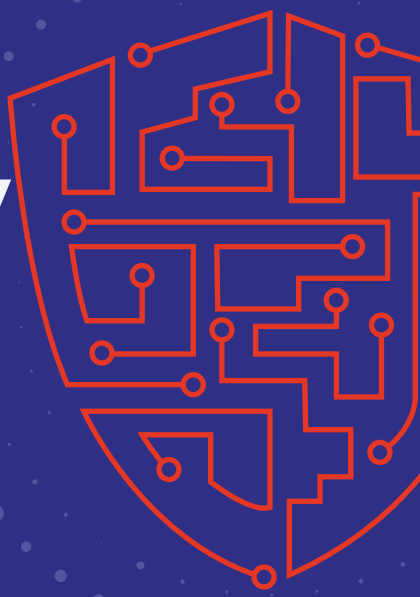
ManageEngine
Password Manager Pro

Security policy document



www.passwordmanagerpro.com

Introduction

ManageEngine crafts IT management solutions to help tens of millions of IT admins across the globe proactively address their IT challenges. Our customers turn to us to improve their security posture, and we give the highest priority to keeping our customer data secure and private, which is reflected in our products, internal culture, and processes. This document explores our security processes at the organizational and product levels. Click here to view our detailed security policy.

Skip to product security >>

Strict adherence to security hygiene

Our security, network operations center (NOC), and privacy teams are dedicated to developing and implementing a rigorous security framework, which includes periodic employee education and training, building and maintaining our defence systems, streamlining security review processes across internal teams and departments, and constantly monitoring our corporate networks to detect and mitigate suspicious activities.

Incident response and management process

At ManageEngine, we have a dedicated incident management team to monitor, track, and respond to incidents in real time. Our team aims to detect and respond to incidents with appropriate corrective measures whenever applicable.

In the event of an incident, we provide our customers with an extensive report, which answers the what, who, how, and when of the security incident accompanied by essential information surrounding our response process. Furthermore, we provide details on the measures we will implement to prevent the recurrence of the incident.

To report any security and privacy incidents, you can write to us at incidents@zohocorp.com, and we will address them immediately.

Breach notification

As a data controller, we will notify all concerned data protection bodies of a data breach within 72 hours of it coming to our notice, as required by the General Data Protection Regulation (GDPR). We also duly notify our customers as and when required, depending on specific requirements. As a data processor, we will notify the concerned data controllers of the incidents as soon as possible. For incidents pertaining to a specific user or organization, we will notify the concerned party through their business email. As for general incidents, we will notify our users through emails, blogs, forums, and social media informing them of the incident and, if required, the next course of remedial action.

Vulnerability management: Security fix, builds, and patching process

To ensure tight security, the ManageEngine Security Response Center (MESRC) uses a combination of in-house and third-party tools to identify security vulnerabilities or bugs (listed in CVE or reported on social media) across our products, corporate networks, endpoints, databases, and other assets. Identified and reported vulnerabilities that require timely remediation are logged and prioritized according to their severity. Furthermore, we run extensive risk assessments, vulnerability proofing tests, and mitigate all the vulnerable systems by providing appropriate fixes and patch builds in our security releases. More info.

Responsible disclosure

We practise proactive and collaborative IT security

Aside from reinforcing our security routine, we appreciate our customers, partners, and security enthusiasts bringing their security concerns to us, which helps us stay on top of security threats. We constantly work with industry specialists and researchers to keep ourselves abreast with recent security developments, leveraging this collective expertise to build foolproof IT security products.

Our vulnerability reporting program, Bug Bounty, is committed to working with the security community to identify, verify, and implement appropriate controls and patches to reported vulnerabilities. If you have discovered a potential security issue with our line of products, please report them to https://bugbounty.zoho.com/, or write to us directly at security@zohocorp.com.

Once a vulnerability is reported, the MESRC, along with product experts, investigates the validity, risks, and severity associated with the reported vulnerabilities and implements remediation to our users in the form of bug fixes, upgrade packs, and security patches.

Password Manager Pro: Overview

Password Manager Pro deals with administrative passwords that offer secure access to enterprise credentials and devices. Any compromise on the security of these passwords will expose organizations to serious risks. Therefore, we've designed Password Manager Pro to offer maximum security, including during application installation, user authentication, data transmission, storage, and regular use.

Secure by design

Our Software Development Life Cycle (SDLC) model mandates our Password Manager Pro engineering team to strictly adhere to our secure coding standards, which includes the following security assessment framework and steps to identify and circumvent any potential security flaws:

Software development lifecycle

Security framework

Analysis and design	Development	QA/release
Gather and analyze the requirements to identify any security flaws and loopholes. Prepare a vulnerability assessment plan to address security concerns posed by users and security analysts in the previous releases/ versions. Develop a product or feature prototype including the changes, and subject them to the change management authority for approval.	Continuous unit testing of newly developed features and modules to ensure they are aligned with user requirements and core business logic. Subject third-party code dependencies and libraries to vulnerability tests before use to ensure they are secure.	Perform integration, automation, and penetration tests to ensure that the new features or modules are secure from potential vulnerabilities/flaws. Continuous smoke testing to ensure that the core functionality of the product remains intact without opening new security loopholes. Generate security assessment reports to identify further areas of improvement. Run continuous vulnerability scans post release for timely identification and patching of vulnerabilities.

- Our repository and build infrastructure are secured with SSH/HTTPS protocol and are placed in a secure segmented network with stricter authentication and access controls.

- Our security and code frameworks are OWASP compliant and implemented at the application layer.

- Every update and new feature in Password Manager Pro is subject to internal change management policies and regular vulnerability assessments, and changes are implemented into production only if approved by the concerned change and security management authorities.

- All code changes, third-party dependencies, release bundles, and upgrade packs are subject to multiple levels of internal security review, automation and penetration testing efforts, and vulnerability scans to ensure they are well secured from logical bugs and security issues.

- The binaries are signed with a code signing certificate and the private key is securely stored in the segmented network with limited access.

- Every update and new feature in Password Manager Pro is subject to and governed by an internal change management policy, which authorizes the requested change before implementing it into production.

- The Password Manager Pro engineering team works closely with internal security teams to obtain their feedback and identify areas of improvement in terms of strengthening our security posture.

Besides the aforementioned security measures, we continuously strive to make the application more secure. The following section provides comprehensive details about the security specifications of ManageEngine Password Manger Pro.

Password Manager Pro: Security specifications

Password Manager Pro protects data at various levels and is classified into the following categories:

Security Specifications	
1. Vaulting and encryption mechanism	• AES-256 encryption • Dual encryption—first at the application and then at the database level • Encryption key and encrypted data cannot reside together • FIPS 140-2 compliant mode • SafeNet Luna PCIe HSM • Custom cryptography • Multi-tenant architecture (MSP edition)

2. Identification and authentication	**Application-level authentication** • Integration with identity stores like Microsoft AD, Azure AD, any LDAP-compliant directory service, Azure AD, and RADIUS • Local authentication mechanism using the SHA2 (SHA512) algorithm • Enforced password resets for local authentication • Smart card authentication • SAML 2.0 single sign-on **Two-factor authentication** • PhoneFactor • RSA SecurID • One-time unique password sent by email • Google Authenticator • RADIUS Authenticator • Microsoft Authenticator • Okta Verify • Duo Security • YubiKey
3. Data security and integrity	**Data transmission** • Encrypted and over HTTPS • SSL mode for client connections **Remote password resets** • Automatic, scheduled remote password reset for over 70 resource types • Remote password reset using agents • Windows service account password reset • IIS AppPool account reset • Password reset listener

	• Password reset plug-ins for custom resource types • Password resets through SSH command sets **Data storage and management** • Dual AES-256 encryption • SSH key management • SSL/TLS certificate management **Application-to-application password management** • HTTPS connections for inter-app communications • Verification through SSL certificate **DevOps password security** • Password management for CI/CD platforms: Jenkins, Ansible, Chef, and Puppet **Web GUI input validation** • Protection against SQL injections, cross-site scripting, buffer overflow, and other attacks **IP restrictions**
4. Access control measures	**Data access control** • Granular access control mechanism • Request-release workflow for password access • Ticketing system integration

5. Secure remote access	**One-click remote connections** • Windows Remote Desktop Protocol (RDP), SSH, SQL, and VNC sessions from any HTML5-compatible browser • No need for additional plug-in or agent software • Remote connections are tunnelled through the Password Manager Pro server • Passwords needed to establish remote sessions do not need to be available on the user's browser • No direct connectivity between user device and remote host • Secure file transfer to target machines **Automatic connection to websites and applications** • Browser extensions: Firefox, Internet Explorer, and Chrome • CSP best practices • Prevention of inline JavaScript execution • AJAX requests
6. Privileged session management	• Privileged session recording and playback • Real-time monitoring
7. Audit, accountability control, and real-time alerts	**Detection capabilities and non-repudiation measures** • Real-time alerts for password, user, and access events • In-depth audit trails • SIEM support • SNMP traps and syslog messages

8. Comprehensive reports	• Out-of-the-box compliance reports for HIPAA, PCI, NERC-CIP, and the GDPR • Password use and policy violation reports • User and access reports • Custom and query reports
9. Availability mechanisms	**High availability** • Redundant Password Manager Pro server and database instances • Direct TCP connection with latency for data-base replication • Password Manager Pro agents for network segments not directly reachable **Offline access** • Export passwords as an encrypted HTML file • Additional passphrase for AES-256 encryption **Mobile access** • Native apps for iOS, Android, and BlackBerry • Passphrase as encryption key • Offline access • Audit trails for data sync to mobile device **Secure cloud storage**
10. Disaster recovery	**Provision for backup** • Live and periodic database backup • Encrypted storage of backup files **Emergency access** • Super-administrator accounts for fire-call or break-glass purposes

Security features

1. Vaulting and encryption mechanism: Secure by design

1.1 Installation of master key

- Password Manager Pro uses AES-256 encryption (the strongest known encryption that the US government has approved). The key used for encryption is auto-generated and is unique for every installation. This serves as the first-level encryption key.

- The first-level encryption key is not allowed to be kept with the Password Manager Pro installation. This is done to ensure that the encryption key and the encrypted data, in both live and backed-up databases, do not reside together.

- The recommended setup is to store the key in a physically separate server or device and ensure that it is available to the server during application start-up. Subsequently, the key is held only in the server memory and never written anywhere.

- Password Manager Pro also supports periodic rotation of the encryption key, where a new key is generated and applied to the existing data and then the old key is discarded. More info

1.2 Database key

- The Password Manager Pro database is secured through a separate key, which is auto-generated and unique for every installation.

- he key for the database can be stored securely within Password Manager Pro.

- Password Manager Pro also allows users to store the database key in any secured location, leaving the key accessible to only the server.

- The RDBMS is always configured to accept only secure connections (forces SSL mode for client connections) and clients can connect only from the same local host. In cases where

the web server and the RDBMS have to reside in separate servers, the configuration enforces connections only from configured IP addresses.

1.3 FIPS-compliant mode

- Password Manager Pro can be set up to run in the FIPS 140-2-compliant mode (using a SQL server as the backend database) where all encryption is done through FIPS 140-2-certified systems and libraries.

1.4 SafeNet Luna PCIe HSM

- Password Manager Pro also provides support for SafeNet Luna PCIe HSM to give administrators the option to enable hardware data encryption.
- SafeNet HSM handles all the encryption and decryption methods, and stores the encrypted key and data directly in its hardware module, which is fitted to a computer or a network server.

1.5 Custom cryptography

- Apart from the default cryptography technique, Password Manager Pro provides the option to use custom cryptography—i.e., customizable encryption and decryption methods by implementing the Java interface PMPEncryptDecrypt with setter and getter methods—letting admins use their own key and encryption logic.

1.6 Multi-tenant architecture (MSP Edition)

- Password Manager Pro offers an MSP edition for secure data segmentation between departments, or in the case of MSP customers, between their customers. The segmentation is implemented at the level of database rows in the RDBMS.
- Each department or customer that requires data segmentation is provided a value range for the unique identity for each row. All database operations performed for that department or customers are automatically restricted to that value range. For more details, click here.

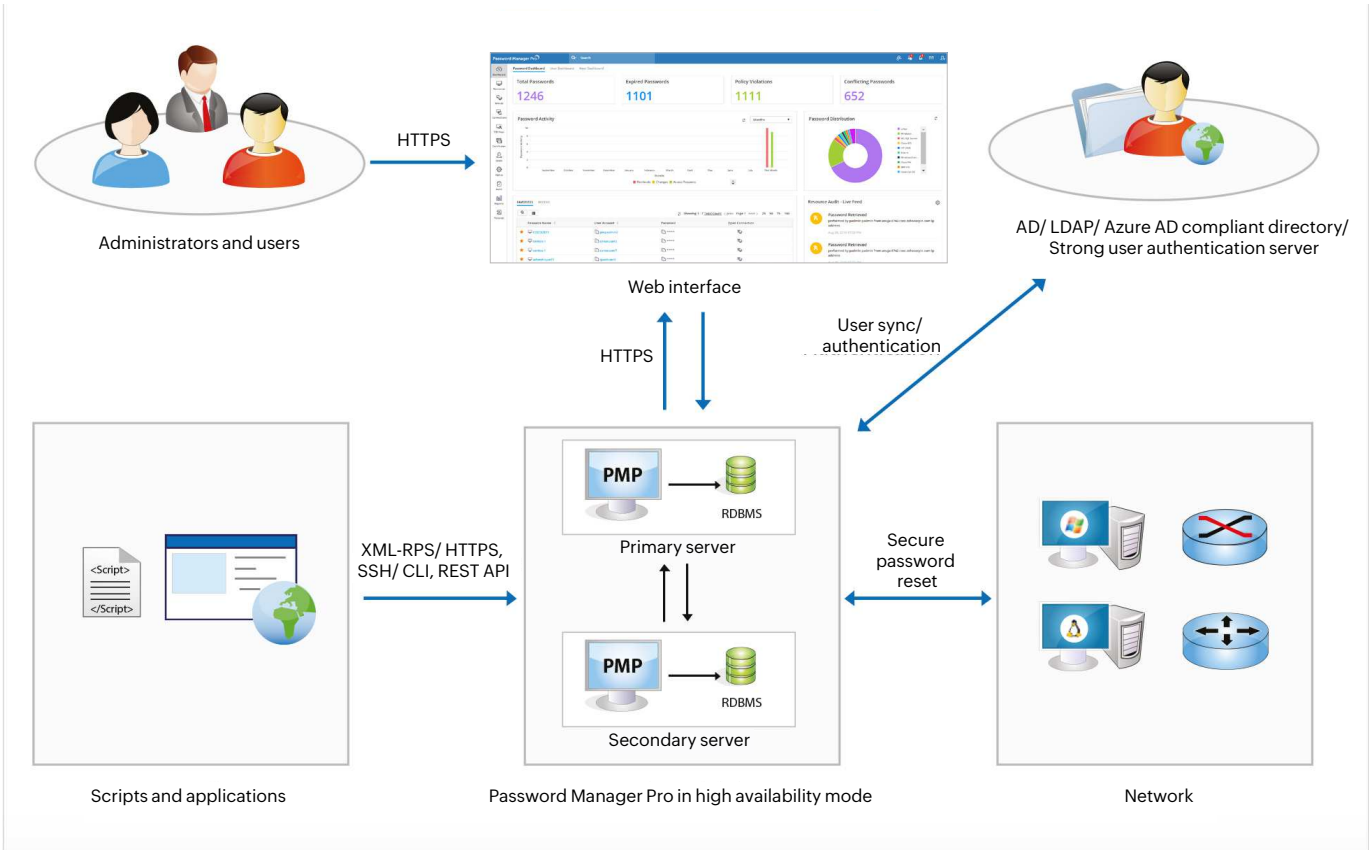


Fig 1. Product architecture

2. Identification and authentication

2.1. Strong application-level authentication: Various options

Password Manager Pro provides various options for uniquely identifying the users who will be accessing the application. All the options are complemented by various two-factor authentication provisions, which provide an extra layer of security.

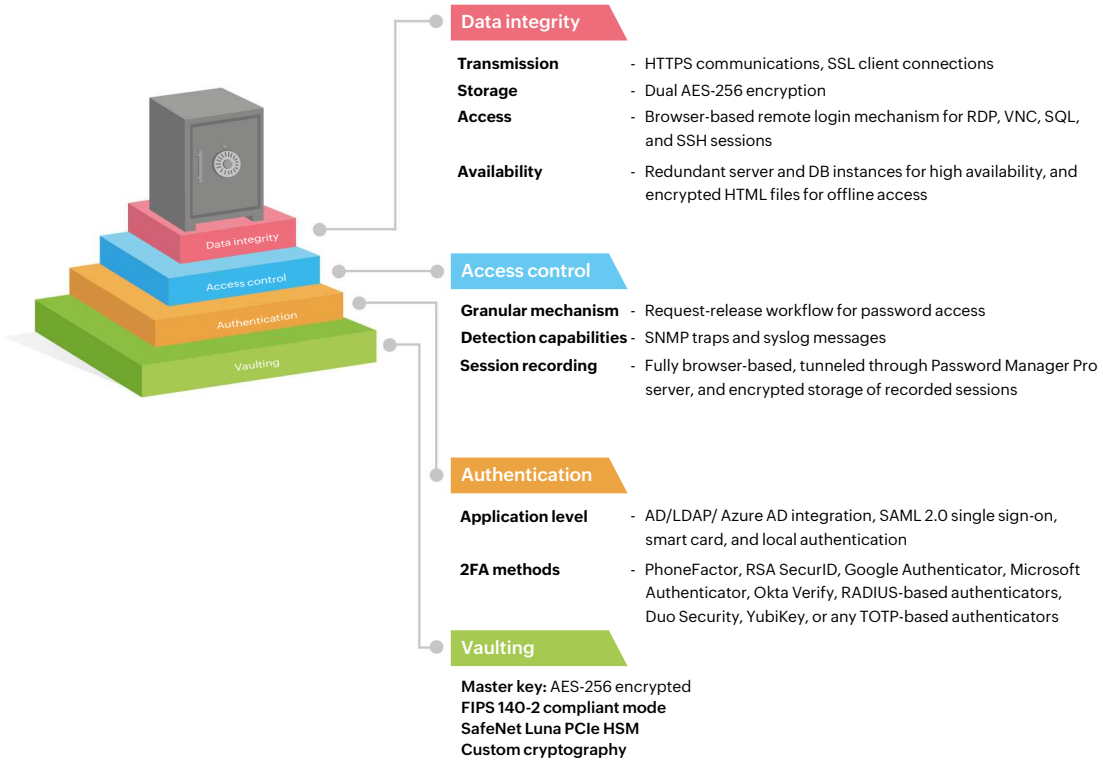
- **Integration with identity stores:** Password Manager Pro readily integrates with external identity stores like Microsoft Active Directory, any LDAP-compliant directory service (Novell eDirectory and Oracle OID), and RADIUS. Users can be imported from identity stores and the respective authentication mechanism can be leveraged. Users will be uniquely identified through their respective accounts in the identity store. More info.

- **Unique accounts and strong local authentication:** Password Manager Pro comes with a local authentication mechanism in which unique accounts are created for users. Users will be able to access the application with their credentials. Password Manager Pro employs the SHA2 algorithm to generate passwords, which ensures that each login password is unique and irreversibly secured.

- **Common access card:** Password Manager Pro supports smart card authentication. The user must possess the smart card and know the personal identification number (PIN) as well. For more details, click here.

- **Enforced password resets for local authentication:** As a security precaution, Password Manager Pro requires the user to reset the local authentication password as a mandatory first step in the following scenarios:
    - User logs in for the first time using default password
    - When the login password is the same as username
    - When the user forgets the password and receives a new system-generated password by email
- In all these scenarios, the user will be allowed to proceed only after resetting the password.

- **SAML compliant service:** Password Manager Pro offers support for SAML 2.0, which facilitates integration with federated identity management solutions for single sign-on. Password Manager Pro acts as the service provider (SP) and it integrates with the identity provider (IdP) by using SAML 2.0. The integration basically involves supplying details about the SP to the IdP and vice versa. After you integrate Password Manager Pro with an IdP, the logged-in users can log on from the respective identity provider's GUI without providing the credentials again. For more details, click here.



2.2. Assurance mechanism: Two-factor authentication (2FA)

To introduce an additional level of security, Password Manager Pro provides two-factor authentication. Users will be required to authenticate through two successive stages to access the web interface. The second level of authentication can be done using one of the following:

- **PhoneFactor:** This leading global provider of phone-based 2FA enables simple and effective security by placing a confirmation call to your phone during the login process.

- **RSA SecurID:** Integrate RSA SecurID with Password Manager Pro to generate a one-time validation token that changes every 60 seconds.

- **Unique password through email:** Authenticate by emailing users unique passwords. The passwords validate the user for one login session and then expire.

- **Google Authenticator:** Time-based numeric tokens can be received by installing the Google Authenticator app on your smart phone or tablet.

- **RADIUS Authenticator:** Leverage the authentication mechanisms of any RADIUS-compliant system, such as Vasco Digipass, to create one-time passwords.

- **Microsoft Authenticator:** Provide the six-digit token on the Microsoft Authenticator app.

- **Okta Verify:** Use the six-digit token on the Okta Verify app.

- **Duo Security:** Leverage Duo security authentication.

- **YubiKey:** Generate one-time passwords with YubiKey.

- Apart from these, Password Manager Pro supports any TOTP-based authenticator.

For more details, click here.

3. Data security and integrity

3.1 Data transmission

All data transmission between the Password Manager Pro user interface and the server are encrypted and take place through HTTPS.

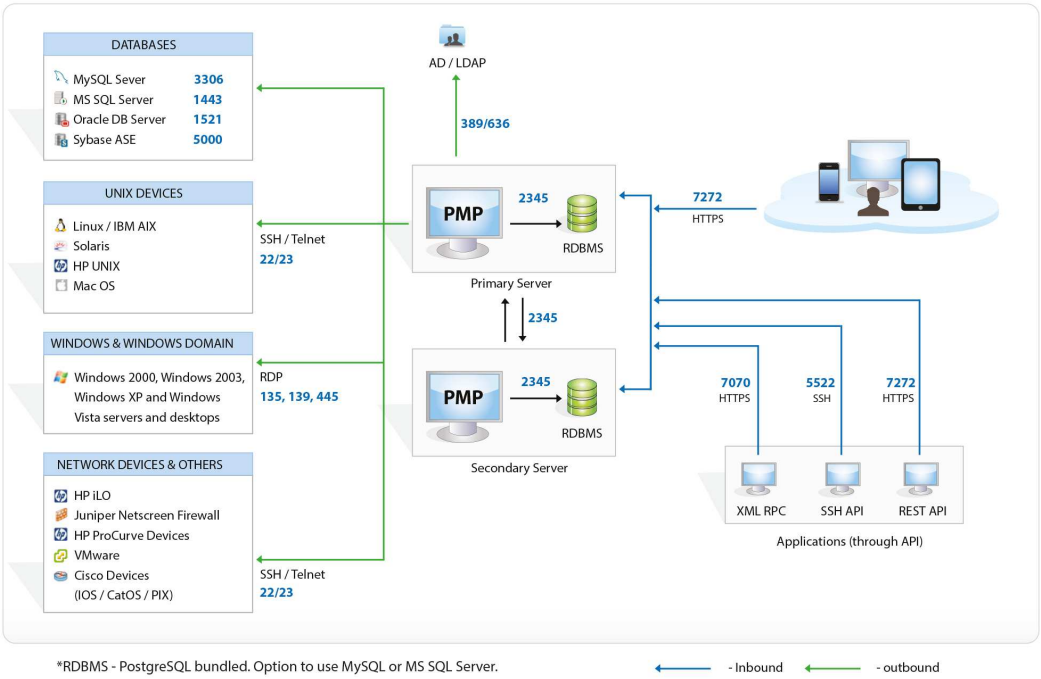


Fig 3. Data flow diagram

- All data transmission between the Password Manager Pro server and database occurs over SSL.

- For remote password reset actions, there is an option to transmit user passwords using SSH.

- **Communication between Password Manager Pro and agents**: Password Manager Pro allows agents to be deployed that can connect to the server. The communication is always one way—that is, the agent always initiates this connection. Therefore, only the server needs to be available for the agents, eliminating the need to punch firewall holes or create VPN paths for the server to reach all agents. The agent periodically pings the server through HTTPS to check whether any operation (password reset or verify password) is pending for execution. The agent will then carry out the tasks and, after completing them, will notify back the server with the results. More info.

- Communication between the primary and secondary servers is encrypted over HTTPS.

3.2 Remote password resets

- **Automatic, scheduled remote password reset:** Password Manager Pro supports agentless remote password reset for over 70 resource types out of the box, the details of which can be found here.

- **Remote password reset using agents:** Password Manager Pro agent automatically resets the password of remote resources that are not connected to the Password Manager Pro server. Once the agent is deployed in the target machines, it will communicate with the application and carry out the password changes.

- **Windows service account password reset:** Password Manager Pro identifies the service accounts associated with a particular domain account. While resetting the password of a domain account managed in Password Manager Pro, it will find the services using that particular domain account as a service account and automatically reset its password.

- **IIS AppPool account reset:** While resetting domain account passwords, Password Manager Pro will identify the IIS AppPools associated with that particular domain account and will automatically update their passwords.

- **Password reset listener:** The password reset listener is a script or executable that can be invoked whenever the password of an account is being changed or reset in the Password Manager Pro repository. The listener can be invoked even for local password changes and for resources for which remote password reset is not supported out of the box.

- **Password reset plugins for custom resource types:** The password reset plug-in allows admins to add their own implementation class and enforce automatic password resets for resources that are not supported by Password Manager Pro out-of-the-box, such as legacy resource types, in-house applications, and more. The plug-ins can also be designed to impose access controls for legacy accounts and enable automatic reset of passwords instantly upon use. This way, the passwords of these accounts will serve as one-time passwords that are reset after every use via the associated plug-in.

- **Password reset through SSH command sets:** For custom SSH-based resources, Password Manager Pro allows admins to directly add the password reset SSH commands used in the resources to the Password Manager Pro web interface, without the need for a CLI terminal. Password Manager Pro offers a default set of basic commands along with an option to add custom commands, arrange them in the order of execution, and combine them into a new command set.

3.3 Data storage and management

- Password Manager Pro is designed as a web application with a web server for business logic and RDBMS for data store.

- Upon applying appropriate initialization vectors and other standard good practices around encryption, the first-level encryption key with AES-256 algorithm is generated in the web server.

- The encrypted data is pushed to the RDBMS for storage by using SQL queries. Next, Password Manager Pro encrypts the data with built-in AES functions of RDBMS for dual layers of encryption.

- The recorded data of privileged sessions is also encrypted before storage and can be played only through the proprietary player because data is stored in the proprietary format.

- Password Manager Pro also securely stores and manages SSH keys, SSL/TLS certificates, files, documents, images, and other digital identities.

3.4 Application-to-application password management

- In the case of application-to-application passwords, Password Manager Pro exposes a web API, and the applications connect and interact through HTTPS. The application's identity is verified by forcing it to issue a valid SSL certificate, matching the details that have already been recorded in Password Manager Pro about the application. More info.

3.5 DevOps password security

- **Password management for CI/CD platforms:** Password Manager Pro helps eliminate embedded credentials in the DevOps pipeline by providing integration capabilities with various CI/CD tools, like Jenkins, Ansible, Chef, and Puppet. The integration ensures that the required credentials are retrieved securely from Password Manager Pro's vault every time a task is executed, instead of being stored in plaintext within the script files.

3.6 Web GUI input validation

- Password Manager Pro thoroughly validates all inputs in the GUI. Use of special characters and HTML code are filtered, and the application is guarded against common attacks like SQL injections, cross-site scripting, buffer overflows, and other attacks.

3.7 IP restrictions

- Password Manager Pro allows administrators to limit inbound connections to the Password Manager Pro server by enforcing IP-based restrictions to minimize unwanted traffic.

It provides an added layer of security by letting the administrator choose exactly which systems should be allowed to or blocked from accessing and sending requests to the Password Manager Pro server.

4. Access control measures

4.1 Data access control

- All data access in Password Manager Pro is subjected to the granular access control mechanism. Password ownership and sharing practices are well defined, and users get access only to authorized passwords.

- For highly sensitive assets, an extra layer of security could be enforced by forcing the authorized users to go through a request-release mechanism. Whenever the password of a sensitive IT resource needs to be accessed, a request must be made, which goes to the administrator (persons who are designated to authorize access) for approval and is released for a limited time period. More info.

- All access to passwords (who accessed what password and when) and all operations performed by users on any resource are captured in audit trails, ensuring accountability for all users and actions.

- In addition, as part of policy enforcement, organizations can automatically randomize the passwords of sensitive IT resources periodically. Password Manager Pro assigns strong, unique passwords to assets. It also analyzes the passwords of systems for required complexity and reports violations. These provisions help prevent unauthorized access to passwords, which prevents unauthorized access to systems and applications. More info.

- **Ticketing system integration:** Password Manager Pro also integrates with a wide range of ticketing systems to automatically validate service requests related to privileged access. The integration ensures that only users with a valid ticket ID can access the authorized privileged passwords. This integration also extends to the Password Manager Pro workflow, which helps in granting approvals to password access requests upon automatic validation of corresponding service requests in the ticketing system.

5. Secure remote access

5.1 One-click remote connections

- Password Manager Pro allows users to launch highly secure, reliable, and completely emulated Windows RDP, SSH, SQL, and VNC sessions from any HTML5-compatible browser without the need for additional plug-in or agent software.

- Remote connections to end points are tunnelled through the Password Manager Pro server, requiring no direct connectivity between the user device and remote host.

- In addition to superior reliability, tunnelled connectivity provides extreme security, as passwords needed to establish remote sessions do not need to be available on the user's browser. More info.

- Password Manager Pro lets users securely transfer files to target machines during remote sessions. For Windows, the files can be transferred to and from the target machine during an RDP session facilitated by RDP. For SSH sessions in Linux systems, file transfers are one-way, i.e., to the target machine only, using the Secure Copy Protocol (SCP).

5.2 Automatic connection to websites and applications with web browser extensions

- Password Manager Pro provides browser extensions for Firefox, Internet Explorer, and Chrome. The extensions have been designed to ensure the highest level of data security and privacy.

- Content Security Policy (CSP) best practices are enforced to effectively combat content injection attacks.

- Inline JavaScript execution and AJAX requests to other sites have been disabled to prevent XSS attacks.

- The highest level of security has been ensured in all stages of data retrieval and transit, including when:
    i. Validating passphrases
    ii. Retrieving encrypted data from the server
    iii. Holding passwords and other sensitive data as JavaScript variables (which can not be accessed by any external application or other extensions)
    iv. Storing other data in the background as local records
    v. Passing credentials to websites
    vi.The user logs out or remains idle for a specified time, after which local data gets completely erased.

6. Privileged session management

- All actions performed by the users during the privileged session are video recorded and stored securely for future forensic analysis. More info.

- In addition to session recording, Password Manager Pro allows administrators to monitor privileged sessions in real time. If any suspicious activity is found, the administrator can snap the connection immediately.

7. Audit, accountability control, and real-time alerts

7.1 Detection capabilities

- Password Manager Pro provides real-time alerts and notifications on various password events, including access, modification, deletion, changes in share permissions, and other specific events. More info.

- The audit module, which records every user and system action, also lets administrators configure what events need to be sent to security information and event management (SIEM) systems. The event alerts can either be sent as standard syslog messages or SNMP traps. More info.

7.2 Non-repudiation measures

- Every action and scheduled task executed by users in the user interface is audited.

- The audit information, which contains details such as who did what operation, when, and from where is stored in the same database. The audit logs are tamper-proof, ensuring non-repudiation.

- The RDBMS is always configured to accept only secure connections (forces SSL mode for client connections), and clients can connect only from the same local host. In cases where the web server and the RDBMS have to reside in separate servers, the configuration allows connections only from specific IP addresses.

8. Comprehensive reports

Information on all password and privileged access activities in your enterprise is presented in the form of comprehensive reports in Password Manager Pro. The status and summaries of the different activities such as password inventory, policy compliance, password expiration, user activity, and more are provided in the form of tables and graphs, which help IT administrators make well-informed decisions on password management.

- **Out-of-the-box compliance reports:** Password Manager Pro makes it easy to meet security audits and compliance requirements stated in various regulations with the help of compliance reports on PCI DSS, ISO/IEC 27001, NERC-CIP, and the GDPR.

- **Canned reports:** Password Manager Pro provides a range of canned reports on all password and user activities, various password and security policies, certificates, and SSH keys.

- **Custom reports:** Password Manager Pro provides the option to create customized reports out of canned and audit reports by specifying certain criteria. Custom reports are designed to bring out specific information from the Password Manager Pro database as per custom needs.

- **Query reports:** Admins can also create query reports to retrieve specific data from the Password Manager Pro database by either writing their own SQL query or customizing a SQL query from the existing reports. Password Manager pro allows SQL statements to query the database directly, fetch information from provided tables, and format the data into a report.

- For more information on reports, click here.

9. Availability mechanisms

9.1 High availability

- Password Manager Pro provides high availability to ensure uninterrupted access to passwords, which is made possible through redundant server and database instances.

- One instance will be the primary instance to which all users stay connected while the other will be secondary or standby instance. The administrators and users can connect to the primary or secondary instance to access the GUI console through a desktop browser, smart phone, or tablet.

- The primary and secondary servers can be installed geographically apart, even across continents, as long as they have a direct TCP connection with latency good enough for database replication.

- The servers can manage endpoints to which it has direct TCP connections. For managed systems that are in a DMZ or in network segments not directly reachable for the server, agents can be installed that can reach the server over standard HTTPS.

- At any point in time, data in both the primary and secondary instances will be in sync. Data replication happens through a secure, encrypted channel. More info.

9.2 Offline access

- Password Manager Pro facilitates secure export of passwords for offline access in the form of an encrypted HTML file and even synchronizes the file to their mobile device.

- Before export, the user is asked for a passphrase to secure the data with AES-256 encryption. The offline copy can be accessed only by providing the passphrase. Moreover, this passphrase is not stored anywhere in the server.

- Whenever the user makes an offline copy of the resources/passwords shared with him/her, the activity gets recorded in the audit trail.

9.3 Mobile access

- Password Manager Pro provides native apps for iOS, Android, and BlackBerry platforms. The mobile apps enable enterprise IT admins and users to securely retrieve passwords while on the go, without compromising on data security. The mobile app is as secure as the desktop installation and uses the same AES-256 encryption. All communication between Password Manager Pro and the mobile app is secured by the HTTPS protocol over SSL.

- The apps are guarded by an additional passphrase entered by the user, which is used as the encryption key. So, even if the mobile device is stolen, passwords cannot be deciphered in plain text.

- If 2FA is configured for a user, they must adhere to it while using the mobile app too.

- The apps do not let users stay logged in, requiring them to authenticate every time they access the app.

- Whenever an offline copy of data is made on the web server, the native app syncs the file to the user's device and this activity is recorded on the audit trail. After the HTML file is deleted by the user, it is also erased from the user's device as part of the synchronization.

9.4 Secure cloud storage

- Apart from the option to export passwords to a spreadsheet in plain-text or an encrypted HTML file, Password Manager Pro provides cloud storage provisions to enable anytime, anywhere access to passwords in a secure way. This can be done by enabling auto-synchronization of the encrypted HTML file to the authorized users' mobile devices via Dropbox, Amazon S3, and Box accounts.

10. Disaster recovery

10.1 Provision for backup

- Password Manager Pro offers provisions for both live backup of the database and periodic backup through scheduled tasks.

- All sensitive data in the backup file is stored in the encrypted form in a ZIP file under the <Password Manager Pro_Home/backUp> directory or under the destination directory configured by the admin.

- The backup copy will not have the encryption master key because Password Manager Pro does not allow both the encryption key and the encrypted data in both live and backed-up database to reside together. Unless one presents the encryption key, sensitive data cannot be deciphered from the backup copy.

- While a database backup operation is in progress, no configuration change can be performed in Password Manager Pro. More info.

10.2 System failure and recovery

- In the event of a disaster or data loss, users can quickly make a fresh install of the same version of Password Manager Pro and restore the backed-up data to the database.

- Disaster recovery for Password Manager Pro with MS SQL Server as the back-end database can be performed only with the master key initially used for encryption upon installation. More info.

10.3 Emergency access

- For break-glass purposes, one or a few administrators can be designated as super administrators who will have unconditional access to all information in the system, including all passwords added to the system by other administrators.

- Administrators cannot designate themselves as super administrators. This has to be approved and carried out by one or more other administrators.

- When the system has one or more super administrators configured, all the administrators will be notified about it.

- After an admin becomes a super admin, they can log on to Password Manager Pro and enable the option to prevent the creation of additional super admin accounts.

11. Build and patching process

- The Password Manager Pro team works closely with the MESRC to run mandatory vulnerability scans and penetration tests before every major release to ensure that the latest builds are completely foolproof. In addition, the team also runs continuous vulnerability assessments on these builds to ensure that they are free from any new vulnerabilities.

- Users are notified immediately to upgrade to the latest version as and when there is a new security patch or update.

- In the event of a security concern or escalation, users are requested to submit a detailed report on the vulnerability or security bug. Meanwhile, the product team evaluates the validity and risks associated with the bug and prioritizes the release based on the severity.

- Hotfix builds are released within 24 to 72 hours of reporting of an issue depending on the severity of the issue, and the team will approve the builds for release only after they have been tested for further vulnerabilities or bugs.

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