XDR Examples

Below are four different message formats for transmitting a message that contains up to 5 names. Note that different assumptions are made in each case.

Example Format One:

(Send a variable number of names – each name is represented as a variable length string. It is assumed that names are up to 32 characters long.)

Number of names (1 to m)	Name 1	Name 2		Name m
Unsigned Integer	Variable Length String	Variable Length String	…	Variable Length String
4 bytes	8 to 36 bytes	8 to 36 bytes		8 to 36 bytes

m names

Overall message size: 12 to 184 bytes

Example Format Two:

(Send a variable number of names – each name is represented as a fixed length string. It is assumed that names are 32 characters long.)

Number of names (0 to m)	Name 1	Name 2		Name m
Unsigned Integer	Fixed Length String	Fixed Length String	…	Fixed Length String
4 bytes	32 bytes	32 bytes		32 bytes

m names

Overall message size: 4 to 164 bytes

Example Format Three:

(Always send 5 names – each name is represented as a variable length string, but names may be empty. It is assumed that names are up to 32 characters long.)

Name 1	Name 2		Name 5
Variable Length String	Variable Length String	…	Variable Length String
4 to 36 bytes	4 to 36 bytes		4 to 36 bytes

5 names

Overall message size: 20 to 180 bytes

Example Format Four:

(Always send 5 names – each name is represented as a fixed length string. It is assumed that names are 32 characters long.)

Name 1	Name 2		Name 5
Fixed Length String	Fixed Length String	…	Fixed Length String
32 bytes	32 bytes		32 bytes

5 names

Overall message size: 160 bytes

XDR Types

Base XDR types are as presented in lecture 2:

Type	Size of Field
Integer (signed – can represent numbers -2147483648 to 2147483647	4 bytes
Unsigned integer (can represent numbers 0 to 4294967295)	4 bytes
Floating Point – single precision (float)	4 bytes
Floating Point – double precision (double)	8 bytes
Character	4 bytes (1 for character + 3 padding)
Fixed length string (length n) [Both sides know how many characters will be sent, n is constant.]	$4 * \lceil n/4 \rceil$ (i.e. round up to multiple of 4)
Variable length string (length i) [Length is sent, followed by the characters, i is variable.]	$4 + 4 * \lceil i/4 \rceil$ (i.e. integer plus characters, rounded up to multiple of 4)
Fixed length array (length n) [Both sizes know how many elements will be sent and the element size – both are fixed]	$n * 4 * \lceil element-size/4 \rceil$ (Element size rounded up to multiple of 4 x n elements)
Variable length array (length i) [Element size is fixed – number of elements is variable – so number of elements must be sent first – unsigned integer]	$4 + i * 4 * \lceil element-size/4 \rceil$

For more details see RFC1832 (http://www.faqs.org/rfcs/rfc1832.html). The standard specifies a number of other types including opaque data. Note that enumerated types and booleans are just implemented as integers.