

Subject: Allow any combination of assumed and explicit shape  
From: Van Snyder  
Reference: 03-258r1, section 2.9.2.2

## 1 **Number**

2 TBD

## 3 **Title**

4 Allow any combination of assumed and explicit shape.

## 5 **Submitted By**

6 J3

## 7 **Status**

8 For consideration.

## 9 **Basic Functionality**

10 Allow any combination of assumed and explicit shape.

## 11 **Rationale**

12 In many applications, one knows the values of some array bounds, but not all. In one application, I  
13 have a  $2 \times 2$  matrix at every point along a path of indeterminate length. If I could declare this using  
14 `incoptdepth(2,2,:)`, I would have some confidence that the processor would optimize the MATMUL  
15 operations along the path, without needing to write `incoptdepth(1:2,1:2,j)`. At another point in the  
16 same application, I have an array that corresponds to the  $\sigma_-$ ,  $\pi$  and  $\sigma_+$  components of a Zeeman-split  
17 spectral line. The first dimension here is naturally `-1:1`.

## 18 **Estimated Impact**

19 Minor.

## 20 **Detailed Specification**

21 Allow any dimension of a pointer or allocatable array to be declared with explicit, assumed or deferred  
22 shape, independently of the others. Allow the last dimension of a pointer array to be specified by an  
23 asterisk. If the bounds for any dimension are given explicitly in the declaration, the same values shall be  
24 specified for those bounds in an ALLOCATE statement. If a pointer with such bounds is the left-hand  
25 side in a pointer assignment statement, and any bounds are specified, any bounds explicitly specified in  
26 its declaration shall have the same values in the pointer assignment statement.

## 27 **History**