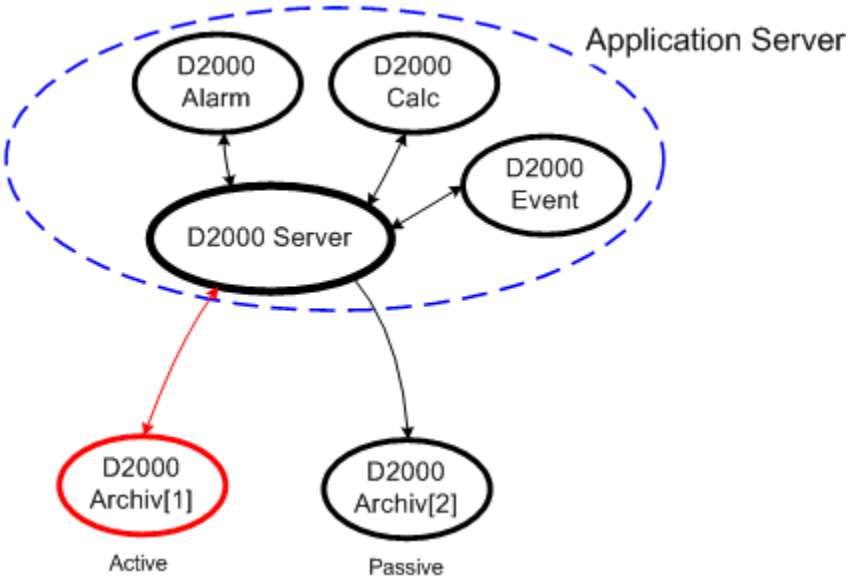
Redundant Archiving

Redundant archiving

Using redundant archiving reduces the probability of archive data loss or interruption of the archiving process.

The following figure shows the D2000 system with a redundancy of D2000 system data archiving:



Redundant archiving is realized by increasing the number of archive processes (D2000 Archiv) in the D2000 system with no need to define them in the DO DM model.

The **DODM** model defines the object of the Proces type with the *.ARC suffix (generally *SELF.ARC*) as the archive process (D2000 Archiv), which has some children – objects of Historical value type. After running process **D2000 Archiv**, it executes operations defined by the configurations of its children. The operations can be described as follows:

1. Archiving – all operations which result in a change of the contents of the archive database (periodic archiving, archiving on change, calculations of statistic functions, ...)
2. Sending values to the system in case of active historical values and the execution of write requests for historical values

Redundant archiving is realized by means of several archive processes that run simultaneously (so-called instance archives) - their names are identical (e. g. *SELF.ARC*). The only difference between them is the so-called *instance number*, which can be within the range of 1 ... 15.
For the value of the object *SELF.ARC,* this holds true: if at least one instance is running, the process will get the value of *Run*. At the same time, each running instance of the process sets the user attribute (flag) to value as follows: instance 1 sets the flag B, instance 2 sets the flag C,...

The parameters of the archive process (*archiv.exe* or *archiv_ora.exe*) are extended with the possibility to define the instance number:

archiv.exe /**W***process_name*, **InstNr**

InstNr - instance number (e.g. *archiv.exe /WSELF,1*)

The method described above allows running several processes of D2000 Archiv with the same name at the same. Processes will perform the operation described in point 1.
The operations described in point 2 are executed by **only one** process - the so-called *active archive*. The active archive becomes the one that logs in to the D2000 Server first. Other processes are passive archives. The active archive can be set with the tell command INSTANCE SET ACTIVE. In addition, an instance can be set as preferred with the INSTANCE SET PREFERRED command, so that it becomes active immediately when it connects to the D2000 Server.

Note 1:
If at least one instance archive is running, it is not possible to run non-instance (/WSELF) and vice-versa.

In production, each of the instance archives is usually running on a different computer - it allows to perform maintenance with no loss of the archive process functionality.

Note 2 (for D2000 v7.01.012 and higher):
When changing a non-instance archive process (e.g. *SELF.ARC*) to an instance process (e.g. instance nr.1), the configuration stored in the registry key:

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_meno_aplikacie\SELF.ARC

can be copied to the registry key of the instance archive process:

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_meno_aplikacie\SELF.ARC_1

The above is required in case you need to distinguish the settings for various instances (e.g. the computer with several instances running). Mostly, there is just one instance running on a computer - in that case, you don't need to create the registry key for the instance.
Instance archive searches instance as well as a non-instance registry key, while the settings in the instance key have priority over the settings in the non-instance key. If the instance key exists and is empty, it will be filled with the setting for the non-instance key, therefore creating an empty instance key in the registry and starting the process D2000 Archiv is enough.

Note 3 (for D2000 v.7.01.011 and older):
When changing a non-instance archive process (e.g. *SELF.ARC*) to an instance process (e.g. instance nr.1), the configuration stored in the Windows Registry key:

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_application_name\SELF.ARC

must be copied to the key of the instance archive process:

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_application_name\SELF.ARC_1

It is sufficient to rename the first key or to duplicate it by using export and import tools in the **Regedit**.

Warning (for D2000 v.7.01.011 and older): If an instance archive has been created without the operation described above, its key in the Windows Registry is to be created with some settings (predefined values) but
the key will neither contain all required settings nor changes performed in the configuration of the non-instance archive !!!

The contents of both keys can be viewed by using the tool D2000 Application Manager.

Note 4: If a preferred instance is starting while the other one has already been activated, the preferred one becomes active after executing all required operations that are necessary after starting the archive (if the archive is ready).

Load balancing

If the archives run redundantly, there is a possibility to split the reading load among more active instances.
For the D2000 Archiv process, the parameter *LoadBalancingMode* exists in the system registers of the application. This parameter activates/deactivates the Load balancing.

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_Meno_Aplikacie\Kernel\SELF.ARC__LoadBalancingMode

If value = 1, the mode is activated. In this mode, the setting of active and preferred instances is ignored (Tell commands SET_ACT_INST and SET_PREFERRED_INST).

Instance parameters

The parameter of instance *%ArchiveName%_%InstanceNumber%_Usable* defines whether the instance will be active in Load balancing mode. The valid values are 0 - passive, 1 - active.

HKEY_LOCAL_MACHINE\Software\Ipesoft\D2000V70\cfg_Meno_Aplikacie\Kernel\SELF.ARC_1_Usable

All parameters will be created automatically when starting the instance of the archive or can be set manually by commands SET_INST_USABLE and SET_LOAD_BAL_MODE.

If only passive instances run, they will not become active but some of them will be used when reading from the archive.

Note: The instance can become active after performing all operations that are necessary after starting the archive - when the archive is ready.

Related pages:

Redundancy in D2000 systems