

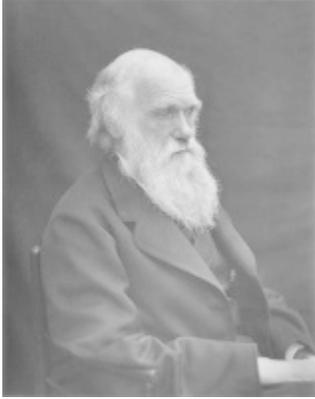
Release 3.7

Darwin

Release 3.7 is a twenty third midPoint release code-named Darwin. The 3.7 release brings new deployment model and numerous gradual improvements. There are improvements of identity governance features, improvements of user interface and internal improvements.

Release date: 18th December 2017

Charles Darwin



[Charles Darwin](#) (1809 - 1882) was English naturalist, geologist and biologist, best known for the theory of evolution. Darwin's famous book *On the Origin of Species* described theory of evolution, mechanism of natural selection that explains the diversity of life. His voyage on HMS Beagle established him as an eminent geologist and made him famous as a popular author. Darwin has been described as one of the most influential figures in human history.

Darwin's theory of evolution is the unifying theory of the life sciences. The theory describes the process how species evolve and adapt over successive generations. MidPoint 3.7 is such an evolutionary step in midPoint development. This midPoint release brings gradual improvements in many diverse areas. Identity governance features are improved, both in capabilities of the engine and the user interface. MidPoint expressions have gained more power and ease of use. There are notable improvements in user interface, security, task management and many smaller improvements in various areas. The scope of almost the entire release was guided by midPoint subscribers and sponsors - which provided the perfect environment for this step in midPoint evolution.

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Credits

Majority of the work on the *Darwin* release was done by the [Evolveum](#) team. However, this release would not be possible without the help of our partners, customers, contributors, friends and families. We would like to express our thanks to all the people that contributed to the midPoint project both by providing financial support, their own time or those that maintain a pleasant and creative environment for midPoint team. However, midPoint project would not exist without proper funding. Therefore we would like to express our deepest gratitude to all midPoint subscribers that made midPoint project possible.

Features

midPoint 3.7 provides following features:

- **Common identity management data model**
 - Extensible object types:
 - User objects to represent users, physical persons and [personas](#)
 - Role objects to represent roles, privileges, jobs and so on

- Org objects to represent [organizational units](#), teams, workgroups, etc.
- Service objects to represent servers, network devices, mobile devices, network services, etc.
- Numerous built-in properties
- Extensibility by custom properties
- Completely schema-aware system
 - Dynamic schema automatically retrieved from resource
 - Support for primitive data types
 - Native support of multi-value attributes
 - Limited support for complex data types
- Processing and computation fully based on [relative changes](#)
- Off-the-shelf support for user password credentials
- Off-the-shelf support for activation (users, roles, orgs, services)
 - Enabled/disabled states (extensible in the future)
 - Support for user validity time constraints (valid from, valid to)
- Object template to define policies, default values, etc.
 - Ability to use conditional mappings (e.g. to create RB-RBAC setup)
 - Ability to include other object templates
 - Global and resource-specific template setup
- Representation of all configuration and data objects in XML, JSON and YAML
- **Identity management**
 - [Enabling and disabling accounts](#)
 - Support for [mapping and expressions](#) to determine account attributes
 - [Multi-layer attribute access limitations](#)
 - [Provisioning dependencies](#)
 - Higher-order dependencies (enables partial support for circular provisioning dependencies)
 - [Provisioning robustness](#) - ability to provision to non-accessible (offline) resources
 - [Provisioning consistency](#) - ability to handle provisioning errors and compensate for inconsistencies
 - Support for [tolerant attributes](#)
 - Ability to select tolerant and non-tolerant values using a pattern (regex)
 - Support for volatile attributes (attributes changed by the resource)
 - [Matching Rules](#)
 - Matching rules to support case insensitive attributes, DN and UUID attributes, XML attributes, etc. (extensible)
 - Automatic matching rule discovery
 - Ability to execute scripts before/after provisioning operations
 - Import from file and resource
 - [Object schema validation during import](#) (can be switched off)
 - [Smart references between objects based on search filters](#)
 - Advanced support for account activation (enabled/disabled states)
 - Standardized account activation that matches user activation schema for easy integration
 - Ability to simulate activation capability if the connector does not provide it
 - Support for account lock-out
 - Support for account validity time constrains (valid from, valid to)
 - Support easy [activation existence mappings](#) (e.g. easy configuration of "disables instead of delete" feature)
 - Support for [mapping time constraints](#) in activation mappings that allow configuring time-related provisioning features such as [deferred account delete or pre-provisioning](#).
 - Ability to specify set of [protected accounts](#) that will not be affected by IDM system
 - Support for base context searches for connectors that support object hierarchies (such as LDAP)
 - [Notifications](#)
 - [Bulk actions](#)
 - Passive [Attribute Caching](#) (EXPERIMENTAL)
 - Partial multi-tenancy support
- **Synchronization**
 - [Live synchronization](#)
 - [Reconciliation](#)
 - Ability to execute scripts before/after reconciliation
 - Correlation and confirmation expressions
 - Conditional correlation expressions
 - Concept of *channel* that can be used to adjust synchronization behaviour in some situations
 - [Generic Synchronization](#) allows synchronization of roles to groups to organizational units to ... anything
 - Self-healing [consistency mechanism](#)
- **Advanced RBAC**
 - [Expressions in the roles](#)
 - [Hierarchical roles](#)
 - Conditional roles and assignments/inducements
 - Parametric roles (including ability to assign the same role several times with different parameters)
 - Temporal constraints (validity dates: valid from, valid to)
 - [Metaroles](#)
 - Role catalog
 - Role request based on shopping cart paradigm
 - Several [assignment enforcement modes](#)
 - Ability to specify global or resource-specific enforcement mode
 - Ability to "legalize" assignment that violates the enforcement mode
 - Rule-based RBAC (RB-RBAC) ability by using conditional mappings in [user template](#) and [role autoassignment](#)
- **Entitlements and entitlement associations**
 - GUI support for entitlement listing, membership and editing
 - Entitlement approval
- **Identity governance**
 - Powerful [organizational structure management](#)
 - [Workflow support](#) (based on [Activiti](#) engine)

- Declarative policy-based multi-level [approval](#) process
 - Visualization of approval process
- [Object lifecycle](#) property
- Object history (time machine)
- [Policy Rules](#) as a unified mechanism to define identity management, governance and compliance policies
- [Segregation of Duties](#) (SoD)
 - Many options to define [role exclusions](#)
 - SoD approvals
 - SoD certification
- Assignment constraints for roles and organizational structure
- [Access certification](#)
- Ad-hoc recertification
- Basic [role lifecycle](#) management (role approvals)
- [Deputy](#) (ad-hoc privilege delegation)
- Escalation in approval and certification processes
- [Personas](#)
- Rich assignment meta-data
- **Expressions, mappings and other dynamic features**
 - [Sequences](#) for reliable allocation of unique identifiers
 - [Customization expressions](#)
 - [Groovy](#)
 - Python
 - [JavaScript \(ECMAScript\)](#)
 - Built-in libraries with a convenient set of functions
 - [PolyString](#) support allows automatic conversion of strings in national alphabets
 - Mechanism to iteratively determine unique usernames and other identifier
 - [Function libraries](#)
- **Web-based administration user interface**
 - Ability to execute identity management operations on users and accounts
 - User-centric views
 - Account-centric views (browse and search accounts directly)
 - Resource wizard
 - Layout automatically adapts to screen size (e.g. for mobile devices)
 - Easily customizable look & feel
 - Built-in XML editor for identity and configuration objects
 - Identity merge
- **Self-service**
 - User profile page
 - Password management page
 - Role selection and request dialog
 - Self-registration
 - Email-based password reset
- **Connectors**
 - Integration of [ConnId identity connector framework](#)
 - Support for Evolveum Polygon connectors
 - Support for ConnId connectors
 - Support for OpenICF connectors (limited)
 - Automatic generation and caching of [resource schema](#) from the connector
 - [Local connector discovery](#)
 - Support for connector hosts and remote [connectors](#), [identity connector](#) and [connectors host type](#)
 - [Remote connector discovery](#)
 - [Manual Resource and ITSM Integration](#)
 - [Unified Connector Framework \(UCF\)](#) layer to allow more provisioning frameworks in the future
- **Flexible identity repository implementations and SQL repository implementation**
 - [Identity repository based on relational databases](#)
 - [Keeping metadata for all objects](#) (creation, modification, approvals)
 - [Automatic repository cleanup](#) to keep the data store size sustainable
- **Security**
 - Fine-grained authorization model
 - [Authorization expressions](#)
 - Limited [power of attorney](#) implementation
 - Organizational structure and RBAC integration
 - Delegated administration
 - Password management
 - Password distribution
 - [Password policies](#)
 - Password retention policy
 - Self-service password management
 - Password storage options (encryption, hashing)
 - Mail-based initialization of passwords for new accounts
 - CSRF protection
- **Auditing**
 - Auditing to [file \(logging\)](#)
 - Auditing to [SQL table](#)
 - Interactive audit log viewer
- **Extensibility**
 - [Custom schema extensibility](#)
 - [Scripting Hooks](#)
 - [Lookup Tables](#)

- Support for overlay projects and deep customization
- Support for programmatic custom GUI forms (Apache Wicket components)
- Basic support for declarative custom forms
- API accessible using a REST, web services (SOAP) and local JAVA calls
- **Reporting**
 - Scheduled reports
 - Lightweight reporting (CSV export) built into user interface
 - Comprehensive reporting based on Jasper Reports
 - [Post report script](#)
- **Internals**
 - [Task management](#)
 - [Task template](#)
 - [Node-sticky tasks](#)
- **Operations**
 - Lightweight deployment structure with two deployment options:
 - [Stand-alone deployment](#)
 - Deployment to web container (WAR)
 - [Multi-node task manager component with HA support](#)
 - Comprehensive logging designed to aid troubleshooting
 - Enterprise class scalability (hundreds of thousands of users)
- **Documentation**
 - [Administration documentation publicly available in the wiki](#)
 - [Architectural documentation publicly available in the wiki](#)
 - Schema documentation automatically generated from the definition ([schemadoc](#))

Changes with respect to version 3.6

- [Stand-alone deployment](#) based on Spring Boot
- User interface improvements
 - New assignment list tab
 - Improvement for human-readable error messages
 - Improved approval messages and screens
 - Improved policy violation messages
 - Support for associations in role editor
 - User interface support for policy rules
 - Customization improvements
 - Visualization of approval process
- Governance improvements
 - Improved assignment metadata
 - Policy rules for attribute values
 - Dependency policy rules
- Expression, mapping and bulk action improvements
 - [Function libraries](#)
 - Significantly improved [inbound mapping](#)
 - Selection of assignment path index in `associationFromLink` expressions.
 - Function to determine projection existence
 - [Variables in bulk actions](#)
 - [Role autoassignment](#)
- Security improvements
 - [Authorization expressions](#)
 - Limited [power of attorney](#) implementation
 - Special authorizations for raw operations
 - [Password policy](#) improvements to enforce different persona passwords.
 - CSRF protection
 - More secure default file permissions
- Task improvements
 - [Task template](#)
 - Node-sticky tasks
- Miscellaneous improvements
 - [Post report script](#)
 - Improved provisioning script error handling
 - Improved JSON/YAML support
 - Import validation improvements

Java 7 environment is no longer supported.

XPath2 scripting is no longer supported.

[Old CSVFile Connector](#) is deprecated and it is no longer bundled with midPoint.

Support for PostgreSQL 8.4 is deprecated. The support will be dropped in the future.

Oracle database 11g support is deprecated in midPoint 3.7. This will be replaced for Oracle 12c database support in midPoint 3.8.

Support for Microsoft SQL Server 2008 and 2008 R2 is deprecated. The support will be dropped in the future.

Quality

Release 3.7 (*Darwin*) is intended for full production use in enterprise environments. All features are stable and well tested - except the features that are explicitly marked as *experimental* or *partially implemented*. Those features are supported only with special subscription and/or professional services contract.

Limitations

- MidPoint 3.7 comes with a bundled LDAP-based eDirectory connector. This connector is stable, however it is not included in the normal midPoint support. Support for this connector has to be purchased separately.

Platforms

MidPoint is known to work well in the following deployment environment. The following list is list of **tested** platforms, i.e. platforms that midPoint team or reliable partners personally tested with this release. The version numbers in parentheses are the actual version numbers used for the tests. However it is very likely that midPoint will also work in similar environments. Also note that this list is not closed. MidPoint can be supported in almost any reasonably recent platform (please contact Evolveum for more details).

Java

- OpenJDK 8 (1.8.0_91, 1.8.0_111, 1.8.0_151)
- Sun/Oracle Java SE Runtime Environment 8 (1.8.0_45, 1.8.0_65, 1.8.0_74, 1.8.0_131)

Web Containers

- Apache Tomcat 8 (8.0.14, 8.0.20, 8.0.28, 8.0.30, 8.0.33, 8.5.4)
- BEA/Oracle WebLogic (12c) - ⚠ special subscription required



Web container (application server) support

MidPoint 3.7 introduced [Stand-alone deployment](#) form that does not need an application server. This is the primary deployment model for midPoint. The deployment to web container is still supported. However the only supported web container is Apache Tomcat. Other web containers (application servers) may be supported if the support is explicitly negotiated in midPoint subscription. Except for those cases midPoint development team will not provide any support for other web containers.

Currently there are no plans to remove support for deployed midPoint installation using a WAR file. However, it is possible that this deployment form will get phased out eventually unless there are active subscribers preferring this deployment method. MidPoint subscription is strongly recommended if you plan to use this method in the future.

Databases

- H2 (embedded, only recommended for demo deployments)
- PostgreSQL (8.4.14, 9.1, 9.2, 9.3, 9.4, 9.4.5, 9.5, 9.5.1)
Support for PostgreSQL 8.4 is deprecated. The support will be dropped in the future.
- MariaDB (10.0.28)
- MySQL (5.6.26, 5.7)
Supported MySQL version is 5.6.10 and above (with MySQL JDBC ConnectorJ 5.1.23 and above).
MySQL in previous versions didn't support dates/timestamps with more accurate than second fraction precision.
- Oracle 11g (11.2.0.2.0)
Oracle 11g support is deprecated in midPoint 3.7. This will be replaced for Oracle 12c support in midPoint 3.8.
- Microsoft SQL Server (2008, 2008 R2, 2012, 2014)
Support for Microsoft SQL Server 2008 and 2008 R2 is deprecated. The support will be dropped in the future.

Supported Browsers

- Firefox (any recent version)
- Safari (any recent version)
- Chrome (any recent version)
- Opera (any recent version)
- Microsoft Internet Explorer (version 9 or later)

Recent version of browser as mentioned above means any stable stock version of the browser released in the last two years. We formally support only stock, non-customized versions of the browsers without any extensions or other add-ons. According to the experience most extensions should work fine with midPoint. However, it is not possible to test midPoint with all of them and support all of them. Therefore, if you chose to use extensions or customize the browser in any non-standard way you are doing that on your own risk. We reserve the right not to support customized web browsers.

Microsoft Internet Explorer compatibility mode is **not** supported.

Important Bundled Components

Component	Version	Description
ConnId	1.4.3.0	ConnId Connector Framework
LDAP connector bundle	1.5.1	LDAP, Active Directory and eDirectory connector
CSV connector	2.1	Connector for CSV files
DatabaseTable connector	1.4.2.0	Connector for simple database tables

Download and Install



Stand-alone deployment model

MidPoint 3.7 deployment method has changed. [Stand-alone deployment](#) is now the default deployment method. MidPoint default configuration, scripts and almost everything else was adapted for this method.

- **New midPoint users** and **new deployments** should simply follow the [installation manual](#).
- **Existing deployments** may keep using exactly the same configuration as before. [Deployment of midPoint as Web Application](#) is still supported as an alternative. However, [stand-alone deployment](#) is now the primary option. It is recommended to migrate the deployment based on application server to a stand-alone deployment in the future. See our [brief migration guide](#).

Release Form	Download	Install Instructions
Binary	http://evolveum.com/downloads/midpoint/3.7/midpoint-3.7-dist.zip	Installing midPoint v3.7
Source	From Git repository (tag "v3.7") https://github.com/Evolveum/midpoint	Building MidPoint From Source Code
Java API	https://www.evolveum.com/downloads/midpoint/3.7/midpoint-api-3.7-javadoc/ [JAR]	
Schema Doc	https://www.evolveum.com/downloads/midpoint/3.7/schema-3.7-schemadoc/ [ZIP]	

Upgrade

MidPoint is software that is designed for easy upgradeability. We do our best to maintain strong backward compatibility of midPoint data model, configuration and system behavior. However, midPoint is also very flexible and comprehensive software system with a very rich data model. It is not humanly possible to test all the potential upgrade paths and scenarios. Also some changes in midPoint behavior are inevitable to maintain midPoint development pace. Therefore we can assure reliable midPoint upgrades only for [midPoint subscribers](#). This section provides overall overview of the changes and upgrade procedures. Although we try to our best it is not possible to foresee all possible uses of midPoint. Therefore the information provided in this section are for information purposes only without any guarantees of completeness. In case of any doubts about upgrade or behavior changes please use services associated with [midPoint subscription](#) or purchase [professional services](#).

Upgrade from midPoint 3.0, 3.1, 3.1.1, 3.2, 3.3, 3.3.1, 3.4, 3.4.1, 3.5 and 3.5.1

Upgrade path from MidPoint 3.0 goes through midPoint 3.1, 3.1.1, 3.2, 3.3, 3.4.1, 3.5.1 and 3.6.1. Upgrade to midPoint 3.1 first (refer to the [midPoint 3.1 release notes](#)). Then upgrade from midPoint 3.1 to 3.1.1, from 3.1.1 to 3.2 then to 3.3, then to 3.4.1, 3.5.1, 3.6.1 and finally to 3.7.

Upgrade from midPoint 3.6 and 3.6.1

MidPoint 3.7 data model is essentially backwards compatible with both midPoint 3.6 and midPoint 3.6.1. However as the data model was extended in 3.7 the database schema needs to be upgraded using the [usual mechanism](#). There are a few points to highlight that are related to database structure upgrade:

- Besides midPoint own tables there are two simple changes in Quartz database structure as well. Migration is ensured using upgrade scripts in the `/config/sql/_all/` directory (along with changes in midPoint own tables).
- The `taskIdentifier` item has now a uniqueness constraint: it is possible (although quite unlikely) that database migration script would fail when it tries to introduce the constraint. In such cases it is necessary to delete conflicting tasks and then continue with updating the database.

MidPoint 3.7 is a release that fixes some issues of previous versions. Therefore there are some changes that are not strictly backward compatible.

- Version numbers of some bundled connectors have changed. Therefore connector references from the resource definitions that are using the bundled connectors need to be updated.
- MidPoint has switched to a [stand-alone deployment](#) model. MidPoint no longer requires explicit deployment to a web container. The web container is bundled inside midPoint distribution. This change is intended to make midPoint easier to deploy, use and maintain. However, this change may affect existing deployment of midPoint. Following is a summary of the most important changes:

- As midPoint is stand-alone server now, it has its own run control (start/stop) scripts. Those scripts are provided in the distribution package.
- Structure of the distribution package has changed to adapt to the stand-alone deployment model.
- The location of a default [midPoint home directory](#) has changed. The default is now `var` subdirectory of the installation directory.
- Default URL is changed. The `midpoint` path prefix is dropped. Therefore URL that used to be `http://host:8080/midpoint/self` is now just `http://host:8080/self`.
- Default logging setup now maintains log files in the `log` subdirectory of midPoint home directory. The default log file was changed from `dm.log` to `midpoint.log`. However, please note that if you have existing logging configuration in [system configuration object](#), that configuration will be still used after upgrade. Upgrade process does not change that automatically. It needs to be updated manually.
- The `assignment.trigger` item (of `EvaluatedPolicyRuleTriggerType`) is now deprecated and partially replaced by `assignment.triggeredPolicyRule`. Original `assignment.trigger` item was automatically computed and took a considerable amount of storage space. So, in 3.7, after each model operation on a focal object, the `assignment.trigger` is automatically erased. Therefore these values will be gradually removed. If you want to remove them at once, you can either execute e.g. recomputation of all affected objects or write a custom bulk action to remove the values.

Changes in initial objects since 3.6 and 3.6.1

MidPoint has a built-in set of "initial objects" that it will automatically create in the database if they are not present. This includes vital objects for the system to be configured (e.g. role `superuser` and user `administrator`). These objects may change in some midPoint releases. But to be conservative and to avoid configuration overwrite midPoint does not overwrite existing objects when they are already in the database. This may result in upgrade problems if the existing object contains configuration that is no longer supported in a new version. Therefore the following list contains a summary of changes to the initial objects in this midPoint release. The complete new set of initial objects is in the `config/initial-objects` directory in both the source and binary distributions. Although any problems caused by the change in initial objects is unlikely to occur, the implementors are advised to review the following list and assess the impact on case-by-case basis:

- `010-value-policy.xml`: Removed deprecated lifetime section from initial password policy.
- `020-system-configuration.xml`: Changed logging configuration to adapt to stand-alone deployment model (see above).
- `040-role-enduser.xml`: Added authorization to read user to fully support deputy functionality.
- `110-report-user-list.xml`: Fixed filter in user list report.
- `160-report-certification-decisions.xml`: Several certification report improvements.
- `200-lookup-languages.xml`: New languages.
- `210-lookup-locales.xml`: New languages.

Bundled connector changes since 3.6 and 3.6.1

- The **LDAP connector** and **AD Connector** were upgraded to the latest available version.

Behavior changes since 3.6 and 3.6.1

- [Stand-Alone Deployment](#) is now the default deployment model (see above).
- Spring resource bundle logger logs unsuccessful attempt to locate a resource bundle on warning level. MidPoint tries to locate several resource bundles for extensibility and those bundles normally does not exist. Therefore there may be a lot of warnings in the logs. The workaround is to set the `org.springframework.context.support.ResourceBundleMessageSource` logger to error level. This solution has been applied to midPoint initial objects. However older midPoint deployment may need to set this logger manually.
- There were subtle fixes in the way how outbound mappings are processed. Several issues that seem to be present in midPoint for quite some time were fixed. Those mostly affect seldom used and corner cases. For example if a value produced by mapping matched intolerant pattern such value was ignored in midPoint 3.6 and earlier. The values is not correctly set to target. Values dictated by removed assignment were removed, even if that assignment was invalid (e.g. disabled). Those issues were fixed in midPoint 3.7. However, the deployments that relied on incorrect behavior might be affected during upgrade.
- MidPoint 3.7 improved behavior of inbound mappings. Inbound mappings can be used to map resource attributes directly to assignments. This change may influence some corner cases for inbound mappings, such as mapping tolerance. MidPoint 3.7 improvements tried to maintain the prior behavior of inbound mapping tolerance. However the behavior may be different in some corner cases. Careful testing of inbound mappings with non-default tolerance is recommended. Note: The schema documentation of midPoint 3.6.1 and earlier contain wrong specification of mapping tolerance behavior. MidPoint 3.6.1 and earlier was behaving in a way that was not consistent with documentation. MidPoint 3.7 documentation was corrected to describe the implemented behavior. However, the behavior of was **not** changed to maintain compatibility.
 - Behavior of midPoint 3.6 was not correct when more than one inbound mapping produced a value for the same target single-value property. MidPoint 3.6 processed such mappings without error, discarding one of the values. MidPoint 3.7 will correctly raise an error in this situation.
- In approval-related expressions (e.g. stage auto-completion conditions), do **not** use `midpoint.getChannel()` to obtain the channel for the original request. It is not present when evaluating approval process preview (). Use new `channel` variable instead.
- Default for `task/executionConstraints/groupTaskLimit` was changed from 1 to unlimited. Properties `allowedNode` and `disallowedNode` are now deprecated (and ignored with warning). They are replaced by `node/taskExecutionLimitations` item. See [Node-sticky tasks HOWTO](#).
- If you want to use execution groups other than default (null), make sure their execution is allowed on individual nodes. Before 3.7 the default behavior was not limiting execution of tasks in these groups.
- Policy situations and triggers are not stored by default now. Use the `record` policy action for this.
- Predefined policy situation `http://midpoint.evolveum.com/xml/ns/public/model/policy/situation#assigned` is no longer available. If you used it in situation constraints, replace it by `http://midpoint.evolveum.com/xml/ns/public/model/policy/situation#modified`. But note that the new situation is triggered for both assignments and objects; therefore if you need to specify rules for assignments only please use `evaluationTarget` of `assignment`.
- There are new [authorizations](#) for raw operations and partial execution operations. Raw operations are used for example to edit objects in GUI "repository objects" page. Those operations did not require any extra authorizations in midPoint 3.6.1 and earlier. Starting with midPoint 3.7 extra authorizations are required in addition to normal object access authorizations (read, add, modify, delete).

- MidPoint 3.7 structure is based on Spring Boot. The old XML-based spring configuration has been phased out and replaced with annotation-based configuration. There were (officially unsupported) Spring Security authentication modules for LDAP and CAS. The LDAP module configuration was migrated to annotation-based configuration and it is now accessible by activating appropriate spring profile. However, the CAS configuration was not migrated and there are no specific plans for this migration to happen. The migration needs to be requested by midPoint subscriber. We will also gladly accept the migration as a community contribution.
- MidPoint 3.6.1 and earlier included a `repo-ninja` tool for emergency operations over midPoint repository. That tool was replaced with next-generation version of the tool called just `ninja`. Development of this new tool is still work in progress, however, it is capable of an equivalent emergency operations as the old tool. Brief documentation is available at [Ninja](#) page.

Public interface changes since 3.6 and 3.6.1

- The `thisObject` variable is deprecated. The variable was too simplistic for use in complex use cases. Now the entire [assignment path](#) is exposed for use in the expressions. It is recommended to use assignment path instead of `thisObject` variable.
- Changes in local Java interfaces
 - User-friendly (localizable) messages in exceptions
 - New midPoint functions
 - Changes to the Model API related to evaluated assignments and other parts of model context.
 - Changes in Prism
 - Audit record changes

Important internal changes since 3.6 and 3.6.1

These changes should not influence people that use midPoint "as is". These changes should also not influence the XML/JSON/YAML-based customizations or scripting expressions that rely just on the provided library classes. These changes will influence midPoint forks and deployments that are heavily customized using the Java components.

- Security component structure has been redesigned.
- Many internal components were refactored, restructured and cleaned up. This may have severe impact on midPoint customizations that go beyond public interfaces, but it should not affect public interfaces. Therefore moderate customizations should be unaffected.
- `MappingType` data type has been changed from property to container. Code that is changing mappings (e.g. deltas) needs to be updates.

Known Issues and Limitations

There is a support to set up storage of credentials in either encrypted or hashed form. There is also unsupported and undocumented option to turn off credential storage. This option partially works, but there may be side effects and interactions. This option is not fully supported yet. Do not use it or use it only at your own risk. It is not included in any midPoint support agreement.

Native attribute with the name of 'id' cannot be currently used in midPoint ([MID-3872 - Getting issue details...](#) STATUS). If the attribute name in the resource cannot be changed then the workaround is to force the use of legacy schema. In that case midPoint will use the legacy ConnId attribute names (`icfs:name` and `icfs:uid`).

JavaDoc is temporarily not available due to the [issue in Java platform](#). This issue is fixed in Java 9 platform, but backport of this fix to Java 8 is (quite surprisingly) not planned.

As all real-world software midPoint 3.7 has some known issues. Full list of the issues is maintained in [jira](#). As far as we know at the time of the release there was no known critical or security issue.

There is currently no plan to fix the known issues of midPoint 3.7 *en masse*. These issues will be fixed in future maintenance versions of midPoint only if the fix is requested by midPoint subscriber. No other issues will be fixed - except for severe security issues that may be found in the future.

The known issues of midPoint 3.7 may or may not be fixed in midPoint 3.8. This depends on the available time, issue severity and many variables that are currently difficult to predict. The only reliable way how to make sure that an issue is fixed is to purchase midPoint subscription. Or you can fix the bug yourself. MidPoint is always open to contributions.

This may seem a little bit harsh at a first sight. But there are [very good reasons for this policy](#). And in fact it is no worse than what you get with most commercial software. We are just saying that with plain language instead of scrambling it into a legal mumbo-jumbo.

See Also

- [midPoint History](#)
- [Installing midPoint v3.7](#)
- [Building MidPoint From Source Code](#)