Mesusa Corporation Report

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The software development lifecycle is complicated, thorough, and time-consuming. Principles and tasks must be managed to produce the best possible software; configuration management is a way to accomplish this. There is a direct relationship between control/configuration management and version control since tracking software is at the core of version control. The implementation of the control/configuration management process can be easily established by following the details of this report. For the configuration management process to work best, a thorough understanding of the process, what goes into it, how to maintain it, and its benefits should be known.

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. This tracks how a system changes over time while maintaining thorough records, making it easier for IT to streamline processes (IBM, 2024). Tracking all this information ensures an operation is in sync (IBM, 2024). Configuration management ensures software and hardware systems remain in a “known state that can be controlled and replicated over time” (Configu Editorial Team, 2024). Implementing CM means developing a predictable and stable interactive environment (Configu Editorial Team, 2024). This makes it easier to ensure a system complies with standards and policies (Configu Editorial Team, 2024). IBM (2024) states that configuration management "ensures that IT assets remain in their desired state, regardless of how they evolve". Buenning (2025) describes five main steps for the control/configuration management: "planning and identifying, identification, control, status accounting, and auditing and verification". The point of the system was to "increase the lifespan of its hardware equipment without sacrificing performance over time" (IBM, 2024). These practices then extended and established themself as a part of the development world.

Control/configuration management process has many benefits. Configuration management helps ensure a system runs optimally (IBM, 2024). Tracking a system makes finding errors in a system or server easier, so developers can manage them. Control management simplifies the learning process since a "catalog of systems and services" exists for the entire team to use and reference (BasuMallick, 2022). This is also extremely handy when bringing in new developers since there are many documents to reference (BasuMallick, 2022). Testing becomes more efficient since it is easier to check if an environment is identical and decreases the risks involved with program deployment containing errors (BasuMallick, 2022). It also helps to reconcile changes and re-configurations, potentially the most significant benefit of configuration management since changes are followed through version control (BasuMallick, 2022).

Some more benefits of the control management process include simplifying the learning process, efficient testing, achieving scalability and reliability, and reducing costs and risks (BasuMallick, 2022). Achieving scalability and reliability means that control management ensures "assets and products are readily recovered should the worst occur" (BasuMallick, 2022). A strong plan makes attacks less likely, and a paper trail can be referenced to help when they occur. Configuration management also reduces expenses since fewer resources need to be given to remediate issues, since it is structured record keeping that helps "minimize the number of funds that may be lost by the business" due to these issues (BasuMallick, 2022). 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). 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.

The control/configuration management process can be great, but implementing these processes has some drawbacks. As helpful as it can be long-term, it does not come without short-term sacrifices. A significant drawback is that these processes require time dedicated to them. Everything needs to be documented, such as details like "location, status, version, data, responsible party, and a description of modifications" (IBM, 2024). The tasks can appear tedious and unnecessary, but they reduce the time it takes to bring a system back to a stable state if it ever leaves it. Tasks must be delegated to software developers, and it will take time to maintain this management process. When there are delegated tasks, everyone needs to be on the same page, and minor issues can throw off the entire team. Team members must ensure that everything is accomplished because if a single person is not doing their part, it leaves room for vulnerabilities and slows down other people's duties. Some other control management challenges include developers' unwillingness to implement the tools and resources as part of configuration management, complex setup when initially working with it, and employees' lack of expertise to uphold these standards properly (Buenning, 2025).

A central part of the configuration management process is properly handling tasks. 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 identify areas for improvement. 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 is targeting the overall goals. An auditor(s) is assigned to ensure the entire process upholds company policies and potential regulations (Configu Editorial Team, 2024). Auditors are checking for any discrepancies.

Configuration management needs to work effectively 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 improve the process flow (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, someone else must be delegated to double-check that it is done correctly. It can be easier for the human eye to miss things, so using software management processes that track the steps of the control management process helps catch anything that might slip through the cracks. Some tools, like CFEngine, Otter, and CHEF Configuration Tool, are available. CFEngine helps automate software deployment and maintain 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 suitable for automating tasks to spend less time on a project than is necessary.

Some activities are expected to be utilized at every phase of the software development lifecycle. This means 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. All the documentation makes it easier to track those who are not doing their jobs or are underperforming. This is especially true when everyone else clearly documents as expected, so anyone who does not is likelier to stick out.

The control/configuration process ensures a system can be reproduced and remain maintainable. Having a system of checks and balances is a great way to make control/configuration management flow at its most optimal. Implementing the information and steps in this paper will lead to a successful control/configuration management process. Reference this report when feeling lost or to confirm that the process is running as intended.

**References**

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