



# Unified Storage Series White Paper

## WORM



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# Preface

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## About This Manual

This manual provides technical guidance for implementation of WORM feature on QSAN Unified Storage system, and it is intended for use by system administrators, NAS designers, storage consultants, or anyone who has purchased this product and is familiar with servers and computer networks, network administration, storage system installation and configuration, network attached storage management and relevant protocols.




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**CAUTION:**

Do NOT attempt to service, change, disassemble or upgrade the equipment's components by yourself. Doing so may violate your warranty and expose you to electric shock. Refer all servicing to authorized service personnel. Please always follow the instructions in this owner's manual.

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## Related Documents

There are related documents which can be downloaded from the website.

- QIG (Quick Installation Guide): <https://www.qsan.com/en/download.php>
- Compatibility Matrix: <https://www.qsan.com/en/download.php>
- QSM User Manual: <https://www.qsan.com/en/download.php>
- Hardware Manual: <https://www.qsan.com/en/download.php>
- Online FAQ: <https://www.qsan.com/en/faq.php>
- White Papers: <https://www.qsan.com/en/download.php>
- Application Notes: <https://www.qsan.com/en/download.php>

## Technical Support

Do you have any questions or need help troubleshooting a problem? Please contact QSAN Support, we will reply to you as soon as possible.

- Via the Web: [http://www.qsan.com/en/contact\\_support.php](http://www.qsan.com/en/contact_support.php)
- Via Telephone: +886-2-7720-2118 extension 136  
(Service hours: 09:30 - 18:00, Monday - Friday, UTC+8)
- Via Skype Chat, Skype ID: qsan.support  
(Service hours: 09:30 - 02:00, Monday - Friday, UTC+8, Summertime: 09:30 - 01:00)
- Via Email: [support@qsan.com](mailto:support@qsan.com)

## Information, Tip and Caution

This manual uses the following symbols to draw attention to important safety and operational information.



**INFORMATION:**

INFORMATION provides useful knowledge, definition, or terminology for reference.



**TIP:**

TIP provides helpful suggestions for performing tasks more effectively.



**CAUTION:**

CAUTION indicates that failure to take a specified action could result in damage to the system.

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## Conventions

The following table describes the typographic conventions used in this manual.

Conventions	Description
<b>Bold</b>	Indicates text on a window, other than the window title, including menus, menu options, buttons, fields, and labels. Example: Click the <b>OK</b> button.
<i>&lt;Italic&gt;</i>	Indicates a variable, which is a placeholder for actual text provided by the user or system. Example: copy <i>&lt;source-file&gt;</i> <i>&lt;target-file&gt;</i> .
[ ] square brackets	Indicates optional values. Example: [ a   b ] indicates that you can choose a, b, or nothing.
{ } braces	Indicates required or expected values. Example: { a   b } indicates that you must choose either a or b.
vertical bar	Indicates that you have a choice between two or more options or arguments.
/ Slash	Indicates all options or arguments.
underline	Indicates the default value. Example: [ <u>a</u>   b ]

## 1. Overview

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This white paper introduces implementation procedures and the concept of **WORM** which includes three types of retention settings that allows the administrator to fit different retention period requirement, and techniques of verifying the effectiveness of WORM settings.

### 1.1. Introduction

**WORM** stands for "**Write Once Read Many**," and it is the unique feature designed by QSAN and comes with Unified Storage. For occasion or application that requires a higher level of security of file correctness or the behavior of file unchangeable for such as, surveillance video recording, ongoing project documentation, submission, and document editing with multiple editions to preserve for a limited period without changing access permission of related accounts.

### 1.2. Prerequisites

This white paper provides technical guidance for designing and implementing "**Write Once Read Many; WORM**" feature, and it is intended for use by system administrators, NAS designers, storage consultants, or anyone who has purchased this product and is familiar with server and computer network, network administration, storage system installation and configuration, network attached storage management, and relevant protocols.

Before proceeding to instructions of this white paper, it is assumed that you have fully read and understood the detail of QSAN product related document before proceeding to implementation.

- QIG (Quick Installation Guide): <https://www.qsan.com/en/download.php>
- Hardware Manual: <https://www.qsan.com/en/download.php>
- QSM User Manual: <https://www.qsan.com/en/download.php>





**TIP:**

Please read related manuals and documents if not familiar with these operations.

### 1.3. Concept

**WORM** (Write Once, Read Many) –

When **WORM** is enabled, the folder with WORM is intentionally not rewriteable, data are written remains as read-only (protected from modify/delete) until the end of the specified retention days.

Purpose of WORM is to satisfy the demand for *compliance, data archive, electronic record protection, prevent intentional and unintentional deletion of files, virus attack.*

WORM is applicable for fields and industries such as *Security, Education, Medical, Finance, Research facility, Patents, Government Agencies or Large Enterprises* that have a high demand for data security.

The three available policies for WORM protection:

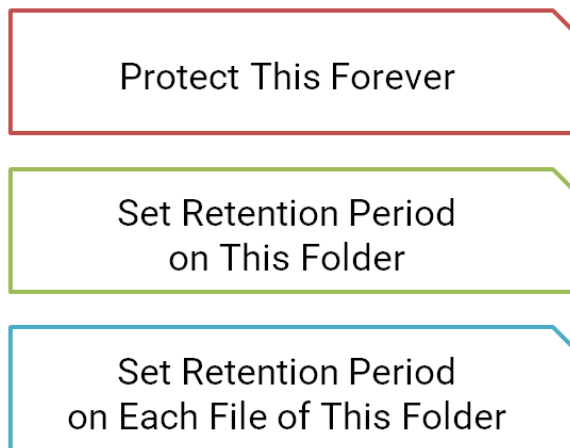


Figure 1-1 Three Policies of WORM Protection



**INFORMATION:**

**WORM** (Write Once, Read Many) – When **WORM** is enabled, data written in this Shared Folder will remain as read-only (protected from modify/delete) until the end of the specified retention days. If a Shared Folder is enabled with WORM, this Shared Folder cannot be deleted with data still inside.

WORM protection policy: **Protect this forever**

Retention start date of **Share Folder**: Jan/1<sup>st</sup>

Retention expiry date of **Share Folder, Subfolders and Files**: Retention period is  $\infty$  forever

Example: **Protect this forever**: Retention Unlimited days

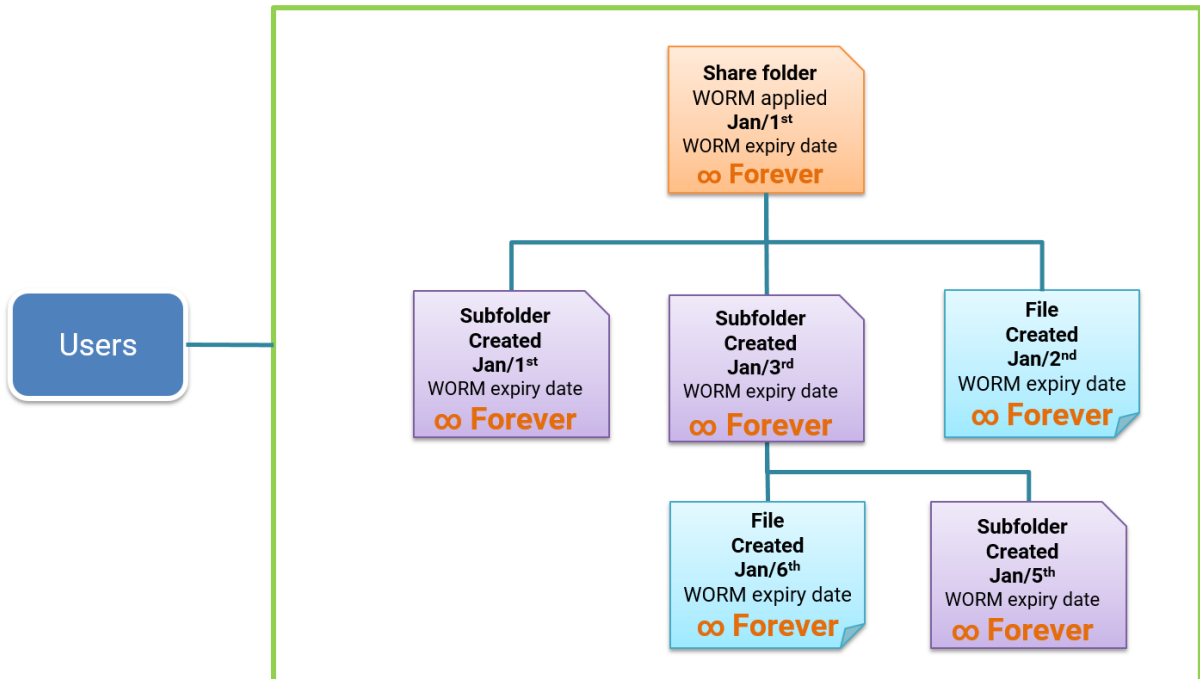


Figure 1-2 Detail Structure of WORM Policy: Protect This Forever



**CAUTION:**

Once the WORM is set to forever, the WORM can't be removed and reset device to default factory settings.

WORM protection policy: **Set retention period on this folder**

Retention start date of **Share Folder**: Jan/1st

Retention expiry date of **Share Folder, Subfolders and Files**:

Based on WORM expiration date of this Share Folder

Example: **Set retention period on this folder : Retention 6 days**

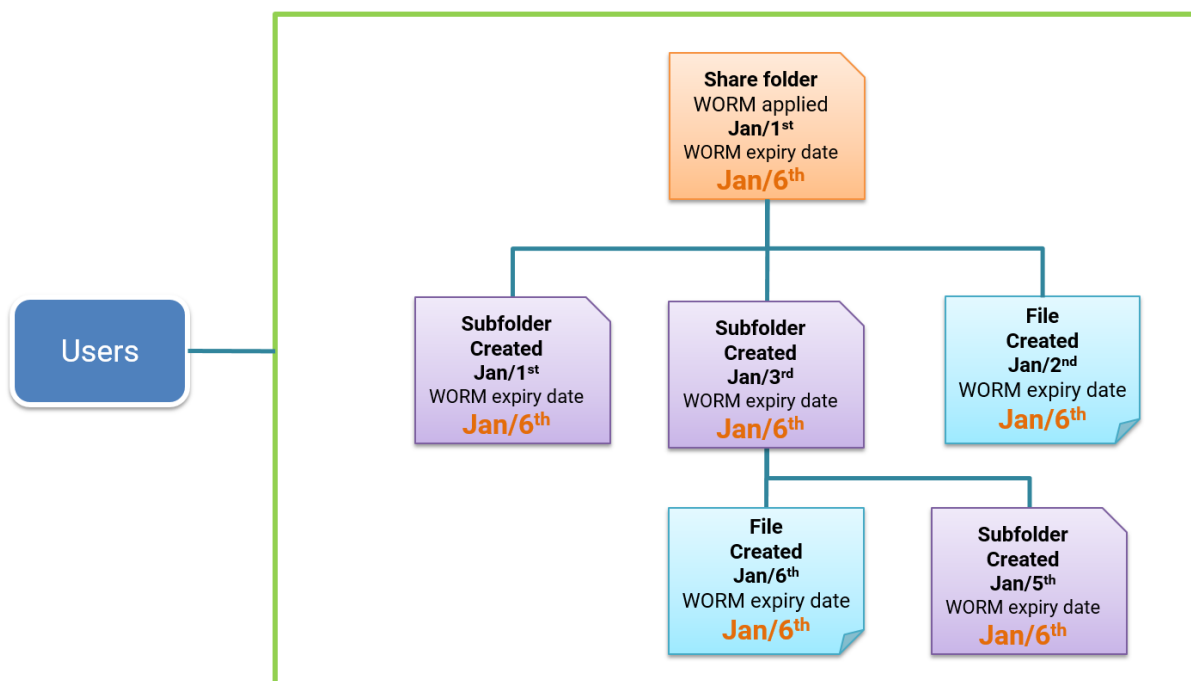


Figure 1-3 Detail Structure of WORM Policy: Set Retention Period on This Folder

WORM protection policy: **Set retention period on each file of this folder**

Retention start date of **Share Folder**: **Jan/1st**

Retention expiry date of **Share Folder, Subfolders and Files**:

WORM expiration date is based on Retention period of individual Subfolder and Files

Example: **Set retention period on each file of this folder : Retention 7 days**

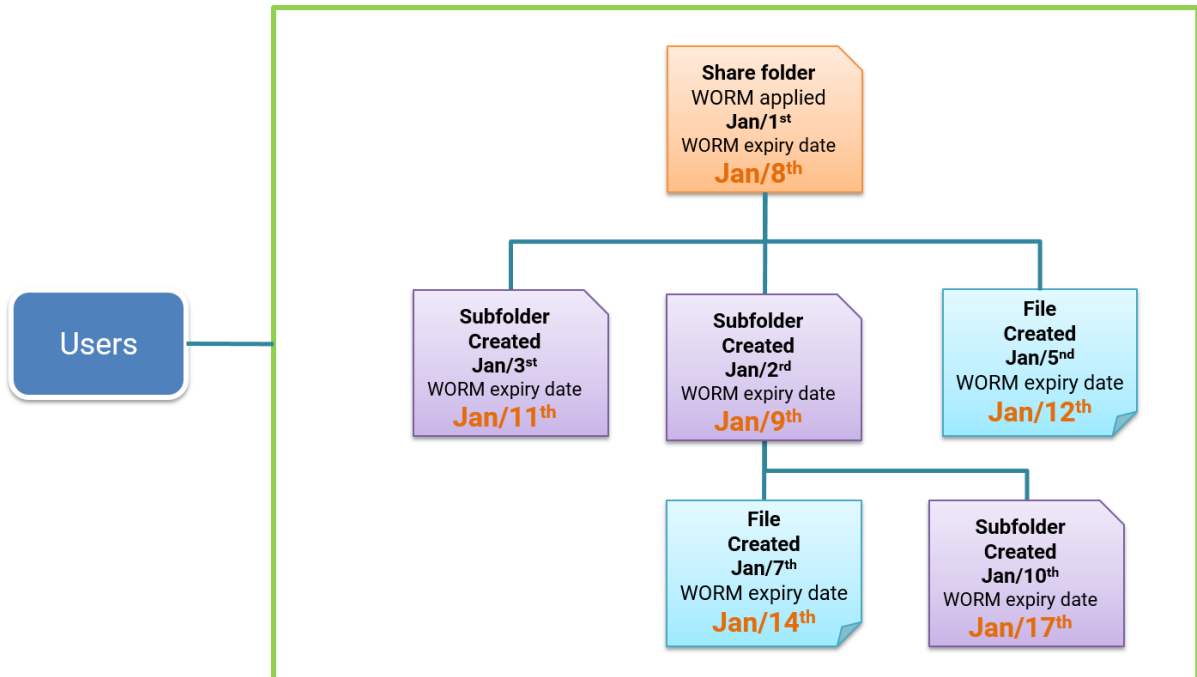


Figure 1-4 Detail Structure of WORM Policy: Set Retention Period on Each File of This Folder

## 2. Instruction

This chapter explains instructions for configuring WORM on QSAN Unified Storage with different application scenarios with the three WORM policies.

The process of WORM setup can be divided into four phases:

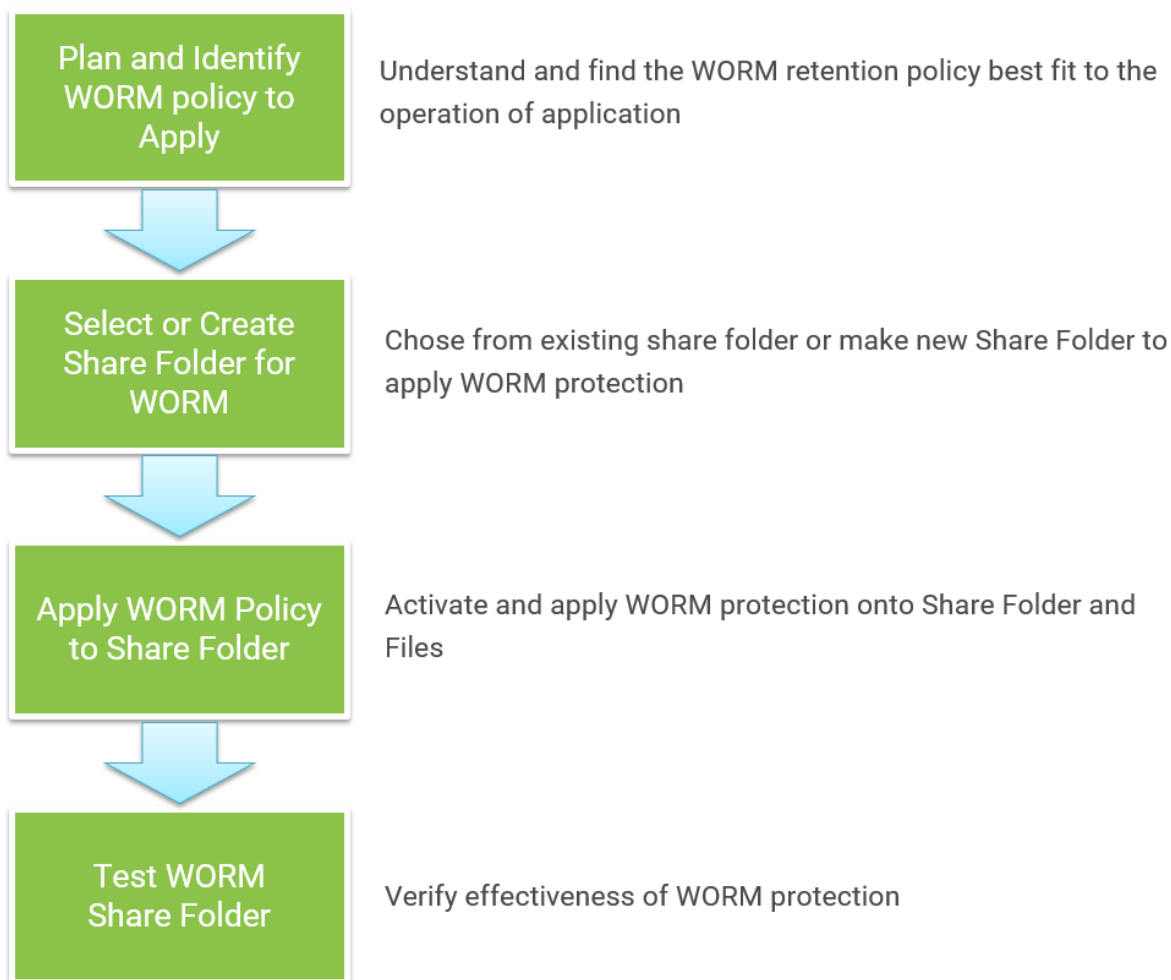


Figure 2-1 The four phases of WORM setup



**INFORMATION:**

Please be aware and fully understand the behavior of each WORM policy before applying WORM on shared folders.

## 2.1. Plan and identify WORM policy to apply



Figure 2-2 Configuration Process Flow: Plan and Identify WORM Policy to Apply

Keep in mind that WORM protection cannot be removed once activated, so planning and designing the WORM policy to apply will be the most important step for the whole process.

Property description of each policy:

### Protect This Forever

*Folders and files do not require any rewrite after being placed into the share folder.*

### Set Retention Period on This Folder

*Files and folders will be kept as read-only for a certain time until share folder is rewritable again.*

### Set Retention Period on Each File of This Folder

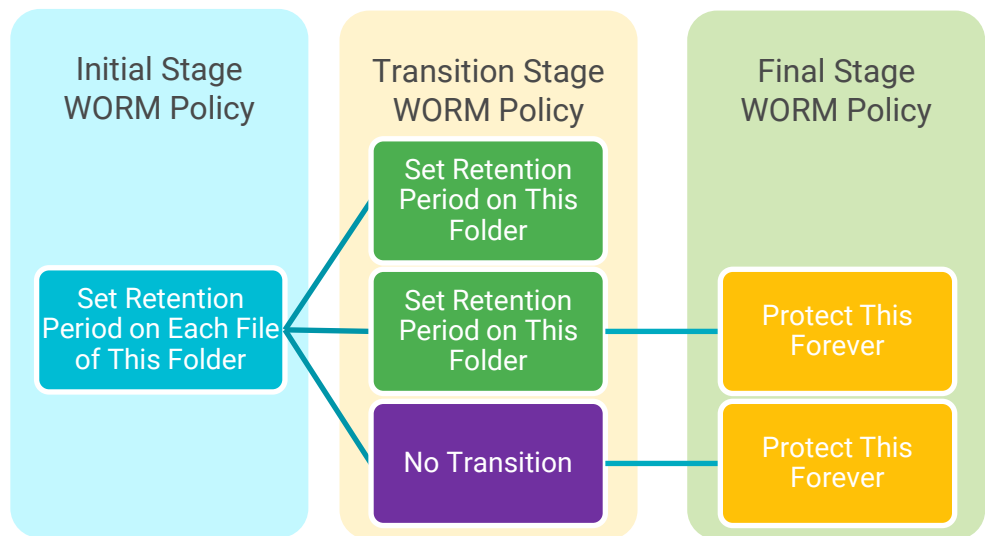
*Files and folders will be kept as read-only for a certain time until each individual file or folder is rewritable again.*



**TIP:**

Still not sure what to choose?

Composite Design:



Start with **“WORM on Each File”** to observe initial retention period and have a transition stage to plan and apply WORM protection policy best fit to the application for final stage.


## 2.2. WORM Configuration



Figure 2-3 Configuration Process Flow: Select or Create Share Folder for WORM

Step 1. Open **Control Panel**

Step 2. Go to **File Sharing** → **Folder** → **Folder list**

Step 3. Select a **Share Folder** → Click on the **Gear icon**  → Select **WORM** from dropdown menu

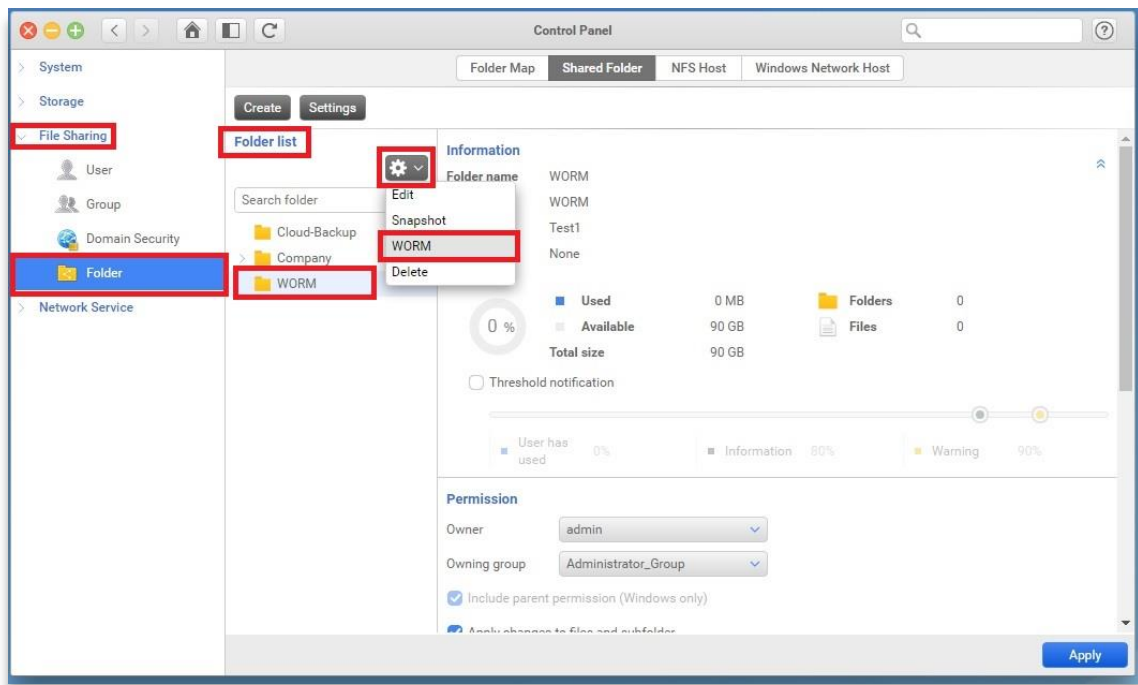


Figure 2-4 Configuration Page for WORM Setup



Figure 2-5 Configuration Process Flow: Apply WORM Policy to Share Folder

Step 4. Check **Enable WORM protection** box to enable WORM

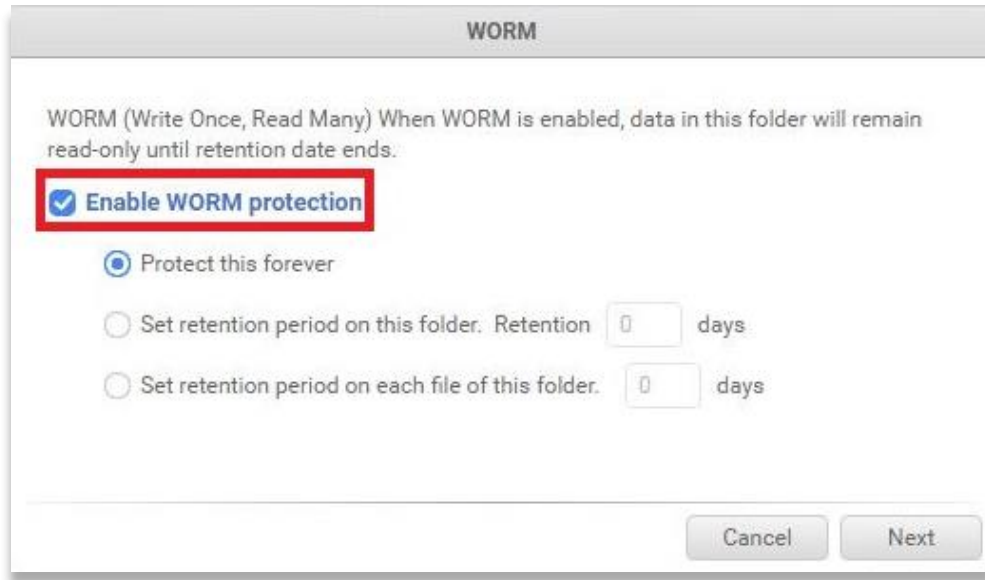


Figure 2-6 Enable WORM

Step 5. Select **WORM Policy**

There are three different policies, so please choose the option you would like to proceed:

a. For **Protect This Forever** policy:

- ① Click on the **Protect This Forever** radio button





Figure 2-7 Selecting Policy: Protect This Forever

- ② Click on the **Next** button if all information is correct

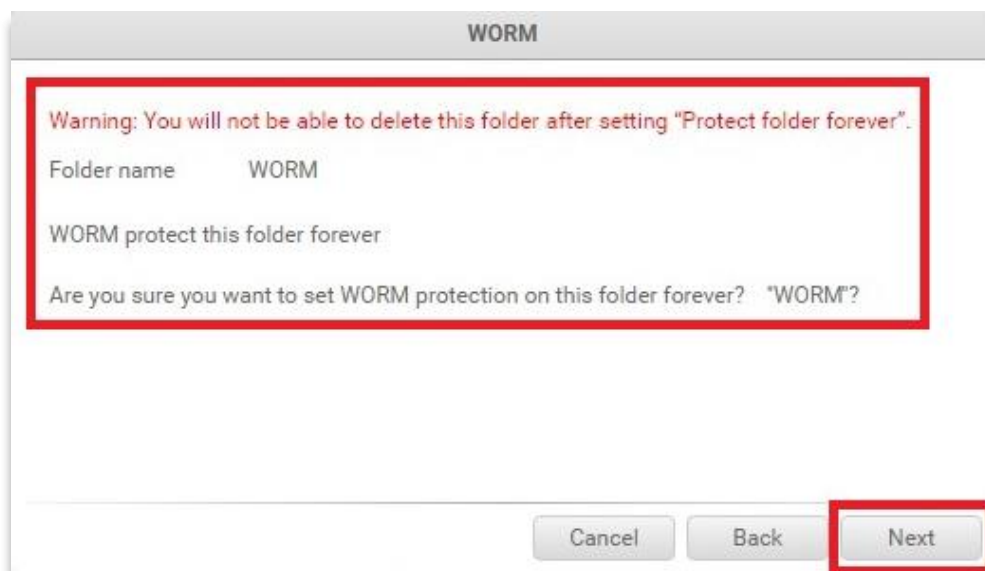


Figure 2-8 Information: Applying Forever WORM Protection

- ③ Click on the **Confirm** button to activate *Forever WORM Protection*

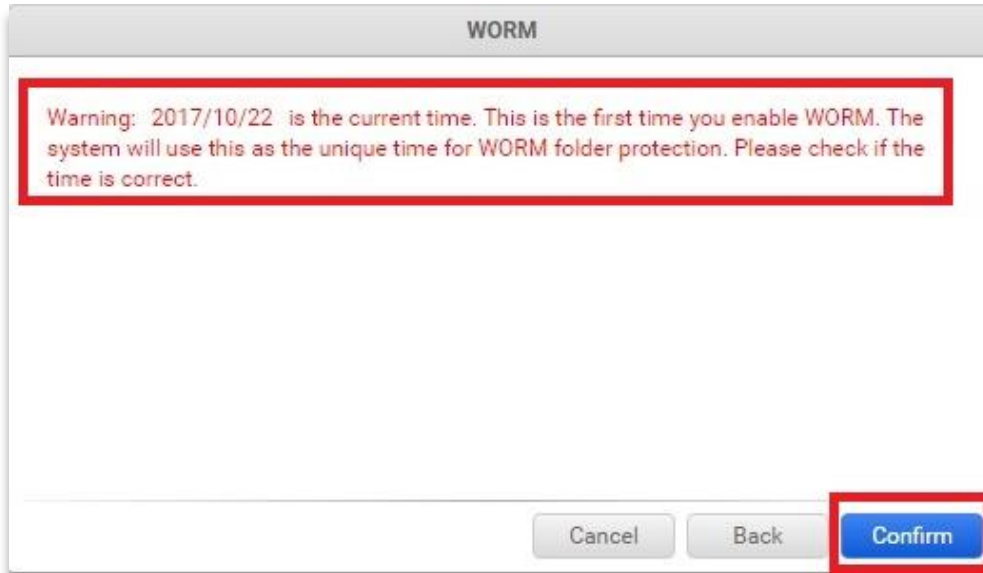


Figure 2-9 Confirmation: Applying Forever WORM Protection

b. For **Set Retention Period on This Folder** policy:

- ① Click on the **Set Retention Period on This Folder** radio button
- ② Enter a number equal to or greater than 1 Day(s)
- ③ Click on the **Next** button

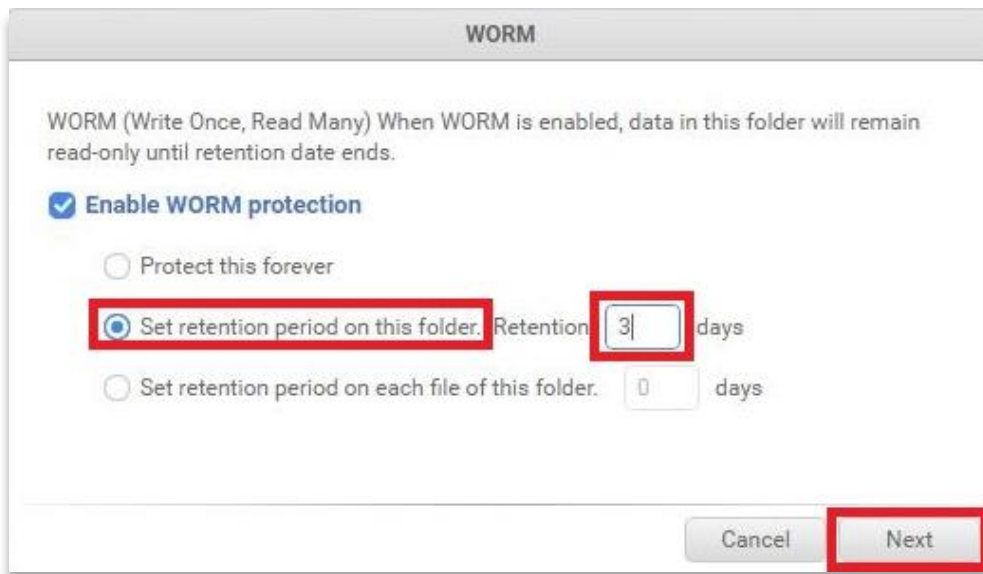


Figure 2-10 Selecting Policy: Set Retention Period on This Folder

- ④ Click on the **Confirm** button if all information is correct

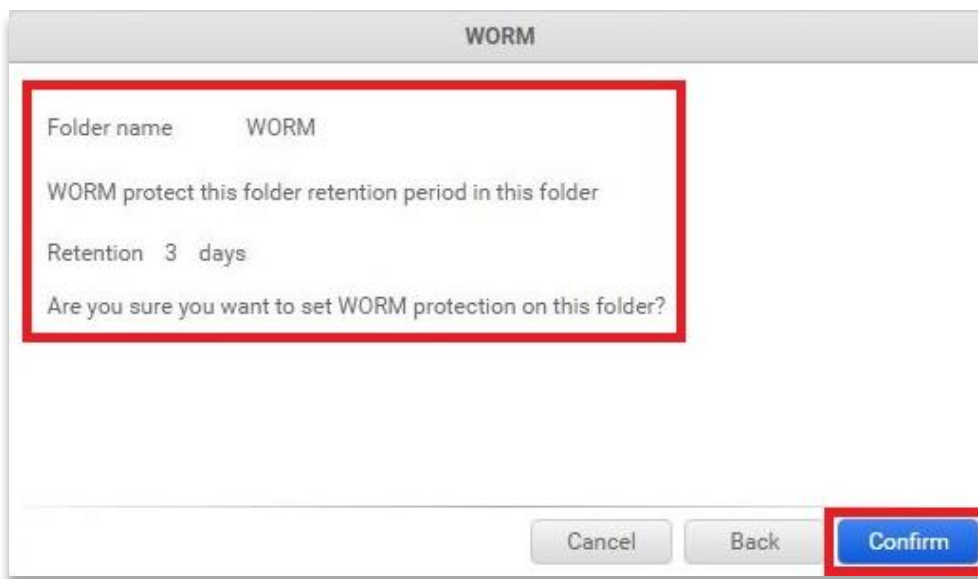


Figure 2-11 Confirmation: Applying Set Retention Period on This Folder

c. For **Set Retention Period on Each File of This Folder** policy:

- ① Click on the **Set Retention Period on Each File of This Folder** radio button
- ② Enter a number equal to or greater than 1 Day(s)
- ③ Click on the **Next** button

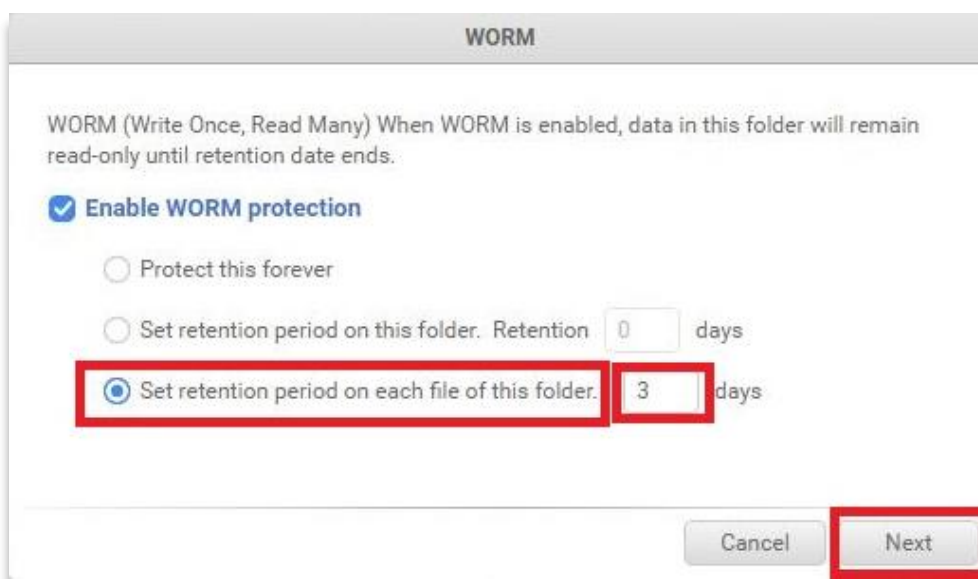


Figure 2-12 Selecting Policy: Set Retention Period on Each File of This Folder

④ Click on the **Confirm** button if all information is correct

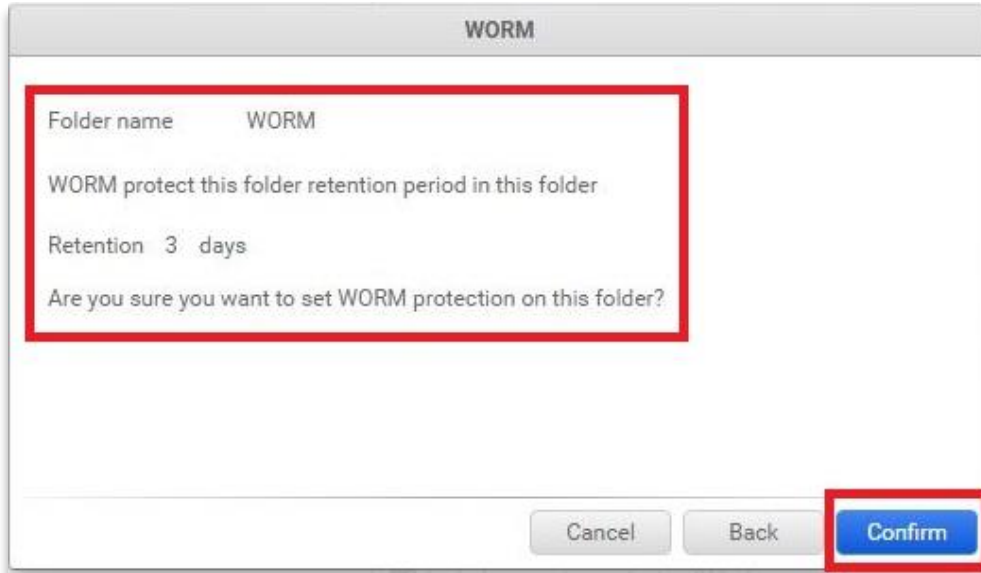


Figure 2-13 Confirmation: Applying Set Retention Period on Each File of This Folder

Step 6. Click on the **Apply** button to apply WORM protection onto designated Share Folder

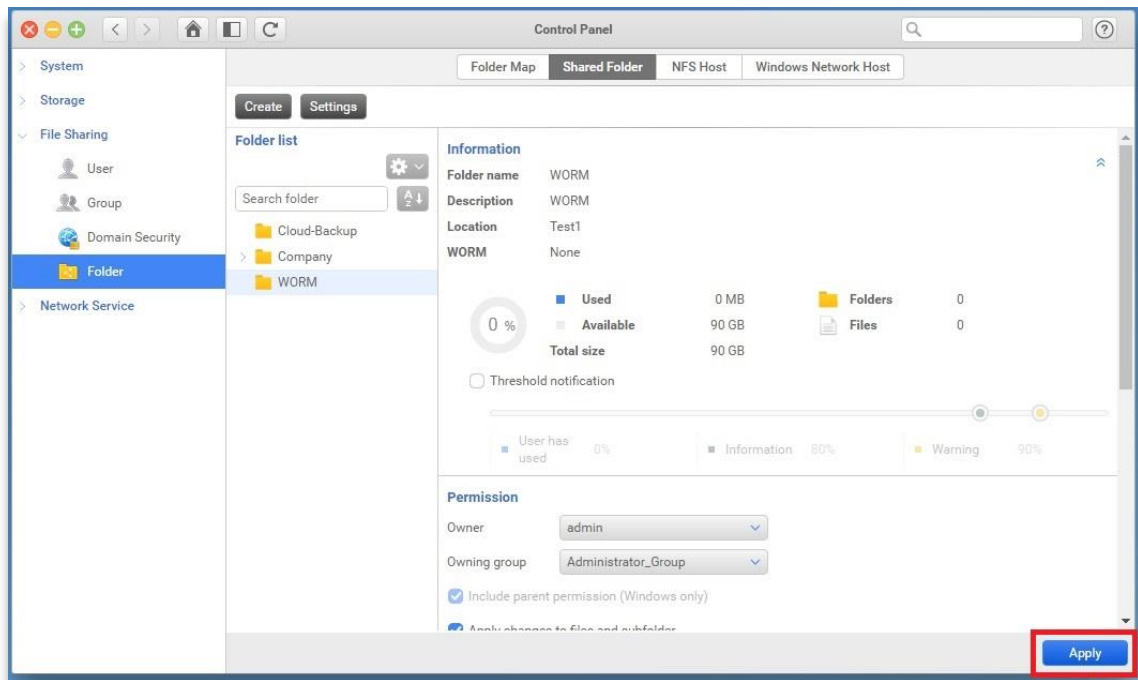


Figure 2-14 Applying WORM Configuration



Figure 2-15 Configuration Process Flow: Test WORM Share Folder

Step 7. **Login the Share Folder with WORM configured**

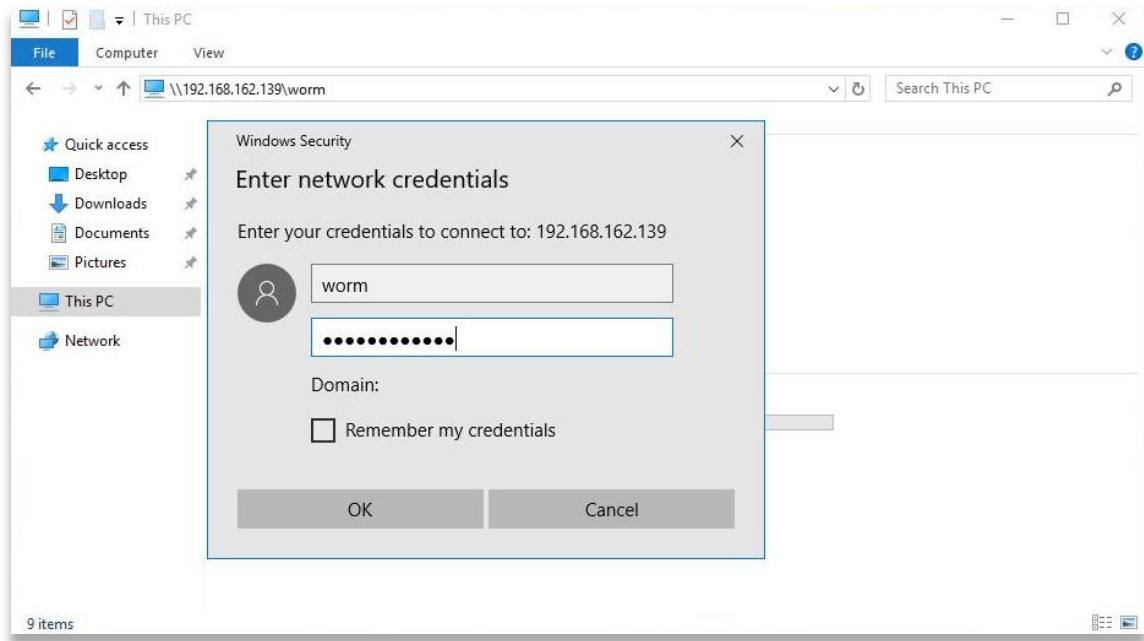


Figure 2-16 Logging in Share Folder

Step 8. Test existing **Folder** or **File** inside the **Share Folder**

There are two methods to test the existing folder or file inside the share folder, please following the steps below:

## Method A: **Rename** an existing **Folder** or **File**; WORM is activated if Rename fails

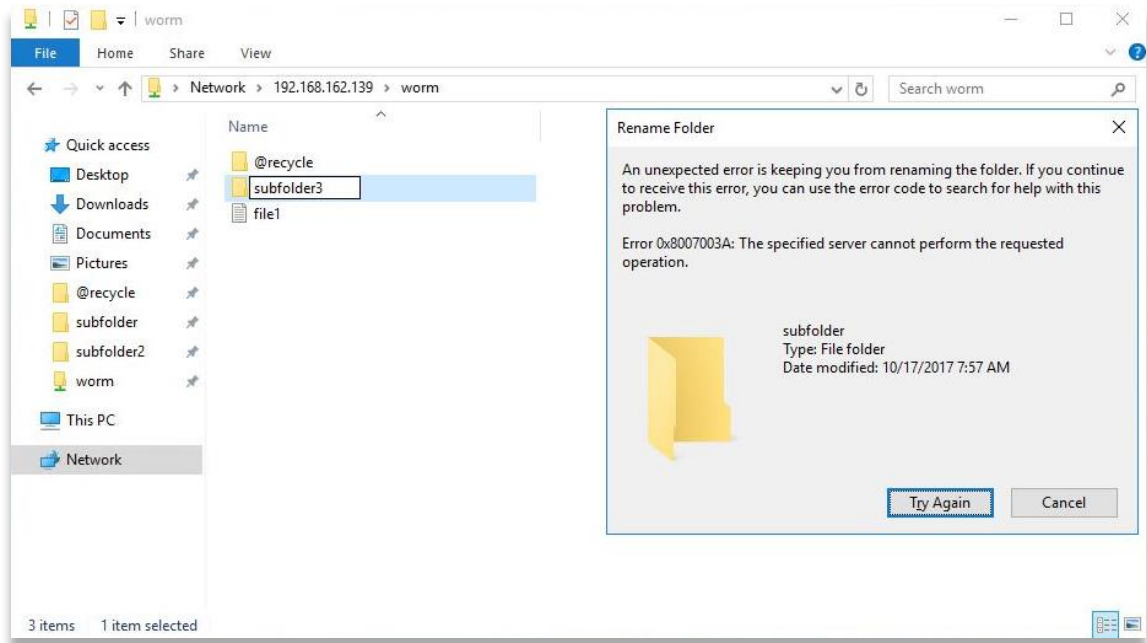


Figure 2-17 Test A: Rename existing Folder or File

Method B: **Delete** an existing **Folder** or **File**; WORM is activated if deleted Folder or File reappeared after refresh

① **Delete** existing **Folder** or **File**

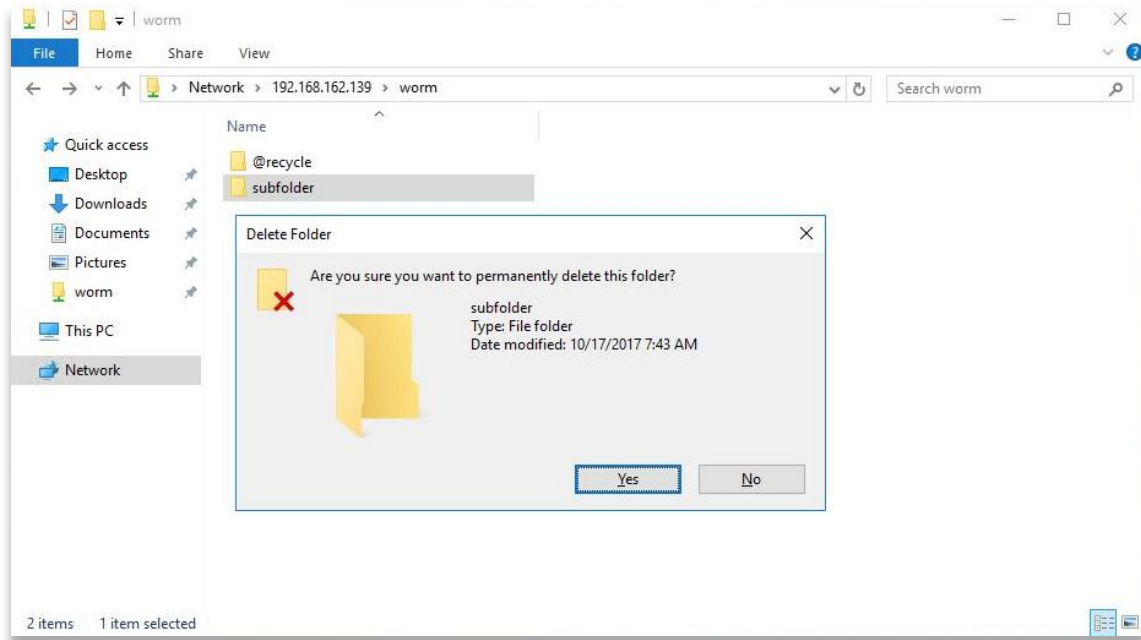


Figure 2-18 Test B: Delete existing Folder or File

② Right click on your mouse and select **Refresh**

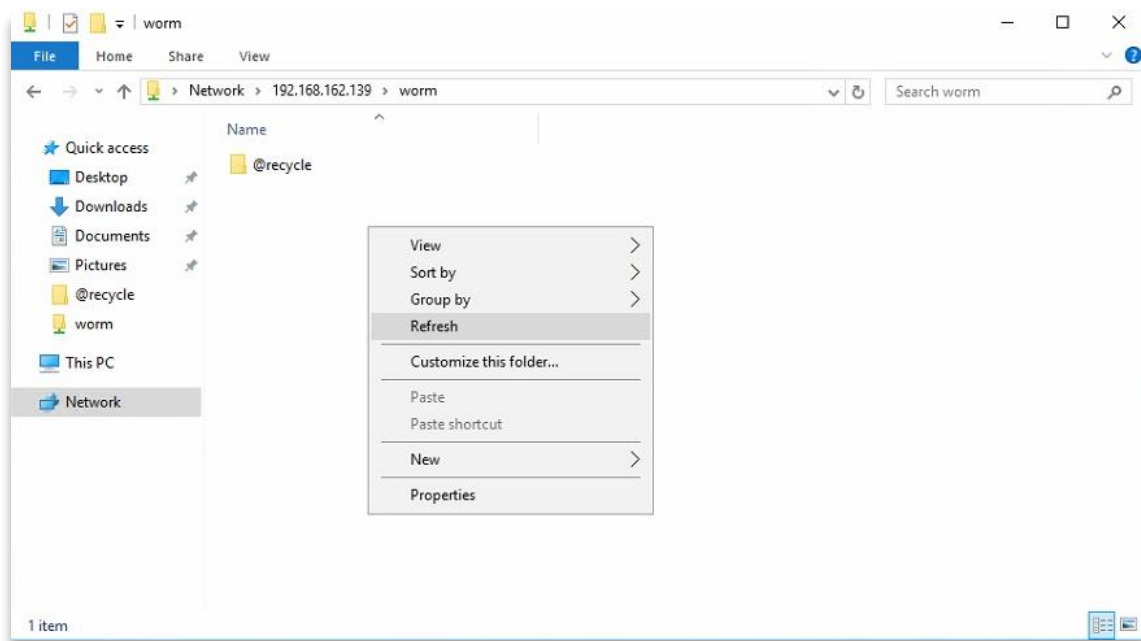


Figure 2-19 Test A: Refresh Share Folder

③ Check if deleted **Folder** or **File** reappeared after refresh

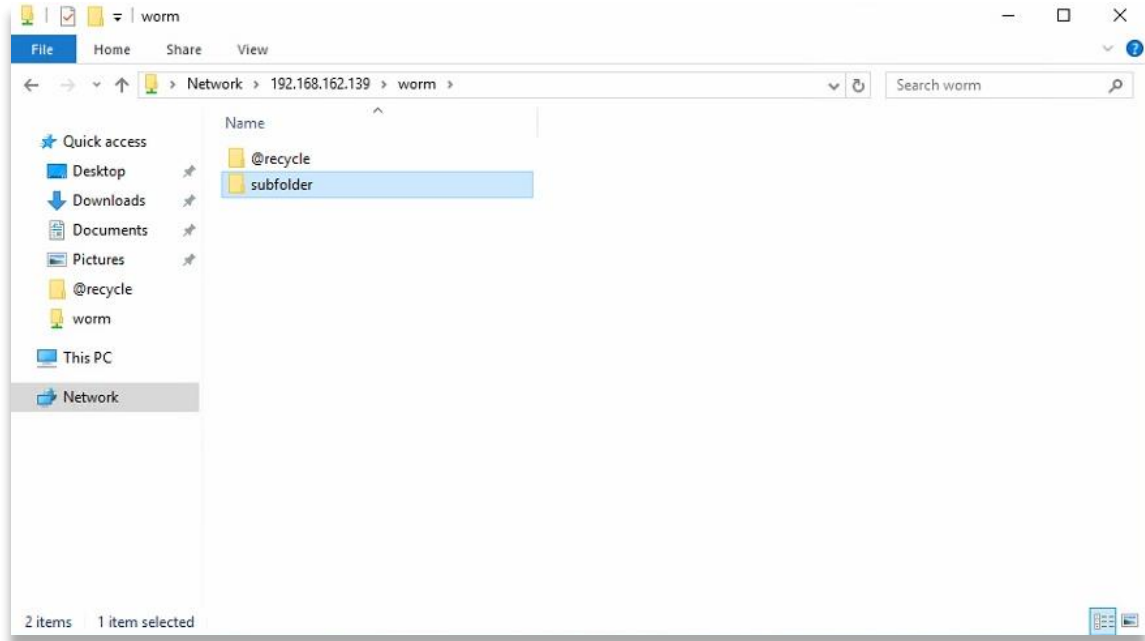


Figure 2-20 Test B: Check Share Folder Deleted File or Folder

## 2.3. Summary

Application of WORM can vary from application and operation, with QSAN Unified System WORM can extend integration scope of application and operation into a standard data secured file sharing system.

## 2.4. Apply to

This manual is applicable to Unified Storage series.



## 3. Support and Other Resources

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### 3.1. Getting Technical Support

After installing your device, locate the serial number on the sticker located on the side of the chassis and register your product at [partner.qsan.com/](http://partner.qsan.com/) (End-User Registration). We recommend registering your product in QSAN partner website for firmware updates, document download, and latest news in eDM. To contact QSAN Support, please use the following information.

1. Via the Web: [http://www.qsan.com/en/contact\\_support.php](http://www.qsan.com/en/contact_support.php)
2. Via Telephone: +886-2-7720-2118 extension 136  
(Service hours: 09:30 - 18:00, Monday - Friday, UTC+8)
3. Via Skype Chat, Skype ID: qsan.support  
(Service hours: 09:30 - 02:00, Monday - Friday, UTC+8, Summertime: 09:30 - 01:00)
4. Via Email: [support@qsan.com](mailto:support@qsan.com)

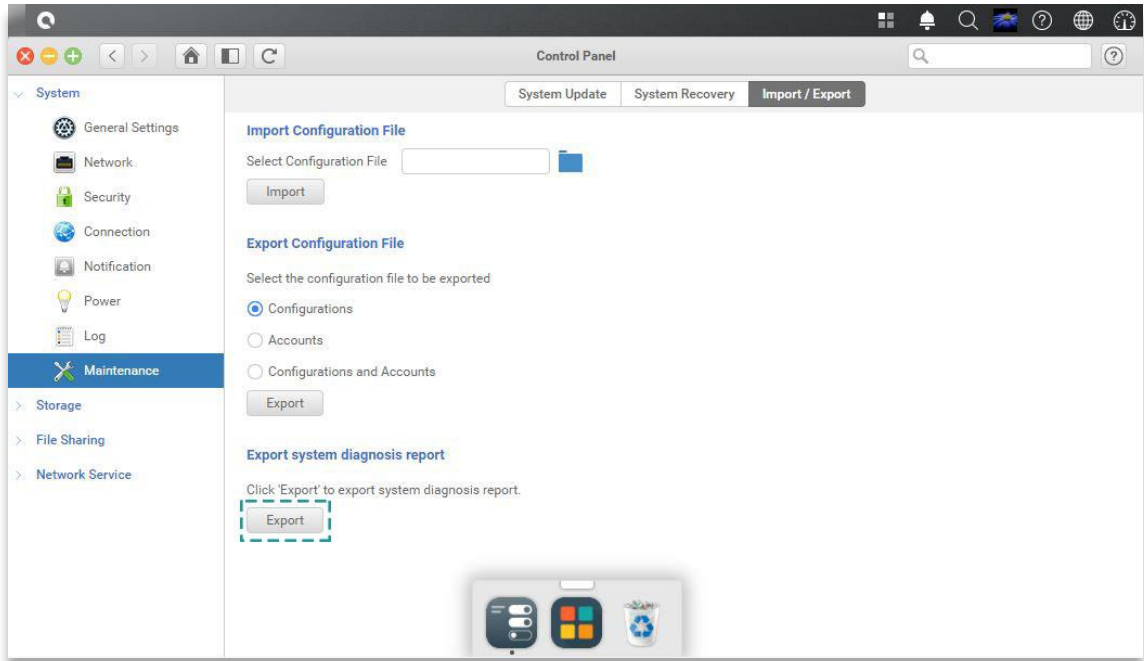
#### Information to collect

1. Product name, model or version, and serial number
2. Firmware version
3. Error messages or screenshot images
4. Product-specific reports and logs
5. Add-on products or components installed
6. Third-party products or components installed

#### Information for Technical Support

The following system information is necessary for technical support, please refer to following for what and where to get the information.

If the technical support requests you to download the service log, please navigate to the QSM UI → **Control Panel** → **System** → **Maintenance** → **Import/Export** → **Export system diagnosis report**, and then click the **Export** button.



## 3.2. Documentation Feedback

QSAN is committed to providing documentation that meets and exceeds your expectations. To help us improve the documentation, email any errors, suggestions, or comments to [docsfeedback@qsan.com](mailto:docsfeedback@qsan.com).

When submitting your feedback, including the document title, part number, revision, and publication date located on the front cover of the document.

# Appendix

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- This EULA will be binding upon and will inure to User's successors and permitted assigns.
- This EULA shall be governed by and constructed according to the laws of R.O.C. Any disputes arising from or in connection with this EULA, User agree to submit to the jurisdiction of Taiwan Shilin district court as first instance trial.