Session
VS039

OpenVMS Shareable Libraries
An Implementor's Guide

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Introduction

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What is an OpenVMS Shareable Library?

A Shareable Library is a section of code and/or data which is dynamically linked to your program at image activation.

Normal usage does not require any privileges not available to a Student user.

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What kinds of code can be included in a Shareable Library?

Almost any code can be placed in a shareable library. The main requirement is that the code be referenced by one or more programs.

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Can data be included in a Shareable Library?

Yes, data can be included in a shareable library.

However, to ensure safety, you should make sure that the data is

Read only (NOWRT)

OR

Copy on Reference.

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Why use Shareable Libraries?

- ***change control***
- ***eliminate regression***
- ***different programmers can work on different parts of the project at the same time without interfering with each other.***

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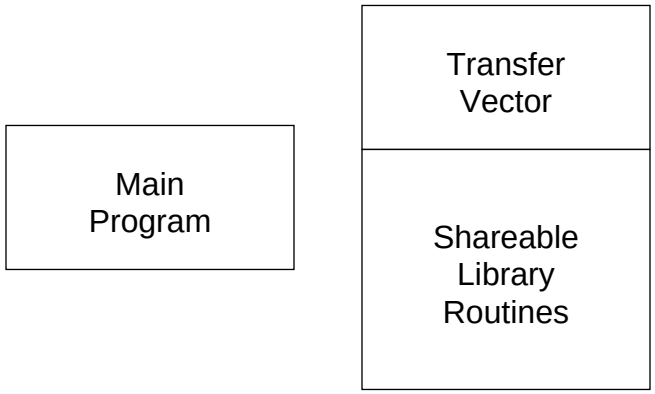
What happens when I call a routine in a shareable library?



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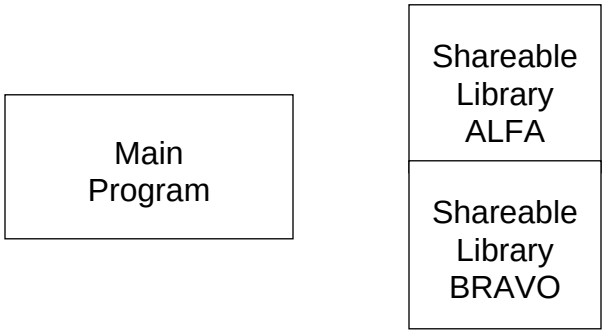
Can I use multiple shareable libraries at the same time?

YES!!!



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How do I specify a shareable library at execution time?

Use logical names.

No privileges required!

```
$ ASSIGN –
$_ $1$DUA2:[GEZELTER]TEKPLT.EXE –
$_ TEKPLT
$ RUN program
```


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How do I create an OpenVMS–VAX transfer vector?

Its easy! (Even if you are not a MACRO programmer!)

Define Transfer Vector:

```
.TRANSFER       TEKPLT
.MASK           TEKPLT
JMP             L^TEKPLT+2
.END
```

Assemble transfer vector.

LINK the image.

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How do I create an OpenVMS–ALPHA transfer vector?

Its even easier!

In the LINKER Options File:

```
SYMBOL_VECTOR=(name1=PROCEDURE,-
        name2=PROCEDURE,-
        SPARE,-
        SPARE,-
        SPARE,-
        SPARE,-
        SPARE)
```

Just LINK the image!

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What do I save by using Shareable Libraries?

- ***link time (huge savings possible)***
- ***disk space***
- ***maintenance effort***
- ***regression errors***

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Guidelines:

- ***provide ID entry points***
- ***have main system produce optional revision listing of libraries used***
- ***be careful of multiple versions***
- ***be extremely careful of shareable, writeable data!!!!***
- ***enforce use of libraries***

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Shareable Libraries – Concepts

- ***All calls to entry points in shareable libraries are routed through transfer vectors.***
- ***Most data areas are allocated as non-shareable space or are located on the stack.***
- ***Normal use requires no privileges. Actual sharing of code/data will require the privileges to INSTALL the image.***

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Source Program Concerns

- ***Avoid impure references; address constants, use MOVA type instructions instead***
- ***Watch out for: COMMONs (FORTRAN); external variables (C); and similar structures***

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Compiler related issues

Watch out for PSECT attributes!

In particular, the combination of SHR and WRT is generally a bad idea (when the image is installed, different processes will share Read/Write data).

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Linker related issues

/SHARE switch on command

GSMATCH=LEQUAL,1,0 (in OPT file)

Fix PSECT attributes (if needed)

Be sure to check MAP file

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Debugging Concerns

Try to debug before releasing shareable image to the world.

Local logical names override more global names, thus you can switch between production and test versions from minute to minute.

Questions?

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