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Introduction

The APM Installation Guide contains a section on High Availability (HA) for APM. *We recommend that you follow the guidelines described in that document as the best practice for working with APM.* However, if you need to shorten the duration of the failover process, this document describes how to fine-tune APM high availability settings.

For a detailed overview of high availability, refer to the APM Installation Guide.

High Availability Controller (HAC)

The High Availability Controller (HAC) component provides failover functionality. The HAC on the DP server monitors all its processes, and updates their availability status in the database every 20 seconds. A failure condition is detected when the availability state of a process is not updated in the database for a specific (configurable) duration. The HAC then initiates the failover for that process if the backup server is available.

HAC Parameters

Within APM infrastructure settings, the following parameters define how high availability is controlled:

- **Keep Alive Timeout** (default 20 minutes). All HAC processes update their **alive** status in the database every 20 seconds. If a process is not able to update its status within the time period defined by this parameter, it is considered a failed process and becomes a candidate for failover.
- **Monitor Failures Interval** (default 2 minutes). This is the time interval after which the high availability controller checks the database to find out if there are any failed processes that should be switched over to the backup server. A failed process is one which has not updated its **alive** status within the **Keep Alive Timeout** period.
- **Failover Stabilization Time** (default 10 minutes). When a process starts, it initially enters into a stabilization state, for the time period defined by **Failover Stabilization Time**. When this period ends, if the process is able to update its **alive** status, it can act as the backup for its peer process; otherwise the process re-enters stabilization state.
Other than during startup, a process enters this state if the HAC checks for failed processes (every **Monitor Failures Interval**) and finds that a process did not update its **alive** status within the **Normal Keep Alive Period**.
- The remaining HA parameters (**Process Protection Enabled**, **Normal Keep Alive Period**, and **Critical Keep Alive Period**) are used for internal management of the HAC processes, to make sure that the same service is not started in both the primary process and the backup process.

Modifying High Availability Settings

To modify HAC settings, access **Admin > Platform > Infrastructure Settings > Foundations > High Availability Controller**.

When setting HAC parameters, always follow the following rule:

Monitor Failures Interval <= Normal Keep Alive Period <= Critical Keep Alive Period <= Keep Alive Timeout.

Modify the parameter values according to the following guidelines:

- Set the **Failover Stabilization Time** close to the DP Server Start Time in your environment.
- The lowest value should be assigned to the **Monitor Failures Interval** (default = 2 minutes), all other values should be greater than this.
- The **Keep Alive Timeout** should be assigned the highest value among all the parameters.
- All other parameters should be assigned a value equal to or less than the **Keep Alive Timeout**; these other parameters are for internal management of the processes when they are failing, so all cleanup tasks must be finished within this time and before failover starts (after expiry of **Keep Alive Timeout**).
- Assigning a very low value to **Critical Keep Alive Period** (default = 19 minutes) and **Failover Stabilization Time** (default = 10 minutes) can cause the same service to be active on both servers, or multiple failovers during DPS startup and switchover time.
- When **Keep Alive Timeout** is set to less than the startup time of the DP server, restarting the primary server can cause activation of the backup server. To prevent this, stop the backup server before restarting the primary, and start the backup only after the primary is up again.

Note: Although there is a logical relationship between the HAC parameters, and their values should follow a logical order, this is not enforced by APM. APM allows you to set any value (within the range of 1 – 1440 minutes) for the time-related parameters, and does not validate the values for inter-dependency. For example, you can set the **Monitors Failures Interval** value higher than the **Keep Alive Timeout** even though this is logically incorrect.

Example

For example, if DP Server Start Time time is 5-7 minutes and HAC Services Activation Time is 2-3 minutes, you can use the following minimum values:

- Keep Alive Timeout – 2 minutes
- Critical Keep Alive Period – 2 minutes
- Normal Keep Alive Period – 2 minutes
- Failover Stabilization Time – 2 minutes
- Failure Monitor Frequency – 1 minute

As a result, the service failure will be identified within 2 minutes, instead of the default 20 minutes.

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