Run II Farms Procurement Vendor Qualifying Document

A. Introduction

Fermilab is the largest high-energy physics research center in the Western hemisphere. As part of the RUN II analysis experiments, there will be a need to purchase several hundred loosely coupled workstation class systems which will run UNIX. Currently supported operating Fermilab systems for Run II include Sun Solaris, SGI IRIX and Red Hat Linux.

B. Goals

Due to the number of PC manufacturers available and the range of quality associated with each, Fermilab has a need to qualify a subset of these vendors which meet the criteria as outlined in **SECTION C**. No fewer than two (2) vendors and not more than five (5) vendors will be accepted in this subset.

C. Criteria

The evaluation system will be critiqued on the items listed below (**SECTION C1 thru C4**). Each item will be weighted equally.

C.1 Competence in the Linux operating system

C1.1 Minimum competency requirements

At a minimum the vendor must be able to demonstrate the ability to install the Linux OS from a CDROM provided by Fermilab. The system configuration (**SECTION E**) component guidelines (see **Linux Configuration Procurement Guidelines**) and installation instructions (see **Fermi Linux Install Instructions**) shall be provided by Fermilab.

C1.2 Further competency tests (OPTIONAL)

Vendors wishing to participate in this optional test shall also build an SMP kernel for the evaluation unit and configure the Linux OS so that the user has a choice of which kernel to use. No instructions will be provided by Fermilab. Vendors able to produce an SMP kernel will be regarded as having a higher competency level than those vendors who do not. Vendors who do not participate in this test will NOT be penalized.

C.2 Ability to provide quality products

Fermilab personnel will evaluate each unit for type of components used (see **Linux Configuration Procurement Guidelines SECTION: Specifications of Other Processes/Items Part 1**) and overall "fit and finish" of the product. The system will also be judged on it's ability to be "functional". That is, the system must be able to perform all tests as outlined in **SECTION F.**

System cooling is the responsibility of the vendor and should conform to the guidelines as outlined in the **Linux Configuration Procurement Guidelines SECTION: Case Part a.** Each component must be adequately cooled according to the operating specification for that component. The vendor should assume a 100% duty cycle by 24 hours per day when evaluating cooling requirements.

C.3 Ability to provide competent support structure

During the evaluation period, the vendor shall provide both on-site maintenance and phone-support at no cost to Fermilab. The support provided must be through normal support channels provided by the vendor and not from a "special support" structure created for this evaluation.

Maintenance shall be provided from 9:00am to 5:00pm CST excluding federal holidays. The level of maintenance required shall provide for a problem resolution no later than 24 hours after a service call has been opened by Fermilab.

The vendor shall provide Fermilab with a phone number(s) and specific instructions for properly opening a service call.

C.4 Pricing

There will be three price quotes requested from the vendor (**SECTION H**).Two price quotes will be related to system configurations and one shall be for maintenance costs over a 3 year period. Vendors should provide projected prices for a 3Q99 purchase of 100 units.

A fourth price quote will be requested for the price of the evaluation unit with current pricing. This information will only be used should Fermilab decide to purchase the unit after the evaluation period.

D. Delivery requirements

Once the proposal has been sent, the vendor shall, using normal shipping channels, deliver a system within 4 weeks. The shipment of this evaluation unit will be at no cost to Fermilab.

Should a vendor fail to meet the 4 week delivery time period, Fermilab may, at it's discretion, disqualify the vendor from the evaluation.

E. Hardware and performance requirements

Specific requirements for each component can be found in the **Linux Configuration Procurement Guidelines.** The following lists what components must be installed on the system. Components not listed below should not be included in the evaluation unit.

E.1 CPU and motherboard

Two Intel Pentium^R II 450MHz processors on a single motherboard.

- The Intel CPUs must comply with the **Linux Configuration Procurement Guidelines SECTION: CPU Part 2.**
- The motherboard must comply with the **Linux Configuration Procurement Guidelines SECTION: Motherboards.** Should a utility be needed to assure that interrupts are not shared, that utility must be provided to Fermilab for evaluation. Instructions on how to use this utility shall be provided by the vendor. Any special equipment needed in the operation of this utility must be provided by the vendor to Fermilab for the purpose of the evaluation.

E.2 Disks

All disks must be contained within the system case (except the disk listed in **SECTION E.2.2.3**). External disks are not allowed. Additional cooling as necessitated by the choice of disks used are the responsibility of the vendor.

E.2.1 System disk

One (1) EIDE system disk, not to be less than 6.4GB in size shall be provided, installed and partitioned as follows:

    2GB ext2 filesystem for the OS mounted as /
    127MB for swap

The rest of the disk shall be left unpartitioned. The system disk must comply with the **Linux Configuration Procurement Guidelines SECTION: System Disk.**

E.2.2 Other disks

Three additional disks must be provided and partitioned as follows.

E.2.2.1 EIDE disk

A second EIDE disk, on a different controller from the system disk, must be provided. This disk must be no less than 16GB in size and partitioned as 1 ext2 filesystem using the entire disk and mounted as */ide_disk*. The disk subsystem must be capable of sustaining a 6MB/s throughput during a write operation.

E.2.2.2 SCSI disk

A SCSI disk, no less than 18GB in size, must be provided and partitioned as 1 ext2 filesystem using the entire disk and mounted as */scsi_disk*. The disk subsystem must be capable of sustaining a 6MB/s throughput during a write operation.

E.2.2.3 Second system disk

A second EIDE system disk, not less than 6.4GB in size, shall be provided and created with the following stipulation. The second system disk must be created by duplicating the system image from the first system disk using the image duplication methods of the vendor. The second system disk must comply with the **Linux Configuration Procurement Guidelines SECTION: System Disk.** The second system disk should not be delivered installed into the evaluation unit. The second system disk should be shipped as a spare/replacement part for the system with proper packaging.

The vendor shall provide a document to Fermilab describing the image duplication process and any time constraints related to duplicating system images.

E.3 System memory

The system shall have 512MB of ECC memory and must comply with the **Linux Configuration Procurement Guidelines SECTION: Memory.**

E.4 Video card

One (1) high-performance video card as outlined in the **Linux Configuration Procurement Guidelines SECTION: Video Part C.**

E.5 Floppy drive

The system must have 1 1.44MB 3.5" floppy drive and comply to the **Linux Configuration Procurement Guidelines SECTION: Other Components Part 3.**

E.6 CDROM drive

The system must have 1 CDROM drive capable of 3600KB/s (24x speed) peak throughput or better and must comply with the **Linux Configuration Procurement Guidelines SECTION: Other Components Part 4.**

E.7 Video monitor

Each system must have at least a 20" color monitor capable of displaying resolutions up to 1280x1024 with a vertical refresh rate greater than 70Hz.

E.8 Network card

The system must have 1 10/100Base-T network card. The following network cards are NOT permitted:

- NO 3Com network cards
- NO DEC Tulip CLONE cards
- NO SMC network cards
- NO NE2000 network cards

E.9 Keyboard

Each system must have a US keyboard and comply with the **Linux Configuration Procurement Guidelines SECTION: Other Components Part 1.**

E.10 Mouse

Each system must have a 3-button PS/2 mouse. NO SERIAL MICE.

E.11 Case

The vendor should provide the smallest possible case for the above configuration while still adhering to any cooling considerations or third party integration requirements. The case must comply with the **Linux Configuration Procurement Guidelines SECTION: Case.**

F. Evaluation

Fermilab shall evaluate the system for no longer than 30 days after receipt from the vendor. Fermilab may, at its discretion, request for an extension of the evaluation period, contingent on the vendor. At the end of the evaluation period, Fermilab shall, at it’s own expense, ship the evaluation unit back to the vendor or, at Fermilab’s discretion, choose to buy the system outright.

The systems will be evaluated based on the criteria listed in **SECTION C** and the tests listed below (**SECTION F.1**)

F.1 System tests

These tests shall be performed by the vendor before delivering the evaluation unit. The results of the tests will be examined by Fermilab upon delivery. The purpose of these tests is to allow the vendor to find problems and resolve these problems before shipping the evaluation unit.

F.1.1 Memory test

The vendor shall conduct a memory test by executing a Fermilab provided executable. T

F.1.2 CPU test

The vendor shall conduct a cpu test by executing a Fermilab provided executable. The test uses the Fermilab physics Monte Carlo reconstruction program, TINY.

F.1.3 Disk test

The vendor shall conduct a disk test on each disk installed in the system by executing a Fermilab provided executable. The test shall use the Linux provided utility "hdparm".

F.2 Instructions for running the tests

The following steps need to be executed by the vendor in order to initiate the tests described above (**SECTION F.1**).

1) Log in with username: *root*
2) Enter the root password (See **Fermi Linux Install Instructions**)
3) Enter "*/root/bench*"

The program will run the tests listed in **SECTION F.1** and give a ***PASSED*** or ***FAILED*** output on the screen after each test.

G. Additional in-house testing

In addition to the test mentioned in **SECTION F**, Fermilab shall conduct the tests outlined below (**SECTION G**). These tests shall be run in parallel and will simulate actual use of the machine.

G.1 Network test

Fermilab shall place the system on the fermilab network and test both performance and functionality of the networking hardware and software installation.

G.2 X functionality test

Fermilab shall start an X-windows sessions on each machine and simulate typical use patterns for the lab.

G.3 Stress test

Fermilab shall run programs of its own choosing to simulate the cpu use of the system for the lab.

H. Miscellaneous requirements

The requests below require a formal written response from the vendor. Responses shall be shipped with the evaluation unit.

H.1 Request for quote (RFQ)

The following RFQs should assume a purchase for 3Q99 except for **SECTION H.1.4.** Information from SECTION H.1.1 thru H.1.3 will be used to qualify the vendor as outlined in **SECTION C.4 SECTION H.1.4** will be used only if Fermilab wishes to purchase the evaluation unit instead of shipping the system back to the vendor.

H.1.1 Price quote 1

The vendor is to provide a price quote for 100 units configured exactly as specified in SECTION E with the following exception:

- NO second system disk

H.1.2 Price quote 2

The vendor is to provide a price quote for 100 units configured exactly as specified in SECTION E with the following exceptions:

- NO CDROM drive
- NO keyboard
- NO monitor
- NO mouse
- NO SCSI disk
- No second system disk
- Video card changed to "low performance" as described in the **Linux Configuration Procurement Guidelines SECTION: Video Part a**

H.1.3 Price quote 3

The vendor is to provide a pricing formula for determining the maintenance costs for each order above (**SECTION H.1.1 and H.1.2**) over a period of 3 years. Maintenance provided must be both on-site and phone support. Maintenance coverage is required from 9:00AM to 5:00PM CST M-F excluding federal holidays. The level of maintenance required shall provide for a problem resolution within 24 hours after a service call has been opened by Fermilab.

H.1.4 Price quote 4

The vendor shall provide a price quote for the delivered evaluation unit with current pricing information (no forward projections).

H.2 Support for multiple system images

H.2.1 Number of system images

The vendor is to provide Fermilab with the number of different system images they are willing to support for Fermilab. These images will be used for disk duplication.

H.2.2 Requirements per system image

The vendor is to list all requirements needed for each system image that the customer requests. For example, if each system image kept by the vendor for the customer requires that a certain number of system be purchased with this image, this must mentioned.

H.3 Additional questions

The vendor shall provide answers to the questions listed in the **Linux Configuration Procurement Guidelines SECTION: RESPONSE ITEMS** questions 1 thru 5.

I. Technical contacts

Fermilab shall provide technical contacts to the vendors for any configuration issues or OS related problems. The primary and preferred contact method is via e-mail. Phone numbers will also be provided.

I.1 Email address

Questions regarding material in this document and operating system issues can be sent to qualify@fnal.gov.

I.2 Phone Contacts

In the case of urgent questions, the following Fermilab Employees may be contacted 8:00AM thru 5:00PM M-F excluding federal holidays.

Lisa Giacchetti - Farms procurement lead
(630)840-8023

Connie Sieh - Linux OS lead
(630)840-8531

Ray Pasetes
(630)840-5250

Dan Yocum
(630)840-8525