From the root node, "fwd" arcs lead to nodes describing the various components within the logical domain a guest is using.

The root node in turn contains "fwd" arcs to collective nodes for cpus, memory and various forms of I/O, as well as nodes targeted to specific consumers such as OpenBoot.

25   Appendix B: Number Registry

This appendix provides a registry of API services, their assigned trap and function numbers, and currently defined version groups and version numbers.

The definitions of the API groupings for the versioning API (§9) are as follows:

Group	Number (api_group)	Group Definition
Common	0x0	sun4v platform
Common	0x1	core APIs
Technology	0x100	PCI
Technology	0x101	Logical Domain Channels
Technology	0x102	Service Channels (*)
Performance measurement	0x200	UltraSPARC T1 performance counters
Test & Development	0x300	Platform specific optional test interfaces

(*) These calls have now been deprecated, and are described only for compatibility with old platform firmware.

25.1   Hyper-fast Trap numbers

For hyper-fast traps, the *sw_trap_numbers are* encoded in the Tcc instruction that enters the hypervisor:

Un-assigned trap numbers result in EBADTRAP being returned in %o0 as described in section 2.3.

25.2   FAST_TRAP Function numbers

Function numbers for fast-traps are provided in %o5 as a 64-bit value.

Un-assigned function numbers used for fast-traps result in EBADTRAP being returned in %o0 as described in section 2.3.

25.3   CORE_TRAP Function numbers

CORE_TRAP APIs are defined and guaranteed present for all sun4v hypervisor versions. These APIs follow the same calling conventions as FAST_TRAP API services. Four CORE_TRAP functions are currently defined as follows;

API_VERSION   defined in section 9.1.1.

API_PUTCHAR   an alias for FAST_TRAP function CONS_PUTCHAR .

API_EXIT   an alias for FAST_TRAP function MACH_EXIT.

API_GET_VERSION   defined in section 9.1.2.

25.4   Summary of API service trap and function numbers

Trap#	Func#	Versioning Group#	Vers#	Name	Defined in section
0x80	--	N/A	N/A	FAST_TRAP	-
0x83	--	0x001	1.0	MMU_MAP_ADDR	12.7.6
0x84	--	0x001	1.0	MMU_UNMAP_ADDR	12.7.8
0x85	--	0x001	1.0	TTRACE_ADDENTRY	18.3.5
0xff	--	N/A	N/A	CORE_TRAP	-
0x80	0x00	0x001	1.0	MACH_EXIT	10.1.1
0x80	0x01	0x001	1.0	MACH_DESC	10.1.2
0x80	0x02	0x001	1.0	MACH_SIR	10.1.3
0x80	0x03	0x001	1.1 *	MACH_SET_SOFT_STATE	10.1.4
0x80	0x04	0x001	1.1 *	MACH_GET_SOFT_STATE	10.1.5
0x80	0x05	0x001	1.1 *	MACH_SET_WATCHDOG	10.1.6
0x80	0x10	0x001	1.0	CPU_START	11.2.1
0x80	0x11	0x001	1.1 *	CPU_STOP	11.2.2
0x80	0x12	0x001	1.0	CPU_YIELD	11.2.5
0x80	0x14	0x001	1.0	CPU_QCONF	11.2.6
0x80	0x15	0x001	1.0	CPU_QINFO	11.2.7
0x80	0x16	0x001	1.0	CPU_MYID	11.2.9
0x80	0x17	0x001	1.0	CPU_STATE	11.2.10
0x80	0x18	0x001	1.0	CPU_SET_RTBA	11.2.3
0x80	0x19	0x001	1.0	CPU_GET_RTBA	11.2.4
0x80	0x20	0x001	1.0	MMU_TSB_CTX0	12.7.1
0x80	0x21	0x001	1.0	MMU_TSB_CTXNON0	12.7.2
0x80	0x22	0x001	1.0	MMU_DEMAP_PAGE	12.7.3
0x80	0x23	0x001	1.0	MMU_DEMAP_CTX	12.7.4
0x80	0x24	0x001	1.0	MMU_DEMAP_ALL	12.7.5
0x80	0x25	0x001	1.0	MMU_MAP_PERM_ADDR	12.7.7
0x80	0x26	0x001	1.0	MMU_FAULT_AREA_CONF	12.7.10
0x80	0x27	0x001	1.0	MMU_ENABLE	12.7.11
0x80	0x28	0x001	1.0	MMU_UNMAP_PERM_ADDR	12.7.9
0x80	0x29	0x001	1.0	MMU_TSB_CTX0_INFO	12.7.12
0x80	0x2a	0x001	1.0	MMU_TSB_CTXNON0_INFO	12.7.13
0x80	0x2b	0x001	1.0	MMU_FAULT_AREA_INFO	12.7.14
0x80	0x31	0x001	1.0	MEM_SCRUB	13.1.1
0x80	0x32	0x001	1.0	MEM_SYNC	13.1.2
0x80	0x42	0x001	1.0	CPU_MONDO_SEND	11.2.8
0x80	0x50	0x001	1.0	TOD_GET	15.1.1
0x80	0x51	0x001	1.0	TOD_SET	15.1.2
0x80	0x60	0x001	1.0	CONS_GETCHAR	16.1.1

Trap#	Func#	Versioning Group#	Vers#	Name	Defined in section
0x80	0x61	0x001	1.0	CONS_PUTCHAR	16.1.2
0x80	0x80	0x102	1.0	SVC_SEND	(*)
0x80	0x81	0x102	1.0	SVC_RCV	(*)
0x80	0x82	0x102	1.0	SVC_GETSTATUS	(*)
0x80	0x83	0x102	1.0	SVC_SETSTATUS	(*)
0x80	0x84	0x102	1.0	SVC_CLRSTATUS	(*)
0x80	0x90	0x001	1.0	TTRACE_BUF_CONF	18.3.1
0x80	0x91	0x001	1.0	TTRACE_BUF_INFO	18.3.2
0x80	0x92	0x001	1.0	TTRACE_ENABLE	18.3.3
0x80	0x93	0x001	1.0	TTRACE_FREEZE	18.3.4
0x80	0x94	0x001	1.0	DUMP_BUF_UPDATE	17.1.1
0x80	0x95	0x001	1.0	DUMP_BUF_INFO	17.1.2
0x80	0xa0	0x001	1.0	INTR_DEVINO2SYSINO	14.3.1
0x80	0xa1	0x001	1.0	INTR_GETENABLED	14.3.2
0x80	0xa2	0x001	1.0	INTR_SETENABLED	14.3.3
0x80	0xa3	0x001	1.0	INTR_GETSTATE	14.3.4
0x80	0xa4	0x001	1.0	INTR_SETSTATE	14.3.5
0x80	0xa5	0x001	1.0	INTR_GETTARGET	14.3.6
0x80	0xa6	0x001	1.0	INTR_SETTARGET	14.3.7
0x80	0xb0	0x100	1.0	PCI_IOMMU_MAP	20.5.1
0x80	0xb1	0x100	1.0	PCI_IOMMU_DEMAP	20.5.3
0x80	0xb2	0x100	1.0	PCI_IOMMU_GETMAP	20.5.4
0x80	0xb3	0x100	1.0	PCI_IOMMU_GETBYPASS	20.5.6
0x80	0xb4	0x100	1.0	PCI_CONFIG_GET	20.5.8
0x80	0xb5	0x100	1.0	PCI_CONFIG_PUT	20.5.10
0x80	0xb6	0x100	1.0	PCI_PEEK	20.5.11
0x80	0xb7	0x100	1.0	PCI_POKE	20.5.13
0x80	0xb8	0x100	1.0	PCI_DMA_SYNC	20.5.15
0x80	0xc0	0x100	1.0	PCI_MSIQ_CONF	21.4.1
0x80	0xc1	0x100	1.0	PCI_MSIQ_INFO	21.4.2
0x80	0xc2	0x100	1.0	PCI_MSIQ_GETVALID	21.4.3
0x80	0xc3	0x100	1.0	PCI_MSIQ_SETVALID	21.4.4
0x80	0xc4	0x100	1.0	PCI_MSIQ_GETSTATE	21.4.5
0x80	0xc5	0x100	1.0	PCI_MSIQ_SETSTATE	21.4.6
0x80	0xc6	0x100	1.0	PCI_MSIQ_GETHEAD	21.4.7
0x80	0xc7	0x100	1.0	PCI_MSIQ_SETHEAD	21.4.8
0x80	0xc8	0x100	1.0	PCI_MSIQ_GETTAIL	21.4.9
0x80	0xc9	0x100	1.0	PCI_MSI_GETVALID	21.4.10

Trap#	Func#	Versioning Group#	Vers#	Name	Defined in section
0x80	0xca	0x100	1.0	PCI_MSI_SETVALID	21.4.11
0x80	0xcb	0x100	1.0	PCI_MSI_GETMSIQ	21.4.12
0x80	0xcc	0x100	1.0	PCI_MSI_SETMSIQ	21.4.13
0x80	0xcd	0x100	1.0	PCI_MSI_GETSTATE	21.4.14
0x80	0xce	0x100	1.0	PCI_MSI_SETSTATE	21.4.15
0x80	0xd0	0x100	1.0	PCI_MSG_GETMSIQ	21.4.16
0x80	0xd1	0x100	1.0	PCI_MSG_SETMSIQ	21.4.17
0x80	0xd2	0x100	1.0	PCI_MSG_GETVALID	21.4.18
0x80	0xd3	0x100	1.0	PCI_MSG_SETVALID	21.4.19
0x80	0xe0	0x101	1.0	LDC_TX_QCONF	19.4.1
0x80	0xe1	0x101	1.0	LDC_TX_QINFO	19.4.2
0x80	0xe2	0x101	1.0	LDC_TX_GET_STATE	19.4.3
0x80	0xe3	0x101	1.0	LDC_TX_SET_QTAIL	19.4.4
0x80	0xe4	0x101	1.0	LDC_RX_QCONF	19.4.5
0x80	0xe5	0x101	1.0	LDC_RX_QINFO	19.4.6
0x80	0xe6	0x101	1.0	LDC_RX_GET_STATE	19.4.7
0x80	0xe7	0x101	1.0	LDC_RX_SET_QHEAD	19.4.7
0x80	0x110	0x103	1.0	NCS_REQUEST	
0x80	0x100	0x200	1.0	NIAGARA_GET_PERFREG	22.3.1
0x80	0x101	0x200	1.0	NIAGARA_SET_PERFREG	22.3.2
0x80	0x102	0x200	1.0	NIAGARA_MMUSTAT_CONF	23.3.1
0x80	0x103	0x200	1.0	NIAGARA_MMUSTAT_INFO	23.3.2
0x80	0x120	0x201	1.0	FIRE_GET_PERFREG	
0x80	0x121	0x201	1.0	FIRE_SET_PERFREG	
0x80	0x200	0x300	1.0	DIAG_RA2PA	
0x80	0x201	0x300	1.0	DIAG_HEXEC	
0xff	0x00	N/A	N/A	API_SET_VERSION	9.1.1
0xff	0x01	N/A	N/A	API_PUTCHAR	16.1.2
0xff	0x02	N/A	N/A	API_EXIT	10.1.1
0xff	0x03	N/A	N/A	API_GET_VERSION	9.1.2

* These version numbers are provisional

25.5 Error codes

When a hypervisor API returns, unless explicitly described by the API service, the 64-bit value in %o0 will be one of the following error identification values.

Value	Mnemonic	Comment
0	EOK	Successful return
1	ENOCPU	Invalid CPU id
2	ENORADDR	Invalid real address
3	ENOINTR	Invalid interrupt id
4	EBADPGSZ	Invalid pagesize encoding
5	EBADTSB	Invalid TSB description
6	EINVAL	Invalid argument
7	EBADTRAP	Invalid function number
8	EBADALIGN	Invalid address alignment
9	EWOULDBLOCK	Cannot complete operation without blocking
10	ENOACCESS	No access to specified resource
11	EIO	I/O Error
12	ECPUERROR	CPU is in error state
13	ENOTSUPPORTED	Function not supported
14	ENOMAP	No mapping found
15	ETOOMANY	Too many items specified / limit reached
16	ECHANNEL	Invalid LDC channel
17	EBUSY	Operation failed as resource is otherwise busy