



Using newer Caché versions

- **Policy of InterSystems**
 - **Normally 1 to 2 new releases of Caché a year**
 - **Backwards compatibility guaranteed**

Who Keeps Up with the latest versions ?



Using newer Caché versions

- **Why do you need/want to upgrade ?**
 - **Need for new functionality/features**
 - **Need for new technology**
 - **Performance issues**
 - **Reporting needs**
 - ...



Using newer Caché versions

- **What are the risks/tasks of upgrading ?**
 - **Compatibility issues**
 - **Testing of the application**
 - **Downtime/breaking of the production**
 - ...



Using newer Caché versions

- **How to avoid/minimize the risks/tasks of upgrading ?**

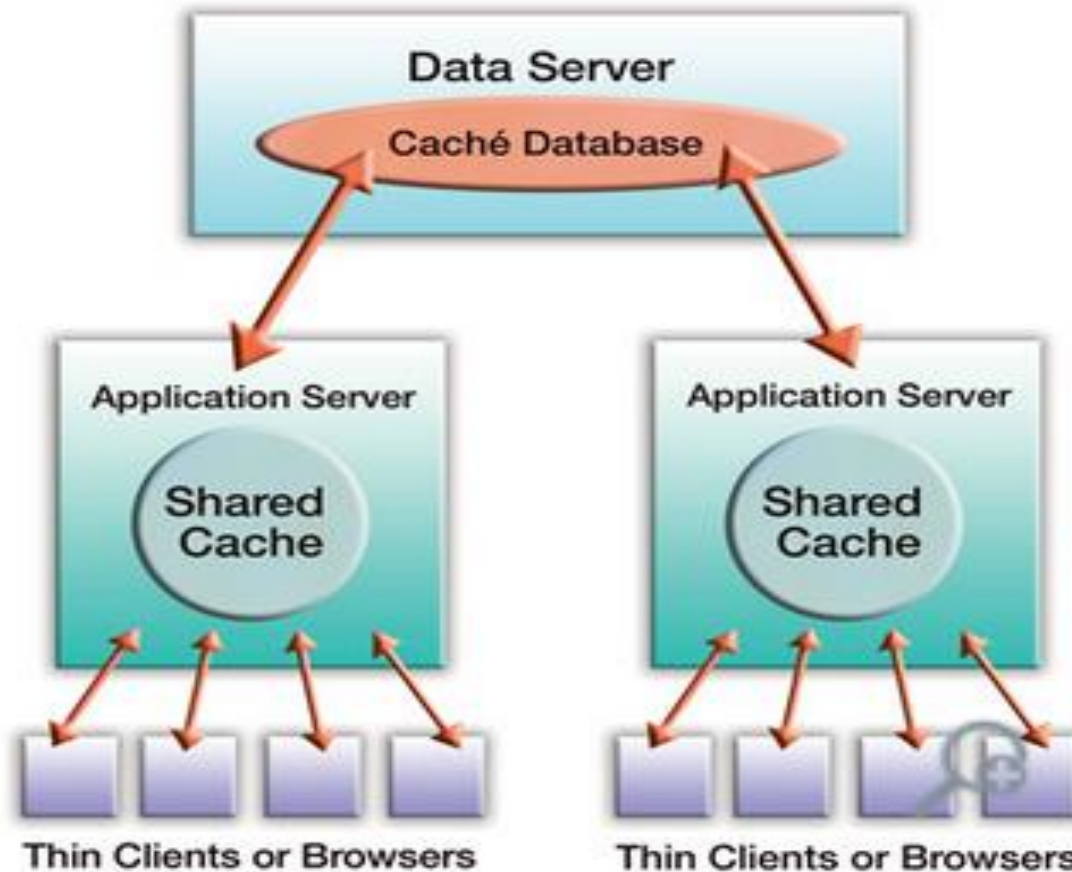


Using newer Caché versions

- **Use a newer Caché versions as frontend application server**
- **This will/can involve the use of :**
 - **ECP (ECP Dataserver(s) and Application Server(s)**
 - **Shadowing**
 - **Mirroring with Async Reporting Servers**



Using newer Caché versions – ECP



Using newer Caché versions - ECP

Make your data available on a different version of Caché

Create a remote database pointing to the data server

Map the needed globals to your new namespace

What about connecting different versions of Caché ?

Supported Version Interoperability - ECP

Component	Client/Destination	Server/Source
CSP Gateway ⁴	2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2017.1 or earlier
ECP ¹	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Backup Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Journal Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Mirroring ³	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Shadowing	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Studio ²	2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
xDBC	5.0.13 or later	5.0.13 or later



Supported Version Interoperability -ECP

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An ECP application server that is connected to a mirrored data server must be version 2010.2 or later

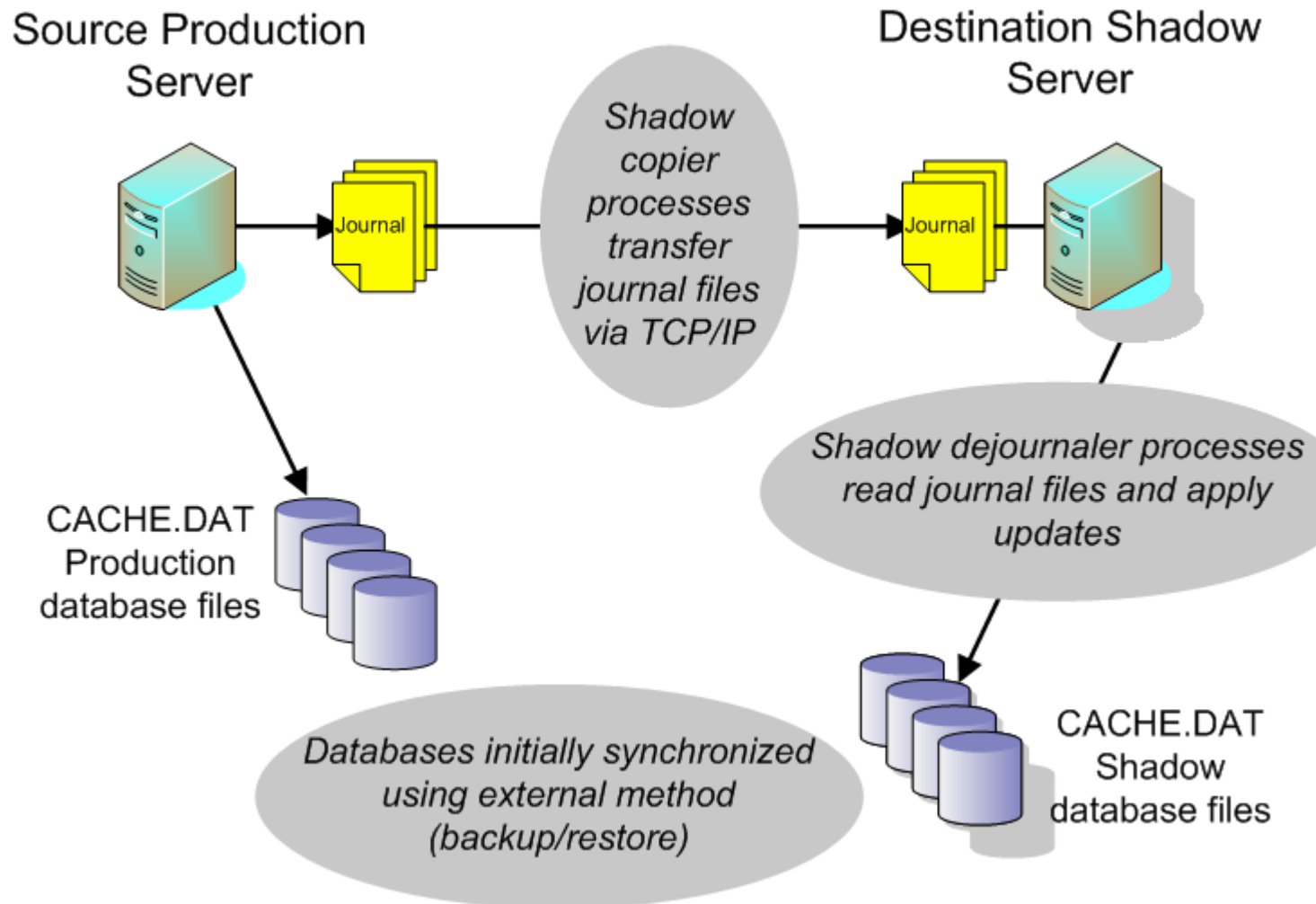
To run any object-based application over ECP, the server and the clients must use the same product version.

Overcome this by copying the Classes for object/SQL access



Using newer Caché versions – Shadowing

Shadowing Overview



Using newer Caché versions - Shadowing

Make your data available on a different version of Caché

Create a filter routine and trap the changes that you need

The routine returns 1 or 0



Supported Version Interoperability- Shadowing

Component	Client/Destination	Server/Source
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ECP ¹	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Backup Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Journal Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Mirroring ³	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Shadowing	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Studio ²	2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
xDBC	5.0.13 or later	5.0.13 or later



Supported Version Interoperability- Shadowing

For example, a Caché 2017.1 system can be the shadow destination of Caché 5.1 (or later) servers;

conversely, only Caché2007.1 (or later) systems can be the shadow destination of journal files created on 2017.1 servers



Using newer Caché versions - Shadowing

Example of a filter routine

```
%ZShadowFilter(pid,dir,glo,type,addr,time) {  
    set type=$zconvert(type,"U")  
    set glostripped=$piece(glo,"(",1)  
    set glopackage=$piece(glostripped,".",1)  
    // skip everything that is not style ^ToCheck.XXX as global  
    if (glopackage'="ToCheck") { quit 0 }  
    else {if (type="S") || (type="K") {  
        // trap only the globals that are in the ^%ZFilterGlobal  
        if ($d(^%ZFilterGlobal(glostripped))=1) {  
            set idkey=$piece($piece(glo,"(",2),")",1)  
            set ^%ZToProcess($i(^%ZToProcess),type)=$lb(^%ZFilterGlobal(glostripped),idkey,dir)}  
        }  
    }  
    quit 0  
}
```



Using newer Caché versions - Shadowing

Create a background process to process the changes:

```
ClassMethod StartJob() {  
    set Time=$g(^%ZTime,300)  
    set ^CacheTempLogDeployJournal($i(^CacheTempLogDeployJournal))="Started"  
    while (1) {  
        do ##class(%ZDeploy.DeployJournal).StartSync()  
        HANG Time  
        if ($g(^%ZStopJob)=1) quit  
    }  
    set ^CacheTempLogDeployJournal($i(^CacheTempLogDeployJournal))="Stopped"  
}
```



Using newer Caché versions - Shadowing

Access the data (^%ZToProcess) and maintain you modifications:

Use methods like :

```
set obj=$CLASSMETHOD(class,"IdxPointOpen",idkey)
```

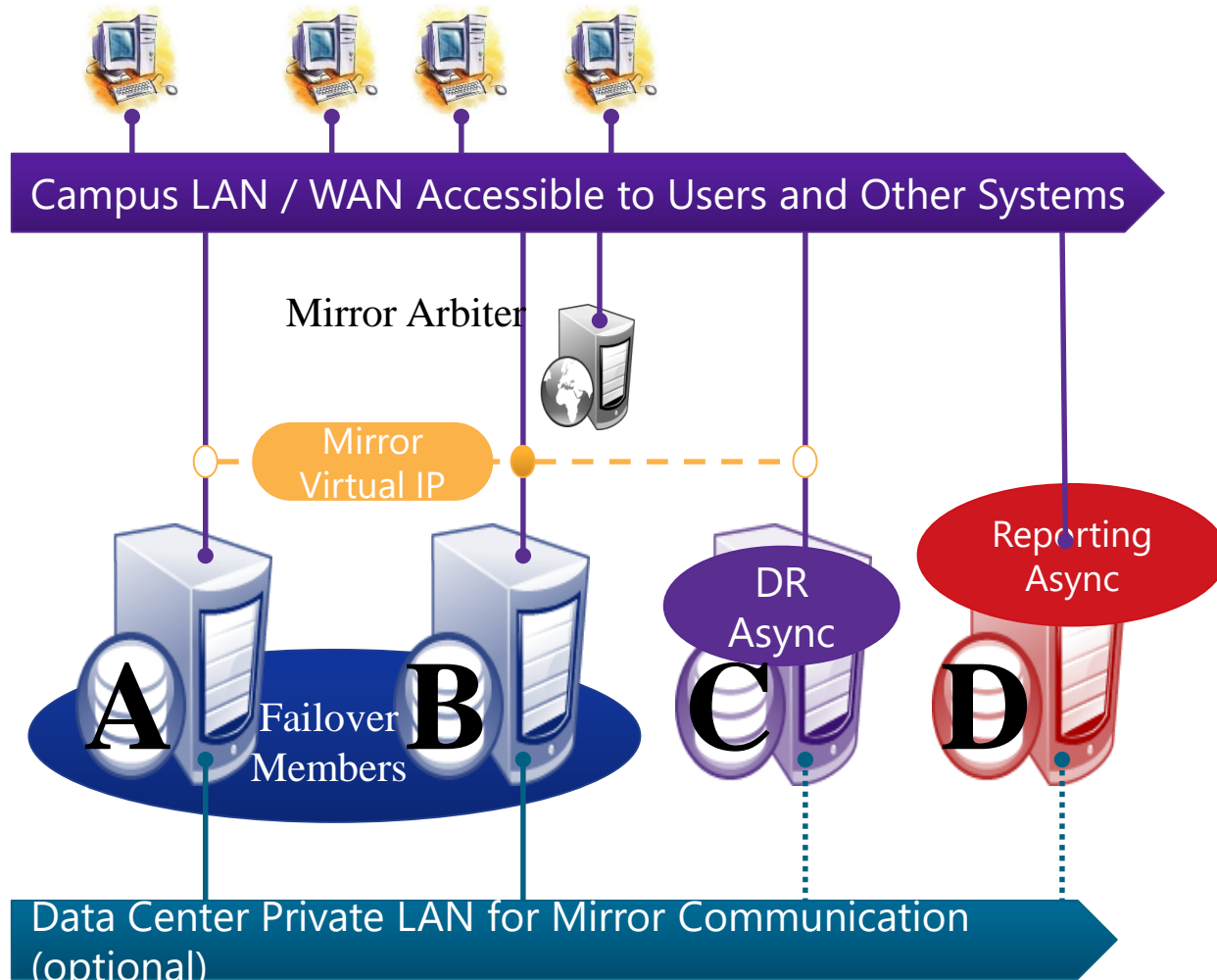
```
set stat=$CLASSMETHOD(class,"%DeleteId",internalkey)
```

```
do $CLASSMETHOD(class,indexname_"GetIndexParams",.tParams)
```

```
.....
```



Using newer Caché versions - Mirroring



Using newer Caché versions - Mirroring

Make your data available on a different version of Caché

Use a Dejournal Filter on a Reporting Async



Supported Version Interoperability- Mirroring

Component	Client/Destination	Server/Source
CSP Gateway ⁴	2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2017.1 or earlier
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Backup Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Journal Restore	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.0, 5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Mirroring ³	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Shadowing	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	5.1, 5.2, 2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
Studio ²	2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1	2007.1, 2008.1, 2008.2, 2009.1, 2010.1, 2010.2, 2011.1, 2012.1, 2012.2, 2013.1, 2014.1, 2015.1, 2015.2, 2016.1, 2016.2, 2017.1
xDBC	5.0.13 or later	5.0.13 or later

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Only reporting async members can be of a different version than the other members of the mirror;

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Using newer Caché versions - Mirroring

DeJournal Filter

Extend the superclass SYS.MirrorDejournal to create a mirror dejournal filter class

Overwrite

**method RunFilter(MirrorDBName As %String,
GlobalReference As %String, RecordType As %String,
Address As %Integer) as %Integer**

Using newer Caché versions - Mirroring

Create a background process to process the changes:

```
ClassMethod StartJob() {  
    set Time=$g(^%ZTime,300)  
    set ^CacheTempLogDeployJournal($i(^CacheTempLogDeployJournal))="Started"  
    while (1) {  
        do ##class(%ZDeploy.DeployJournal).StartSync()  
        HANG Time  
        if ($g(^%ZStopJob)=1) quit  
    }  
    set ^CacheTempLogDeployJournal($i(^CacheTempLogDeployJournal))="Stopped"  
}
```



Using newer Caché versions – Last option

Make you new server the entry point to the outside

**Communicate every fetch or push to the old server by using
webservices/odbc/...**



