Hybrid UI Database User Documentation

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Hybrid UI Database

About Hybrid UI Database

The hybrid UI database feature allows a web-based application UI to quickly display to the user while the user data continues to load in the background.

Prior to the Hybrid UI Database feature being added to Predix Mobile, the web-based hybrid application UI data was combined with the user data in a single database. Because of this, all application and user data was required to be downloaded before the UI could be displayed to the user. See the Mobile Service Components for more information.

The hybrid UI database option allows for web-based application UI data to be independent of user data. As a result, when the mobile application starts, it can quickly display the application UI, while it continues to load user data in the background. This can often result in the appearance of a faster application start, and allow the user to begin work in cases where having only partial user available is acceptable.

The hybrid UI database feature also supports the following loading options:

- Statically loaded from the native application bundle
- Downloaded from the Predix Mobile server backend on first Application start
- Updates downloaded the Predix Mobile server backend on Application start

Key Features of the hybrid UI :

- Web applications may be pre-loaded or synchronized from the Predix Mobile Service.
- User Data Documents are synchronized in the background.
- Shorter wait period to display the UI
- Supports development of Enterprise Apps with support for dynamic updates

A graphical representation of hybrid UI synchronization process is shown in *Figure 1*.

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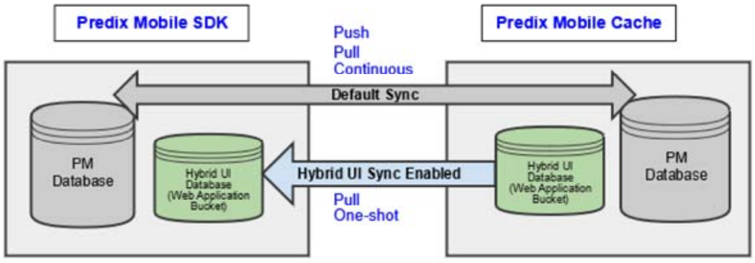


Figure 1 Hybrid UI Synchronization Process

Following are the different types of synchronizations that are represented in *Figure 1*.

Pull — Synchronizing data from the Predix Mobile Service to the Client

One-shot — Synchronizing data push or pull only once.

Continuous — Synchronizing data push or pull continuously or as long as the application is up and running.

Hybrid UI Sync Workflow

When the hybrid UI is enabled it performs a version check between the bundle and the device. If versions do not match, the device application is replaced with the application from the bundle. The synchronization of hybrid UI data allows for easy updates during development, this also allows you to create Enterprise applications that supports dynamic updates.

Following is the set of sequences that your application follows during the hybrid UI synchronization process:

1. When the application starts, it detects that hybrid UI database is enabled.
2. If the hybrid UI database is found in the bundle or asset folder (your Android Studio project folder), it verifies that the version matches.
3. If the version doesn't match, the hybrid UI database in the bundle will replace the existing hybrid UI database on your device.
4. Checks if the hybrid UI updates are allowed, if yes — it initiates a one time pull synchronization of the hybrid UI database.
5. Waits for hybrid UI replication to complete before displaying the application UI to the user.
6. Regardless of how the hybrid UI is configured, the Data database synchronization begins and continues in the background.

See the Flowchart in *Figure 2* for a graphical representation of the hybrid UI workflow.

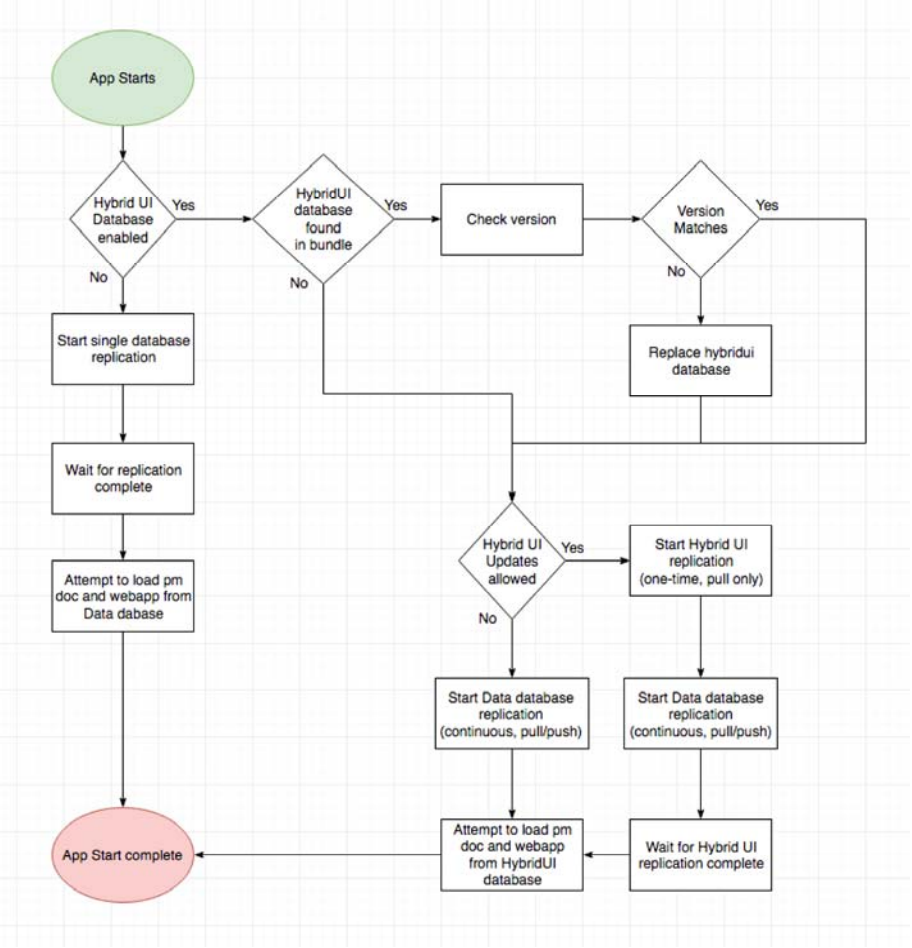

App Starts
Hybrid UI Database enabled
Yes
No
HybridUI database found in bundle
Yes
No
Check version
Version Matches
Yes
No
Start single database replication
Replace hybridui database
Wait for replication complete
Hybrid UI Updates allowed
Yes
No
Start Hybrid UI replication (one-time, pull only)
Attempt to load pm doc and webapp from Data dabase
Start Data database replication (continuous, pull/push)
Start Data database replication (continuous, pull/push)
App Start complete
Attempt to load pm doc and webapp from HybridUI database
Wait for Hybrid UI replication complete

Figure 2 Hybrid UI Workflow

Before you begin

You must have the latest version of PM CLI tools before your proceed to enable Hybrid UI.

Enabling Hybrid UI and Replication

You can enable hybrid UI and the hybrid UI replication (allow updates) using one of the following two methods:

- Setting Hybrid UI Flags in the Container app code

  Example - iOS

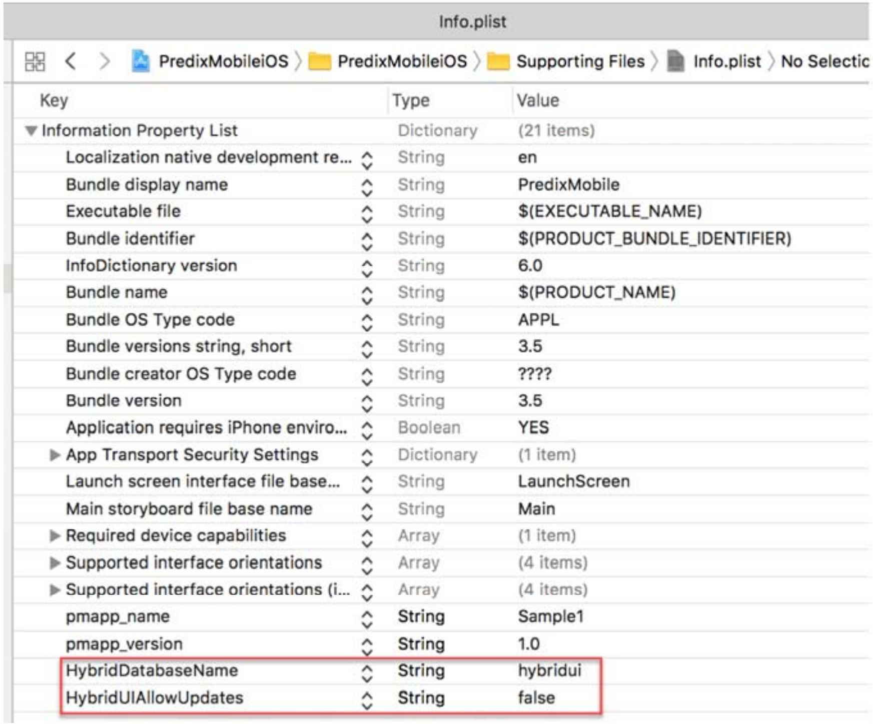
  ```
  PredixMobilityConfiguration.hybridUIDatabaseName = "hybridui"
  PredixMobilityConfiguration.hybridUIAllowUpdates = true
  ```

  Example - Android

  ```
  PredixMobileConfiguration.hybridUIDatabaseName = "hybridui"
  PredixMobileConfiguration.hybridUIAllowUpdates = true
  ```

- Using the Configuration Files to enable the Hybrid UI Database

Example - IOS



Key	Type	Value
Information Property List	Dictionary	(21 items)
Localization native development re...	String	en
Bundle display name	String	PredixMobile
Executable file	String	$(EXECUTABLE_NAME)
Bundle identifier	String	$(PRODUCT_BUNDLE_IDENTIFIER)
InfoDictionary version	String	6.0
Bundle name	String	$(PRODUCT_NAME)
Bundle OS Type code	String	APPL
Bundle versions string, short	String	3.5
Bundle creator OS Type code	String	????
Bundle version	String	3.5
Application requires iPhone enviro...	Boolean	YES
App Transport Security Settings	Dictionary	(1 item)
Launch screen interface file base...	String	LaunchScreen
Main storyboard file base name	String	Main
Required device capabilities	Array	(1 item)
Supported interface orientations	Array	(4 items)
Supported interface orientations (i...	Array	(4 items)
pmapp_name	String	Sample1
pmapp_version	String	1.0
HybridDatabaseName	String	hybridui
HybridUIAllowUpdates	String	false

Figure 3 Hybrid UI Flags

Example - Android

```
hybrid_ui_enabled=true

hybrid_ui_allow_updates=true
```

Publishing Web Application to Hybrid UI in Predix Mobile Service

You can publish your web application to Hybrid UI in Predix Mobile Service using the `pm publish` command as shown in the following example:

Example:

```
if "webapp.json" is the name of webapp-manifest
pm publish webapp.json -d hybridui
pm publish webapp.json -d pm
pm publish webapp.json
```

In the above example, `pm pubish webapp.json -d hybridui` command publishes your web application to the hybrid UI. The `pm publish webapp.json-d pm` command and `pm publish webapp.json` command publishes your web application to the Predix Mobile service.

Hybrid UI Database FAQs

What is the Hybrid UI Database feature?

The hybrid UI database feature allows a web-based application UI to be displayed to the user quickly while the user data continues to load in the background.

How do you enable it?

One can enable hybrid UI and the hybrid UI replication which allows updates by using one of the following two methods:

- Android:
  - Set both `Hybri_ui` and `hybrid_ui_allow_updates` to true from the Android Reference config.properties file.
- iOS:
  - Set "PredixMobilityConfiguration.hybridUIDatabaseName" to `hybridui` and `PredixMobilityConfiguration.hybridUIAllowUpdates` to true from the iOS Reference info.plist.

Can I edit data in the hybrid UI database?

While technically possible, this is not recommended. Changes to the Hybrid UI database should come from the server.

Will changes to the Hybrid UI database on the server reflect in the client immediately?

No, Hybrid UI database is only synchronized with the server after the user logs in when the application starts.

Can I put documents in the hybrid UI database?

While technically possible, this is not recommended. Changes to the Hybrid UI database should come from the server.

How do I access data in the hybrid UI database?

Generally, the information in the hybrid UI database is only used by the Predix Mobile SDK. It is technically possible to interact with the hybrid UI database using the DB service much the user data interaction. User data is accessed using the "pm" (or "~") database name. The hybrid UI database can be accessed by using the configured Hybrid UI database name.

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