Hewlett Packard Enterprise

HPE Workload Aware Security for Linux 1.0 version Troubleshooting guide

Abstract

This guide provides the troubleshooting tips for the installation, setup and different operation of HPE Workload Aware Security for Linux (WASL) version 1.0 product.

Part Number: P04100-001 Published: December 2017

Edition 1

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1 Read before Troubleshooting

It is advised to go through the HPE Workload aware security For Linux (WASL) Install and Setup Guide as well as User guide, before visiting this troubleshooting guide. This troubleshooting guide assumes that users already has an understanding of the WASL product.

2 Troubleshooting SMS Setup

WASL SMS Setup is performed by the menu driven command: "/opt/hpe/wasl/sms/tools/wasl_sms.sh -setup". Errors during setup gets displayed on the console as output of this command.

For more information on how to remove the WASL product and do the fresh installation, see the WASL Install and Setup guide.

Note: All the data related to any previous SMS installation will be lost if you completely remove WASL SMS product.

Following are some of the errors and possible ways to make the WASL setup work:

2.1 Setup fails with "Couchbase is not installed" message

WASL SMS packages needs Couchbase Server for storing data related to WASL. In Typical setup of WASL, it is expected that couchbase-server-community that is provided as a part of WASL packages is installed before installing any other WASL packages. This error message is see if couchbase-server-community is not installed.

If you see this error and want to perform typical setup, it is advised to remove all the packages related to WASL and install freshly, ensuring that couchbase-server-community packaged is installed first before any other package.

2.2 Setup fails with "This setup type is not valid with enterprise version of Couchbase Server" message

In typical setup of WASL, it is expected that couchbase-server-community that is provided as a part of WASL packages is installed before installing any other WASL packages. This error message is see if couchbase-server-community is not installed but an enterprise version of Couchbase Server is installed on the system.

If you see this error and want to perform typical setup, it is advised to remove all packages related to WASL and Couchbase. Install the WASL and related packages freshly ensuring that couchbase-server-community packaged is installed first before any package.

2.3 Setup fails with " 'waslsms' user is not part of 'couchbase' group" message

In typical setup of WASL, it is expected that couchbase-server-community is installed before any other WASL packages. Some of the WASL packages uses the couchbase group created by couchbase-server-community package.

If you see this error and want to perform typical setup, it is advised to remove all packages related to WASL and install it freshly, ensuring that couchbase-server-community packaged is installed first before any package.

2.4 Setup fails with "Bucket with given name already exists" message

This errors is seen during typical setup if the previous typical setup operation has failed in middle. If you see this error and want to perform typical setup, it is advised to remove all packages related to WASL and install it freshly.

2.5 Setup fails with "The system RAM identified to setup Couchbase Server is <max-size> MB" message

This message appears in typical setup if the RAM size is less than the required RAM size as defined in the WASL Install and Setup guide. Install WASL on a system with the correct RAM size to avoid this issue.

2.6 Setup fails with "Couchbase Error: Generic network failure" message

This message usually comes while doing advanced setup of WASL. WASL will not be able to connect to the Couchbase Server on the IP address and port specified during the WASL advanced setup thus result in this error message. Ensure that the Couchbase Server is running and listening on the port specified to avoid the issue. Also ensure that connection to Couchbase Server is not blocked by any firewall.

This message can also appear in typical setup if Couchbase Server is not running. Check if couchbase-server service is started by the command, "service couchbase-server status". If the service is not running, start the service using the command "service couchbase-server start". Do WASL SMS setup after starting the couchbase-server service successfully.

2.7 Setup fails with "Couchbase Error: Authentication failed" message

This message usually comes while doing advanced setup of WASL. This message appears if WASL will be able to connect to the Couchbase Server on the IP address and port specified during the WASL setup but will not be able to get authenticated using the Couchbase bucket name and password provided. Ensure that the correct bucket name and passwords are provided for the advanced setup to complete.

2.8 Setup fails with "Prior setup detected. Exiting HPE WASL SMS setup without any changes" message

This message indicates that SMS setup is already complete on the node. SMS can be setup only once.

There are chances that you see this message even if setup of SMS certificates has failed during earlier SMS setup. In such cases, you can do a SMS certificate setup separately by the command: "/opt/hpe/wasl/sms/tools/wasl_sms.sh -setup_cert".

In case you want to redo the setup completely once again, then the WASL product has to be removed and installed freshly.

2.9 Setup fails with "Unsupported encryption algorithm" or "Unsupported pbkdf algorithm" or "unsupported RSA key size" message

These errors usually happen if you have tried to override the setupConfig.sym.alg, setupConfig.sym.pbkdf, setupConfig.rsa.keysize or setupConfig.rsa.key_enc_alg parameters to a wrong value. The default setup parameter of WASL SMS is available in /opt/hpe/wasl/sms/config/default_setupConfig.js file and works for most of the cases. These parameter can be overridden in /opt/hpe/wasl/sms/config/custom_setupConfig.js custom setup configuration file before invoking WASL SMS setup. Check if you have overridden a parameter in custom setup configuration file and if these values are correct.

2.10 Setup fails during importing of signed certificate

Check the permission and ownership of the Path as well as the certificates before importing. The certificates should be accessible by 'waslsms' user. Once you have corrected any issues, you can then re-import the signed certificate using the '/opt/hpe/wasl/sms/tools/wasl_sms.sh -setup_cert' command.

3 Troubleshooting SMS Startup and run

SMS can be started using "service hpe-wasl-sms start" command or by invoking "/opt/hpe/wasl/sms/tools/wasl_sms.sh -start [-use_stash_file]" command.

3.1 WASL SMS failed to start during system reboot or by using "service hpewasl-sms start" command

Usually no message is displayed on the console when WASL SMS is started using "service hpe-wasl-sms start" command. Most of these messages gets redirected to following files:

- /var/log/hpe_wasl_sms/wasl_sms_daemon.log
- /var/log/hpe_wasl_sms/wasl_sms.log
- /var/log/boot.msg

You can look at the contents of these files and troubleshoot the issue based on the other troubleshooting tips of this section.

The service "service hpe-wasl-sms start", will internally call "/opt/hpe/wasl/sms/tools/wasl_sms.sh -start -use_stash_file" command to start WASL SMS.

This command requires the stash file: "/opt/hpe/wasl/sms/data/stashfile" to be present and owned by "waslsms" user and group. This file will not be created, if you have choose not to do so during WASL SMS setup. In case you want to create it freshly, you can run the command "/opt/hpe/wasl/sms/tools/wasl_sms.sh -create_stash_file" (This command requires you to enter the master password, in order to store this password in the stashfile). In case you want to reset the master password, you can use the "/opt/hpe/wasl/sms/tools/wasl_sms.sh -reset_password" command (You need to have the old master password or the recovery password, to reset the master password).

3.2 SMS fails to start giving "Couchbase Server is not running" message

Check if couchbase-server service is started by the command, "service couchbase-server status". If the service is not running, start the service using the command "service couchbase-server start". Start WASL SMS, after starting the couchbase-server service successfully.

3.3 SMS fails to start giving "Couchbase Server bucket 'wasl_sms_bucket' is not accessible at cluster URL '<cluster-url>'." message

Check if couchbase-server service is running by the command, "service couchbase-server status". If the service is running, check if the Couchbase Server is listening to the port number in the configuration parameter 'config.db.cluster_url' in either '
/opt/hpe/wasl/sms/config/auto-gen/setup_config.js' or ' /opt/hpe/wasl/sms/config/custom_config.js' using 'netstat –an | grep
<configured-port-number>'. If the Couchbase Server is not listening to this port number find out the port number to which
Couchbase Server is listening and configure the same in the configuration parameter 'config.db.cluster_url' in 'custom_config.js' file.

3.4 SMS fails to start and wasl_sms.log file has "Master password may be incorrect" message

If you are starting SMS from command line, ensure that you provide the right master password, at the prompt.

./wasl_sms.sh -start
Enter the master password: ********
Failed to start WASL SMS

For more information, see the /var/log/hpe_wasl_sms/wasl_sms.log file.

If you have forgotten the master password but a recovery password was configured during the setup, then use the script 'opt/hpe/wasl/sms/tools/wasl_sms.sh -reset_password' to reset the master password.

3.5 SMS fails to start and wasl_sms.log file has "The configured HTTP/HTTPS port (<port_number>) is already in use by another application" message

The <port_number> is in-use by another application. Identify a port not in-use and add the new port number configuration parameter 'config.web.https_port=<new-port_number>' in ' /opt/hpe/wasl/sms/config/custom_config.js' file before starting SMS. SMS will make the web interface on this newly configured port after starting.

3.6 SMS fails to start and wasl_sms.log file has "Exception during certificates processing" message

The certificate is used by SMS to start the WEB service and enable HTTPS connections. To overcome this issue, try doing a setup of SMS certificates by the command: "/opt/hpe/wasl/sms/tools/wasl_sms.sh -setup_cert" before starting SMS.

3.7 SMS fails to start and wasl_sms.log file has "Authentication failed. You may have provided an invalid username/password combination" message

This can happen in case of advanced SMS setup if the bucket password of Couchbase Server is changed but SMS is not aware of this password. Change the bucket password in SMS using '/opt/hpe/wasl/sms/tools/wasl_sms.sh -reset_password' to the correct bucket password. In case you want to change the Couchbase Server bucket password itself, refer to Couchbase Server documentation under the section 'Access Control' (https://developer.couchbase.com/documentation/server/4.5/clustersetup/change-settings-bucket.html) on how to change the Couchbase Server bucket password.

3.8 SMS fails to start and wasl_sms.log file has "parameter in config.js set to an invalid value" message

These errors usually happen if you have tried to override the SMS parameters like config.web.secure_protocol, config.web.ciphers etc. to a wrong value. The default setup parameter of WASL SMS is available in /opt/hpe/wasl/sms/config/default_config.js file and works for most of the cases. These parameter can be overridden in /opt/hpe/wasl/sms/config/custom_config.js custom configuration file before starting WASL SMS. Check if you have overridden a parameter in custom configuration file and if these values are correct.

3.9 WASL SMS runs for some time and then stops

Check if couchbase-server service is started by the command, "service couchbase-server status". If the service is not running, start the service using the command "service couchbase-server start". Start WASL SMS, after starting the couchbase-server service successfully.

4 Troubleshooting SMS password reset

SMS password can be reset by running the command "/opt/hpe/wasl/sms/tools/wasl_sms.sh -reset_password". You need either the master password or recovery password to reset any password. If stash file (/opt/hpe/wasl/sms/data/stashfile) is configured during WASL SMS setup, then the master password in this file will be used. Following password can be reset using "/opt/hpe/wasl/sms/tools/wasl_sms.sh -reset_password":

- Master password
- Recovery Password
- Couchbase cluster password (If typical setup is done on WASL)
- Couchbase bucket password (If typical setup is done on WASL)
- Change Couchbase bucket password details stored in SMS and used to connect to Couchbase Server (If Advanced setup is done on WASL)

For doing any password reset operation, the Couchbase Server should be running and allowing the connections to happen as some of the data (like keys) will be encrypted using old password and stored on the Couchbase Server. This data needs to be decrypted and encrypted using new key.

The reset password also uses algorithms for doing encryption and hashing of keys with the new password. If any custom changes are done to the algorithm by changing the configuration files (/opt/hpe/wasl/sms/config/custom_config.js or /opt/hpe/wasl/sms/config/custom_setupConfig.js), then check that these changes are correct (check if config.sym.alg, config.sym.pbkdf, setupConfig.rsa.keysize, setupConfig.rsa.key_enc_alg parameters are set to correct values).

4.1 Reset password fails with "Couchbase Error: Generic network failure" message

This message usually comes if WASL is configured using advanced setup. WASL will not be able to connect to the Couchbase Server on the IP address and port specified during the WASL setup thus result in this error message. Ensure that the Couchbase Server is running and listening on the port specified to avoid the issue. Also ensure that connection to Couchbase Server is not blocked by any firewall.

The Couchbase Server port number configured during setup will be stored in parameter 'config.db.cluster_url' in '/opt/hpe/wasl/sms/config/auto-gen/setup_config.js' file. You can override this parameter to a different port if required by setting the 'config.db.cluster_url' in '/opt/hpe/wasl/sms/config/custom_config.js' file to a different value.

This error message can also appear in typical setup if Couchbase Server is not running. Check if couchbase-server service is started by the command, "service couchbase-server status". If the service is not running, start the service using the command "service couchbase-server start".

4.2 Reset password fails with "Couchbase Error: Authentication failed" message

This message usually comes if WASL is configured using advanced setup and you are trying to reset the Master or Recovery password of SMS. If you see this error, it indicates that the bucket Password configured on the Couchbase Server is modified and SMS does not know the latest Couchbase Server bucket password. Change the Couchbase Server bucket password that is stored in SMS first using "wasl_sms.sh -reset_password" before resetting the Master or Recovery password.

4.3 Reset password fails with "ERROR: command: cluster-edit" or "ERROR: command: bucket-edit" or "ERROR: unable to bucket-edit" messages

This message usually comes if WASL is configured using typical setup and Couchbase Server is not up and running.

Check if couchbase-server service is running by the command, "service couchbase-server status". If the service is running, check if the Couchbase Server is listening to the port number in the configuration parameter 'config.db.cluster_url' in either '
/opt/hpe/wasl/sms/config/auto-gen/setup_config.js' or ' /opt/hpe/wasl/sms/config/custom_config.js' using 'netstat –an | grep
<configured-port-number>'. If the Couchbase Server is not listening to this port number find out the port number to which
Couchbase Server is listening and configure the same in the configuration parameter 'config.db.cluster_url' in 'custom_config.js' file.

4.4 Reset password process does not terminate on pressing 'ctrl-c' at the password prompts

It is recommended that you complete the password reset operation once started as terminating the program in middle may make take SMS data to an inconsistent state. However, if you still want to terminate the process half way, you can do so by logging in from a separate terminal and issuing a kill on the process/sub process running the specific "wasl_sms.sh -reset_password" command.

5 Troubleshooting connection to WASL SMS via browser

5.1 Unable to connect to WASL SMS from browser

There can be multiple reasons on why connection is not possible from a browser to WASL SMS:

- Check if the WASL SMS is started and running properly.

- Run "ps -ef | grep -i was!" command on the SMS node and check if ""/opt/hpe/wasl/nodejs/usr/bin/node /opt/hpe/wasl/sms/server/server.js" process is running
- o If SMS is not started, start the WASL SMS product
- Check if the Port used by WASL SMS is not used by other application.
 - Run "netstat -anp | grep -I <port_number>" to identify the program that is listening on the SMS port. Ensure that this
 program is the /opt/hpe/wasl/nodejs/usr/bin/node program.
- Check if the Port number and the IP address on which WASL SMS is listening is not blocked by any firewall

5.2 Connection from a browser is not established and we see 'ERR SSL VERSION OR CIPHER MISMATCH' error in browser

SMS uses TLS 1.2 protocol and secure ciphers by default for SSL HTTPS connection handshake. In case the browser is not supporting this SSL protocol version or the ciphers, other SSL protocol version and ciphers can be enabled in SMS. Overriding the 'config.web.ciphers=<valid-cipher>' and 'config.web.secure_protocol=<valid-protocols> in '/opt/hpe/wasl/sms/config/custom_config.js ' file and restart WASL SMS to change the SSLciphers and protocol.

For a list of < valid-protocols >, see https://www.openssl.org/docs/man1.0.2/ssl/ssl.html#DEALING-WITH-PROTOCOL-METHODS. For a list of <valid-cipher>, see https://nodejs.org/api/tls.html#tls_modifying_the_default_tls_cipher_suite.

5.3 Browser pages stalls showing "HPE Workload Aware Security for Linux is almost ready..." message, or after hitting "Restart" from setting menu of SMS

These are caching issues. You will see a User icon on the browser in these case. Use this icon to logout of SMS and re login once again to get the SMS pages properly.

5.4 Browser shows that the SMS certificate has expired

Check the certificate that is provided on the browser. If the certificate is expired, check the Date/time on the SMS node (using date command) and set it correctly if it is not correct. Check the Date/time on the system from which you are browsing to SMS node and set it correctly if it is not correct. If the certificate expired message is still appearing, either regenerate the SMS certificate or import a new signed certificate to SMS using '/opt/hpe/wasl/sms/tools/wasl_sms.sh -setup_cert' command.

6 Troubleshooting Workload Management and Operation

6.1 Workload Registration, Editing or Operation shows "Failed to connect to the node"

This problem happens if the SMS is unable to SSH to the node using the credentials provided to SMS. Ensure that the SSH Daemon service is running on the node and the service is reachable from SMS node. Also ensure the user name and passwords provided during workload registration is correct. If they are different, edit the Workload and provide the correct username and passwords.

6.2 Workload Registration, Editing or Operation shows either "sudo: no tty present and no askpass program specified" status or "User does not have sudo privileges" status

This can happen due to two reasons:

- An automatic installation of WASL Node Packages from SMS is tried, but the Operating system user mentioned under "Host Username" of "Add Node" screen do not have enough privileges to install the WASL Node packages.
- WASL Node packages are not installed and setup properly

See the "Node Packages Installation and setup" section of WASL Install and Setup guide to perform an installation of Node packages and setting up the correct privileges (sudoers) for the users.

6.3 Workload Registration, Editing and Policy deploy shows "Failed to perform the operation on the remote node." Status indicating problem in creating directory or changing to specific directory

Check if the user provided in the "Host Username" during workload registration has a proper home directory and proper write permission on this directory.

User might have deleted the policy files inadvertently on end node or changed the permissions of the policy directories. Try Undeploying the Policy and redeploying it once again.

6.5 Workload Registration, Editing or Operations shows "Failed to encrypt password" message

During Workload Registration, the passwords of the Workload is encrypted before storing into the database. The above error message will usually come if any custom changes are done to the algorithm that is used to encrypt these passwords. Check if config.sym.alg, config.sym.pbkdfg parameters are overridden in the custom configuration file: /opt/hpe/wasl/sms/config/custom_config.js and if their values are correct.

6.6 Operations on SAP HANA (Specifically Workload registration and Editing) shows "SAP HANA DB User does not have privileges" status

Check the Privileges of the "SAP HANA DB Username" that is provided to the SAP HANA workload element. Ensure that this user has the correct privileges on the SAP HANA systems. For more information on the required privileges, see the *WASL User Guide* "Add or Register Workload" section.

6.7 Operations on SAP HANA (Specifically Workload registration and Editing) shows "Could not connect to SAP HANA DATABASE" Status

Verify the details provided while registering the SAP HANA workload element. Also check if SAP HANA is running on the end node.

6.8 SAP HANA Workload Registration/Editing shows "WASL library for HANA not found, please install the library" status?

The WASL HANA node packages might not be installed. Check the License you have obtained for using WASL. WASL HANA related packages are shipped only with the advanced license. Try reinstalling the WASL Node packages once again with all the packages. (For more information, see the WASL Install and Setup guide).

6.9 SAP HANA Workload Registration/Editing shows "SAP HANA python client not found" status

WASL SAP HANA packages uses SAP HANA Client - HDB_CLIENT provided with SAP HANA database to connect to SAP HANA database. You can check if the Python PyDBAPI file: /usr/sap/hdbclient/hdbcli/dbapi.py is present to confirm if SAP HANA Client - HDB_CLIENT is installed on the SAP HANA node. Install this package to avoid this issue. Alternatively, WASL can also use the SAP HANA's <SID>adm OS user account (<SID>is the system identifier of SAP HANA), which does not require SAP HANA Client - HDB_CLIENT to be installed. You can get more details on this by reading the "Add or Register Workload" section of WASL User guide.

6.10 SAP HANA Workload Registration/Editing/Operation fails with "Could not connect to SAP HANA DATABASE. SSL key store cannot be found" Status

SAP HANA can mandate SSL only connections to its database (by using the sslenforce parameter in its global.ini file). In such cases, WASL will require SSL certificates that are signed by the SAP HANA server certificates to connect to SAP HANA. This process is automatically done during the WASL HANA node installation.

If you see the above error message, then the certificates for WASL is not generated properly or it has expired. You can regenerate the certificates once again by Editing the Workload and selecting "Install Packages" option and save the workload from SMS. Alternatively, you can setup the certificates on the end SAP HANA node by invoking the "/opt/hpe/wasl/core/bin/wasl-setup --waslhanauser_cert_gen --sidadm=<sid>adm" command. For more information, see the WASL Install and Setup guide.

6.11 SAP HANA Workload Registration/Editing/Operation fails with "Validate of SAP HANA hardening failed." Status

Check the following log files on the end node: /var/opt/hpe/wasl/core/log/hana/hanalog.txt to identify the issue.

6.12 How to enable debug at end node

Edit the /opt/hpe/wasl/core/config/user_config.py file and Set log_level to DEBUG, to enable debugging on end node. You can find the log in subdirectories of /var/opt/hpe/wasl/core/log/.

6.13 SAP HANA Workload Registration/Editing shows "SSL Certificate generation for user waslhanauser failed" Status

If you see the following messages in "additional details" section on the status, then verify the System ID entered while registering the workload:

...

chown: invalid user: '<sid>adm' sudo: unknown user: <sid>adm sudo: unable to initialize policy plugin

•••

Correct the System ID and try registering or editing the workload again.

6.14 Workload Operations gives error and workload goes into an "Unknown" or "Offline" state. No operations are permitted after this apart from Edit or Disable workload

Workload can go into Unknown or Offline state due to various reasons like the end Node System going down or connection to the end node system getting lost while the operation is in progress. Once the end node is active once again and reachable to the SMS system, edit the Workload containing this Node and save the Workload. This enables all the Operation (Like Evaluate, Remediate, Rollback, Reset etc) on the Workload.

6.15 Workload Operation shows "Lock request timed out. Another instance of WASL seems to be running" status

This is a rare occurring issue and happens on Workload where a large number of policies is deployed and all these policies are either evaluate/remediated in one go. Some of the Workload operation might timeout.

WASL ensure that only one of the WASL operation is in progress on a Node and the rest of the operations are made to wait. This wait time happens until the specific WASL operation is run or until a timeout value is reached. This timeout is set via setting HARDENING_LOCK_TIMEOUT on the end Node. The value of this is currently set to 3600 seconds (20 minutes) in /opt/hpe/wasl/core/config/default_config.py file on end Node. If required, you can override this by setting HARDENING_LOCK_TIMEOUT =<new_timeout_in_seconds> in /opt/hpe/wasl/core/config/user_config.py file on end Node to avoid the error seen above.

7 Troubleshooting User Management

7.1 Unable to delete users from SMS

SMS does not allow users who have already logged in, from being deleted. This is done for auditing reasons, so that all the activities done by this user can be mapped back. If required, you can go ahead and De-activate a user from SMS.

8 Troubleshooting Policy Management

8.1 Import or Copy policy fails

If you are importing a policy, check if the policy is having the correct format and size as requested in the policy import screen:

- 1. The names of archived directory, XCCDF file, JSON file and the resultant archive file should be same.
- 2. The naming conventions of the profiles inside the XCCDF file should comply with xccdf_[^_]+profile.+ syntax as per XCCDF 1.2 Specification.
- 3. JSON file follows the guidelines mentioned in the documentation.
- 4. Upload file should be less than 100MB and must be a .TAR.GZ or .ZIP file.

Apart from this for both Importing and copying a policy, check the disk space on the partition holding /var/opt/hpe directory on SMS node. Ensure that there is sufficient space left on this partition.

If you are importing a policy, ensure that the Profiles inside the XCCDF file getting imported has unique title, not matching with any policies on SMS. The profile title will be used to uniquely identify the Policy in SMS.

8.2 Policy reload fails

Check the syntax of the tailoring XML file which you are trying to reload and correct any issues. Also, check the ownership and permission of the tailoring file. The file should be owned by waslsms user and group and the file should be writable/readable by owner and group user.

8.3 No Policies are listed in the Policy page

During WASL SMS start-up, policies are read from Couchbase Server. If the policies are not listed in the policy page, then verify the WASL startup log file /var/log/hpe_wasl_sms/wasl_sms.log for any issues in loading the policies. You can also try restarting the WASL SMS.

8.4 Unable to delete the policy

The default policies shipped with WASL cannot be deleted. The policy which are define by user can only be deleted before it is deployed on any workload. Once the user defined policy is deployed on any workload, that policy cannot be deleted but can only be disabled. This is done for auditing reason.

9 Troubleshooting Activity viewing

9.1 Scrolling down the activity pages takes a lot of time and usually shows an in progress icon for a long duration

The activity page might be having too many activities and takes time to load. In case you are interested in activities for a specific duration, you can apply the "From Date" and "To Date" filter, to get the activities displayed quickly. You can also apply other filters based on the requirement.

10 Troubleshooting Setting changes

10.1 Changes to "Maximum Password Length" does not impact the password length in change password as well as in new user creation

The Modified "Maximum Password Length" will not impact for the current session. You have to restart the Management station to impose the change.