

An Analysis of Automated Management of System using Control-M Workload Automation

Gaurav Thakre and Prof. Tanu Gautam
Jhulelal Institute of Technology, Nagpur, India

Abstract: *Workload automation solutions like Control-M provide high-quality job scheduling and batch services to the business in the face of increasing IT and workload complexity. The modern IT environment has become increasingly difficult to manage, due to the advent of new technologies and trends including virtualization, cloud, big data, enterprise application silos, complex business process spanning multiple technologies and departments, and the pressure to provide real-time services to lines of business in an ever more competitive business environment. Control-M is BMC's flagship product for workload automation and is designed to manage a broad range of scheduling and workload automation tasks across a complex IT infrastructure from a single point of control. Control-M schedules jobs and monitors processes as the jobs are executed, generating alerts and exceptions to allow corrective action to be taken when necessary. Control-M by BMC is excellent job scheduling and workload automation perfect for medium sized to large businesses. It delivers operational excellence for every type of business. Automating workloads is easy with this tool. You can also opt for self-service access via web and mobile applications.*

Keywords: Control-M, BMC, workload automation, real-time services

I. INTRODUCTION

This project was done to systematically study the how automation techniques help IT businesses to automate the scheduling and processing of your business workflows across various platforms to help organizations build, define, schedule, manage, and monitor production workflows, ensuring visibility, reliability, and improving SLAs. Due to the ever increasing technological advances and more focus on reducing human efforts to reduce human errors as well as time, automation techniques are used on larger scales in organizations. Enterprise Job Scheduling Software (EJSS) is used to schedule multiple, temporary and intermittent jobs that run unattended. It can be used to control the flow of workloads and to streamline the management and monitoring of those workloads or jobs. For businesses with a finite number of employees, EJSS is valuable software that helps to manage labor costs while improving SLAs and optimizing compute resources. This project is focused on one such workload automation and job scheduling tool "Control-M".

The product was acquired from New Dimension Software in 1999 and was originally designed for IBM mainframe computers. It now runs on distributed platforms including Unix, Windows and Linux platforms.

Application Continuity in the production environment is a critical issue that is faced by every modern organization. This study aims to provide information regarding what Application Continuity is and why it is important. It also reviews the available solutions for achieving Application Continuity in BMC Control-M, as well as guidelines for their implementation. Control-M is the 1st ranked solution in top Process Automation tools, top Managed File Transfer (MFT) tools, and top Workload Automation tools. large enterprise segment, accounting for 76% of users researching this solution.

II. LITERATURE REVIEW

Qiang Ding (October 2012), in his study titled "BMC Control-M 7: A Journey from Traditional Batch Scheduling to Workload Automation" let us into the world the world of Control-M and guided to implement and maintain a Control-M environment successfully. This study revealed that Control-M is one of the world's most widely used enterprise class batch workload automation products produced by BMC software. With a strong knowledge of Control-M, we can use the tool to meet ever growing batch processing needs. We can use the various aspects of controlling like

implementation, administration, design, and management of Control-M job flows to move into workload automation and let batch processing utilize the cloud. The tool can help us leverage to meet the already sophisticated and ever-growing business demand

Nucleus Research (December 14, 2017 - Research R209) - Computing jobs are expected to run smoothly in the background all the time, but administrators know it is not that easy. BMC's Control-M solution supports and simplifies processes that lead to efficient and reliable workload automation. Businesses rely on computing jobs for all manner of IT functions, such as data loading and processing. Job efficiency is critical for service level agreements (SLAs) around key deliverables or business operations, but too many tools working at once and lack of visibility have plagued administrators. Control-M's flexibility, integration, ease of use, and event-based scheduling drive significant benefits in productivity and customer satisfaction.

Tim Grieser and Mathew Marden of IDC (September 2020), their research "The Business Value of Application Workflow Orchestration with Control-M by BMC" aims at analyzing the value Control-M as a workload automation gives the businesses. Their research demonstrates the significant value that BMC customers get with Control-M through enhanced application workflow orchestration. Use of Control-M has allowed organizations to reduce friction and take on inefficiencies that previously inhibited modern, digital-first approaches to development and required much more staff time to adequately monitor and integrate disparate application environments. With Control-M, organizations have taken advantage of automation and orchestration to monitor application performance much more efficiently and increased the value of their development activities by implementing DevOps- and CI/CD-driven approaches. Adam Schlegel, Forrester Consulting (February 2017), conducted a study on The Business Benefits Enabled by Control-M Workload Automation. Using Control-M as their centralized, enterprise-level workload automation solution, organizations can automate their batch services from a single, intuitive graphical user interface, improving IT efficiency, reducing operational costs, and improving service delivery. Using Control-M as their end-to-end, enterprise-wide workload automation solution, organizations were able to significantly improve their visibility and control over their critical business processes. Control-M provided IT organizations with significant efficiency gains and operational cost savings that enabled them to exponentially grow their batch processing environment without growing headcount. Perhaps most importantly, organizations were able to improve the reliability of their critical IT processes, materially reducing the probability of missing their regulatory and customer SLAs, while concurrently improving customer and employee service levels.

TRUSTRADIUS (September 2016), published a study to help make an informed decision about BMC's workload automation solution, Control-M. The study includes analysis of the types of customers (company sizes, industries etc.) that use Control-M, what companies and users like most about the product, as well as areas for improvement. The study concludes that Control-M is a centralized batch-scheduling tool for organizations that have many complex batch processes running across platforms on several different machines. Hence, Control-M is more likely to be a best fit for large organizations running complex processes.

2.1 OBJECTIVES OF PAPER

- To study the working of BMC Control-M as a best-of-breed workload automation solution for enterprises like HCL focusing on applications, integration, and management of Workload Automation.
- To study and analyze automation techniques like Control-M which helps business to scale and perform operations efficiently.
- To study and analyze the working of Control-M as Enterprise job scheduling technique which helps business to reduce costs, increase quality, increase agility, and reduce risks.
- To focus and analyze the Business Benefits and Values enabled by Control-M Workload Automation as Enterprise job scheduling technique.

2.2 SIGNIFICANCE OF RESEARCH

Pressure is growing for IT organizations to deliver new services more quickly and to get systems running more reliably. Meanwhile, meeting these needs is becoming more challenging because of the many interdependencies among systems

and their demands on limited resources. To keep up with demands, IT teams need to automate as much support and development work as possible.

This study analyses how these ever-increasing challenges to automated workflows can be done with Control-M Workload Automation. It also studies help us understand the

Is the Control-M Workload automation as a product or service capable of managing tasks more reliably and with high availability?

The study aims to provide a clear view as to how using Automation products and EJSS software like Control-M can be beneficial to the enterprises be it large or medium-scaled and give idea about how such products and services like Control-M can be used to monitor batch schedules/jobs from different application groups in multiple servers to reduce the resource manual work and also be useful to track all the jobs information in one area, which is the Enterprise Management layout window, with job statuses as success or failure enabling the enterprises to scale batch processing tasks and avoid manual interventions.

2.2 HYPOTHESIS

Null Hypothesis: Control-M Workload Automation does not have significant impact on workflow automation and job scheduling.

Alternative Hypothesis: Control-M Workload Automation does significantly impact on workflow automation and job scheduling

III. RESEARCH METHODS

Research methodology is the specific procedures or techniques used to identify, select, process, and analyses information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

Control-M is a centralized batch-scheduling tool for organizations that have many complex batch processes running across platforms on several different machines. Hence, Control-M is more likely to be a best fit for large organizations running complex processes, with a high number of dependencies, scheduling rules, and execution hosts.

METHOD ADAPTED:

Descriptive research has been done while collecting information.

Descriptive research design is a type of research design that aims to obtain information to systematically describe a phenomenon, situation, or population. More specifically, it helps answer the what, when, where, and how questions regarding the research problem, rather than the why.

Exploratory research has also been done while collecting information.

Exploratory research is a methodological approach that investigates research questions that have not previously been studied. Exploratory research is often qualitative and primary in nature. However, a study with a large sample conducted in an exploratory manner can be quantitative as well.

IV. ANALYSIS AND INTERPRETATION

RESULTS: -

- Over 50% of all critical data processing is performed in batch, which means that scheduling plays a key role in your business success. To successfully address the batch scheduling needs and meet the business objectives, a reliable, scalable batch scheduling solution capable of effectively managing critical processes and contributing to your overall business success must be implemented.
- Control-M enhances the industry-leading workload automation solution to enable reduced operating costs, improved IT system reliability and faster workflow deployments.
- BMC Control-M Workload Automation integrates the management of critical workload processes from one focal point of control. It maximizes automation by providing cross application and cross-platform scheduling capabilities, such as job dependencies, workload balancing and event-based job execution.

- Control-M prevents scheduling problems from developing into business problems. The Control-M Workload Automation solution aligns with Data Center Optimization, an initiative to improve the quality of the service of IT while concurrently lowering the costs. Control-M Workload Automation provides the following benefits by reducing the overall complexity and increasing productivity through greater automation:
- Control-M provides a centralized view of all jobs running across the entire enterprise, regardless of platform.
- Users love the intuitive graphical user interface, which reduces training requirements, as well as the strong data drill-down capabilities.
- Control-M handles scheduled job dependencies across platforms very well.
- Control-M scheduling capabilities provide fine-grained control over the job scheduling process, and it is a mature, stable product, which is tested and highly reliable.
- Control-M enhances the industry-leading workload automation solution with reduced operating costs, improved IT system reliability, and faster workflow deployments.
- High availability – It Maximizes production environment uptime, prevents data loss, and ensures business continuity.
- Automated Promotion – It has automated job promotion from test to production, improves deployment speed and eliminates manual errors.

V. FINDINGS AND INTERPRETATION

The findings and conclusion that can be drawn from the analysis conducted can be summarized in the following way:

- 86% of respondents agree that Control-M provides a Centralized view across the enterprise and 82% of respondents agree that Control-M provides user friendly user interface making it a very reliable and leading Workload Automation solution.
- 80% of respondents agree that Control-M scheduling capabilities provide fine-grained Control over the job scheduling process and 84% people think that Control-M is good at scheduling jobs that have dependencies across various servers and platforms.
- Control-M is stable, reliable, able to handle extremely complex scenarios, and the customer support is fantastic, and it is rare to have any issues with the application and reviewers are generally very happy with the add-on control modules for cross-platform job scheduling.
- Several users feel that reporting capabilities do not work very well, and that pulling reports is cumbersome.
- Using the Control-M Reporting Facility, users can customize reports and automate to run reports on a set schedule.
- The Reporting Facility is available as an add-on in Control-M versions 7 and later.
- Version upgrades are challenging although newer versions of Control-M allow for in place upgrades to ease the challenge of upgrading from version to version and documentation could be improved overall to provide additional help to the users.

VI. CONCLUSION AND FUTURE RESEARCH

6.1 Conclusion

Control-M allow for in place upgrades to ease the challenge of upgrading from version to version and documentation could be improved overall to provide additional help to the users.

6.2 SUGGESTION

It feels that reporting capabilities can be improved to work very well, and that pulling reports is cumbersome. If this is rectified, it will be huge yes for businesses to implement it.

Documentation could be improved overall. As it needs a person to work and get used to it to know in depth about all the features and working of Control-M Workload Automation. Good Documentation will help new entrants understand better so that service providers can be confident to make businesses implement this solution.

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