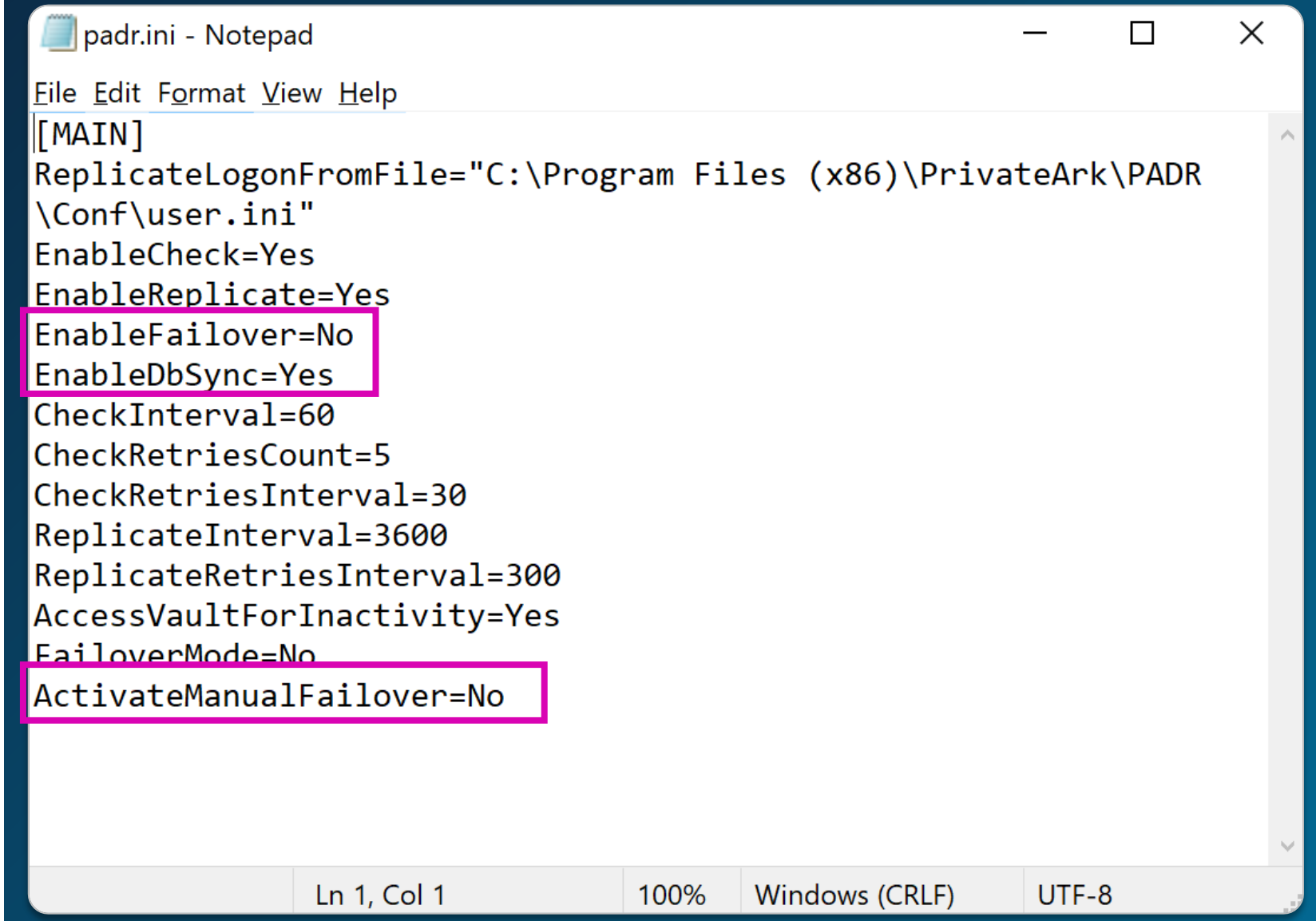
Manual Failover

To configure the **DR Vault** for manual failover, ***padr.ini*** should be configured as follows during ***normal*** operations:

- ***EnableFailover*** to ***No*** (disables auto failover).
- ***EnableDbsync*** to ***Yes*** (default setting).
- ***ActivateManualFailover*** to ***No***.

In this configuration, the **DR Vault** will not accidentally failover if the DR service is restarted



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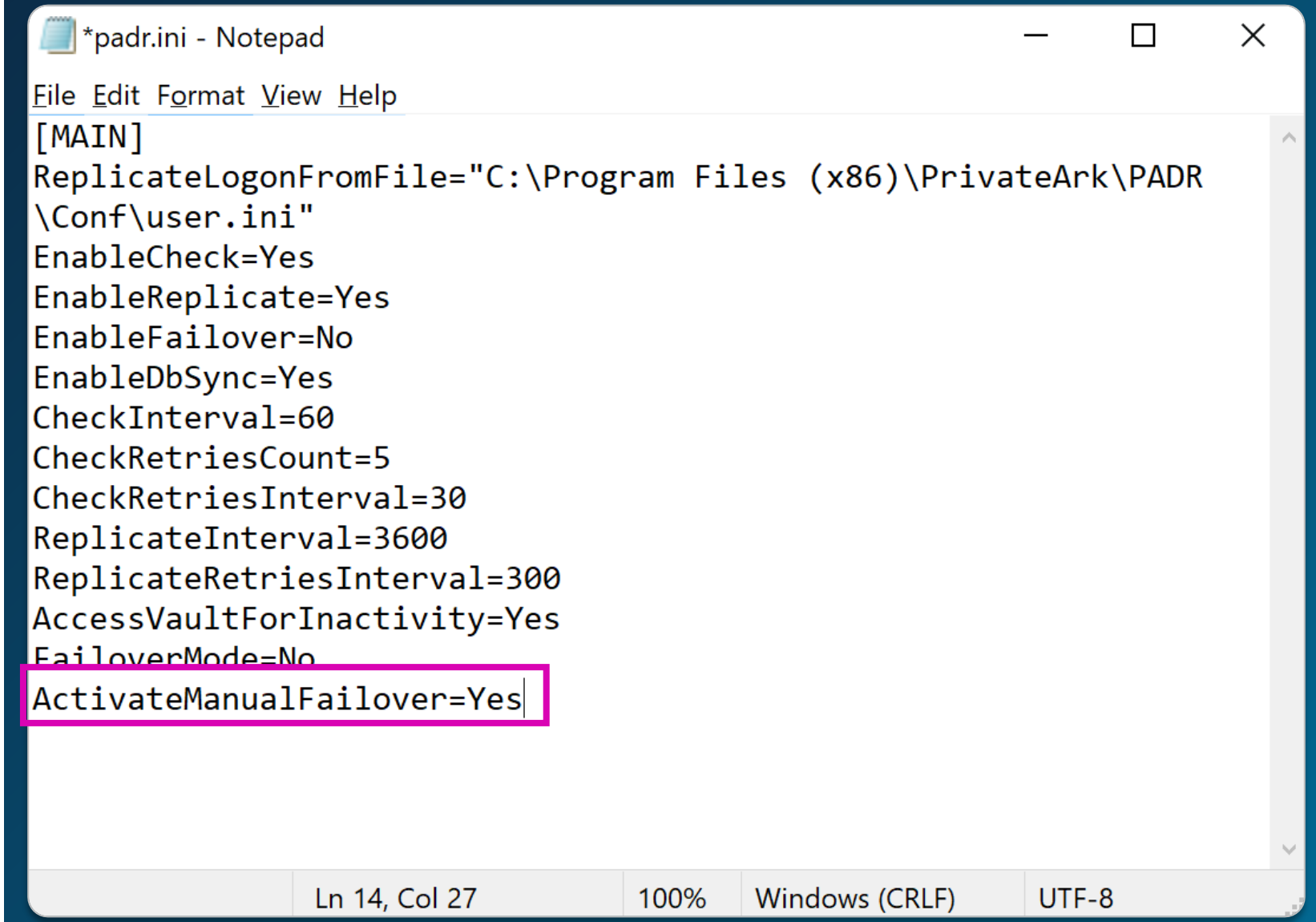
Manual Failover

To perform a proper manual failover, set the parameter ***ActivateManualFailover*** to ***Yes*** and then restart the DR service.

On start up, the service reads its config file, sees the manual failover parameter is set to **Yes**, and immediately starts the failover process.



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The Failover Process

Connection fails

Retry attempts, failover started

Data synchronization

Stop Disaster Recovery service

```
[15/11/2019   03:37:19.579740]    ::    PADR0097I Refreshing Vault configuration files completed successfully.
[15/11/2019   03:37:19.583130]    ::    GetPADRWorkingDirectory returned [C:\Program Files (x86)\PrivateArk\PADR\Conf]
[15/11/2019   03:37:19.583156]    ::    GetPADRWorkingDirectory returned [C:\Program Files (x86)\PrivateArk\PADR\Conf]
[15/11/2019   03:37:19.585119]    ::    PADR0010I Replicate ended.
[15/11/2019   03:39:49.461321]    ::    PADR0005E CASTM003E Vault transaction failed. Reason: ITACM012S Timeout has expired.
[15/11/2019   03:39:49.461373]    ::    PADR0014E Attempt to test vault availability failed (code=1).
[15/11/2019   03:40:48.820556]    ::    PADR0005E CASTM003E Vault transaction failed. Reason: ITACM062S Communication error
[15/11/2019   03:40:48.820603]    ::    PADR0015E Attempt to test vault availability failed 2 times (code=-1066062).
[15/11/2019   03:41:49.164344]    ::    PADR0005E CASTM003E Vault transaction failed. Reason: ITACM062S Communication error
[15/11/2019   03:41:49.164388]    ::    PADR0015E Attempt to test vault availability failed 3 times (code=-1066062).
[15/11/2019   03:42:48.586131]    ::    PADR0005E CASTM003E Vault transaction failed. Reason: ITACM062S Communication error
[15/11/2019   03:42:48.586204]    ::    PADR0015E Attempt to test vault availability failed 4 times (code=-1066062).
[15/11/2019   03:42:48.587974]    ::    PADR0099I Metadata Replication is running successfully.
[15/11/2019   03:43:48.992889]    ::    PADR0005E CASTM003E Vault transaction failed. Reason: ITACM062S Communication error
[15/11/2019   03:43:48.992962]    ::    PADR0015E Attempt to test vault availability failed 5 times (code=-1066062).
[15/11/2019   03:43:48.993396]    ::    PADR0016E Vault availability test failed, failover started.
[15/11/2019   03:43:48.993586]    ::    PADR0103I Failover process started.
[15/11/2019   03:43:48.998678]    ::    GetPADRWorkingDirectory returned [C:\Program Files (x86)\PrivateArk\PADR\Conf]
[15/11/2019   03:43:48.998706]    ::    GetPADRWorkingDirectory returned [C:\Program Files (x86)\PrivateArk\PADR\Conf]
[15/11/2019   03:43:49.000938]    ::    PADR0024I Synchronizing vault data and metadata.
[15/11/2019   03:43:49.046952]    ::    ITATS408I Synchronizing objects of Safe Notification Engine...
[15/11/2019   03:43:49.082602]    ::    ITATS408I Synchronizing objects of Safe PVWATaskDefinitions...
[15/11/2019   03:43:49.094407]    ::    ITATS158I Deleting total of 0 objects.
[15/11/2019   03:43:49.094439]    ::    ITATS159I Updating total of 0 top version objects.
[15/11/2019   03:44:00.175729]    ::    PADR0025I Failover process ended successfully.
[15/11/2019   03:44:00.175766]    ::    PADR0067I Starting Vault service.
[15/11/2019   03:44:09.987674]    ::    PADR0017I Failover completed, PADR service is shutting down.
[15/11/2019   03:44:10.180106]    ::    PADR0022I Disaster Recovery service terminated.
```

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Component Failover

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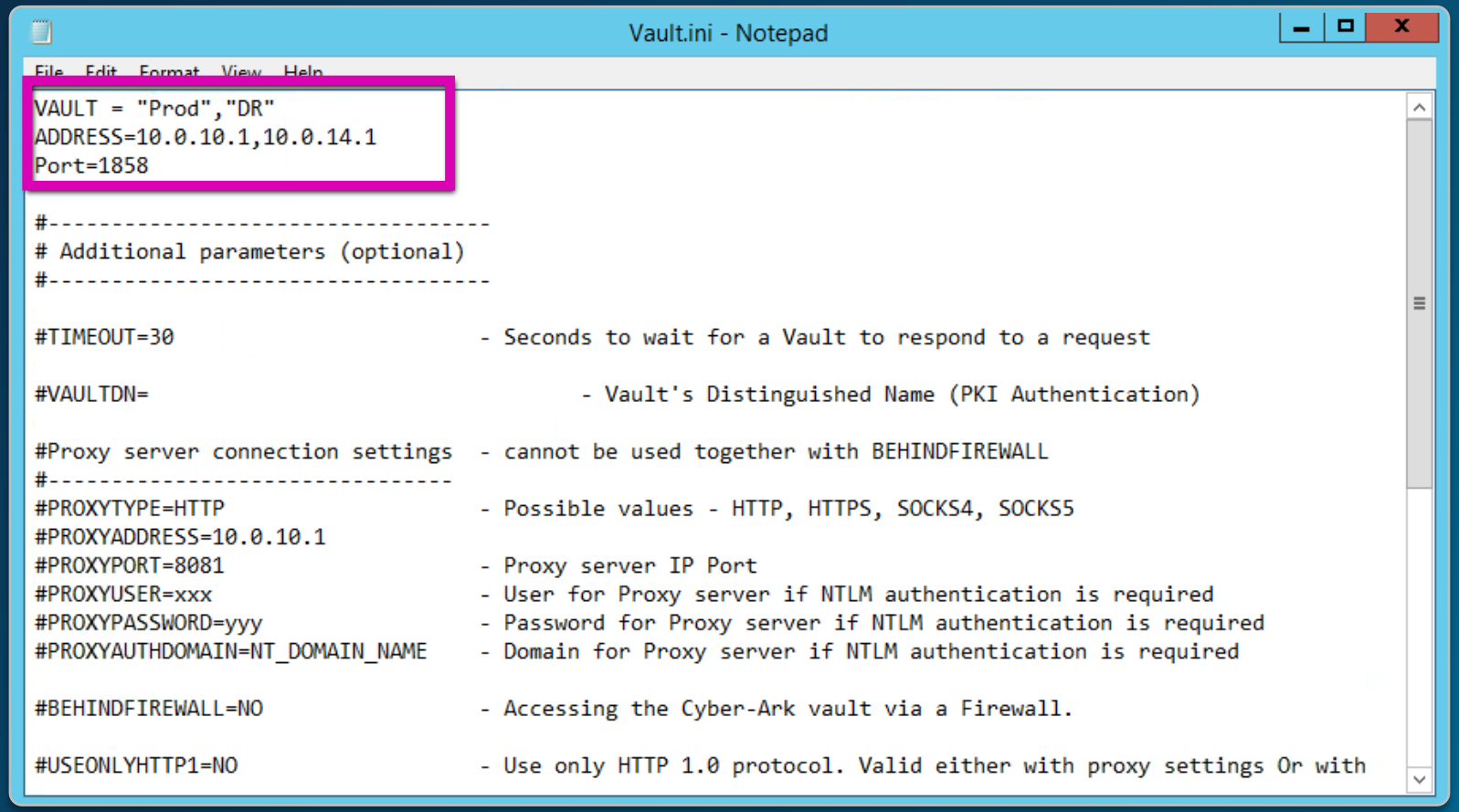
Setup Component Failover

- It is possible to configure components to failover automatically to the **DR Vault** by configuring addresses for both the **Primary** and **DR Vaults** in the ***Vault.ini*** file
- The component will attempt to connect according to the order set in ***Vault.ini***

REMEMBER: The CPM should not be configured to failover automatically



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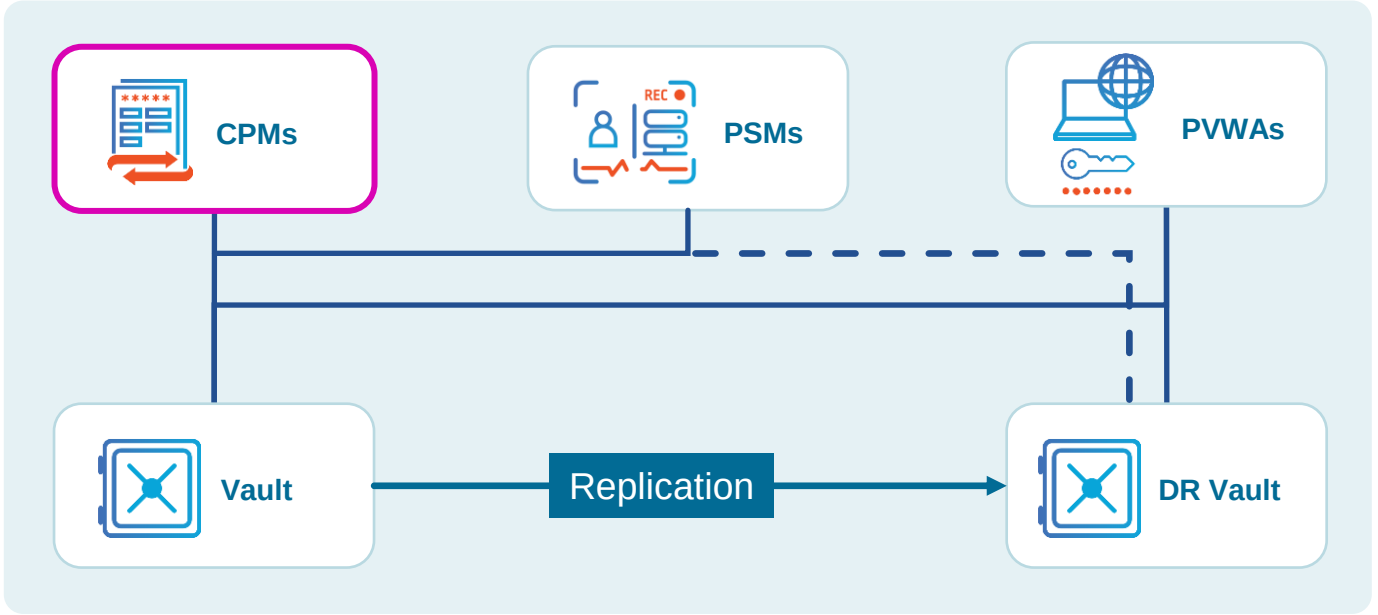
CPM Failover Setup

CPM should **NEVER** be configured for automatic failover due to the possibility of a split-brain scenario

Split-brain occurs when the passwords in the **Production Vault** and **DR Vault** are out of sync

CPM failover must always be a manual process



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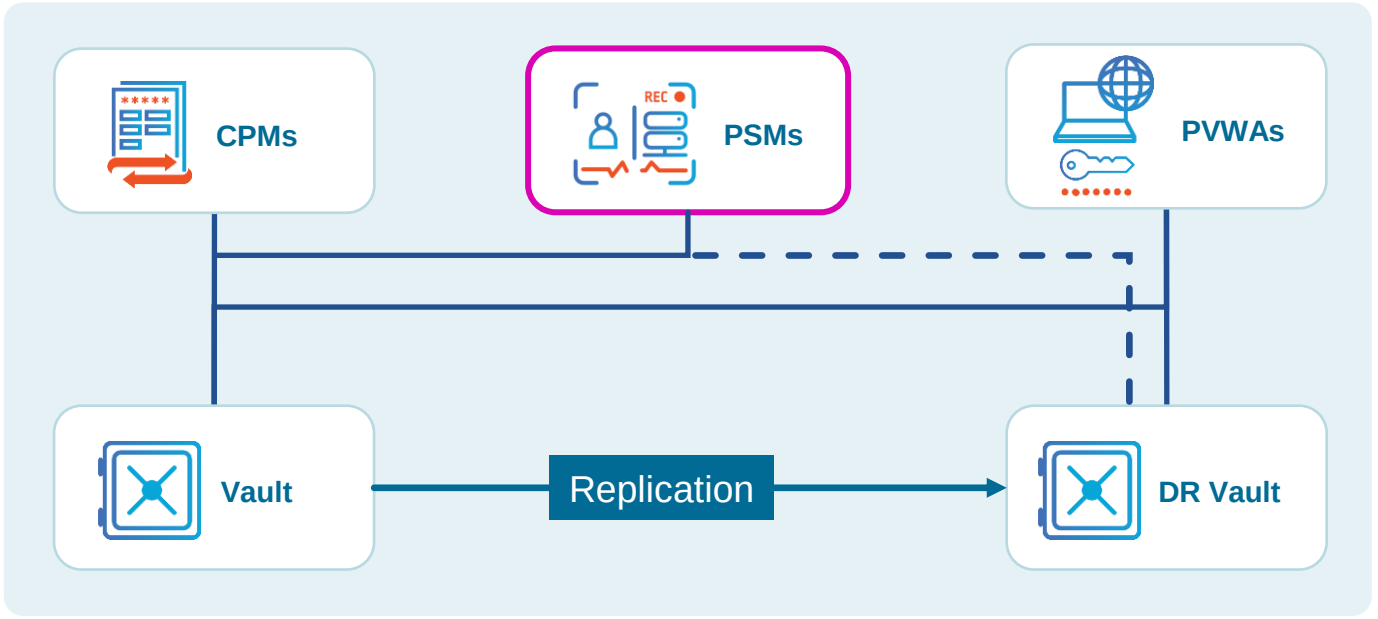
PSM Failover Setup

Automatic failover of the **PSM** servers is optional

Any recordings captured on the **DR Vault** must be backed up or replicated back the **Primary Vault** before returning to normal operations

Consult with **CyberArk** services to review **PSM** failover options



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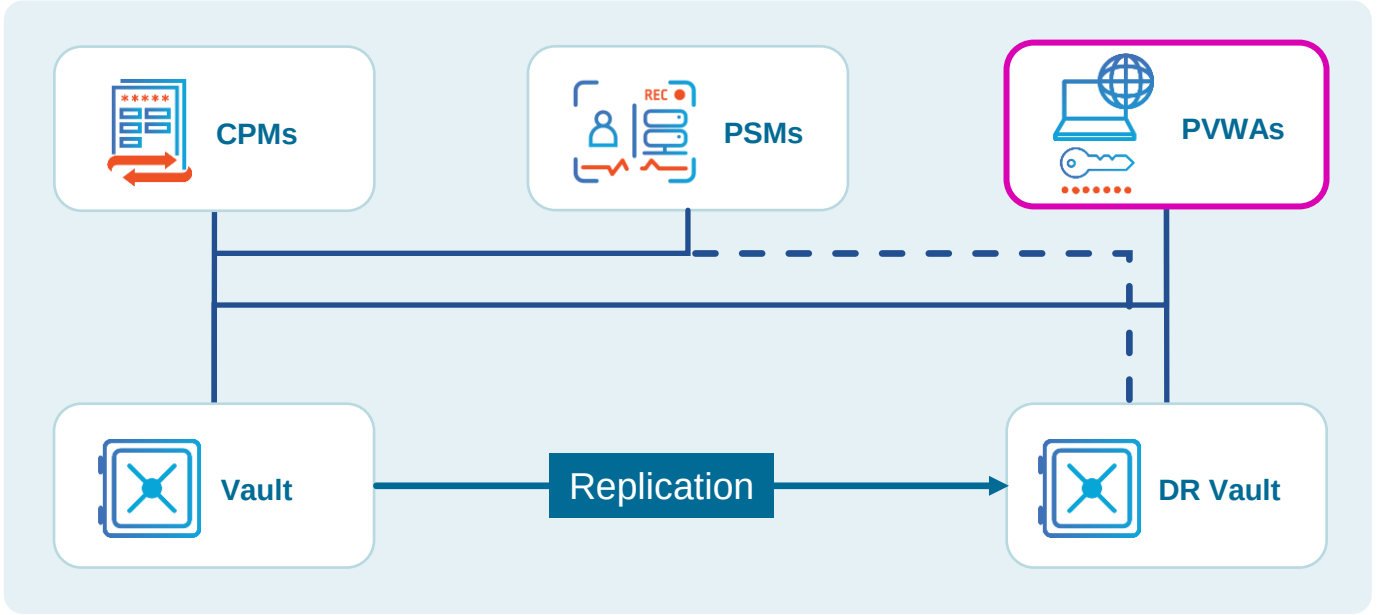
PVWA Failover Setup

PVWA servers can be configured for automatic failover to allow users to access passwords without interruption

Audit data should be saved via the activity log before re-enabling replication, however SIEM integration will mitigate this issue



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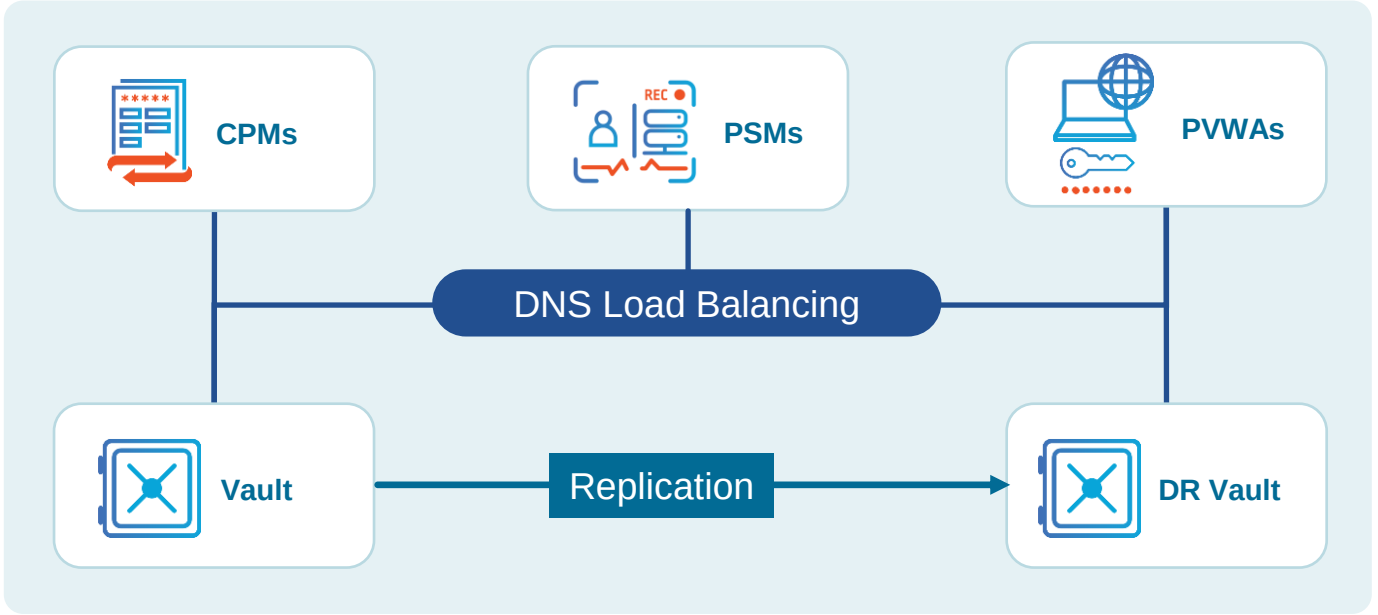
DNS Load Balancing

- A possible approach to avoiding split-brain is to use a DNS Alias for the Vaults to control which Vault is used by the components
- The **DNS Alias** will be set in the ***Vault.ini*** file



Remember: DNS Alias updates is a manual process and will extend the outage

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Return to Primary Site

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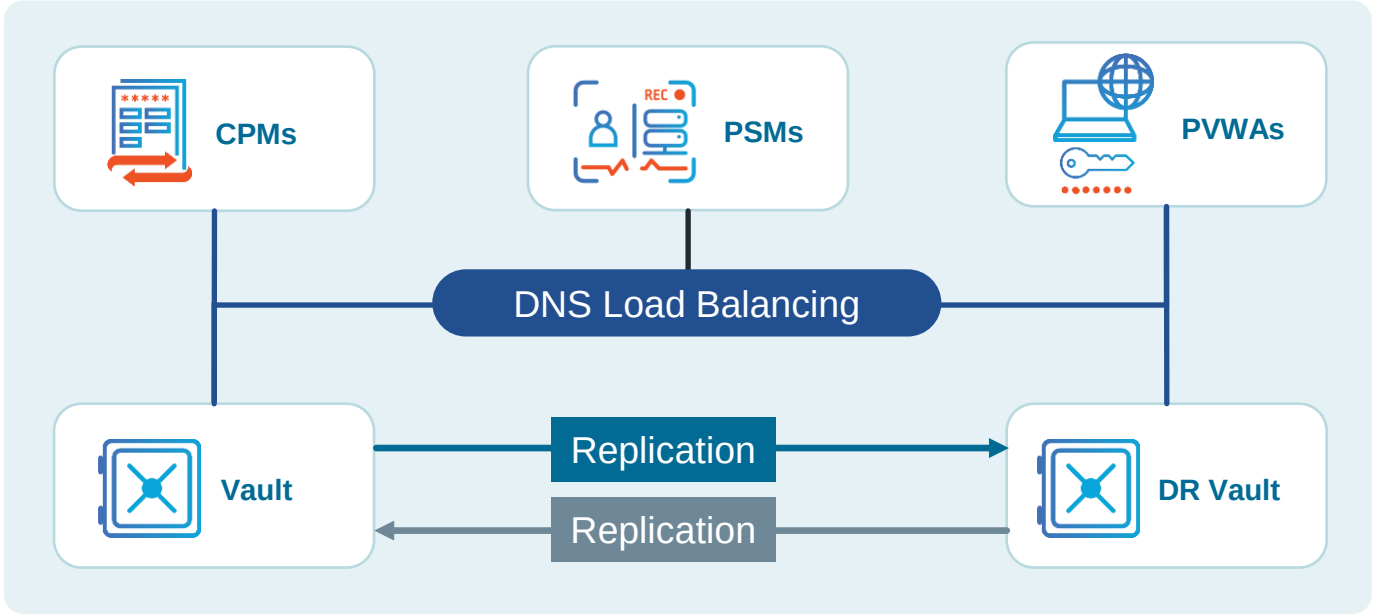
Return to Primary Site

- Data generated on the DR Vault should be replicated back to the Primary Vault before bringing it back online
- DNS Alias updates and failback replication are manual processes and will extend the outage



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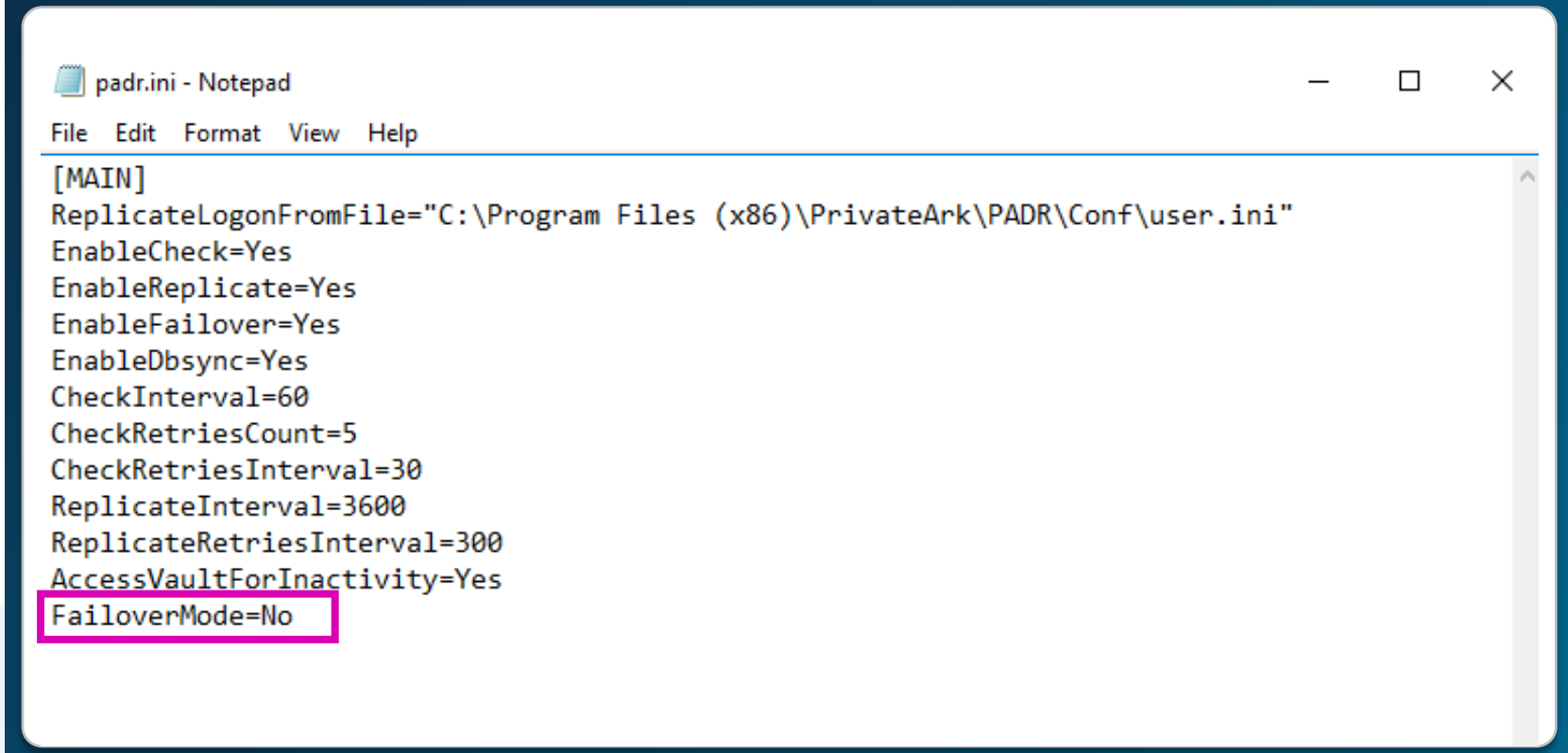
Restoring the DR Vault to DR Mode

On the DR Vault server, edit the PADR.INI file and make the following changes:

- Set FailoverMode=No
- Delete the last two lines in *PADR.ini* (this will force a full replication)
- Restart the DR service

If you are using manual failover, then you should reset the parameter ***ActivateManualFailover*** to ***No*** to avoid accidental failovers



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Summary

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Summary

In this session we covered the **CyberArk PAM Disaster Recovery** solution:

- Backup Solution Deployment
- Disaster Recovery Deployment

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Exercises

You may now proceed to completing the following exercises:

Disaster Recovery

- Step 1 – Enable Automatic Failover On The DR Vault
- Step 2 – Execute A Full Replication To The DR Vault
- Step 3 – Execute Automatic Failover Test
  - Confirm Automatic Failover on the DR Vault
  - Confirm Automatic Failover of PVWA and PSM
- Step 4 – Execute a Full Replication back to the Primary Vault
- Step 5 – Execute Failback Procedure by using Manual Failover
  - Confirm Manual Failover on the Primary Vault
- Step 6 – Set the DR Server back to DR mode
  - Confirm Automatic Failover for PVWA and PSM

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