



White Paper

Fabasoft Folio Zero Downtime Update

Fabasoft Folio 2019

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Contents

1 Introduction	4
2 Software Requirements	4
3 Update Process	4
3.1 Enable Update Mode	4
3.2 Update Fabasoft Folio Backend Services	5
3.3 Update Fabasoft Folio Web Services	5
4 Details and Restrictions	5

1 Introduction

This document describes best practices to update a Fabasoft Folio installation with minimal downtime and therefore minimal impact for users.

2 Software Requirements

System environment: All information contained in this document implicitly assumes a Microsoft Windows environment or Linux environment.

Supported platforms: For detailed information on supported operating systems and software see the software product information on the Fabasoft distribution media.

3 Update Process

3.1 Enable Update Mode

During an update of a Fabasoft Folio backend installation, the Fabasoft Folio object model comprised of component and administration objects are modified as part of the setup process. These modifications can be incompatible to previous versions and therefore should not be visible to Fabasoft Folio Kernel installations or users until the update process is considered completed.

To ensure a consistent state of component and administrative objects (with exceptions), the so-called “Update Mode” must be enabled for Fabasoft Folio Kernel installations.

By enabling the “Update Mode”, the current state of component and administrative objects is persisted on the local machine (next to the client cache) and considered read-only and not refreshable. Object instances of the following classes are affected by this operation:

- Component Object (COOSYSTEM@1.1:ComponentObject)
- Domain (COOSYSTEM@1.1:Domain)
- Current Domain (COOSYSTEM@1.1:CurrentDomain)
- Tenant (COOSYSTEM@1.1:ClientDomain)
- COO Service (COOSYSTEM@1.1:COOService)
- COO Store (COOSYSTEM@1.1:COOStore)
- COO Outbound Gateway (COOSYSTEM@1.1:COOGateWay)
- MMC Service (COOSYSTEM@1.1:MMCService)
- MMC Store (COOSYSTEM@1.1:MMCStore)
- MMC Outbound Gateway (COOSYSTEM@1.1:MMCGateWay)

As long as the “Update Mode” is enabled, potential changes to objects of these object classes are not visible. Objects cannot be modified, locked or refreshed. Attempting to do so results in an error message. As these kinds of modifications usually only affect administrative use cases, the impact on users is effectively non-existent.

A Fabasoft Folio Kernel bootstrap does not affect the “Update Mode”, the state remains frozen until the mode is disabled.

The “Update Mode” can be enabled or disabled via `fscadmin`:

- `fscadmin --action updatemode --enable true`

- `fscadmin --action updatemode --enable false`

To switch all Kernel-based services to or from the update mode, an UDP multicast packet is sent. Therefore, it is required that the “Cache- and UDP-Multicast-Protocol” is configured accordingly.

Before continuing with the update, verify that each Fabasoft Folio Kernel-based service was switched to the update mode by checking the following performance counter available for each Kernel-based service:

- Microsoft Windows: COO-Kernel - Update Mode
- Linux: `enterprises.17100.1.1.15.2.1.40.0.0.<instance>`

Note: After enabling the update mode via `fscadmin` the update mode is in effect. A restart or recycle is not required. After disabling the update mode a restart of all affected Kernel-based services is required.

3.2 Update Fabasoft Folio Backend Services

The Fabasoft Folio Backend Services can be updated using the Fabasoft Folio Setup. During the update process, COO services are unavailable for a short period of time because of binary updates as well as a potential request after object model updates.

In case of a minor delta not involving migration steps during service startup or the restart after object model updates, the downtime is expected to be below 30 seconds. During that time, objects frozen by the “Update Mode” and existing cached objects remain available but cannot be modified. To eliminate downtime, COO service requests block for at most 30 seconds to provide transparent failover. After that timespan, use cases requiring COO services (reading objects that are not in the cache, modifying objects) result in an error message informing users that the services are not fully available.

3.3 Update Fabasoft Folio Web Services

Before the update, a web server must be removed from the load balancer and existing requests must be completed. The update can be executed via Fabasoft Folio Setup. In the course of the update process, the “Update Mode” is disabled. Consequently, no further action is required after a successful update before taking the web server online again.

To make sure that users working with updated web servers do not fall back to web servers in “Update Mode”, the load balancer must be configured accordingly. One way to achieve that is splitting available web servers into two pools, taking one pool offline and switching to that pool once the pool is fully available.

4 Details and Restrictions

Objects of object classes derived from *Administration Object* (`COOSYSTEM@1.1:AdministrationObject`) that are not covered by the “Update Mode” (*User, Group, Automated Task, Mindbreeze Indexing Service* ...) are not frozen. Consequently, changes executed as part of the update process are visible to Kernel instances.

Running transactions may result in an error during the Fabasoft Folio Backend Service update. Whether or not a transaction can be executed successfully depends on the state of the transaction when the Fabasoft Folio Backend Services are restarted.

Typical error scenarios:

- COOSYSTEM@1.1:COOSTERR_NET, COOSYSTEM@1.1:COOERR_COOSRVNOTREACHABLE, COOSYSTEM@1.1:COOERR_DOMAINSRVNOTREACHABLE, COOSYSTEM@1.1:COOSTERR_RPCSEQUENCE
These errors can occur if the connection to the service is broken. The user should have either no impact (in case of successful retries) or see the error message COOSYSTEM@1.1:COOERR_DOMAINUPDATE (Fabasoft Folio is down for maintenance and will be back shortly) in case of a longer downtime.
- COOSYSTEM@1.1:COOSTERR_SQL (in conjunction with a "Unique constraint violation")
This error can occur if a transaction execution fails (e.g. due to a broken RPC call) and the transaction logic retries the operation. If the first execution was successfully on database side then the transaction retry results in a database error. In this case the error message COOSYSTEM@1.1:COOERR_DOMAINUPDATE (Fabasoft Folio is down for maintenance and will be back shortly) will be shown to the user. Further, new requests, should be successful for the user. This scenario can also be identified by the message "Retry transaction ... after ... ms" in the error log.

Enabling the "Update Mode" causes RPC calls to be retried for at most 30 seconds. Requests may take a longer time until responding with an error.

A web server setup automatically disables "Update Mode" by deleting the update cache.

The error log (e.g. `WebService.error.log`) shows all occurred errors – also if a retry solves the problem.