PEXlib 2

PEXlib is an application program interface (API) to the PEX protocol. It is a programmer's interface to the PEX protocol just as Xlib is to the X protocol. It provides application portability across hardware platforms and enables 3D graphics rendering on local and remote displays. The PEXlib implementation for Solaris PEX is based on the *PEXlib Specification and C Language Binding Version 5.1* and *CGE PEX 5.1 Specification*.

Direct PEXlib

Direct PEXlib is a performance enhancement mode of Sun's PEXlib implementation that you can use when you display PEXlib applications locally, that is, on the same machine as your PEX client. To enable Direct PEXlib, set the environment variable `SUNPEX_DIRECT_ENABLE` in your environment before starting a PEXlib client:

```
% setenv SUNPEX_DIRECT_ENABLE
```

Setting this environment variable enables PEXlib to use a direct path to graphics capabilities in your machine, without passing through the PEX protocol interface to the server. The PEX protocol interface requires that PEXlib encode your application data, and that the PEX server receiving the data decode it. This is transparent to the application developer or user, but can have

some performance cost. By using the environment variable, you may regain this performance cost. Note that by default, this environment variable is not set on your machine.

Note – If you set the environment variable `SUNPEX_DIRECT_ENABLE` but are running your application remotely (that is, your application is running on a different machine than your server), the environment variable has no effect.

Features and Limitations of the Direct Rendering Path

▼ Subset support

Direct PEXlib does not support any requests that are part of the Workstation subset of PEX.

Table 2-1 shows the return values for Direct PEXlib in the `PEXGetExtensionInfo` reply.

Table 2-1 PEXGetExtensionInfo reply (Direct PEXlib)

Field	Value
protocol major version	5
protocol minor version	1
vendor	"SunPEX 3.0 SMI (Direct)"
release number	30000
subset info	5 (PEXImmediateMode & PEXStructureMode)

▼ Resource sharing

PEX resources are not shareable among different clients when using the Direct rendering path mode.

▼ GDPs and GSEs

Solaris PEX PEXlib supports a large set of GDPs and GSEs. See Table 4-25 through Table 4-27 in Chapter 4, "Functional Description" for lists of the specific GDPs and GSEs supported in the current release of Solaris PEX.

Mixing X and PEX

For applications that mix X and PEX rendering between pairs of `PEXBeginRendering()` and `PEXEndRendering()` calls, make sure the Xlib function `XSync()` is called before switching from X to PEX, and vice versa. For better performance, applications should perform all X rendering before the `PEXBeginRendering()` or after the `PEXEndRendering()` to eliminate the overhead of the `XSync()` operation.

Mixing XGL and Direct PEXlib

If you mix XGL and PEXlib calls in the same application, you cannot run this application in the Direct rendering path mode.

Double Buffering with Escapes

Direct PEXlib supports the Evans & Sutherland and Hewlett-Packard double-buffering PEX extensions via the PEX Escape mechanism. For a list of these supported Escapes, see Table 4-28 in Chapter 4, "Functional Description."

Direct PEXlib supports double buffering only on frame buffers that provide hardware double buffering, such as the GXplus. Refer to your frame buffer IHV for PEX double buffering support information.

Multibuffering

Direct PEXlib does not support interoperating with MBX (Multi-Buffering Extension to X).

Pixmaps

Direct PEXlib does not support rendering to pixmaps.

2

Extensions

Solaris PEX PEXlib provides header files containing constant definitions and data structures for extensions of Sun, Hewlett-Packard, and Evans & Sutherland such as GDPs, GSEs, and Escapes. These extension header files are:

- `ESpex.h`
- `ESproto.h`
- `ESprotost.h`
- `HPpex.h`
- `HPproto.h`
- `PEXExt.h`
- `PEXExtlib.h`
- `PEXExtproto.h`
- `PEXExtprotost.h`
- `SunPEX.h`
- `SunPEXproto.h`

References

- *PEXlib Programming Manual*
- *PEXlib Reference Manual*
- *PEXlib Specification and C Language Binding Version 5.1*
- *CGE PEX 5.1 Portability Guide*
- *Solaris PEXlib Reference Manual*