



## Accelerating Adoption of Data Center Linux

Today, adoption of Linux in the enterprise data center has progressed beyond infrastructure services like file serving, printing, web hosting and email. Linux now increasingly finds use as business application servers and data base servers, moving deeper into the data center as a strategic data store, database, and application host.

### DCL Benefits

The benefits of Linux in the data center are many:

- Superior economics / lower cost of deployment
- H/W platform independence
- High reliability and security
- Increasing independent software vendor (ISV) support for Linux
- System vendor acceptance and support

### Data Center Expectations

With success comes raised expectations – end-user requirements for Linux in the data center continue to escalate. IT professionals continually seek more functionality, performance, manageability and other capabilities found in enterprise operating systems.

The list of end-user requirements is varied and long. Lacking a “center of gravity” where developers, users and vendors assess Linux capabilities and requirements together, advances in technology have occasionally been uncoordinated and lacking the momentum needed to meet enterprise needs. Enter the Data Center Linux (DCL) Working Group.

### DCL Working Group

Hosted and coordinated by OSDL, the DCL initiative brings together interested parties to accelerate development and adoption of Linux in the enterprise. The DCL initiative addresses both mid-tier and high-end multiprocessor servers as platforms for mission-critical enterprise applications and databases.

The initiative is made up of OSDL member companies – industry leading IT vendors, ISVs, end users and other interested individuals. The objective of the DCL Working Group is twofold: to identify capabilities required to accelerate Linux adoption in the data center, and to recommend technical and business approaches to meet these requirements.

Periodically, the DCL Working Group publishes capabilities requirements specifications for public review. The first capabilities document has already been delivered by the DCL Working Group and can be found on the OSDL website.

### Working Group Approach

Because the scope of analysis for DCL is so large, setting priorities is essential before attempting to focus resources to meet identified requirements. As a first step, the DCL Working Group analyzes and enumerates the range of Linux capabilities as they apply to data center implementations. *The DCL Technical Capabilities Document Version 1.0* encapsulates this range.

### The DCL Technical Capabilities Document

The *DCL Technical Capabilities Document* represents the first steps of the OSDL DCL Working Group. It analyzes the needs of enterprise data center applications and is designed to stimulate discussion and review. OSDL membership and community response to the *DCL Technical Capabilities Document* will enable the DCL Working Group to drive toward publication of more formal documentation of requirements.

As with other OSDL initiatives, such a future document would provide detailed and prioritized guidance to community and commercial implementers of Data Center Linux platforms and solutions. This future document, once published, would be updated periodically to reflect the evolving needs of Data Center Linux applications.

### DCL Architecture

The scope of DCL Working Group initiative spans three areas:

**Edge** – broadly speaking, servers that host edge applications, as well as infrastructure and web services

**Applications** – a very broad range of business applications, primarily solutions built around an application server supporting user/clients

**Database** – data store systems that include database, data warehouse and decision support systems (DSS)

### DCL Capabilities Assessment

The DCL identifies two levels of technical priorities for Linux in the data center:

- Priority One Capabilities, considered the most important for data center readiness for Linux
- Priority Two Capabilities, intended to stimulate thought and discussion

Beyond general priorities of importance, the DCL Working Group examines Linux functionality in the following technical areas:

#### DCL Technical Capabilities

- Scalability
- Performance
- RAS
- Manageability
- Standards Compliance
- Clustering
- Security
- Usability



## Scalability

DCL notions of scalability imply both horizontal and vertical scaling of data center to guarantee that the ability to leverage incremental addition of hardware resources for concomitant increases in throughput and/or capacity. DCL scalability requirements assume base provisioning of CPU, I/O, memory and networking.

## Performance

Performance levels in DCL are those levels required for data center applications. The DCL measures performance with a workload focus, in particular, workloads for which recognized industry-standard benchmarks exist. The DCL initiative specifies various types of benchmarks to measure performance, and tracking benchmark results over time, to gauge maturity.

## RAS – Reliability, Availability, Serviceability

RAS includes features that enhance software component and system-level robustness and support hardware failure recovery.

The DCL RAS definition requires that serviceability components be handled or directed by outside service organizations (vs. internal IT staff). RAS encompasses tools or features required to prevent, locate, circumvent, and recover from system failure. RAS requirements also include tools needed for installation and major updates.

## Manageability

Manageability addresses the day-to-day operation of data center systems. DCL notions of manageability focus on administrators, not end-users or vendor service personnel. These capabilities manage administrative activities, either passive (automated) or active (involving human interaction).

## Clustering

Clustering entails the use of multiple-server systems to provide higher levels of service availability through redundant resources and recovery capabilities, and a horizontally-scaled environment supporting increased throughput.

## Standards Compliance

Data Center Linux acknowledges and indeed depends upon a range of industry standards (LSB, POSIX, etc.) that exist outside the DCL Working Group. This capability covers only standards related to use of Linux in data center applications.

## Security

DCL Security capabilities address data center requirements for protecting confidential data and ensuring availability and reliability of systems maintaining those data.

Data center demands for security arise from the diversity of end-users and vulnerability from connection to and access from the Internet. DCL security mechanisms must account for both internal and external exploits and attacks. Systems must also provide means to detect intrusion and to minimize the scope of damage from successful exploits.

## Usability

Usability describes tools, utilities and services needed by system administrators for active servicing and system management. DCL notions of *usability* are based on multiple factors:

- Overall ease of use
- Short learning curve – straightforward and memorable interfaces, and the ability to attain rapid in-depth mastery
- Easy avoidance and corrections of errors
- Integration with complementary features

## DCL Working Group Mission

The mission of the Data Center Linux (DCL) Working Group is to provide a forum for industry leaders to accelerate business-hardening and adoption of Linux in the data center.

## DCL Progress

The DCL Working Group has completed its first pass at identifying Linux capabilities in the data center today, and has developed a prioritized list of capabilities needed. The *Data Center Linux Technical Capabilities v1.0* document is available for public review on the OSDL website. The OSDL encourages all interested parties to review the document and provide input to help further advance Linux in the enterprise data center.

## OSDL and the DCL Working Group

The OSDL is a non-profit organization founded in 2000 to accelerate the growth and adoption of Linux in the enterprise. Sponsored and sustained by top IT industry leaders, OSDL supports and drives the evolution of Linux, and promotes the use of open source and Linux. The DCL Working Group was established in January 2002 to enhance Linux for use in the data center.

## Contact Information

[http://www.osdl.org/lab\\_activities/data\\_center\\_linux/](http://www.osdl.org/lab_activities/data_center_linux/)

<http://groups.osdl.org/workgroups/dcl>

Mailing List:

[dcl\\_discussions@osdl.org](mailto:dcl_discussions@osdl.org)

## DCL Participation

Participation in OSDL DCL is open to everyone, whether representing a company or as an individual contributor. To participate, contribute, or just learn more, visit the OSDL web site at <http://www.osdl.org>.

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