[MS-FSRVP]: File Server Remote VSS Protocol

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Revision Summary

Date	Revision History	Revision Class	Comments

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1 Introduction

1.1	Glossary
	endpoint file system fully qualified domain name (FQDN) HRESULT IDL Microsoft Interface Definition Language (MIDL) shadow copy
	file store:
	shadow copy utility:
	volume shadow copy service (VSS):
	VSS writer:
	MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:
1.2	References
1.2.	1 Normative References

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_		_
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1.3 Overview		
shadow copy		
1.4 Polationship to Other Pres	to colo	
1.4 Relationship to Other Pro	tocois	
		
1.5 Prerequisites/Precondition	ons	
1.6 Applicability Statement		
1.0 Applicability Statement		
1.7 Versioning and Capability	Negotiation	
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GetSupportedVersion (Opnum 0)

1.8 Vendor Extensible Fields

1.9 Standards Assignments

Parameter	Value	Reference
		_

2	M	essa	ges
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2.1 Transport

and	poir	м.
CIIU	DUII	ш

FssagentRpc

2.2 Common Data Types

Microsoft Interface Definition Language (MIDL)

Data type name	Section

2.2.1 Structures

Structure name	Section	Description

2.2.1.1 FSSAGENT_SHARE_MAPPING_1

```
typedef struct _FSSAGENT_SHARE_MAPPING_1 {
   GUID ShadowCopySetId;
   GUID ShadowCopyId;
   [string] LPWSTR ShareNameUNC;
   [string] LPWSTR ShadowCopyShareName;
   LONGLONG CreationTimestamp;
```

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	ShadowCopySetId:				
	ShadowCopyId:				
	ShareNameUNC:				
	ShadowCopyShareName:				
	CreationTimestamp:				
2.	2.2.2 Constants				
2.	2.2.1 SHADOW_COPY	_ATTRIBUTES			
	Value	Meaning			

 \dot{R} Recovery Complete Shadow Copy Set

ExposeShadowCopySet

} FSSAGENT_SHARE_MAPPING_1, *PFSSAGENT_SHARE_MAPPING_1;

2.2.2.2 CONTEXT_VALUES

Value	Meaning				
2.2.2.3 SHADOW COP	Y_COMPATIBILITY_VALUES				
_	_				
Value	Meaning				
	file store				
2.2.2.4 FSRVP_VERSI	2.2.2.4 FSRVP_VERSION_VALUES				
Value	Meaning				
2.2.3 Unions	2.2.3 Unions				
Union name	Section Description				

2.2.3.1 FSSAGENT_SHARE_MAPPING

FSSAGENT_SHARE_MAPPING

```
typedef [switch_type(ULONG)] union _FSSAGENT_SHARE_MAPPING {
    [case(1)]
        PFSSAGENT_SHARE_MAPPING_1 ShareMapping1;
    [default]
    ;
} FSSAGENT_SHARE_MAPPING, *PFSSAGENT_SHARE_MAPPING;
```

ShareMapping1: FSSAGENT_SHARE_MAPPING_1

2.2.4 Error Codes

HRESULT

Return value/code	Description
	AddToShadowCopySet (Opnum 3) StartShadowCopySet (Opnum 2)
	SetContext (Opnum 1) StartShadowCopySet (Opnum 2)

3 Protocol Details

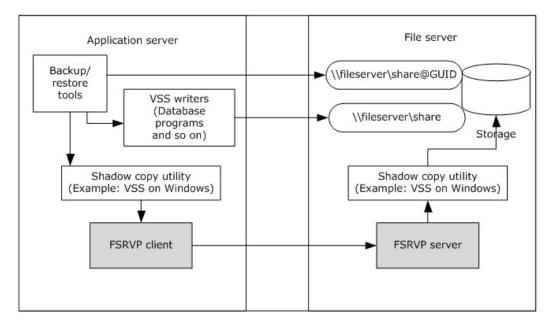


Figure 1: FSRVP client and server environments and components

shadow copy utility

3.1 FileServerVssAgent Server Details

3.1.1 Abstract Data Model

3.1.1.1 Global		
ContextSet:	SetContext	
CurrentContext		
GlobalShadowCopySetTable ShadowCopySetId		
MinServerVersion		
MaxServerVersion		
3.1.1.2 Per ShadowCopySet		
ShadowCopySet		
ShadowCopySetId		
Status		
Context		
ShadowCopyList ShadowCopy		
3.1.1.3 Per ShadowCopy		
ShadowCopy		
ShadowCopyId		
VolumeName		
CreationTimeStamp		

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3.1.1.4 Per MappedS	Share	
MappedShare		
ShareName:		
ShadowCopyShareNam ShareNam		
IsExposed		
3.1.2 Timers		
Message Sequence Ti	mer	
3.1.3 Initialization		
	ContextSet	
	CurrentContext	
	GlobalShadowCopySetTable	
	GlobalShadowCopySetTable	ShadowCopySet
	MinServerVersion	
	MaxServerVersion	

ShareMapping

3.1.4 Message Processing Events and Sequencing Rules

Method	Description

ShareMappingList

Method	Description
	VSS writers

3.1.4.1 GetSupportedVersion (Opnum 0)

${\bf Get Supported Version}$

DWORD GetSupportedVersion(

MinVersion:	
MaxVersion:	
Return Values:	
Return value/code	Description
Min MaxServerVersion	Persion MinServerVersion MaxVersion
3.1.4.2 SetContext (C	pnum 1)
SetContext	
DWORD SetContext([in] handle_t [in] unsigned	nBinding, .ong Context);
hBinding:	
Context:	
Return Values:	
Return value/code	Description
Context	
Context ContextSet	CurrentContext

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[out] DWORD* MinVersion,
[out] DWORD* MaxVersion);

3.1.4.3 StartShadowCopySet (Opnum 2)

StartShadowCopySet

DWORD StartShadowCopySet(
<pre>[in] handle_t hBinding,</pre>	
<pre>[in] GUID ClientShadowCopySetId,</pre>	
<pre>[out] GUID* pShadowCopySetId);</pre>	
hBinding:	
ClientShadowCopySetId:	
pShadowCopySetId:	
Return Values:	

Return value/code	Description
	StartShadowCopySet (Opnum 2)

ContextSet

ShadowCopySet GlobalShadowCopySetTable

- ShadowCopySetId
- Status
- ContextCurrentContext
- ShadowCopyList

pShadowCopySetId ShadowCopySetId,

3.1.4.4 AddToShadowCopySet (Opnum 3)

AddToShadowCopySet

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[in] [string] LPW [out] GUID* pShad			
hBinding:		_	
ClientShadowCopyId:			
ShadowCopySetId:			ShareName
ShareName:			
pShadowCopyId:			
Return Values:			
Return value/code		Description	
			ShareName
			ShareName
ShadowCopySetId.	Shadow	r CopySet	GlobalShadowCopysetTable
ShadowCopySet.Status			

[in] GUID ClientShadowCopyId,
[in] GUID ShadowCopySetId,

ShadowCopy ShadowCopySet.ShadowCopyList file system

ShadowCopy.VolumeName

ShareName

ShadowCopy ShadowCopySet

- ShadowCopyId
- VolumeName
- CreationTimeStamp
- ShareMappingList

MappedShare ShadowCopy.ShareMappingList

- ShareName
 ShareName
- ShadowCopyShareName
- IsExposed

ShadowCopySet.Status

pShadowCopyId ShadowCopyId,

3.1.4.5 CommitShadowCopySet (Opnum 4)

CommitShadowCopySet

DWORD	Commit	ShadowCopy	ySet(
	[in]	handle_t	hBindi	ng,			
	[in]	GUID Shad	dowCopy	SetId,			
	[in]	unsigned	long T	imeOutInMi	illisec	onds);	
hBindin	ıg:						
Ch - d		attal.					
Shadov	исоруз	etta:					
TimoOu	.+T :: Mil	liseconds					
iiiieou	ICTIIMIII	iiseconus).				
Datuum	Values						
Return	values) :					

Return value/code	Description

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Return value/code	Description	
ShadowCopySetId.	ShadowCopySet G	lobalShadowCopysetTable
ShadowCopySet.Statu	IS "	
Shar	lowCopySet.Status	
Silat	, iowcopyset.status	
		ShadowCopySet.Status
FimeOutInMilliseconds		
FimeOutInMilliseconds,	Sha —	adowCopySet.Status —
	CopySet (Opnum 5)	
ExposeShadowCopy	Set	
DWORD ExposeShadowCopy [in] handle_t l [in] GUID Shado [in] unsigned i	Binding,	
	=	

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ShadowCopySetId:	
TimeOutInMilliseconds:	
Return Values:	
Return value/code	Description
ShadowCopySetId.	ShadowCopySet GlobalShadowCopysetTable
ShadowCopySet.Statu	is and the second secon
	 ShadowCopySet
 ShadowCopy 	ShadowCopySet.ShadowCopyList
MappedShare	e ShadowCopy.ShareMappingList
•	
	MappedShare.ShareName
MappedShare.ShareN	lame
MappedShare.ShareN	lame
•	ShadowCopySet.Context RecoveryCompleteShadowCopySet
	ndowCopyShareName eMapping.IsExposed

	TimeOutInMilliseconds,
ShadowCopySet.Status	TimeOutInMilliseconds,
	TimeOutInMilliseconds ——
3.1.4.7 RecoveryCompleteS	pleteShadowCopySet (Opnum 6) ShadowCopySet
DWORD RecoveryComplete: [in] handle_t l [in] GUID Shado	hBinding,
hBinding:	
ShadowCopySetId: Return Values:	
Return value/code	Description
ShadowCopySetId.	ShadowCopySet GlobalShadowCopysetTable
ShadowCopySet.Statu	JS

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ShadowCopySet.ShadowCopyList ShadowCopy.ShadowCopyId

ShadowCopySet.Status

ContextSet

3.1.4.8 AbortShadowCopySet (Opnum 7)

AbortShadowCopySet

DWORD AbortShadowCopySet(

	<pre>handle_t hBinding, GUID ShadowCopySetId);</pre>
hBinding:	
ShadowCopyS	SetId:
Return Values	5:

Return value/code	Description

ShadowCopySetId

ShadowCopySet GlobalShadowCopysetTable

ShadowCopySetId.

ShadowCopySet

ShadowCopySet

GlobalShadowCopySetTable

ContextSet

3.1.4.9 IsPathSupported (Opnum 8)

IsPathSupported

DWORD IsPathSupported(
 [in] handle_t hBinding,
 [in] [string] LPWSTR ShareName,

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[out] [string] LP	PWSTR* OwnerMachineName);
hBinding:	
ShareName:	
SupportedByThisProvider	r:
OwnerMachineName:	ShareName
Return Values:	
Return value/code	Description
	ShareName
	ShareName
Owner!\ SupportedByThisProvider	MachineName ShareName.
3.1.4.10 IsPathShadow	Copied (Opnum 9)
IsPathShadowCopied	
DWORD IsPathShadowCopied(inding, WSTR ShareName,
hBinding:	

[out] BOOL* SupportedByThisProvider,

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ShareName:			
ShadowCopyPresent:	9	ShareName	
ShadowCopyCompatibi	lity:		
Return Values:	_		
Return value/code	Description		
	Shar	reName	
	Sha	areName	
ShadowCopySo	et GlobalShadowCopyS	ShadowCopy	itus
ShadowCopyS ShadowCopy.VolumeN	Set.ShadowCopyList ame ShadowCopyPresent	ShadowCopy ShareName	
 ShadowCopyPrese 	nt		
-			
ShadowCopyCompatib	ility		
•	ShadowCopyCompat	tibility	
.1.4.11 GetShareMa	pping (Opnum 10)		
GetShareMapping			
DWORD GetShareMapping([in] handle_t			

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Value		Meaning					
Level:		ī.					
ShareNa	me:						
Shadow(CopySetId:						
Shadow(CopyId:						
hBinding	:						
	[in] [stri [in] DWORD	ng] LPWSTR Shar	reName,	_SHARE_MAPPI	NG ShareMa	apping);	
		ShadowCopyId, ShadowCopySetId	٦.				

ShareMapping:

ShareMapping1

ShareMapping

ShareMapping1.ShadowCopySetId
 ShadowCopySet.ShadowCopySetId

ShareMapping1.ShadowCopyId
 ShadowCopy.ShadowCopyId

ShareMapping1.ShareNameUNC
 MappedShare.ShareName

MappedShare.IsExposed ShareMapping1.ShadowCopyShareName
 ShareMapping1.ShadowCopyShareName

ShareMapping1.CreationTimeStamp
 ShadowCopy.CreationTimeStamp

3.1.4.12 DeleteShareMapping (Opnum 11)

DeleteShareMapping

DWORD DeleteShareMapping(
<pre>[in] handle_t hBinding,</pre>	
<pre>[in] GUID ShadowCopySetId,</pre>	
<pre>[in] GUID ShadowCopyId,</pre>	
<pre>[in] [string] LPWSTR ShareName);</pre>	
hBinding:	
ShadowCopySetId:	
ShadowCopyId:	
ShareName:	
Return Values:	

Return value/code	Description

ShadowCopySetId ShadowCopyId

ShareName

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hBinding:	
ShadowCopySetId:	
TimeOutInMilliseconds:	
Return Values:	

Return value/code	Description

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Return value/code	Description

ShadowCopySet

GlobalShadowCopysetTable

ShadowCopySetId.

ShadowCopySet.Status

TimeOutInMilliseconds

TimeOutInMilliseconds,

3.1.5 Timer Events

Message Sequence Timer elapses:

ShadowCopySet GlobalShadowCopySetTable ContextSet

ShadowCopySet.Status ShadowCopySet

- 3.1.6 Other Local Events
- 3.2 FileServerVssAgent Client Details
- 3.2.1 Abstract Data Model

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3.2.1.1 Global

	CurrentContext		_		
	GlobalShadowCopySetTable ShadowCo	e opySetId	ServerNan	1e	-
	PrepareTimeout				
	CommitTimeout				
	ExposeTimeout				
	ClientVersion				
3	.2.1.2 Per ShadowCopyS	Set			
	ShadowCopySet				
	ShadowCopySetId				
	ServerShadowCopySetId				
	ServerName	Sha	ıdowCopySo	et	
	Status				
	Status				
	Context				
	ShadowCopyList Sh	nadowCopy			
3	.2.1.3 Per ShadowCopy				
	ShadowCopy				
	ShadowCopyId				
	ServerShadowCopySetId				
	ServerName				
	ShareName				

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CreationTimeStamp									
3.2.2 Timers									
3.2.3 Initialization									
CurrentContext									
GlobalShadowCopySet	Table								
GlobalShadowCopySetTable									
PrepareTimeout									
CommitTimeout									
ExposeTimeout									
ClientVersion									
									
3.2.4 Message Processing Events and Seq	uencing Rules								
3.2.4.1 Application Queries Shadow Copy	Support for a Shar	e							
ShareName									
		ShareName							
									
IsPathSupported	ShareName	ShareName							
	SupportedByThisProvi	ider							
OwnerMachineName									
3.2.4.2 Application Requests Shadow Copy Preparation For a Share									
ShareName									

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ExposedName

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Context					
ShadowCopySetId					
ShadowCopyId					
IsLastShareToAdd					
			Sharel	Name	
ShadowCopyS ShadowCopySet.ServerName ShareName ShadowCopySet.Sha ShadowCopySetId		ShadowCopySetT tId	able		
3.2.4.2.1 Starting a Shadow Copy	Set				
IsPathSu	ported	ShareName SupportedByThisProvider		ShareName	
Owne	erMachineNam	ne			
GetSuppo ClientVersion	rtedVersion	MinVersion			
ClientVersion		MinVersion •	sion MaxVersion		
SetContex	ct	Context			
	CurrentCor	ntext			
StartShad ShadowCopySetId	owCopySet	Cliei	ntShadowCo	pySetId	
ShadowCopySet GlobalShadowCopySetTable					
ShadowCopySetId	Sł	hadowCopySetId.			
 ServerShadowCopySetId 	ShadowCo	ppySetId			

ServerName ShareName

Status

Context CurrentContext

ShadowCopyList

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PathFormat FQDN

3.2.4.2.2 Adding Shadow Copies to the Shadow Copy Set

ShadowCopySet.Status

ShareName

ShadowCopySet.PathFormat

ShadowCopySet.ShadowCopyList,

ShadowCopy.ShareName

AddToShadowCopySet

ClientShadowCopyId

ShadowCopyId ShadowCopySetId

ShadowCopySet.ServerShadowCopySetId

ShareName

ShareName

ShadowCopy

ShadowCopyIdShadowCopyId

ServerShadowCopyIdShadowCopyId

• ServerName ShareName

ShareNameShareName

ExposedName

CreationTimeStamp

IsLastShareToAdd

PrepareShadowCopySet
 ShadowCopySetId
 ShadowCopySetId
 PrepareTimeout.

ShadowCopySetId
TimeOutInMilliSeconds
PrepareTimeout.

.

3.2.4.3 Application Requests Committing a Shadow Copy Set

ShadowCopySetId

ShadowCopySet GlobalShadowCopySetTable
ShadowCopySet.ShadowCopySetId ShadowCopySetId

CommitShadowCopySet ShadowCopySetId
ShadowCopySetServerShadowCopySetId TimeOutInMilliSeconds CommitTimeout

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ShadowCopySet.Status

3.2.4.4 Application Requests Exposing a Shadow Copy Set

ShadowCopySetId

ShadowCopySet

GlobalShadowCopySetTable

ShadowCopySet.ShadowCopySetId

ShadowCopySetId

ShadowCopySet.Status

ExposeShadowCopySet

ShadowCopySetId

ShadowCopySet.ServerShadowCopySetId

TimeOutInMilliSeconds

ExposeTimeout

ShadowCopySet.Status

ShadowCopy

ShadowCopySet.ShadowCopyLis ShadowCopyId

ShadowCopy.ServerShadowCopyId

GetShareMapping ShadowCopySetId

ShadowCopySetId

ShareName

ShadowCopy.ShareName

- ShadowCopy.ExposedName ShareMapping.ShadowCopyShareName
- ShadowCopy.CreationTimeStamp ShareMapping.CreationTimestamp

3.2.4.5 Application Updates Recovery Status of a Shadow Copy Set

ShadowCopySetId

ShadowCopySet

GlobalShadowCopySetTable

ShadowCopySet.ShadowCopySetId

ShadowCopySetId

ShadowCopySet.Status

RecoveryCompleteShadowCopySet ShadowCopySet.ServerShadowCopySetId

ShadowCopySetId

ShadowCopySet.Status

3.2.4.6 Application Aborts a Shadow Copy Set

ShadowCopySetId

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ShadowCopySet GlobalShadowCopySetTable ShadowCopySetId ShadowCopySetId

AbortShadowCopySet

ShadowCopySetId

ShadowCopySet.ServerShadowCopySetId

ShadowCopySet GlobalShadowCopySetTable

ShadowCopySet

3.2.4.7 Application Queries Shadow Copy Information of a Share

- ShareName
- ShadowCopySetId
- ShadowCopyId

ShadowCopySet GlobalShadowCopySetTable ShadowCopySet.ShadowCopyId ShadowCopySetId

ShadowCopy ShadowCopySet.ShadowCopyList ShadowCopy.ShareName

ShadowCopy

3.2.4.8 Application Requests Deleting Shadow Copy Of a Share

Identifier
 IsShadowCopySet

IsShadowCopySet
 Identifier

IsShadowCopySet

ShadowCopySet GlobalShadowCopySetTable ShadowCopySet.ShadowCopySetId Identifier

GetSupportedVersion MinVersion ClientVersion

MinVersion MaxVersion

ClientVersion

ShadowCopy ShadowCopySet.ShadowCopyList
DeleteShareMapping ShadowCopySetId
ShadowCopySet.ServerShadowCopySetId ShadowCopyId

ShadowCopy.ServerShadowCopyId ShareName ShadowCopy.ShareName

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ShadowCopy ShadowCopyList ShadowCopySet

ShadowCopy

IsShadowCopySet

ShadowCopySet GlobalShadowCopySetTable
 ShadowCopy ShadowCopySet.ShadowCopyList
 ShadowCopy.ShadowCopyId
 Identifier

DeleteShareMapping ShadowCopySetId

 $\textbf{ShadowCopySetId} \hspace{0.2cm} \textit{ShadowCopyId} \hspace{0.2cm} \textit{ShadowCopyId} \hspace{0.2cm}$

ShadowCopy.ServerShadowCopyId ShareName ShadowCopy.ShareName

ShadowCopy

ShadowCopySet.ShadowCopyList ShadowCopy

3.2.4.9 Application Requests Shutdown of Client

ShadowCopySet GlobalShadowCopySetTable ShadowCopySet.Status

AbortShadowCopySet

ShadowCopySetId ShadowCopySetServerShadowCopySetId

3.2.5 Timer Events

3.2.6 Other Local Events

4 Protocol Examples

4.1 Shadow Copy Preparation

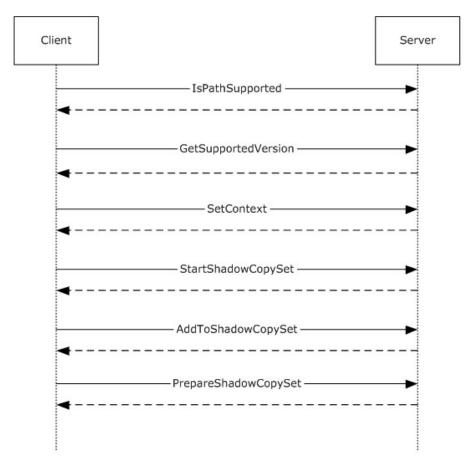


Figure 2: Message sequence for preparing a shadow copy set

IsPathSupported (Opnum 8)

GetSupportedVersion (Opnum 0)

SetContext (Opnum 1)

StartShadowCopySet (Opnum 2)

AddToShadowCopySet (Opnum 3)

PrepareShadowCopySet (Opnum 12)

4.2 Shadow Copy Creation

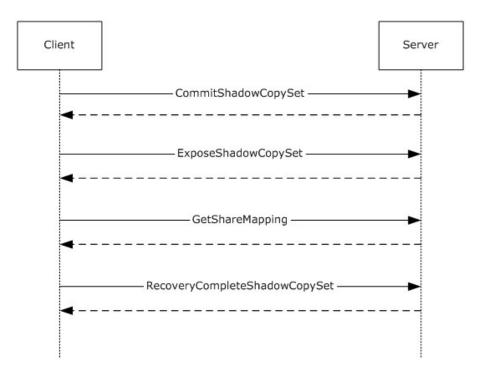


Figure 3: Message sequence for committing a shadow copy set

CommitShadowCopySet (Opnum 4)

ExposeShadowCopySet (Opnum 5)

GetShareMapping (Opnum 10)

4.3 Shadow Copy Deletion

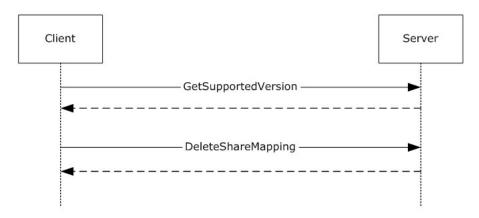


Figure 4: Message sequence for committing a shadow copy set GetSupportedVersion (Opnum 0)

DeleteShareMapping (Opnum 11)

5 Security

5.1 Security Considerations for Implementers

5.2 Index of Security Parameters

IDL

```
import "ms-dtyp.idl";
   uuid (A8E0653C-2744-4389-A61D-7373DF8B2292),
   version(1.0),
   ms union,
   pointer default (unique)
]
interface FileServerVssAgent
   typedef struct FSSAGENT SHARE MAPPING 1 {
       GUID ShadowCopySetId;
       GUID ShadowCopyId;
       [string] LPWSTR ShareNameUNC;
       [string] LPWSTR ShadowCopyShareName;
       LONGLONG CreationTimestamp;
   } FSSAGENT SHARE MAPPING 1, *PFSSAGENT SHARE MAPPING 1;
   typedef [switch_type(unsigned long)] union _FSSAGENT_SHARE_MAPPING {
            FSSAGENT SHARE MAPPING 1 *ShareMapping1;
        [default]
    } FSSAGENT SHARE MAPPING, *PFSSAGENT SHARE MAPPING;
```

```
DWORD ExposeShadowCopySet (
[in] handle_t hBinding,
[in] GUID ShadowCopySetId,
[in] unsigned long TimeOutInMilliseconds);
DWORD RecoveryCompleteShadowCopySet (
[in] handle_t hBinding,
[in] GUID ShadowCopySetId);
DWORD AbortShadowCopySet (
[in] handle t hBinding,
[in] GUID ShadowCopySetId);
DWORD IsPathSupported (
[in] handle t hBinding,
[in] [string] LPWSTR ShareName,
[out] BOOL* SupportedByThisProvider,
[out] [string] LPWSTR* OwnerMachineName);
DWORD IsPathShadowCopied (
[in] handle t hBinding,
[in] [string] LPWSTR ShareName,
[out] BOOL* ShadowCopyPresent,
[out] long* ShadowCopyCompatibility);
DWORD GetShareMapping (
[in] handle t hBinding,
[in] GUID ShadowCopyId,
[in] GUID ShadowCopySetId,
[in] [string] LPWSTR ShareName,
[in] DWORD Level,
[out] [switch is(Level)] FSSAGENT SHARE MAPPING *ShareMapping);
DWORD DeleteShareMapping (
[in] handle_t hBinding,
[in] GUID ShadowCopySetId,
[in] GUID ShadowCopyId,
[in] [string] LPWSTR ShareName);
DWORD PrepareShadowCopySet (
[in] handle t hBinding,
[in] GUID ShadowCopySetId,
[in] unsigned long TimeOutInMilliseconds);
```

MinServerVersion			
MaxServerVersion			
	StartShadowCopySe	t	
AbortShadowCopySet			
VSS			

7 Appendix B: Product Behavior

Net	rShareAdd()	
	MappedShare.Sl	hareName
•	MappedShare.Sl	hareName
		ShadowCopySet.Status

8 Change Tracking

	New
	Major
•	
	Minor
	Minor
	Editorial
	No change
•	
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Editorially updated.

•	Protocol	syntax
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Protocol revision

Section	Tracking number (if applicable) and description	Major change (Y or N)	Change type

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