



# ALM

Software Version: 12.55

## Secured Deployment and Configuration Guide

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# Welcome to this Guide

Welcome to the Application Lifecycle Management Secured Deployment and Configuration Guide.

This help is designed to help IT professionals who deploy and manage Application Lifecycle Management (ALM) instances in a secure manner in the modern enterprise. Our objective is to help you make well-informed decisions about the various capabilities and features that ALM provides to meet modern enterprise security needs.

Security requirements for the enterprise are constantly evolving and this guide should be viewed as Micro Focus's best effort to meet those stringent requirements. If there are additional security requirements that are not covered by this guide, please open a support case with the Micro Focus support team to document them and we will include them in future editions of this guide.



# Chapter 1: Secure Implementation and Deployment

This chapter provides information on implementing and deploying ALM in a secure manner.

## Technical System Landscape

ALM is an enterprise-wide application based on Java 2 Enterprise Edition (J2EE) technology. J2EE technology provides a component-based approach to the design, development, assembly, and deployment of enterprise applications. For details, see the *About ALM Technology and Architecture* section of the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide*.

## Security in Basic ALM Configuration

For security recommendations for a basic ALM configuration, see the *Example of Basic ALM Configuration* section of the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide*.

## Security in Clustered ALM Configuration

For security recommendations for a clustered ALM configuration, see the *Example of Clustered ALM Configuration* section of the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide*.

## External Authentication

ALM supports external authentication with specific configurations. The supported modes include Smart Card authentication, such as CAC, and SSO authentication, such as Siteminder. For details, see the *Micro Focus Application Lifecycle Management External Authentication Configuration Guide*.

## Proxy Authentication Support

When a proxy or front end web server requires authentication, you can use the Webgate Customization tool to configure the proxy and identify the credentials it expects, as well as any required front end web server credentials. For details, see the *ALM Webgate Customization Readme*, available from **Help > ALM Tools > Webgate Customization**.

## Common Security Considerations

Thoroughly review the trust boundaries between ALM components (ALM servers, Performance Center servers, exchange servers, database servers, LDAP servers, and other integrating servers) to minimize the number of hops between the components. In addition, it is recommended to use SSL to secure access to servers located across such boundaries.

When there is a firewall between any ALM deployment components, ensure the proper configuration according to the vendor recommendation.

Run periodic trusted root Certificate Authority certificate updates on your clients and servers to ensure that the publisher certificates used in digital code signing are trusted.

## Best Practice

- The ALM application server installation supports a secure connection via SSL/TLS. In addition, it is expected and recommended that the front end server (load balancer or reverse proxy) will be configured to require secure connection.
- If you are using SSO external authentication, such as SiteMinder, the SSO cookie must be HTTP-only.
- The demonstration web applications and demo projects are not necessarily secure and should not be deployed on production servers.

## Chapter 2: ALM Security Site Settings

This chapter contains reference to some of the ALM settings that are relevant to security. Full details can be found in the *Micro Focus Application Lifecycle Management Administrator Guide*.

### Secure ALM Storage

ALM allows users to upload files to the server. This allows users to upload attachments, save automation scripts and test run results, and so on. All files uploaded to the server must be validated, since they can contain viruses, malicious code, or Trojan horses that could infect the entire system. An attacker or a malicious user can upload malicious files from one account and then download them to diverse clients.

The site administrator can limit the types of files that can be uploaded to ALM by using the **FILE\_EXTENSION\_BLACK\_LIST\_UPLOAD** site parameter, which filters unwanted file types by extension. However, the attachment files can contain dangerous content. As a result, a downloaded file must still be opened with caution.

It is strongly recommended to implement proper antivirus protection for the file storage allocated for the ALM repository.

The site administrator can restrict the download of specific file types as described below.

In addition, the size of the file uploaded as an attachment can be limited by setting the **UPLOAD\_ATTACH\_MAX\_SIZE** site parameter.

Since ALM provides an OTA API to work with file storage, it is recommended to secure the API by setting the **DISABLE\_EXTENDED\_STORAGE** and **RESTRICT\_SERVER\_FOLDERS** site parameters.

### Secure ALM Client Installation

As mentioned above, attachment files can contain dangerous content. As a result, a downloaded file must be opened with caution. The site administrator can help protect the ALM client by using the **FILE\_EXTENSION\_BLACK\_LIST\_DOWNLOAD** and **DOWNLOAD\_REST\_ATTACHMENTS** site parameters to restrict certain file types from being downloaded to the client machine.

### Secure Access to Excel Report Query Execution

Business View Microsoft Excel reports use DQL queries to retrieve data from the database. The user cannot manually edit SQL queries generated from DQL to insert forbidden commands.

For DQL limitations, see the *Working with DQL* section of the *Micro Focus Application Lifecycle Management Administrator Guide*. You can customize the maximum number of records that can be retrieved from the database by setting **Row Limit** in Excel. For details, see the *Business Views Microsoft Excel Add-in User Guide*.

## Secure Debug Features

ALM provides a set of tools for troubleshooting and to provide better supportability. These features, which can expose sensitive internal information about the system and about activities performed on the system, are disabled by default and can be switched on by using the following site parameters. It is recommended to validate that the parameters are reset to the default values immediately after using the debug feature.

The debug related site parameters are:

- **ENABLE\_JMX\_CONSOLE**
- **ENABLE\_PERFORMANCE\_MONITOR\_BIRT\_REPORTS**
- **DISABLE\_CONSOLE\_DEBUG\_INFO**
- **DISABLE\_COMMAND\_INTERFACE**
- **DISABLE\_VERBOSE\_ERROR\_MESSAGES**

## Secure Access to ALM

- Display of the last user login name is controlled by the **DISPLAY\_LAST\_USER\_INFO** site parameter.
- Display of the last login attempt is controlled by the **DISPLAY\_LAST\_LOGIN\_ATTEMPT** site parameter.
- Whether a project administrator can change user details is controlled by the **ALLOW\_UPDATE\_USER\_PROPERTIES\_FROM\_CUSTOMIZATION** site parameter.
- Whether users can reset their passwords using the Forgot Password link is controlled by the **PASSWORD\_RESET\_DISABLE**, **PASSWORD\_RESET\_VALID\_PERIOD**, and **PASSWORD\_RESET\_SERVER** site parameters.
- The following site parameters control the user session:
  - **WAIT\_BEFORE\_DISCONNECT**
  - **FAST\_RECONNECT\_MODE**
  - **AUTO\_LOGOUT\_ON\_SERVER\_DISCONNECT**
- You can determine the number of login attempts a user can make before being deactivated. This is controlled by the **MAX\_INVALID\_LOGINS\_ATTEMPT\_TO\_LOCKOUT** site parameter. In addition, you can set a parameter that resets the count of failed logins if a specified amount of time passes after an attempted login. This is controlled by the **INTERVAL\_BETWEEN\_INVALID\_LOGINS\_TO\_LOCKOUT** site parameter.

For more details, see the *Micro Focus Application Lifecycle Management Administrator Guide*.



## Secure Data Hiding

ALM data hiding involves hiding rows and columns. The **DATA\_HIDING\_MODE** site parameter controls the transfer of hidden data from the ALM server to a client. The default value, which is highly recommended for use, blocks the transfer of hidden data.

## Restrict ALM Mail Distribution

You can restrict which users receive emails from ALM. For details, see the *Setting ALM Mail Restrictions* section of the *Micro Focus Application Lifecycle Management Administrator Guide*.

## Restrict External Attachments

Whether external attachments can be saved to the ALM database is controlled by the **DENY\_EXTERNAL\_IMAGES** site parameter.

## Best Practice

Set the **UPLOAD\_ATTACH\_MAX\_SIZE** site parameter to limit the size of the file uploaded as an attachment.

# Chapter 3: Installation Security

This chapter provides information on aspects of installation security.

## Supported Operating Systems

For the list of supported system environments, see the *Readme*.

**Note:** The supported environment information in the *Readme* is accurate for the current ALM release, but there may be subsequent updates. For the most up-to-date supported environments, see <http://admhelp.microfocus.com/alm/specs/alm-qc-system-requirements.htm>.

## Web Server Security Recommendations

It is important to configure your front-end web server for strong encryption (ciphers and protocols) to ensure a secure channel between the client and the server. For information on how to restrict the use of certain cryptographic algorithms and protocols at the web server level (IIS and Apache) see this [KB article](#).

### IIS Web Server

See <http://www.iis.net/> for information on enabling SSL/TLS for all interactions with the web server.

**Note:** SSL/TLS should be enabled for the entire IIS web server under which you installed the ALM applications.

To disable weak ciphers on IIS, see <http://support.microsoft.com/kb/187498/en-us>.

### Apache Web Server

See [http://httpd.apache.org/docs/current/ssl/ssl\\_howto.html](http://httpd.apache.org/docs/current/ssl/ssl_howto.html) for information on enabling SSL/TLS for all interactions with the web server and on enforcing strong security.

## Application Server Security Recommendations

- For information on how to configure Jetty to support HTTP Strict Transport Security (HSTS), see this [KB article](#).
- When configuring SSL/TLS on the ALM application server (Jetty), keep your keystore in a private directory with restricted access. Although the Java keystore is password protected, it is vulnerable as long as the password was not changed from its default value of *changeit*.

- Always change default passwords.
- Always obfuscate passwords entered into the jetty.xml file. For details, see <http://www.eclipse.org/jetty/documentation/current/configuring-security-secure-passwords.html>.
- Since the default *td* user password is documented in ALM, it is strongly recommended to change the *td* user’s password. This is done during the installation in the *Create new SA schema* step, if the *td* user does not yet exist in this database server. Each subsequent installation that uses the same database server uses the existing *td* user credentials. To change the password for the previously created *td* user, follow the steps in this [KB article](#).
- Configure jetty to use secure cookies.
- Always change the default password when creating a database schema.
- Limit the access to ALM directories to relevant users (such as system administrators, the user who runs the ALM service, and users who have a site administrator role in the application).
- Always use the minimal possible permissions when installing and running ALM.

**Note:** It is recommended to limit access to ALM directories to relevant users, such as the site administrator, system administrator, and the user who runs the ALM service.

Action	Permissions Needed for User
Installing ALM	<ul style="list-style-type: none"> <li>• <b>Windows:</b> Administrator permissions</li> <li>• <b>Linux:</b> The user who installs ALM must have read/write/execute permissions on all the relevant folders (installation, deployment, repository and temp folders). All related installation operations for the same version, such as patch installations or uninstalling ALM, must be performed by the same user.</li> </ul>
Running ALM	<ul style="list-style-type: none"> <li>• <b>Windows:</b> Windows service runs as the system user or a specific user (the user must have access to the file repository).</li> <li>• <b>Linux:</b> ALM service runs as a daemon that does not require a superuser privilege. It can be registered to run as a specific user with certain minimal permissions. See the <i>Micro Focus Application Lifecycle Management Installation and Upgrade Guide</i> for the set of required permissions.</li> </ul>
Database connection	The <i>td</i> user permissions must be set properly according to the recommendations in the <i>Micro Focus Application Lifecycle Management Installation and Upgrade Guide</i> . Do not use a higher level of permissions than required. Do not use the default password when creating the schema.

## FAQ

### Question

Does ALM ensure that configuration files are not stored in the same directory as user data?

### Answer

The user can change the location of the repository and log files according to best practices to avoid mixing user data with configuration files.

### Question

Does ALM install with unnecessary functionality disabled by default?

### Answer

Yes, functionality is license driven.

### Question

Are application resources protected with permission sets that allow only an application administrator to modify application resource configuration files?

### Answer

Yes, only the user with permission to access specific directories on the ALM server machine can modify ALM configuration files.

### Question

Does ALM execute with no more privileges than necessary for proper operation?

### Answer

Yes, the permissions model is constantly reviewed and only necessary permissions are required. For permission details see the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide*.

# Chapter 4: Network and Communication Security

## Security

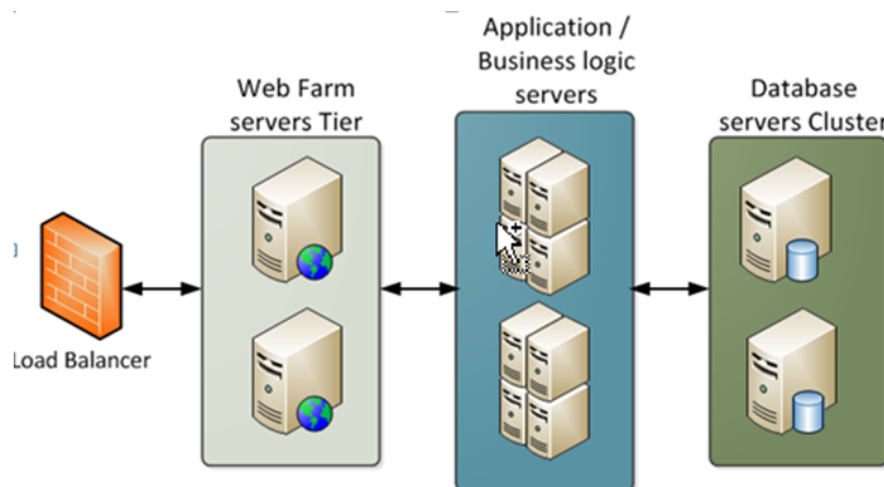
This chapter provides information on network and communication security.

### Secure Topology

The ALM platform is designed to be part of a secure architecture, and can meet the challenge of dealing with the security threats to which it could potentially be exposed.

Several measures are recommended to securely deploy ALM servers:

- Reverse proxy architecture  
One of the more secure recommended solutions is to deploy ALM using a reverse proxy. ALM fully supports reverse proxy architecture as well as secure reverse proxy architecture. See the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide* for information on configuring a reverse proxy for ALM.
- TLS/SSL communication protocol  
Transport Layer Security (TLS) and its predecessor, Secure Sockets Layer (SSL), are cryptographic protocols designed to provide communication security over the Internet. For details, see [http://en.wikipedia.org/wiki/Transport\\_Layer\\_Security](http://en.wikipedia.org/wiki/Transport_Layer_Security). URLs that require a secure connection start with HTTPS instead of HTTP. ALM supports TLSv1.2. For details on excluding weak protocols and ciphers, see this [KB article](#).
- DMZ architecture using a firewall  
The secure architecture referred to in this document is a typical DMZ architecture using a device as a firewall. The basic concept is to create a complete separation, and to avoid direct access, between the ALM clients and the ALM servers. This is especially important when opening access to ALM to external clients from outside of your organization.
- Separation between web servers, application servers, load balancers, and database servers.



## Reverse Proxy Overview

A reverse proxy is an intermediate server that is positioned between the client machine and the web servers. To the client machine, the reverse proxy seems like a standard web server that serves the client machine's HTTP or HTTPS protocol requests, with no dedicated client configuration required.

The client machine sends ordinary requests for web content, using the name of the reverse proxy instead of the name of a web server. The reverse proxy then sends the request to one of the web servers. Although the response is sent back to the client machine by the web server through the reverse proxy, it appears to the client machine as if it is being sent by the reverse proxy.

## Reverse Proxy Security

A reverse proxy functions as a bastion host. It is configured as the only machine to be addressed directly by external clients, and thus obscures the rest of the internal network. Use of a reverse proxy enables the application server to be placed on a separate machine in the internal network, which is a significant security objective.

DMZ is a network architecture in which an additional network is implemented, enabling you to isolate the internal network from the external one. Although there are a few common implementations of DMZs, this chapter discusses the use of a DMZ and reverse proxy in a back-to-back topology environment.

The following are the main security advantages of using a reverse proxy in such an environment:

- No DMZ protocol translation occurs. The incoming protocol and outgoing protocol are identical (only a header change occurs).
- Only HTTP or HTTPS access to the reverse proxy is allowed, which means that stateful packet inspection firewalls can better protect the communication.
- A static, restricted set of redirect requests can be defined on the reverse proxy.
- Most of the web server security features are available on the reverse proxy (authentication methods, encryption, and more).
- The reverse proxy screens the IP addresses of the real servers as well as the architecture of the internal network.
- The only accessible client of the web server is the reverse proxy.
- This configuration supports NAT firewalls.
- The reverse proxy requires a minimal number of open ports in the firewall.
- The reverse proxy provides good performance compared to other bastion solutions.
- Using a secure reverse proxy architecture is easier to maintain. You can add patches to your

reverse proxy as needed.



**Note:**

- The ALM application server installation does not include SSL. It is expected and recommended that the front end server (load balancer or reverse proxy) will be configured to require SSL.
- Follow security guidelines for LDAP servers and Oracle or SQL databases.
- Run SNMP and SMTP servers with low permissions.

## Communication Channels Security

ALM supports the following secure channels:

Secure Channel	How to Configure
Between client (including testing tools) and ALM server	<ul style="list-style-type: none"> <li>• In general, trust is only needed on the client. This is a trust to the authority that issued the server certificate for the ALM server.</li> <li>• If client certificate or smart card authentication is required, and there is no access to the internet, an offline OCSP (cache) server or local CRL should be used for the certificate revocation list (CRL). Otherwise, it can take a long time to log in to ALM due to timeouts in checking the online CRL.</li> <li>• There is a flag for debugging such situations that can be provided as a URL parameter, <i>cancelcrlcheck=true</i>. Providing this flag cancels the CRL check, and thus can determine if there is a CRL related issue.</li> <li>• Use the Webgate Customization tool if proxy authentication is required.</li> </ul>
Between ALM and database server	For details, see the <i>Configuring Secure Database Access</i> section of the <i>Micro Focus Application Lifecycle Management Installation and Upgrade Guide</i> .
Between ALM and LDAP server	For details, see the <i>Enabling LDAP over SSL</i> section of the <i>Micro Focus Application Lifecycle Management Administrator Guide</i> .

<b>Secure Channel</b>	<b>How to Configure</b>
Between ALM and mail server	Specify a secure port when defining the mail server.
Between reverse proxy / load balancer and ALM server	Configure the ALM server with SSL (for details, see the <i>Configuring Secure Access</i> section of the <i>Micro Focus Application Lifecycle Management Installation and Upgrade Guide</i> ). On the reverse proxy or load balancer, use a secure connection to the ALM server (for example, <code>https://&lt;almserver&gt;:8443/qcbin</code> ). For details on configuring load balancer, see <i>Example of Clustered ALM Configuration</i> section of the <i>Micro Focus Application Lifecycle Management Installation and Upgrade Guide</i> .
Between ALM and Global Search	The firewall must be configured to accept incoming TCP traffic to the Global Search port (default 18080) from the ALM server only and not from any other source.

## FAQ

### Question

Are exceptions required to be added to the firewall policy?

### Answer

Placing a reverse proxy in front of the ALM server is recommended. The list of ports to be open in the firewall for the incoming traffic is documented in the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide* and in the *Micro Focus Performance Center Installation Guide*. The only port that must be opened on the ALM server for incoming traffic is the jetty port (8080, or 8443 if you are using a secure connection).

### Question

How do I configure the ALM server in SSL using the certificate authority?

### Answer

For details, see this [KB article](#).

### Question

How do I protect the data transition between the ALM client and server?



## **Answer**

Only passwords undergo a special handling during the transition between client and servers. However, ALM passwords are only obfuscated before being transferred to avoid occasional sniffing. To secure password transfer (and data transfer in general) use a secure communication between the client machines and servers.

# Chapter 5: Site Administration Interface

This chapter provides information related to securing ALM Site Administration.

## Access to Site Administration

To disable access to the site administration interface (not including project customization) from the outside, the following URLs can be blocked at the front end (either the load balancer or the reverse proxy):

- /qcbn/SiteAdmin.jsp
- /qcbn/addins.html
- /qcbn/servlet/tdsiteadminservlet/\*
- /qcbn/debug/\*

These URLs are subject to change and must be reviewed for each new major version of ALM.

Access to project customization can be restricted at the permissions level.

To secure the site administration interface:

1. Change the site administrator password during the initial setup.
2. Use a strong password for the site administrator.

## Site Administration Actions

Action	How to Access
Site admin	Log in to Site Administration via <a href="https://&lt;server&gt;/qcbn/SiteAdmin.jsp">https://&lt;server&gt;/qcbn/SiteAdmin.jsp</a>
Project admin	Log in to ALM through the desktop client as a project administrator.

Action	How to Access
Debugging user actions	<ol style="list-style-type: none"> <li>1. Log in to Site Administration.</li> <li>2. Open the <b>Servers</b> tab.</li> <li>3. Select your server.</li> <li>4. For client actions recorded on the server, use the <b>Client Log File Settings</b>.</li> <li>5. For site administration actions, use the <b>Site Administration Log File Settings</b>.</li> <li>6. Set the <b>Log Level</b> to <i>debug</i>.</li> </ol> <div data-bbox="407 611 943 1066" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p>Client Log File Settings</p> <p><b>Log Level:</b> Warnings</p> <p><b>Max. Log Lines:</b> 10000</p> <p><b>Max. Log Days:</b> Unlimited</p> <p><b>Log File Location:</b> C:\ProgramData\HP\ALM\log\qc</p> <hr/> <p>Site Administration Log File Settings</p> <p><b>Log Level:</b> Warnings</p> <p><b>Max. Log Lines:</b> 10000</p> <p><b>Max. Log Days:</b> Unlimited</p> <p><b>Log File Location:</b> C:\ProgramData\HP\ALM\log\sa</p> <p>Miscellaneous</p> </div> <div data-bbox="431 1108 1377 1192" style="background-color: #e6f2e6; padding: 5px; margin: 10px 0;"> <p><b>Note:</b> Make sure to turn off the debug when you are done.</p> </div>
Debugging	<p>The debug console and QCSense reports are by default disabled (see the <b>DISABLE_CONSOLE_DEBUG_INFO</b> site parameter) since these features are for debug purposes and should be switched off immediately after debugging is finished.</p>
Debugging	<p>The <b>DISABLE_CONSOLE_DEBUG_INFO</b> site parameter controls access to the ALM debug info console page.</p>
Debugging	<p>The <b>ENABLE_JMX_CONSOLE</b> site parameter enables the JMX Console for debugging purposes.</p>
Debugging	<p>The <b>ENABLE_PERFORMANCE_MONITOR_BIRT_REPORTS</b> site parameter allows you to generate QC Sense reports for debugging purposes.</p>
Debugging	<p>The <b>DUMP_REQUEST_HEADERS</b> site parameter enables you to view request headers in the logs. This is helpful when you are configuring external authentication and are looking for the correct header that contains the user ID. To view this information, you must also set the site administration or client <b>Log Level</b> to <i>debug</i>.</p>

**Note:** All debug features should be used for debug purposes only and should be switched off immediately after debugging is finished.

# Chapter 6: User Management and Authentication

This chapter provides information related to user authentication.

## Authentication Model

ALM supports the following authentication methods:

- Form login
- External authentication
  - IDM-SSO (Siteminder) - with special configuration required
  - Smart Card - with special configuration required
  - Active Directory or any LDAP provider supporting the LDAP3 protocol

## Authentication Administration and Configurations

Authentication is configured using Site Administration. For details, see the *Managing ALM Users* chapter of the *Micro Focus Application Lifecycle Management Administrator Guide*.

Following are additional references:

Action	Reference
Create and manage users using OTA API	<i>Micro Focus ALM Open Test Architecture Reference</i>
Manage users using REST API	<i>ALM REST API Reference (Technical Preview)</i>
External authentication (Smart Card or SSO)	<i>Micro Focus Application Lifecycle Management External Authentication Configuration Guide</i>

## FAQ

### Question

Can ALM require account passwords that conform to corporate policy?

### Answer

LDAP integration is a recommended solution to ensure password policy support.

### Question

Which LDAP providers does ALM support?

### Answer

ALM works with any LDAP provider supporting the LDAP3 protocol.

### Question

Describe the session management and session lockout mechanisms (that is, how does ALM verify the user's session, how does ALM respond if verification fails, is there a lockout time-out or can it be configured).

### Answer

ALM manages user sessions on the application level. The session can be terminated by the site administrator at any time. All currently opened sessions can be viewed from the Site Administration console. Each session has an expiration time that can be configured by the **WAIT\_BEFORE\_DISCONNECT** site parameter for OTA APIs and the **REST\_SESSION\_MAX\_IDLE\_TIME** site parameter for REST APIs.

### Question

Can ALM limit the number of logon sessions per user and per application?

### Answer

Since ALM provides the possibility to connect from different interfaces, such as testing tools, UI, or API, there is no limit on the number of user logon sessions.

# Chapter 7: Authorization

This chapter provides information related to user authorization in ALM.

## Authorization Administration

User access to ALM resources is authorized based on the user's role and group membership. See the *Managing User Groups and Permissions* chapter of the *Micro Focus Application Lifecycle Management Administrator Guide* for details.

By default, the user is assigned to each project as **Viewer**. However, the user can be assigned to specific user groups. The same groups can exist in different projects. The membership in these user groups is per project.

The same user assigned to multiple groups receives the highest permissions. When a user belongs to multiple groups, data hiding can be affected. Check the permissions across all groups.

It is recommended to use minimal permissions when creating new groups. Make sure to select appropriate role and base permissions for the group. It is always recommended to grant minimal permissions and extend the permissions only as needed to avoid unwanted privilege escalation. For example, start with **Viewer** permissions and add additional permissions individually as needed.

## FAQ

### Question

Can ALM inherit users' information and authorization profiles from an external repository, such as LDAP?

### Answer

The information required for proper authentication is imported from LDAP.

### Question

Is Role Management (access to different views and access and edit permission to separate parts) supported?

### Answer

Yes, in ALM a permission module group represents the user role in the project. For details see the *About Managing User Groups and Permissions* section of the *Micro Focus Application Lifecycle Management Administrator Guide*.

### **Question**

Does ALM support limitations associated with user profiles and roles (for example, maximum number of group profiles, predefined profiles, and so on)?

### **Answer**

ALM supports predefined user groups. For details see the *About Managing User Groups and Permissions* section of the *Micro Focus Application Lifecycle Management Administrator Guide*.

### **Question**

Is Access Control supported at Field Level?

### **Answer**

Yes, you can define access control at the field level when defining group permissions. Also, workflow customization and data hiding further customize the access control at field level. For details, see the *Micro Focus Application Lifecycle Management Administrator Guide*.



# Chapter 8: Data Integrity

Data integrity is a critical security requirement. The data backup procedure is an integral part of this requirement.

ALM does not provide backup capabilities. Following are some important considerations:

- Backup is especially important before critical actions such as project upgrade. See the *Back Up Projects in Existing ALM Installation* section of the *Micro Focus Application Lifecycle Management Installation and Upgrade Guide* for details.
- Backup files should be stored properly according to the industry best practices to avoid unauthorized access.
- Since data backup consumes lots of resources, it is strongly recommended to avoid running backups during peak demand times.

**Note:** When backing up the database, ensure that the file repository is backed up at the same time to reflect the same system state.

# Chapter 9: Encryption Model

## Transparent Data Encryption (TDE)

ALM and Performance Center are certified to work with Transparent Data Encryption (TDE) for Microsoft and Oracle databases. Implementation of TDE can have an impact on system performance. For details, contact the vendor providing encryption.

## Full Disk Encryption (FDE)

Full disk encryption (FDE) is supported for all system components, including database, server, repository server, and client machines. Implementation of FDE can have an impact on system performance. For details, contact the vendor providing encryption.

## ALM Encryption

ALM crypto capability is used to encrypt sensitive credentials and store them encrypted in the database. Examples of sensitive data include credentials to the database server ALM uses, credentials to the LDAP and SMTP servers with which ALM integrates, and credentials for machines that contain user data.

ALM crypto implementation uses the following security configuration:

JCE crypto source, Symmetric block cipher, 3DES engine, 192 key size

LW crypto source, Symmetric block cipher, AES engine, 256 key size

## Password Encryption

User passwords are never stored, only the hash versions are stored.

## FAQ

### Question

Does ALM transmit account passwords in an approved encrypted format?

### Answer

It is strongly recommended to enable SSL on the ALM and LDAP servers to ensure secured account password transmission.

### Question

Does ALM store account passwords in approved encrypted format?

### **Answer**

User passwords are not stored at all, only the hash; but internal system passwords are stored in AES 256.

### **Question**

Does ALM use the Federal Information Processing Standard (FIPS) 140-2 validated cryptographic modules and random number generator to implement encryption, key exchange, digital signature, and hash functionality?

### **Answer**

The cryptography provider used by ALM is not FIPS validated.

### **Question**

What base product and service authentication methods are provided?

### **Answer**

ALM can be configured to support one of the following authentication methods: user name and password, LDAP authentication, smartcard, and external authentication. For details, see the *Micro Focus Application Lifecycle Management External Authentication Configuration Guide*.

### **Question**

Is SSO (Single Sign On) supported?

### **Answer**

Yes, based on the third-party SSO provider, such as Siteminder. For details, see the *Micro Focus Application Lifecycle Management External Authentication Configuration Guide*.

### **Question**

Does ALM integrate with Identity Management (via API or AD) for system and product users?

### **Answer**

ALM integrates with IDM-SSO providers, such as Siteminder, where a remotely authenticated user name is passed in the header. This requires a separate configuration. For details, see the *Micro Focus Application Lifecycle Management External Authentication Configuration Guide*.

**Question**

Are there any default vendor-supplied passwords or other security parameters embedded in ALM?

**Answer**

Yes, but the defaults can be replaced by configuration.

# Chapter 10: Logs

This chapter provides information related to logs.

## Log and Trace Model

There are several types of logs provided on the ALM server:

- Client logs
- Audit logs
- Site administration logs
- PPT (project planning and tracking) logs

In addition, the history of changes to existing objects (defects, test cases, requirements, and so on) are stored in the database as history. This information remains as long as the object itself is not deleted. For this reason, we recommend using a dedicated folder as an alternative to permanent deletion.

Recommendations:

- Pay attention to the log level and do not leave the level at Debug.
- Pay attention to log rotation.
- Restrict access to the log directory.
- If logs archiving is needed, create your own archiving policy.

## Log and Trace Security Administration and Features

Sensitive data is kept on log files. ALM provides applicative logs that can report all system events according to log level. It is the user's responsibility not to insert unprotected sensitive data to regular ALM entity fields.

The data provided in log files depends on the log level. For details, see the *Configuring Servers and Parameters* chapter of the *Micro Focus Application Lifecycle Management Administrator Guide*.

The period of time that log data is kept is configurable. The default is unlimited. The wrapper.log is configurable in the wrapper.conf file.

## Audit Logs

You can enable audit logs in ALM via the ENABLE\_AUDIT site parameter. The logs are stored in the **<ALM File repository folder>\log\Audit** folder.

The logs include the following information:

- Logins to Site Administration and ALM
- Logouts from Site Administration and ALM
- User operations:
  - Create
  - Delete
  - Disable
  - Enable
  - Update
  - Change password
- User group operations:
  - Create
  - Delete
  - Rename

## FAQ

### Question

Does ALM audit access to need-to-know information and key application events?

### Answer

The information can be obtained from the application log files or ALM entity history.

### Question

Does ALM display the user's time and date of the last change in data content?

### Answer

This information is available in ALM entity history for fields marked as History Enabled in project customization. For details, see the *Customizing Project Entities* section of the *Micro Focus Application Lifecycle Management Administrator Guide*.

### Question

Does ALM support the creation of transaction logs for access and changes to the data?

## **Answer**

The information can be found in the application logs based on the log level. For details, see the *Configuring Servers and Parameters* chapter of the *Micro Focus Application Lifecycle Management Administrator Guide*.

# Chapter 11: General Questions

## Question

How can view security bulletins?

## Answer

Via the following link:

[Security Bulletin Archive](#)

## Question

Where can customers obtain the latest information regarding security vulnerabilities in ALM?

## Answer

You can register for security vulnerability alerts via this webpage:

[Register for e-mail notification](#)



# Send Us Feedback



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