Procuring support for and installation of Red Hat Enterprise Linux across an organization Post-Implementation Report

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Summary

Robert Code Solutions LLC is a mid-sized software development firm based in Huntsville, Alabama, with three hundred and twenty-seven employees. They have been working as a contracted software developer for multiple organizations and individuals. Recently, the operating system that previously failed an internal security audit, as well the target of numerous reports from employees about general reliability issues and lost data that, after investigation, has been linked to longstanding issues within the operating system.

They have determined that the security issues and reliability issues pose a significant potential financial liability for the company, as there is a risk that core infrastructure or essential work can be lost, with backups having been a temporary solution, they have decided that the risks are no longer acceptable for their growing organization, and wish to alleviate the issue once and for all. Robert Code Solutions needs a stable, reliable operating system with a dedicated support contract for ongoing support. The previous operating system that Robert Code Solutions LLC used did not meet its stability or internal compliance requirements.

They have decided that they need an operating system that will provide versions of software that remain on a stable base and receive updates for security issues or severe bug fixes, an operating system where the update methodology prioritizes stability over new features. The decision was made to install Red Hat Enterprise Linux and acquire a support contract from Red Hat for ongoing support. The project followed a Waterfall methodology that began with the IT team reviewing Red Hat Enterprise Linux audits, ensuring that regulatory and internal requirements were met. Red Hat Enterprise Linux was deployed to a small set of testing systems. After an initial testing period, it was rolled out to a small selection of users to receive feedback and ensure that it met the needs of our employees.

The project was a success. Red Hat Enterprise Linux was deployed across the organization's workplaces after receiving positive feedback from the employees, as it met their reliability requirements and contained the tools needed to aid them in software development, ensuring that they can meet their obligations for providing software solutions on time to clients. Ongoing maintenance has been provided, and Red Hat support has been timely in providing support for issues that have occurred, allowing us to achieve 40% less downtime across the organization and a 55% increase in employee productivity.

Review of Other Work

Review #1

The first work that supported the implementation of the project is a Red Hat Blog post describing the capabilities and rapid deployment of Red Hat Enterprise Linux. The post (Cattelain, 2023) describes multiple tools that Red Hat offers customers, such as the RHEL image builder tool to create optimized operating system images based on a standard foundation, as well as inbuilt tools in Red Hat Enterprise Linux, such as Performance Co-Pilot to optimize system performance. The blog post also includes descriptions of tools that would help Robert Code Solutions streamline configuration management, such as "Systemd," allowing a simplified interface to start, stop, and manage services across the operating system, simplifying the maintenance workload.

This blog post supports the implementation by providing Robert Code Solutions with vital information on the tooling available in Red Hat Enterprise Linux to ensure maximum reliability and automation to reduce downtime and hours spent on operating system maintenance.

Review #2

The second work that supported the implementation of the project was the Red Hat documentation regarding kickstart files. This resource helped Robert Code Solutions create the kickstart file used to automate Red Hat Enterprise Linux installation across the organization. The documentation (Red Hat, n.d.) describes many abilities of a kickstart file, such as creating a passphrase for all encrypted devices, specifying how the bootloader will be installed, appending kernel parameters, firewall configurations, logging configurations, as well as any other aspect of the operating system that Robert Code Solutions would wish to automate at installation.

This work helped Robert Code Solutions ensure a fast and consistent rollout of the operating system across the organization's workstations, ensuring a predictable and consistent environment from which to work.

Review #3

The third work that supported the implementation of the project was the Red Hat Developer portal, which described the uses of Ansible for automation. On this page, (Red Hat, 2025) describes Ansible as an automation platform that allows DevOps teams to create, manage, and scale automation across various environments. Ansible allowed Robert Code Solutions to use automation in the daily workflow, powered by the Red Hat Enterprise Linux environment.

The predictability of an automated workflow helped ensure reliability for Robert Code Solutions, as routine tasks in the Software Development team's workflows were automated, ensuring there was no risk of errors or misconfigurations of the operating system caused by the usage of the tools.

Changes to the Project Environment

After the successful implementation of Red Hat Enterprise Linux, employee morale significantly increased, as the primary issue of data loss from the unreliable previous operating system was solved. Employees can work while trusting that their workstations can meet their needs and that they no longer have to fight the technology supporting their work. The migration strengthened the original company strategy of maintaining a reliable and stable environment with a conservative approach to change. Red Hat Enterprise Linux fosters a dependable environment supported for more than twice the lifespan of the previous operating system and prioritizes critical bug fixes and security fixes more than implementing new features, which aligns strongly with Robert Code Solutions' strategy of being a reliable monolith for the Software Development industry.

Along with employee morale, the company culture has greatly improved. As employees are no longer struggling with maintenance issues, they have been able to spend more time focusing on their work and discovering new ways to foster collaboration. Without having their work disturbed by downtime, they can more easily dedicate teams to specific tasks without ensuring that those with more technical competence in the operating system are nearby if issues arise or need to call the IT department for support. These have fostered a greater environment of collaboration and community across the organization.

Methodology

This project followed the Waterfall methodology. This project had well-defined requirements, steps to take, and processes to follow. It benefited well from the structured process that a Waterfall methodology provides. The Waterfall methodology was first implemented by defining the project's requirements, namely, the overall migration, obtaining support and licensing, automating the installation process, and ensuring all regulatory and internal requirements were met.

The Design phase of Waterfall was completed by mapping out the workflow of the migration by making a process chart of the steps required during the process of writing the script for automating installation, creating a testing suite, and the process for deploying the script in bulk across the workstation, as well as tools listed in the chart to implement the process. This was also the phase where it was determined what portions of the organization's workflow were covered by the support contracts from Red Hat.

The Implementation phase was completed by writing the scripts and implementing the tools to automate the installation, such as implementing the scripts into a kickstart file containing instructions for an automated Red Hat Enterprise Linux installation. This is also when support contracts will be finalized with the Red Hat organization.

The Integration and Testing phase was performed by rolling out Red Hat Enterprise Linux to a controlled set of systems separate from the organization's main workstations to test the process, ensure that all expected outcomes are present, and fix issues when they arise. This is also the phase where the tools the organization relies on daily have testing performed to ensure they function as expected.

After this, the deployment phase began. This was when Robert Code Solutions implemented the rollout of Red Hat Enterprise Linux installations across the entirety of the organization's workstations so that the software developers could begin using the new environment.

After a clean deployment, Robert Code Solutions continued to maintain the new systems, using the support contract to ensure no issues arose while operating the new environment and performing their own occasional maintenance on the Red Hat systems to meet the organization's needs further.

Project Goals and Objectives

The project's primary goal was to migrate Robert Code Solutions LLC to Red Hat Enterprise Linux and procure a support contract. To achieve this goal, several supporting objectives were met. These goals are, first, to obtain support and licenses for the operating system and tools. This was done via obtaining the support contract agreement with the Red Hat organization, obtaining licenses for Red Hat Enterprise Linux, and creating an internal knowledge base regarding the use and troubleshooting of the tools available. These deliverables ensured that Robert Code Solutions had a well-supported environment to support its software development team.

The second main supporting objective was to automate the installation process. This was done by creating scripts that were the primary tool for automating the installation process, initialization, and setup of the needed tools. A testing suite was also created to ensure that after initialization and configuration, each workstation will be in the expected state defined by the scripts. A process was designed to run these scripts simultaneously across multiple environments via a kickstart file.

The third main supporting objective was to meet Robert Code Solutions LLC's regulatory and internal requirements. This was achieved by verifying Red Hat Enterprise Linux operating system audits and comparing the results to internal and external requirements and government regulations for protecting personal data in Robert Code Solutions' systems.

Project Timeline

The project's initial estimated timeline is documented in the following table:

Milestone	Duration (hours or days)	Projected Start Date	Anticipated End Date
Acquire Support Agreement	14 days	3/12/2019	3/26/2019
Acquire Licenses for Red Hat Enterprise Linux	14 days	3/28/2019	4/11/2019
Knowledge base created	20 days	4/11/2019	5/1/2019
Installation script creation, testing, and automation	30 days	5/3/2019	6/2/2019
Verify that the operating system meets compliance and reliability requirements	90 days	6/3/2019	8/1/2019
Train users on Red Hat Enterprise Linux usage	60 days	8/2/2019	10/1/2019

The project successfully met all end dates, and due to the technical competence of the software development team, training was completed faster than planned. Training the users on Red Hat Enterprise Linux took 43 of the initially estimated 60 days, leading the project to be completed on September 14, 2019.

Unanticipated Scope Creep

During the project, we began an investigation into Red Hat Fuse. Red Hat describes the functionality of this product (Red Hat, 2025) "Fuse enables you to build collaborative and agile Java applications using microservices and containers. Fuse packages together Apache Camel with ten other open-source projects into a coherent whole that will save you time in implementation while allowing you to use a variety of specific application development tools (such as ApiCurio, Swagger, and Undertow) to build apps with your preferences and create powerful links with these interfaces."

Initially, we were interested in the functionality of Red Hat Fuse. However, after spending some resources looking into it, we decided not to go with it as it was out of the project's scope. The project's primary focus is to increase the reliability of our infrastructure by migrating to Red Hat Enterprise Linux with a support contract. Introducing significant changes to our workflow during the process would hinder our progress toward stability and reliability.

Conclusion

The success criteria for this project were the completion of a rollout of the Red Hat Enterprise Linux operating system to all employee workstations and confirming a support contract with the Red Hat organization to provide support. The success will be measured by measuring the downtime experienced across the organization and the data-loss rate and errors experienced by the software development team.

The measured downtime was the last six months experienced by the organization before the operating system implementation, compared to the first six months of downtime post-implementation. The same time frame and measuring method would be used for the data loss rate and rate of errors. This project would be considered successful if the results were a 25% decrease or greater in all categories.

The short-term benefits of a successful implementation would include greater productivity and less downtime. The long-term benefits were expected to appear as greater employee morale and customer satisfaction.

After the project's implementation, all the workstations across the organization ran Red Hat Enterprise Linux. This achieved 40% less downtime on the systems overall across six months and a 55% increase in employee productivity across the same six months. Employees adjusted well to the new tools and operating system, finishing training faster than expected.

The Red Hat Enterprise Linux support contract was agreed upon. Over the six months, it has proved a vital resource for ensuring the stability and reliability of the system, as Red Hat professionals ensured that we were operating our systems with best practices and helped resolve issues faced by Robert Code Solutions.

The project was successful, as all the goals that Robert Code Solutions set out to achieve were completed successfully, surpassing planned expectations. Employee morale was greatly improved as employees did not experience data loss, which caused them to lose hours of productivity. This also improved productivity across the organization as fewer issues and downtime and improved employee morale allowed employees to finish their work without issue.

References

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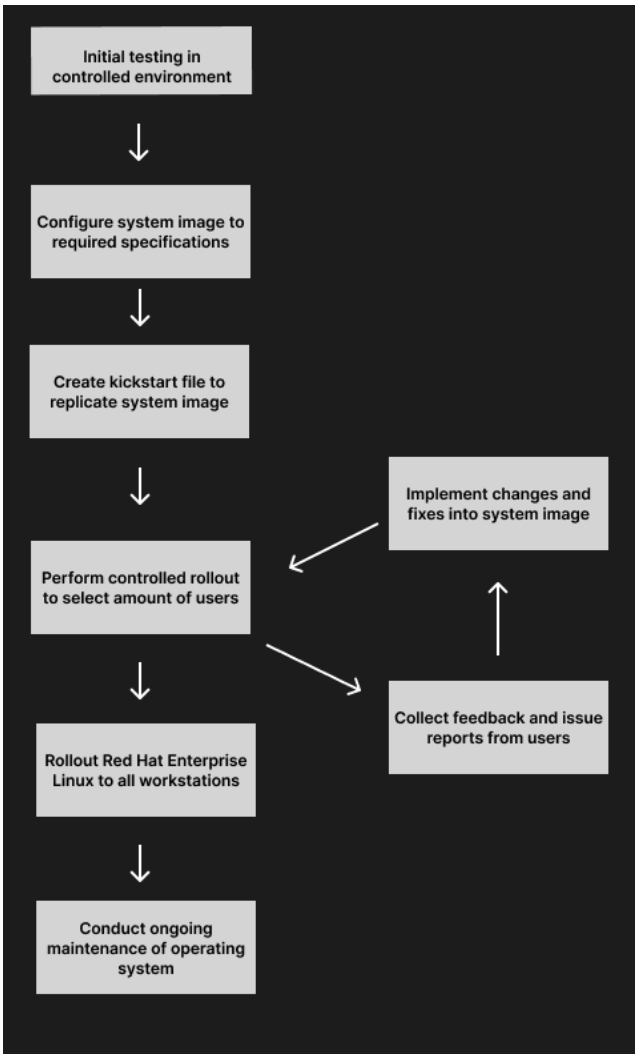
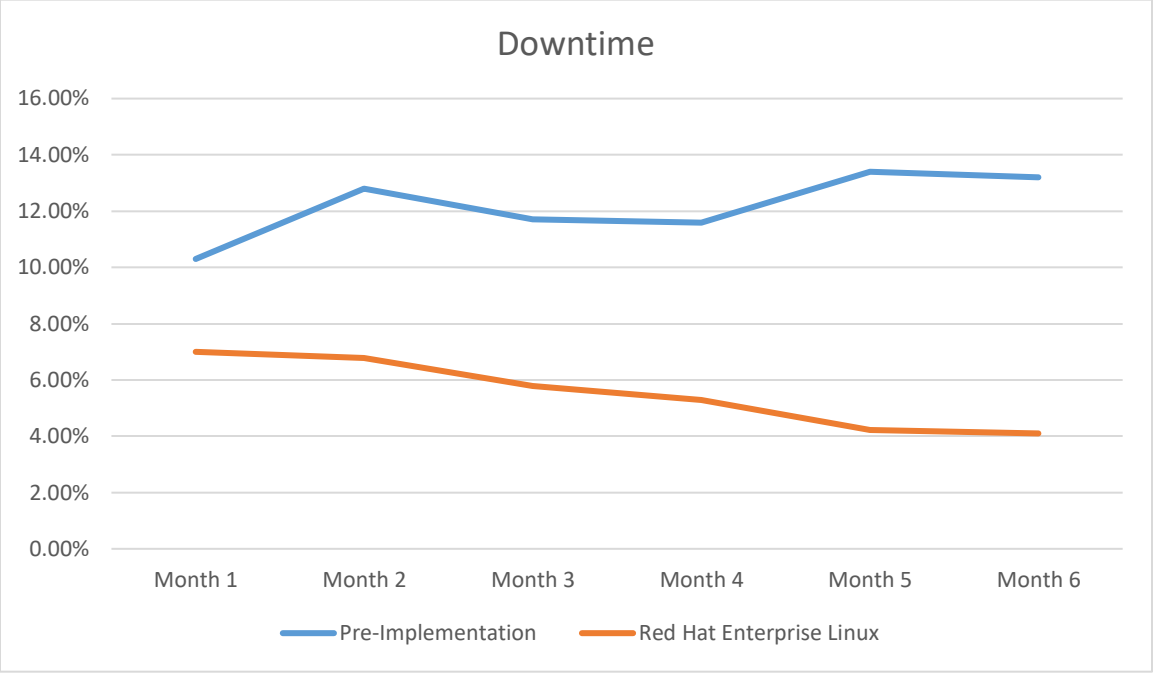
Appendix A

Flow Chart for the Red Hat Enterprise Linux operating system rollout process, emphasizing the process of collecting feedback and implementing changes.



Appendix B

Downtime chart, representing a ~40% absolute reduction across the six months as a whole.



Appendix C

Frequency of support requests before and after Red Hat Enterprise Linux implementation. This chart indicates 47.26% fewer support requests over six months than before the implementation.