X11/96-43

MUMPS Development Committee

Extension to the MDC Standard
Type A Release of the MUMPS Development Committee

<u>ssvn</u> Formalization

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Produced by the MDC Subcommittee #15
Programming Structures

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Because of the evolutionary nature of MDC specifications, the reader is further reminded that changes are likely to occur in the specification released, herein, prior to a complete republication of the MDC Standard.

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1. Identification

1.1 Title:

ssvn Formalization

1.2 MDC Proposer and Sponsor:

Proposer:
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Sponsor:
SC15/TG13 ssvn Syntax
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1.3 Motion:

None. Final publication version, superseding X11/SC15/96-4.

1.4 History:

Date	Document	Action	
01 Aug 96	X11/96-43	Final publication version.	
01 Feb 96	X11/SC15/96-4	Proposed as MDC/A	(passed: 16-3-7)
31 Aug 95	X11/SC15/95-32	Proposed as MDC/A (postponed for discussion)	
19 Apr 95	X11/SC15/95-11	Proposed as MDC/A (editorial amendment)	
01 Dec 94	X11/SC15/94-32	Proposed as MDC/A (editorial amendment)	
20 Apr 94	X11/SC15/94-21	Proposed as SC15/A	(passed: 25-0-3)
01 Feb 94	X11/SC15/TG13/94-1	modified, proposed as SC15/B	(passed: 25-0-5)
25 Oct 93	X11/SC15/TG13/93-1	proposed as SC15/B (environment language added)	
09 Sep 93	X11/SC15/TG4/93-2	Initial proposal for SC12/B	

1.5 Dependencies:

No proposals have been identified which depend on this proposal.
No proposals have been identified upon which this proposal depends.

2. Justification

2.1 Needs

The formalization of the ssvn section of the draft standard is woefully lacking in meta-language constructs. As it is currently written it is not possible to use indirection to resolve an ssvn reference.

2.2 Existing Practice

Existing practice takes two forms; one is that implementors have, on their own, implemented the syntax such that indirection can be used with ssvns since that usage was clearly intended with the creation of certain ssvns. The other practice is that of completely writing out full ssvn references every time.

3. Description

3.1 General description

This proposal defines the formalization for ssvns based on the existing formalization for gvns. As a result, indirection, and especially name indirection, will be formally usable with ssvns. ssvn references to environments other than the current one are erroneous unless the specific ssvn defines the resulting action.

Note that certain forms of environment may be inappropriate for certain ssvns; the element environment may encompass more than just one system, or even act as 'meta'-environments where it is may be ambiguous which version of a specific ssvn is in effect. Implementors which permit such 'meta'-environments will need to deal with the potential problems these ambiguities may produce.

For those ssvns which have default environments (see 7.1.3.9), explicit environment references override the individual reference) the default environment (as one might expect).

3.2 Annotated Examples of Use

```
Set REF=$NAME(^$Window(window,"GADGET"))
If $D(@REF) Write !,"There are gadgets!"
Set G="" For  Set G=$O(@REF@(G)) Quit:G="" Do Gadget(G)
I $D(^$|"linus"|ROUTINE("TEST")) D ^|"linus"|TEST
```

3.3 Formalization (References are to the X11.1-1994 Canvass Document)

- **Replace Clause 7.1.3 (but not the subclauses beneath it) with:**

7.1.3 Structured system variable ssvn

```
                  |        rssvn              |
ssvn ::=          |                           |
                  |   @ expratom V ssvn       |


                  | ^$ [ | environment | ] ssvname [ ( L expr ) ] |
rssvn ::=         |                                                |
                  |   @ ssvnamind @ ( L expr )                     |


ssvnamind ::=   rexpratom V ssvn
```

The prefix ^$ uniquely denotes a structured system variable name. The parenthesized list of exprs following the ssvname are called subscripts; a ssvn may be either subscripted or unsubscripted; if it is subscripted, any number of subscripts separated by commas is permitted (the allowed values and/or interpretation of each subscript is defined for each individual ssvname). Structured system variable names (ssvnames) differing only in the use of corresponding upper and lowercase letters are equivalent.

When ssvnamind is present it is always the component of a rssvn. If the value of the rssvn is a subscripted form of ssvn, then some of its subscripts may have originated in the ssvnamind. In this case, the subscripts contributed by the ssvnamind appear as the first subscripts in the value of the resulting rssvn, separated by a comma from the (non-empty) list of subscripts appearing in the rest of the rssvn.

Values may not be assigned to ssvns and ssvns may not be KILLed unless the semantics of these operations are explicitly defined. The environment form of the ssvn syntax may only refer to the default environment unless the ssvn is explicitly defined to permit use of environments other than the default. A reference to such an ssvn which refers to an environment which is not explicitly permitted is erroneous and causes an error condition with ecode = "M59". Other references to ssvns using the environment syntax however, due to technical reasons or security concerns, may be restricted by implementors to a restricted set of possible environments. An attempt to violate this restriction causes an error condition with an implementor-specified ecode beginning with "Z".

The meaning of the individual subscripts of a ssvn is explicitly defined for each ssvn. The standard contains the following ssvnames:

```
                   | C[HARACTER]     |
                   | D[EVICE]        |
                   | G[LOBAL]        |
ssvname  ::=       | J[OB]           |
                   | LIBRARY         |
                   | L[OCK]          |
                   | R[OUTINE]       |
                   | S[YSTEM]        |
                   | Z[unspecified]  |
```

Unused structured system variable names beginning with an initial letter other than Z are reserved for future enhancement of the standard.

- **Replace the definition of rexpratom (7.1.2.1) with the following:**

```
                   | rlvn      |
rexpratom ::=      | rgvn      |
                   | rssvn     |
                   | expritem  |
```

4. Implementation Effects

4.1 Effect on Existing User Practices and Investments

None expected; this potentially will 'standardize' certain non-standard coding practices.

4.2 Effect on Existing Vendor Practices and Investments

None expected; the implicit understanding that non-Z ssvn names are reserved for future standard extensions has been made explicit. This should affect only those vendors (none to the author's knowledge) who have created ssvns whose names fall in that category.

4.3 Techniques and Costs for Compliance Verification

None identified.

4.4 Legal Considerations

None identified.

5. Closely Related Standards Activities

5.1 Other X11 Proposals Under Consideration

None.

5.2 Other Related Standards Efforts

None.

5.3 Recommendations for Coordinating Liaison

X11/TG18	ssvn coordination task group

6. Associated Documents

X11/92-48	MDC/A	Structured System Variables
X11/SC12/93-20	MDC/A	Character Set Profiles
X11/94-23	MDC/A	Library proposal

7. Issues, Pros and Cons, and Discussion

- Sep 93 A syntactic shorthand, such as indirection, is a desired (and expected) addition to the language.

- Oct 93 Dublin: Addition of environment syntax should include language which permits an implementation to restrict access to other environments. In addition, ssvn definitions should be allowed to exclude environment syntax. (inclusion is default)

- Jan 94 Restrict environment to default environment unless an ssvn is defined to use other environments. (exclusion is default)

- Feb 94 Houston: Passed as SC/B: 25-0-5

- Jun 94 Reno: Passed as SC/A: 25-0-3, No cons

- Jan 95 Albuquerque: not presented. A discussion came up regarding the appropriateness of environment with ssvns for *all* environments. It was pointed out that there may be environments where a reference to ^$JOB would certainly be ambiguous (a client/server network being considered a single environment is one example). The consensus was that identification of this problem in section 3.1, would satisfy objections while not delaying the proposal too much and it could be presented for MDC/A at the next meeting.

- Jun 95 Chicago: remanded to subcommittee 15 for clarification. Some questions arose from the wording discussing the use of environments other than the default environment. The correction, highlighted in secticn 3.3 changes the sentence "The environment form of the ssvn syntax may only refer to the default environment; an ssvn must be explicitly defined to permit use of environments other than the default." to: "The environment form of the ssvn syntax may only refer to the default environment unless the ssvn is explicitly defined to permit use of environments other than the default." The will be presented as an editorial change for reaffirmation by the subcommittee and is expected to then be presented for elevation to MDC/A status.

- Oct 95 New Orleans: motion to postpone until the March 1996 meeting: the two sides of the discussion on the use of environment were directed to have written discussion documents ready for the pre-meeting mailing. (see X11/SC15/96-3 for one of them)

- Mar 96 Boston: Proposed as MDC/A -- passed 16-3-7. Note: only one discussion document was submitted.

  Pro: 1. Necessary Formalization
  2. Environment semantics defined

  Con: 1. Should not include environment syntax because no semantics attached

8. Glossary

None.

9. Appendix

None.