[MS-FSRVP]: File Server Remote VSS Protocol

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Errata below are for Protocol Document Version V9.0 – 2015/10/16.

Errata Published*	Description
2016/06/27	In Section 3.1.4, Message Processing Events and Sequencing Rules, updated the processing rules to clarify the server access check of FSRVP (client) caller permissions. Changed from: The server MUST enforce the following security measures to verify that the caller has the required permissions to execute any method:<4> • The security provider as RPC_C_AUTHN_GSS_NEGOTIATE or RPC_C_AUTHN_GSS_KERBEROS or RPC_C_AUTHN_WINNT, as specified in [MS-RPCE] section 2.2.1.1.7. • The authentication level as RPC_C_AUTHN_LEVEL_PKT_INTEGRITY or RPC_C_AUTHN_LEVEL_PKT_PRIVACY, as specified in [MS-RPCE] section 2.2.1.1.8. If the caller does not have the required permissions, then the server MUST fail the call and return E_ACCESSDENIED. For more details on how to determine the identity of the caller for the purpose of performing an access check, see [MS-RPCE] section 3.3.3.1.3. <4> Section 3.1.4: Windows servers additionally check whether the caller is a member of the administrators or backup operators group. Changed to: The server MUST enforce the following security measures to verify that the caller has the required permissions to execute any method: • The security provider as RPC_C_AUTHN_GSS_NEGOTIATE or RPC_C_AUTHN_GSS_KERBEROS or RPC_C_AUTHN_WINNT, as specified in [MS-RPCE] section 2.2.1.1.7. • The authentication level as RPC_C_AUTHN_LEVEL_PKT_INTEGRITY or RPC_C_AUTHN_LEVEL_PKT_PRIVACY, as specified in [MS-RPCE] section 2.2.1.1.8. The server can perform additional implementation-specific<4> checks to verify that the caller has permission. If the caller does not have the required permissions, then the server MUST fail the call and return E_ACCESSDENIED. The details on how to determine the identity of the caller for the purpose of performing an access check are specified in [MS-RPCE] section 3.3.3.1.3.

Errata Published*	Description
	<4> Section 3.1.4: Windows servers additionally check whether the caller is a member of the local administrators or backup operators group.

2016/04/04	In Section 3.1.4.2, SetContext (Opnum 1), corrected the sequence of methods that must be called from the client.
	
	Changed from:
	
	▪ Otherwise, if the requestor client address is the same as ShadowCopyClientAddress, the server MUST increment the ShadowCopyClientRetryCount.
	    ▪ If ShadowCopyClientRetryCount exceeds the implementation-specific count, the server MUST set the ContextSet to FALSE, set ShadowCopyClientAddress to NULL, and fail the call with FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS.
	
	Changed to:
	
	▪ Otherwise, if the requestor client address is the same as ShadowCopyClientAddress, the server MUST process as follows:
	    ▪ Remove the ShadowCopySet if a ShadowCopySet exists in the GlobalShadowCopySetTable where ShadowCopySet.Status is not equal to "Recovered".
	    ▪ Set ContextSet to FALSE.
	    ▪ Set ShadowCopyClientAddress to NULL.
	    ▪ Increment the ShadowCopyClientRetryCount.
	    ▪ If ShadowCopyClientRetryCount exceeds the implementation-specific count, the server MUST fail the call with FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS.

2016/02/08	In Section 3.1.4.3, StartShadowCopySet (Opnum 2), revised the processing rules. Changed from: … If ContextSet is FALSE, the server MUST fail the call with FSRVP_E_BAD_STATE. The server MUST stop the Message Sequence Timer specified in section 3.1.2. … Changed to: … If ContextSet is FALSE, the server MUST fail the call with FSRVP_E_BAD_STATE. If there is a ShadowCopySet in the GlobalShadowCopySetTable where ShadowCopySet.Status is not equal to "Recovered", the server MUST fail the call with FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS. The server MUST stop the Message Sequence Timer specified in section 3.1.2. …
2016/01/25	In two sections, provided an explanation and context for the term "indexing". In Section 1.1, Glossary, added a new term: indexing: The process of extracting text or properties from files and storing the extracted values in an index or property cache.

Errata Published*	Description
	In Section 3.1.4.10, IsPathShadowCopied (Opnum 9), the last two bullets of the first list have been changed from: ▪ If the file store does not allow defragmentation operations, set the DISABLE_DEFRAG bit of ShadowCopyCompatibility. ▪ If the file store does not allow content index operations, the server MUST set the DISABLE_CONTENTINDEX bit of ShadowCopyCompatibility. Changed to: ▪ If the shadow copy provider does not support defragmentation operations on the file store, set the DISABLE_DEFRAG bit of ShadowCopyCompatibility. ▪ If the shadow copy provider does not support indexing (see the definition in section 1.1) on the file store, the server MUST set the DISABLE_CONTENTINDEX bit of ShadowCopyCompatibility.
2016/01/25	In two sections, removed an unnecessary Windows implementation detail. In Section 3.1.1, Abstract Data Model, the following paragraph was removed: A server implementing this RPC interface maintains the following metadata for the shadow copies created on file shares. The server persists this data in an implementation-specific configuration store in order to process the methods appropriately. In Section 3.2.1, Abstract Data Model, the following paragraph was removed: A client that interacts with the FSRVP server maintains the following metadata of the shadow copies created on file shares on the remote file server. The client persists this data in an implementation-specific configuration store.
2016/01/25	In various sections, corrected the description for the SetContext method. In Section 3.1.1.1, Global ContextSet, changed from: ContextSet: A Boolean value that, when set to TRUE, indicates that the client has set a valid context for the shadow copy operations by calling the SetContext method, as specified in section 3.1.4.2. Changed to: ContextSet: A Boolean value that, when set to TRUE, indicates that the shadow copy operation is in progress and the client has set a valid context for the shadow copy operations by calling the SetContext method, as specified in section 3.1.4.2. In Section 3.1.1.1, Global ContextSet, added the following two new ADM elements: ShadowCopyClientAddress: The IP address of the client, in a string format, that has set the context for shadow copy operation. ShadowCopyClientRetryCount: A numeric value that indicates the count of SetContext retry attempts. In Section 3.1.4.2, SetContext (Opnum 1), added a new return value and updated the processing rules:

Errata Published*	Description	

Return value/code	Description
0x80042316 FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS	Creation of another shadow copy set is in progress.

Changed from:

If the Context parameter contains an invalid value, the server MUST fail the call with FSRVP_E_UNSUPPORTED_CONTEXT.

If the Context parameter is valid, the server MUST update CurrentContext to Context, set ContextSet to TRUE, start the Message Sequence Timer (as specified in section 3.1.2) with a timeout value of 180 seconds, and return ZERO to the caller.

Changed to:

If the Context parameter contains an invalid value, the server MUST fail the call with FSRVP_E_UNSUPPORTED_CONTEXT.

The server MUST get the requestor client address corresponding to the hBinding parameter as specified in [C706] section 2.12.1.

If ContextSet is TRUE, the server MUST process as follows:

▪ If the requestor client address is not the same as ShadowCopyClientAddress, the server MUST fail the call with FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS.

▪ Otherwise, if the requestor client address is the same as ShadowCopyClientAddress, the server MUST increment the ShadowCopyClientRetryCount. If ShadowCopyClientRetryCount exceeds the implementation-specific count,<5> the server MUST set the ContextSet to FALSE, set ShadowCopyClientAddress to NULL, and fail the call with FSRVP_E_SHADOW_COPY_SET_IN_PROGRESS.

Otherwise, if ContextSet is FALSE, set ShadowCopyClientRetryCount to 0.

The server MUST set ShadowCopyClientAddress to the retrieved requestor client address.

The server MUST update CurrentContext to Context, set ContextSet to TRUE, start the Message Sequence Timer (as specified in section 3.1.2) with a timeout value of 180 seconds, and return ZERO to the caller.

<5> Section 3.1.4.2: Windows Server 2012 R2 and Windows Server 2016 Technical Preview FSRVP servers set this retry attempt limit to 5. Windows Server 2012 operating system doesn't perform this verification.

In Section 3.1.4.7, RecoveryCompleteShadowCopySet (Opnum 6), the last paragraph was changed from:

The server MUST update ShadowCopySet.Status to "Recovered", set ContextSet to FALSE, and return ZERO to the caller.

Changed to:

The server MUST update ShadowCopySet.Status to "Recovered", set ContextSet to FALSE, set ShadowCopyClientAddress to NULL, and return ZERO to the caller.

In Section 3.1.4.8, AbortShadowCopySet (Opnum 7), the last paragraph was changed from:

Errata Published*	Description
	The server MUST delete ShadowCopySet from GlobalShadowCopySetTable and free the ShadowCopySet object. The server MUST set ContextSet to FALSE, and return ZERO to the caller.
	Changed to:
	The server MUST delete ShadowCopySet from GlobalShadowCopySetTable and free the ShadowCopySet object. The server MUST set ContextSet to FALSE, set ShadowCopyClientAddress to NULL, and return ZERO to the caller.
	In Section 3.1.5, Timer Events, the first paragraph has been changed from:
	Message Sequence Timer elapses: When the Message Sequence Timer elapses, the server MUST delete the ShadowCopySet in the GlobalShadowCopySetTable where ShadowCopySet.Status is not equal to "Recovered", ContextSet MUST be set to FALSE, and the ShadowCopySet object MUST be freed.
	Changed to:
	Message Sequence Timer elapses: When the Message Sequence Timer elapses, the server MUST delete the ShadowCopySet in the GlobalShadowCopySetTable where ShadowCopySet.Status is not equal to "Recovered", ContextSet MUST be set to FALSE, ShadowCopyClientAddress MUST be set to NULL, and the ShadowCopySet object MUST be freed.
2015/12/11	In Section 3.1.4.12, DeleteShareMapping (Opnum 11), corrected two names - ShadowCopy.ShareMappingTable changed to ShadowCopy.ShareMappingList and ShadowCopyList.ShadowCopyList changed to ShadowCopySet.ShadowCopyList.
	Changed from:
	The server MUST delete the MappedShare from ShadowCopy.ShareMappingTable and free the MappedShare object.
	If ShadowCopy.ShareMappingTable is now empty, the server SHOULD remove the shadow copy for the file store identified by ShadowCopy.VolumeName and MUST delete ShadowCopy from ShadowCopySet.ShadowCopyList and free the ShadowCopy object.
	If the ShadowCopyList.ShadowCopyList is now empty, the server MUST remove the ShadowCopySet from GlobalShadowCopySetTable and free the ShadowCopySet object.
	Changed to:
	The server MUST delete the MappedShare from ShadowCopy.ShareMappingList and free the MappedShare object.
	If ShadowCopy.ShareMappingList is now empty, the server SHOULD remove the shadow copy for the file identified by ShadowCopy.VolumeName and MUST delete ShadowCopy from ShadowCopySet.ShadowCopyList and free the ShadowCopy object.
	If the ShadowCopySet.ShadowCopyList is now empty, the server MUST remove the ShadowCopySet from GlobalShadowCopySetTable and free the ShadowCopySet object.

*Date format: YYYY/MM/DD