IBM is Committed to Linux and Open Source

In 1999, IBM announced its support for the open source Linux operating system. Since that time IBM has invested considerable financial, technical, and marketing resources to foster the growth, development, and use of Linux technology, and has made significant contributions to the community on which Linux relies.

IBM is consistently among the top commercial contributors of Linux code, with more than 600 IBM developers involved in over 100 open source projects and thousands of dedicated development and support personnel supporting all of IBM's products and customers on Linux. As a result:

- Linux is supported on all modern IBM Systems.
- Over 500 IBM software products run natively on Linux.
- IBM offers a full line of implementation, support, and migration services and has facilitated more than 3,000 migrations to the Linux platform.
- IBM has completed over 15,000 Linux customer engagements.
- IBM offers the widest range of hardware, middleware, and services products for Linux in the industry.

Why IBM Supports Linux

IBM's commitment to Linux stems from the belief that Linux is not only a world-class operating system, but that it also provides flexibility, choice, and an attractive total cost of ownership that can benefit IBM customers. As an open source development project, Linux benefits from community innovation that constantly develops and integrates leading-edge technologies and best practices into the operating system. As a result, Linux is a forward-looking long-term strategic platform that is supported by major server and middleware vendors.

Why IBM Participates in the Linux Community

In 1999, IBM established the Linux Technology Center (LTC) as the primary vehicle to participate in the Linux community. IBM and the LTC have established four goals for participation in the Linux community:

- Make Linux better.
- Expand Linux's reach for new workloads.
- Enable IBM products to operate with Linux.
- Increase collaboration with customers to innovate in ways IBM cannot do by itself.

IBM is Committed to Linux and Open Source

IBM's LTC continually works to accelerate the growth and maturity of Linux as an enterprise operating system while ensuring that all IBM Systems are certified on Linux. This helps ensure that Linux is ready to support mission-critical applications. IBM also works closely with its customers to design, deliver, and implement innovative Linux solutions that meet their unique business needs. IBM's involvement in the Linux community helps to influence development and to incorporate features and functions that benefit its clients and potential clients as well as the industry and community as a whole.

Making Linux Better

IBM participates in the Linux community in a wide range of ways. LTC engineers work directly with open source communities to develop open source code that helps the community achieve its goals. Participation in communities involves not only contributing code developed at IBM, but also augmenting, testing, and deploying code developed by others to ensure that it meets community and user expectations.

IBM engineers also contribute to other aspects of open source development required to deliver enterprise-level functionality. They develop documentation for open source projects and the IBM Information Center, an online repository for Linux and open source-oriented information. Engineers from the LTC actively contribute best practices to IBM developerWorks. Additionally, IBM engineers also have been involved in developing Linux test suites and methodology, including the Linux Test Project, which IBM maintains. The goal of the Linux Test Project is to deliver test suites to the open source community that validate the reliability, robustness, and stability of Linux. In addition to IBM-sponsored / hosted efforts, it also contributes to parallel community efforts such as developing autotest as part of test.kernel.org.

Furthermore, IBM collaborates with the academic community on Linux and Open Source development for higher platforms by contributing System z and System p platforms, simultaneously providing learning opportunities to ensure continuity of skills and University-hosted access to these platforms for the broader Open Source development community.

Expanding Linux's Reach for New Workloads

IBM has long worked closely with both Novell and Red Hat, both leading distributors of enterprise Linux, to integrate new technologies into the Linux kernel that improve customer efficiency and provide a competitive edge. These relationships promote enhanced solutions on IBM Systems, with support for new IBM devices and processors, cross-platform functionality, and interoperability of IBM middleware and hardware.

Working with Linux Organizations

As a community-based effort, Linux has been the beneficiary of the hard work of many community organizations. IBM actively contributes to many community and industry organizations and conferences, including:

- The Linux Foundation which promotes, protects, and standardizes Linux by providing unified resources and services needed for open source to successfully compete.
- The Linux Standard Base which works to establish interoperability between applications and the Linux operating system.
- The Free Software Foundation, whose mission is to preserve, protect, and promote the freedom to use, study, copy, modify, and redistribute computer software.
- The Open Source Initiative which provides open source education and serves as the standards body maintaining the Open Source Definition and the list of OSI-approved licenses.
- The Linux Kernel Developers Summit and Ottawa Linux Symposium, which are both annual gatherings of the top Linux kernel developers in the world.
- LinuxWorld San Francisco which is one of the premier events for Linux and open source companies and customers.

By working closely with Novell and Red Hat during all stages of development, IBM helps ensure that features needed by customers and IBM Business Partners are included in the industry's leading distributions. As part of this partnership, IBM performs extensive testing on these distributions, improving RAS, performance, platform support, and much more. These collaborations represent a sustained effort to keep Linux enterprise-ready and to expand Linux to new workloads.

Enabling IBM products to operate with Linux

Like any operating system, Linux is a platform for applications. Without a range of compelling business applications, an operating system will not find widespread acceptance. In addition to developing enhanced open source software stack solutions, IBM has worked to enable its entire server and storage product line to interoperate with Linux. This includes ensuring that Linux utilizes the unique advantages and enhanced functionality provided by IBM Systems. For example, when running Linux on an IBM POWER server, EEH-aware drivers prevent PCI failures from automatically crashing the server without first attempting to reset the device.

IBM server products also integrate Linux with best-of-breed virtualization technologies including dynamic logical partitioning and dynamic workload management. Moreover, IBM pioneered the use of Linux for mission-critical workloads on System p (RISC) and System z (mainframe) servers, while also ensuring that key business application workloads including Oracle, SAP, and the IBM software family run with the stability and efficiency demanded of IBM Systems.

IBM delivers the same technical expertise to customers and IBM Business Partners. The Linux Integration Center helps remove technical barriers facing IBM customers and IBM Business Partners who wish to use Linux technology. The Linux Integration Center helps customers with proofs of concepts, best practices, and initial deployment support as they move forward with solutions that use Linux and IBM middleware, as well as enabling IBM Business Partners to develop and deliver integrated software solutions on Linux. It has resources available to help define and build the right solution stack, includ-

Involvement with Key Open Source Projects

IBM holds ongoing, significant roles in a large number of Linux-related and other open source projects. Among the most high-profile projects are:

- Linux Kernel Components: IBM has made significant contributions to most of the major subsystems including clustering, scalability, containers, virtualization, device drivers, documentation, file systems, internationalization, networking, performance, RAS, real time, security, storage, systems management, and more.
- Linux Toolchain: IBM has contributed to many development tools such as GCC, GLIBC, GDB, and oprofile.
- Real time Linux: Real time Linux provides technology for running real time workloads that require predictable response times.
- Xen: Open source virtualization technology that allows users to run multiple operating systems concurrently on the same physical box.
- Common Criteria Certification: Whispered by many in 2002 to be impossible, IBM was a key leader driving common criteria certification for Linux to the highest level of certification of any general purpose operating system in 2007.
- Apache: The most popular web server in the world.
- Eclipse: An open development platform (http://www. eclipse.org/) founded by IBM and others in 2001. It has grown to be a hugely successful community for building, deploying, and managing software.
- Samba: Provides file and print services to all types of SMB/CIFS clients.
- InfiniBand: A development effort to add the InfiniBand communication fabric stack to the Linux kernel.
- Community Linux Distributions: Ubuntu, Debian, Fedora, and Gentoo, just to name a few.

ing the hardware, operating system, middleware, applications, and tools needed for solutions to be fully installed and configured with minimal interaction.

Collaborating with Customers

IBM collaborates closely with customers to design, deliver, and implement innovative Linux solutions that meet their unique business needs. Customers can leverage IBM's Linux and hardware enablement expertise and experience with developing new technologies to satisfy complex IT and business requirements. In return, the interactive collaboration process helps IBM create better solutions and accelerate its clients' return on investment.

Delivering Customer Advantage

IBM operates as a partner and a peer in every aspect of the Linux open source development community.

- IBM has contributed, and will continue to contribute significant resources to developing and testing Linux for its customers, its business, and in partnership with the industry as a whole.
- IBM ensures that its hardware and software products work seamlessly with Linux and the associated technologies.
- IBM backs Linux with 24/7 support and its full services business.
- IBM collaborates extensively with others in the community to ensure that Linux remains a robust, enterprise-ready platform.

With its extensive commitment to Linux and the open source community, IBM is the premier partner to provide your Linux and open source solutions.