Mesusa Corporation Report – Rough Draft

Liz Hinz

CSD370-A339: Secure Software Development

Professor Nathan Braun

May 4, 2025

**Mesusa Corporation Report**

The development process and the entire software development lifecycle are complicated and thorough processes that are time-consuming. There are principles and tasks that must be managed in order to produce the best possible software. Configuration management should be an integral part of an IT department. The implementation of the control/configuration management process can be easily established by following the details of this report. There is a direct relationship between control/configuration management and version control since tracking is at the core of version control.

According to Buchanan (2024), the control/configuration management process dates back to the 50s when the US Department of Defense decided to implement a system that tracks changes in a development system. The point of the system was to "increase the lifespan of its hardware equipment without sacrificing performance over time" (IBM, 2024). This helps to track how a system changes over time while maintaining thorough records of the changes that have been made, making it easier for IT to streamline processes (IBM, 2024). Tracking all this information ensures that an operation is in sync (IBM, 2024). IBM (2024) states that configuration management "ensures that IT assets remain in their desired state, regardless of how they evolve over time". These practices then extended and established themself as a part of the IT world. For the process of configuration management to work best, a thorough understanding of what the process is, what goes into it, how to maintain it, and the benefits of it should be known beforehand. Configuration management ensures systems on hardware and software in a “known state can be controlled and replicated over time” (Configu Editorial Team, 2024). Implementing CM means that development and interactive environments are predictable and stable (Configu Editorial Team, 2024). This makes it easier to ensure a system is compliant with standards and policies (Configu Editorial Team, 2024). Control/configuration management process has many benefits. Some of these include simplifying the learning process, efficient testing, achieving scalability and reliability, and reducing costs and risks (BasuMallick, 2022). Configuration management helps ensure a system is running optimally (IBM, 2024). Tracking a system makes it easier to find errors in a system or server, so that developers can manage them. Implementing the information and steps in this paper will lead to a successful control/configuration management process. Control management helps to simplify the learning process since there is already a "catalog of systems and services" for the entire team to use and reference (BasuMallick, 2022). This is also extremely handy when bringing in new developers since there are plenty of documents to reference (BasuMallick, 2022). Testing becomes more efficient since it is easier to check that an environment is identical, and it decreases the risks involved with program deployment containing errors (BasuMallick, 2022). Achieving scalability and reliability means that control management ensures "assets and products are readily recovered should the worst occur" (BasuMallick, 2022). Having a strong plan makes attacks less likely, and when they do occur, there is a paper trail that can be referenced to help with it. It also helps to reconcile changes and re-configurations, potentially the biggest benefit of configuration management since changes are followed through version control (BasuMallick, 2022). Configuration management also reduces expenses since fewer resources need to be given to remediate issues, since it is structured record keeping helps "minimize the number of funds that may be lost by the business" due to these issues (BasuMallick, 2022). Although configuration management can be costly, it is still worth it in the long run since it saves companies from spending extra money on system recoveries, crashes, attacks, or any other vulnerabilities. Software configuration management also means that "version control tracks changes and rollback, efficient handling of parallel development tracks, minimized conflicts and smoother integration, enhanced security through access controls, increased auditability and compliance with regulatory standards, and reduced time-to-market due to streamlined workflows" (Buenning, 2025).

After hearing all the ways that control/configuration management works, it only makes sense to be clear and upfront about the drawbacks of implementing these processes. A major drawback is that these processes are time-consuming. Everything needs to be documented, such as details like "location, status, version, data, responsible party, and a description of modifications" (IBM 2024). As helpful as it can be long-term, it does not come without short-term sacrifices. The tasks can appear to be overly tedious and seem unnecessary, but they reduce the amount of time it takes to bring a system back to a stable state if it ever leaves it. Team members must ensure that everything is being accomplished because if just a single person is not doing their part, then it leaves room for vulnerabilities, plus slows down other people's duties. Tasks must be delegated to software developers, and it should be understood that it will take time to maintain this management process. When there are delegated tasks, everyone needs to be on the same page, and small issues can throw off the entire team. Configuration management also faces its own challenges. Some challenges of control management include any developers unwilling to implement the tools and resources as part of configuration management, complex setup when initially working with it, and employees who lack the expertise needed to properly uphold these standards (Buenning, 2025).

A main part of the configuration management process is making sure that the tasks are properly handled. One way to accomplish this is through developer-assigned roles. Assigning roles helps ensure that each step of the process is followed and makes it easier to track progress and where areas that are lacking. Software developers should ensure that new code works when combined with older code (Configu Editorial Team, 2024). In addition to developer-assigned roles, there also needs to be a designated configuration manager. Appointing a designated configuration manager aids in running a more effective process. A configuration manager watches over the configuration management process, checking that everything is documented and maintained while following the management plan and ensuring others are too (Configu Editorial Team, 2024). Project managers are part of the roles that must be assigned. Project managers help ensure a project is progressing the way it should be and targeting the overall goals. An auditor or auditors are assigned to check that the entire process upholds company policies and any potential regulations (Configu Editorial Team, 2024). Auditors are checking for any discrepancies. Buenning (2025) describes five main steps for the control/configuration management: "planning and identifying, identification, control, status accounting and auditing, and verification".

Configuration management needs to work effectively in order for it to maximize the benefits it offers. One way to accomplish this is through assigned roles, as mentioned previously. Crafting a work management plan is another way to make the process flow better. (Configu Editorial Team, 2024). When there is a clear, laid-out plan with steps to follow, it makes it much easier to incorporate it. If someone is assigned a task, then someone else needs to be delegated to double-check that it is being done and done right. It can be easier for the human eye to miss things, so using software management processes that track the different steps of the control management process helps catch anything that might slip through the cracks. There are some tools available like CFEngine, Otter, and CHEF Configuration Tool. CFEngine helps automate software deployment and helps with the maintenance of software and hardware systems (BasuMallick, 2022). Otter is made for Windows and helps to set updates and verify consistency (BasuMallick, 2022). These tools are also good for automating tasks to spend less time on a project than is necessary.

There are activities that are expected to be utilized at every phase of the software development lifecycle. This means that the control/configuration process should be used during planning, requirements analysis, design, coding, testing, deployment, and maintenance. Regular reviews help to stay on top of these processes. Reviews should be thorough, checking that everything complies with the set standards and any other guidelines that must be part of the process. With all the documentation, it makes it easier to track those who are not doing their jobs or underperforming. This is especially true when everyone else is clearly documenting as expected, so anyone who is not is more likely to stick out.

Control/configuration process is a system that ensures that a system can be reproduced and remains maintainable. Having a system of checks and balances is a great way to make control/configuration management flow at its most optimal. Now, having a general understanding of the control/configuration management process should be understood. Reference this report when feeling lost or to confirm that the process is running as intended.

**References**

BasuMallick, C. (2022, October 18). *What Is Configuration Management? Working, Tools, and Importance*. Spiceworks. https://www.spiceworks.com/tech/devops/articles/what-is-configuration-management/

Buchanan, I. (2024). *Configuration management: definition and benefits*. Atlassian. https://www.atlassian.com/microservices/microservices-architecture/configuration-management

Buenning, M. (2025, April 11). *Software Configuration Management | Overview | NinjaOne*. Www.ninjaone.com. https://www.ninjaone.com/blog/software-configuration-management-overview/

CMS. (n.d.). *Configuration Management Processes*. Www.cms.gov. Retrieved April 14, 2025, from <https://www.cms.gov/tra/Application_Development/AD_0520_Configuration_Management_Processes.htm>

Configu Editorial Team. (2024, October 14). *Configuration Management Process: 6 Steps, Roles & Best Practices - Configu*. Configu - Rethinking Configuration Management. https://configu.com/blog/configuration-management-process-6-steps-roles-best-practices/

Guzzi, B. (2023, November 17). *SDLC vs Change Management Controls: What Auditors Should Know*. Www.auditboard.com. <https://www.auditboard.com/blog/sdlc-vs-change-management-controls/>

IBM. (2024, January 30). *Configuration Management*. Ibm.com. https://www.ibm.com/think/topics/configuration-management