Date: July 11, 2001

To: T10 Committee (SCSI)

From: George Penokie (Tivoli)

Subject: SRP to SAM-2 Protocol

I suggest you make this a normative annex A. The annex starts on the next page.

Annex A

(normative)

SRP services

A.1 SRP services overview

SRP provides services to enable an application client to request and manage tasks (see SCSI Architecture Model-2 Standard) and to enable a device server to receive commands and move data to/from an application client. The SRP services are described in terms of the services the SCSI initiator port and SCSI target port provide.

A.2 Procedure objects

See table A.1 for a list of the procedure objects used when passing services across the SRP service interface. See table A.1 for the definitions of the names used within this standard and the equivalent SCSI Architecture Model-2 Standard names of the procedure objects, the name of the standard where the objects are defined, the standard where the binary contents of the objects are defined, and the routing of the objects. The routing shows:

a) the source of the object
b) the final destination of the object, and
c) the routing of the object.

.

Table A.1 - SAM-2 Procedure objects

Procedure Object	Standard where object format defined	Object routing
application client buffer offset	SAM-2	DS → targ → init
data-out buffer size	SAM-2	AC → init
data-in buffer size	SAM-2	AC → init
command descriptor block	SAM-2/cmd (note 1)	AC → init → targ → DS
data-in buffer	cmd (note 2)	DS → targ → init → AC
data-out buffer	cmd (note 2)	AC → init → targ → DS
device server buffer	cmd (note 2)	DS → targ → init
I_T_L_x nexus	this standard	AC → init → targ → DS **or** AC → init → targ → TM **or** DS → targ → init
request byte count	SAM-2	DS → targ
service response	this standard (note 3)	DS → targ → init → AC **or** targ → DS
autosense request	SAM-2	AC → init → targ → DS
sense data	SPC-2	DS → targ → init → AC
status	SAM-2	DS → targ → init → AC
task attribute	this standard	AC → init → targ → DS

Key: AC=application client, cmd=SCSI command standards, DS=device server, init=initiator port, SAM-2=SCSI Architecture Model-2 Standard, TM=task manager, targ=target port

Notes

1) The portions not defined in the SCSI Architecture Model-2 Standard are defined in the SCSI command standards (e.g.,SCSI-3 Block Commands Standard, SCSI Primary Commands-2 Standard).
2) Parameter lists are defined within one of the SCSI command standards (e.g.,SCSI-3 Block Commands Standard, SCSI Primary Commands-2 Standard). SCSI standards do not define non-parameter list information.
3) The SERVICE DELIVERY OR TARGET FAILURE value of the service response is not defined in SCSI.

A.3 Application client SCSI command services

A.3.1 Application client SCSI command services overview

The SCSI command services shall be requested by the application client using a procedure call defined as:

Execute Command (IN (I_T_L_x nexus, command descriptor block, [task attribute], [data-in buffer size], [data-out buffer], [data-out buffer size], [autosense request]), OUT ([data-in buffer], [sense data], status, service response))

A.3.2 Send SCSI command service

The send SCSI command service is a four step confirmed service that provides the means to transfer a command data block to a device server.

Processing the execute command procedure call for a send SCSI command service shall be composed of the 4 step confirmed service shown in table A.2.

Table A.2 - Processing of send SCSI command service procedure

Step	Source/ Destination	Protocol service name	SCSI Protocol Service Interface procedure call
request	application client to consumer	send SCSI command request	Send SCSI command (IN (I_T_L_x nexus, command descriptor block, [task attribute], [data-in buffer size], [data-out buffer], [data-out buffer size], autosense request))
information unit transfer	consumer to I/O controller	SRP_CMD IU or SRP_Task_Management IU	See 5x7 and 5x6
indication	I/O controller to device server	send SCSI command indication	SCSI command received (IN (I_T_L_x nexus, command descriptor block, [task attribute], autosense request))
response	device server to I/O controller	send SCSI command response	Send command complete (IN (I_T_L_x nexus, [sense data], status, service response))
information unit transfer	I/O controller to Consumer	SRP_RSP IU	See 5x8
confirmation	consumer to application client	send SCSI command confirmation	Command complete received (IN (I_T_L_x nexus, [data-in buffer], [sense data], status, service response))

A.4 Device server SCSI command services

A.4.1 Device server SCSI command services overview

The SCSI data buffer movement services shall be requested from the device server using a procedure call defined as:

> Move data buffer (IN (I_T_L_x nexus, device server buffer, application client buffer offset, request byte count)).

Either data-in delivery, data-out delivery, both data-in and data-out delivery, or neither data delivery may be used while processing one command. If both are used, the device server shall combine the data-in and data-out service responses into one service response.

A.4.2 Data-in delivery service

The data-in delivery service is a two step confirmed service that provides the means to transfer a parameter list or data from a device server to a SCSI initiator port.

Processing the execute command procedure call for a data-in delivery service shall be composed of the 2 step confirmed service shown in table A.3.

Table A.3 - Processing of data-in delivery service procedure

Step	Source/ Destination	Protocol service name	SCSI Protocol Service Interface procedure call
request	device server to I/O controller	data-in delivery request	Send data-in (IN (I_T_L_x nexus, device server buffer, application client buffer offset, request byte count))
data-in transfer	I/O controller to consumer	RDMA data-in transfer	See 4x1.
confirmation	I/O controller to device server	data-in delivery confirmation	Data-In delivered (IN (I_T_L_x nexus))

A.4.3 Data-out delivery service

The data-out delivery service is a two step confirmed service that provides the means to transfer a parameter list or data from a SCSI initiator port to a device server.

Processing the execute command procedure call for a data-out delivery service shall be composed of the 2 step confirmed service shown in table A.4.

Table A.4 - Processing of data-out delivery service procedure

Step	Source/ Destination	Protocol service name	SCSI Protocol Service Interface procedure call
request	device server to I/O controller	data-out delivery request	Receive data-out (IN (I_T_L_x nexus, application client buffer offset, request byte count, device server buffer))
data-out transfer	I/O controller to consumer	RDMA data-out transfer	See 4x1.
confirmation	I/O controller to device server	data-out delivery confirmation	Data-out received (IN (I_T_L_x nexus))

A.5 Task management services

A.5.1 Task management functions overview

The task management services shall be requested from the application client using a procedure call defined as:

Function name (IN (nexus), service response)

A.5.2 Task management functions

This standard handles task management functions as a four step confirmed service that provides the means to transfer task management functions to a task manager.

The task management functions are defined in the SCSI Architecture Model-2 Standard. This standard defines the actions taken by the SRP services to carry out the requested task management functions.

A.5.3 ABORT TASK

The SRP services request the SCSI initiator port issue an SRP_TASK_MGMT information unit with a TASK MANAGEMENT FLAGS field set to indicate an ABORT TASK function (see xxx) to be sent to the selected SCSI device.

A.5.4 ABORT TASK SET

The SRP services request the SCSI initiator port issue an SRP_TASK_MGMT information unit with a TASK MANAGEMENT FLAGS field set to indicate an ABORT TASK SET function (see xxx) to be sent to the selected SCSI device.

A.5.5 CLEAR ACA

The SRP services request the SCSI initiator port issue an SRP_TASK_MGMT information unit with a TASK MANAGEMENT FLAGS field set to indicate an CLEAR ACA function (see xxx) to be sent to the selected SCSI device.

A.5.6 CLEAR TASK SET

The SRP services request the SCSI initiator port issue an SRP_TASK_MGMT information unit with a TASK MANAGEMENT FLAGS field set to indicate an CLEAR TASK SET function (see xxx) to be sent to the selected SCSI device.

A.5.7 LOGICAL UNIT RESET

The SRP services request the SCSI initiator port issue an SRP_TASK_MGMT information unit with a TASK MANAGEMENT FLAGS field set to indicate an LOGICAL UNIT RESET function (see xxx) to be sent to the selected SCSI device.