

# IPMI Developers Meet

## **GNU FreeIPMI Project**

**Anand Babu** <*ab@gnu.org.in*>

**FreeIPMI Core Team**

# GNU FreeIPMI Components

- **KCS, SMIC and LAN** Portable Device Driver
- **libfreeipmi** - C library interface
- **fish** - Powerful readline based scheme extensible FreeIPMI Shell.
- **ipmi-power** - Power Management utility
- **ipmi/rmcp-ping** - IPMI Discovery and Reachability
- **sensors** - Monitoring and Diagnostics utility
- **bmc-config** - IPMI Configurator
- **sel** - System Event Log utility
- **sold** – IPMI Serial Over Lan daemon (*IPMI-2.0 onwards*)
- **bmc-info** - BMC Version, Features

# Design Goals

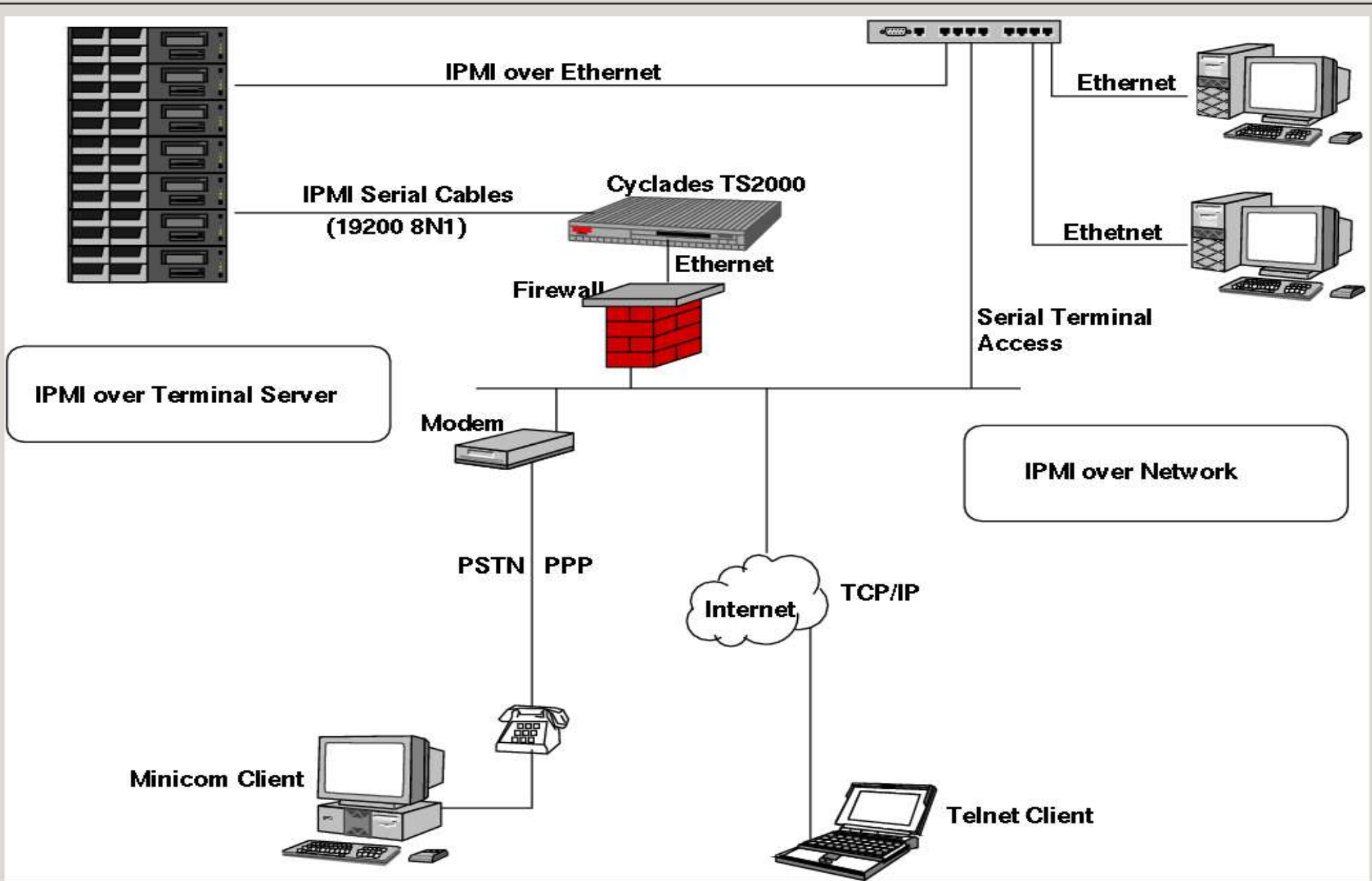
**Performance**

**Completeness**

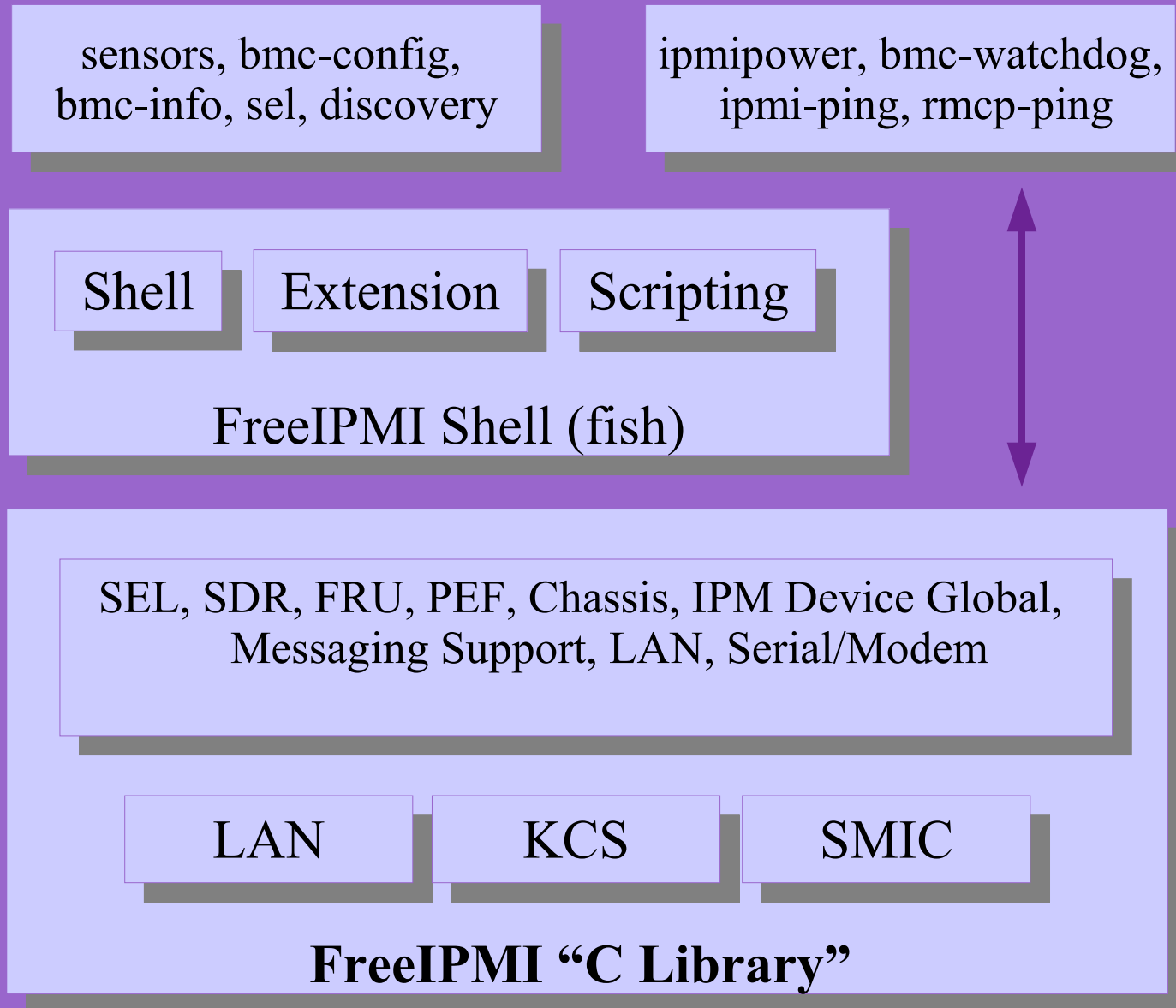
**Portability**

**Correctness**

# IPMI Network Layout



# GNU FreeIPMI Stack



# GNU FreeIPMI Building Blocks

- libfreeipmi
  - raw driver interface
  - command interface
  - higher level APIs
- fish
  - readline
  - extension
  - scripting

# LAN Interface

- `fill_lan_msg_hdr`
- `assemble_ipmi_lan_pkt`
- `ipmi_lan_sendto`
- `ipmi_lan_recvfrom`
- `ipmi_lan_cmd`
- `ipmi_lan_chksum`

# KCS Interface

- `ipmi_kcs_io_init`
- `ipmi_kcs_cmd`
- `ipmi_kcs_read`
- `ipmi_kcs_write`

# SMIC Interface

- `ipmi_smic_io_init`
- `ipmi_smic_cmd`
- `ipmi_smic_read`
- `ipmi_smic_write`

# Locking and Synchronization

- Semaphores
- Per Command Transaction
- Handled inside the device driver

# Interface Definition

- FIID (FreeIPMI Interface Definition)
  - fiid\_obj\_alloc
  - fiid\_obj\_len
  - fiid\_obj\_field\_lookup
  - fiid\_obj\_get
  - fiid\_obj\_set

# Sample FIID

```
fiid_template_t tmp1_get_sel_info_rs =
{
    {8, "cmd"},
    {8, "comp_code"},
    {4, "sel_version_major"},
    {4, "sel_version_minor"},
    {16, "log_entry_count"}, //LS byte first
    {16, "free_space"}, //LS byte first
    {32, "recent_addition_timestamp"}, //LS byte first
    {32, "recent_erase_timestamp"},
    {1, "get_sel_alloc_info_cmd_support"},
    {1, "reserve_sel_cmd_support"},
    {1, "partial_add_sel_entry_cmd_support"},
    {1, "delete_sel_cmd_support"},
    {3, "reserved"},
    {1, "overflow_flag"},
    {0, ""}
};
```

# FreeIPMI SHell

- Shell Interface
- Customization
- Extension
- Scripting

# FISHing

```
:: fish.scm: default fish configuration scm
```

```
:: Customize Fish:
```

```
(fi-set-prompt! "fish# ")
```

```
:: Set driver SMS IO Base port
```

```
; (fi-set-sms-io-base! #x0CA2)
```

```
:: Set Driver Internals:
```

```
; (fi-set-default-driver-poll-interval 10)
```

```
:: Example Group Aliases
```

```
; (set! sensors-group-alias-list
```

```
; '(  
;   (mysystem . (Processor Fan "Power Supply" Current Memory Chassis))  
;   (power . ("Power Supply"))  
;   (security . ("Platform Chassis Intrusion Platform Security Violation"))  
;   ))
```

# GNU FreeIPMI Roadmap

- GNU FreeIPMI - 0.1.0 official GNU release
- BMC Auto Config
- Unified extension interface for in-band and out-of-band interfaces
- Block-Transfer mode
- PEF
- IPMI 2.0 hardware access control
- GTK, Web interfaces ???
- New feature requests

# Demo Session

- Demo Session...

# Contact us

- Home Page
  - <http://www.gnu.org/software/freeipmi>
- Project Page
  - <https://savannah.gnu.org/projects/freeipmi/>
- Mailing List
  - <https://savannah.gnu.org/mail/?group=freeipmi>
- Contact Me
  - Anand Babu <[ab@gnu.org.in](mailto:ab@gnu.org.in)>