17   Domain state services

This section describes the API services provided for a guest to report its operational state to an external entity.

17.1   API calls

The following API services are provided to get and set the current domain state.

17.1.1   soft_state_set

```
Trap#              FAST_TRAP
function#          SOFT_STATE_SET
arg0               software_state
arg1               software_description_ptr

ret0               error code
```

This service enables the guest to report its soft state to the hypervisor. The soft state of the guest consists of two primary components: The first identifies whether the guest software is running or not. The second contains optional details specific to the software. The current soft state may be retrieved using the soft_state_get API service.

The software_state argument is a 64-bit value used to indicate whether the guest software is operating normally or in a transitional state. The states "normal" and "in-transition" are defined in the Sun Indicator Standard.

```
SIS_NORMAL        0x1     guest software is operating normally
SIS_TRANSITION    0x2     guest software is in transition
```

The argument software_description_ptr is a real address of a data buffer of size 32 bytes aligned on a 32byte boundary. This buffer provides additional details specific to the guest software its operating state. The contents of this buffer are treated as a NUL terminated and padded 7-bit ASCII string of up to 31 characters not including the NUL termination. This string is to be defined by the guest software - no registry or convention is defined by this API, and guest software is free to use any appropriate string value.

Once the soft-state API group has been successfully negotiated the initial soft state is set to SIS_TRANSITION with an empty string for the software description.

17.1.1.1   Errors

```
EINVAL             – software_state is not valid, or
                        software_description is not NUL terminated
ENORADDR           – software_description is not a valid real addr buffer
EBADALIGNED        – software_description is not correctly aligned
```

17.1.1.2   Programming Notes

This service enables a guest operating system, or boot loader, to indicate its state to an entity external to the guest's virtual machine environment. Two simple states; "normal" or "transition" enable a guest to indicate whether it is operating normally, or in a transitional state such as booting or shutting down. The ability to provide a short message string enables the guest to supply additional human-readable information to supplement the two basic states.

Examples of this human readable string could be:

```
"OpenBoot before boot"
"OpenBoot booting"
```

```
"Solaris booting"
"Solaris panicked"
```

This service is enabled by successfully negotiating a version of its API service group. Before the group has been enabled a hypervisor may externally report the guest state as unavailable or as SIS_NORMAL (with a default string such as "operating normally") depending upon implementation. The current soft state is not visible to the guest itself until the service is enabled.

Once the soft state group has been enabled, the initial state is set to SIS_TRANSITION with an empty string. The virtual machine soft state is initially set to SIS_TRANSITION in the expectation that the guest operating environment will set the state to SIS_NORMAL once successfully started.

For example, while loading Solaris, OpenBoot may ignore, or set the state to transition several times (updating the informational string to identify different steps in the boot process), once booted and running Solaris may set the state to SIS_NORMAL indicating that it booted successfully. Similarly, when shutting down or panicking, Solaris may set the state to SIS_TRANSITION.

The state strings used by a guest are to be defined within the context of that guest software, there are no commonly defined strings to be used by all guests. The intended use of the soft state strings is as presentation messages to human readers. Use of commonly defined strings is strongly discouraged so as to prevent interpretation and use by external automated management software. External management software should only ascribe meaning to the well defined software state values.

17.1.2 soft_state_get

```
Trap#               FAST_TRAP
function#           SOFT_STATE_GET
arg0                software_description_ptr

ret0                error code
ret1                software_state
```

This service retrieves the current value of the guest's software state.

The software_description_ptr argument is the real address of a guest provided 32 byte buffer to be aligned on a 32 byte boundary. The API service will return the current value of the guest software description in this buffer. The hypervisor is only guaranteed to return up to and including the first NUL byte of the software description buffer contents (see soft_state_set).

17.1.2.1 Errors

```
ENORADDR        - software_description is not a valid real addr buffer
EBADALIGNED     - software_description is not correctly aligned
```