Silect SOFTWARE INC.

The Evolution of Systems Management

Managing the Lifecycle of Operations Manager Management Packs

A whitepaper from Silect Software

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5636-B Manotick Main Street Manotick, ON Canada K4M 1B3 • 613.692.0913 • 613.692.5373 fax • www.silect.com

Introduction

Organizations using a structured approach to manage the lifecycle of Operations Manager Management Packs significantly increase the return on their investment in Microsoft Operations Manager. The following document defines the Management Pack lifecycle and shows how MP Studio can help reduce the time and resources required at critical points within this lifecycle. MP Studio delivers a framework to achieve an efficient, repeatable way of managing the key stages of the Management Pack lifecycle resulting in a more efficient and effective delivery of the service management function.

The Management Pack Lifecycle

Many organizations using Operations Manager to deliver a service monitoring function utilize a common series of steps when working with Managements Packs. These steps provide a repeatable, efficient and effective way of leveraging Management Packs from initial planning and development to implementation and maintenance.

The typical lifecycle of a Management Pack follows these broadly defined stages:

The key stages of the Management Pack lifecycle are described as follows:

Management Pack Development

The initial Management Pack for a new or an existing application is created at this stage based on a set of requirements outlining the business needs of monitoring the application. The steps within this development stages will change

somewhat based on the level of MP being developed. Microsoft identifies 3 levels of Management Pack sophistication:

- Level 1 is a basic MP primarily making use of event and performance rules;
- Level 2 MPs make use of additional Operations Manager capabilities including State monitoring, tasks and possibly scripts;
- Level 3 MPs are the most sophisticated MPs that take advantage of all Operations Manager capabilities.

Level 1 MPs typically can be developed relatively quickly without involving a large team. Typically these MPs make use of instrumentation (events and performance counters) that is exposed by the application to be monitored. Ideally the team responsible for the application or system provides a list of all event IDs that are generated by their application. Additionally they should also provide some guidelines as to the expected performance of their application, as well as its expected load on various system resources. Using this information, a set of rules is created using the Operations Manager Administrator console. The MP should be tested by the MP development group in an isolated manner to ensure it behaves as expected before being moved into the implementation stage of the lifecycle.

Developing a Level 2 or Level 3 MP should be treated as a software development project involving a larger team and including a more thorough analysis of the requirements and development of a detailed specification. The project is typically initiated by the team responsible for the development of the application and may include product or application owners as well as IT architects and IT Pros responsible for managing the availability of the application.

A detailed requirements analysis should be performed and a requirements definition document should be produced. A functional analysis should be conducted and as part of this analysis, an application Health Model should be developed. Microsoft promotes the development of an application Health Model to identify the different states of the application (healthy or unhealthy), define the characteristics indicative of these states and also indicators of the transitions between states. The Health Model is typically generated by the developers of the application. The model is very helpful at driving the development of monitoring rules and other objects within the Management Pack to identify health state transitions and provide guidance on returning the application to a healthy state.

The next stage is the development of a detailed specification including a test or QA plan. Subsequent stages include architectural/design specification, coding, testing and maintenance/support. Each stage of the development process will include documentation and regular reviews with all team members. Reviews are important to ensure the project stays on track with meeting the objectives

originally defined, and a necessary component of these reviews is formal documentation.

Management Pack Implementation

After a Management Pack has been released by the MP development team, the next stage of the lifecycle involves the implementation of the Management Pack. This stage includes all the steps necessary to begin using the Management Pack in a production monitoring environment. These steps include MP review and analysis, testing and calibration, then finally installation. A change control mechanism may also be part of the process particularly in the cases of a major MP update. Formal Change Management policies should be adhered to.

The first step of the implementation stage is to make a backup copy of the MP before any changes have been made to it. This creates a point of reference so any changes can be tracked against the original MP. Also if an update is released, you can compare the newly released MP to the original to determine what changes were made by the MP developer.

Next, the MP should be analyzed to ensure established policies with regards to security, data collection and data retention are adhered to. For example, MP data collection definitions should be reviewed to ensure data is not collected more frequently than a policy dictates. Another example is to ensure there are no server based scripts are defined within the MP as this may violate the security model in place within an organization. Some changes to the MP may take place at this stage to ensure conformance with established policies and all of these changes should be tracked and documented.

Initial testing of the MP should be conducted in an isolated environment. Detailed results of the testing should be maintained including data collected during the test run as well as alerts generated. These results can be compared against other test runs to see the incremental impact of changes that have been made to the MP before implementation. The MP should be tuned based on the test results including disabling rules that generate unnecessary alerts or editing rule criteria to better reflect an organization's service level policies. All edits made to the MP should be documented including the before and after values and the reason why the change was made.

Next the MP should be tested and tuned in a pre-production environment monitoring production servers to ensure they deliver the expected results. The pre-production environment should be configured in such a way that notification events are not forwarded to the network operations center. A detailed review of the test results and in particular, all alerts generated during the testing should be conducted. After the test results have been reviewed and are satisfactory, the MP can be installed in the production Operations Manager environment following Microsoft's guidelines.

Management Pack Maintenance

After an MP has been installed into a production environment, there are a number of ongoing maintenance tasks to ensure the MP continues to deliver a high level of service. Backups of the MP should be made on a regular basis. Ongoing changes made to the MP as a result of updates to software or hardware, changes in usage patterns, alert tuning or other situations should be tracked so that changes can be backed out if they don't have the desired results.

MP upgrades can present some challenges in a MOM 2005 environment since a typical upgrade results in the loss of customizations. Before an MP is upgraded, an analysis of why an upgrade is necessary should be completed before taking any additional steps. Next a detailed review of all the differences between the existing MP and the new MP should be conducted and a comparison report should be generated and saved for reference. Customizations made to an MP may need to also be applied to the upgraded MP.

Next, the upgraded MP should be tested in an isolated environment then a pre-production environment following the steps identified earlier in the Management Pack Implementation stage of the lifecycle. Any changes made to the MP along the way should be documented and saved for reference. Once completed, the MP is ready for installation into the production environment. Please follow Microsoft's guidelines when upgrading an MP.

Although an MP can be tuned before implementation, it is not possible to simulate all conditions present in a production environment. This may lead to alerts being generated by the MP that are not anticipated. Taking a production MP offline for tuning can be a rigorous process and the Microsoft Alert Tuning Solution Accelerator should be referenced for a complete set of guidelines on alert tuning. During a tuning exercise, care needs to be taken to ensure production operations are not impacted by superfluous alerting or large alert volumes. As with other stages in the MP lifecycle, tracking changes to an MP during the tuning exercise is very important.

MP Studio and the MP Lifecycle

MP Studio delivers a set of capabilities that reduce the time and the effort required as a Management Pack passes through each stage of the Management Pack lifecycle. By leveraging these capabilities, IT groups can deliver a higher quality MP to the production Operations Manager environment in less time resulting in better service monitoring and less alert noise.

A key enabling technology within MP Studio and the foundation for managing change throughout all stages of the Management Pack lifecycle is the MP Store. The MP Store is a version control system for Operations Manager Management Packs. It provides a place to store complete versioned copies of all MPs and provides a single point of reference for an MP regardless of where it is in the lifecycle. Version control, check-in / check-out and a complete change history are all available via the MP Store.

Key features of MP Studio as related to the Management Pack lifecycle are described in the following 3 sections.

Management Pack Development

MP Studio's version control system is a great place to start the MP development process. The version control environment provides a central shared location to store Management Packs including all versions of the MPs as they are being developed. This ensures team members are using the most current MP version as they add their expertise in the development process. If desired, users can use the check-out capability to allow only a single user to make changes to an MP at any given time. When the MP is checked back in, changes are automatically detected and the user is given an opportunity to comment on the changes that were made. This change history is maintained within the MP Store alongside the MP itself, ensuring that the reasons for each change will never be lost.

As development of the MP progresses and changes are being made, MP Studio's testing capability (referred to as profiling) allows MP developers to test their changes in an integrated test environment that does not require the MP to be installed in a Operations Manager environment. This "sandbox" allows features to be tested as they are developed without having to interact with a Operations Manager environment. Profiling gathers data based on provider definitions contained within the MP. Results of profiling including detailed performance and event information as well as the alerts Operations Manager would generate based on the data collected are presented to the user. The MP can then be edited and tuned using these results. After making changes to the MP, it can be tested against the same profile data to confirm the alert volume is reduced to an acceptable level.

MP Studio's extensive documentation capabilities are also very useful at this stage to help capture and share knowledge amongst team members as the MP development process continues.

Management Pack Implementation

Prior to implementation, the MP Studio's Management Pack Store should be used to store the original released MP. This can be used as a reference point for all future work with the MP.

Next MP Studio's reporting and documentation features can be used to enable a detailed analysis of the MP prior to implementation. An MP file can be opened and viewed using MP Studio's customizable reporting user interface. Columns can be grouped, sorted, hidden, filtered etc. so that only the information that is important to you is displayed. Information from this customized view can be exported to XML or to Excel for further sharing, analysis or review. MP Studio also includes a one touch documentation feature that generates a complete MP report within seconds. This report can be printed and/or saved to a file for future reference.

MP Studio's profiling feature allows effective testing of an MP in an isolated environment. Profiling gathers data based on provider definitions contained within the MP. Results of profiling including detailed performance and event information as well as the alerts Operations Manager would generate based on the data collected are presented to the user. An MP can be profiled against any server within an environment including production servers regardless of whether or not it has a Operations Manager agent. Profiling production servers will result in a much higher quality MP than if tuning took place in a lab environment. The profiling results are very useful for tuning the MP before further lab or pre-preproduction testing takes place.

Tuning a Management Pack in MP Studio is easy as changes can be made directly to the MP file itself either one rule at a time or bulk editing of key fields like rule enable / disable. Since MP Studio works with MP files, tuning can also be delegated to application stakeholders without giving access to the Operations Manager environment.

Management Pack Maintenance

MP Studio's MP Store provides key maintenance capabilities including Management Pack backup and version control. Full versions of MPs can be backed up to the store on a regular basis and changes that have been made to the MPs are automatically recorded and stored in a change history report.

MP Studio is also invaluable when upgrading Management Packs. MP Studio's compare feature can show all the differences between an existing MP and a

newly released MP. This makes it very easy to drill down and quickly pin point deletions, additions and changes within the new MP. The comparison capability is very flexible and a comparison report can be generated in several ways and can include any combination of file based or installed Management Packs. Furthermore an MP Studio Comparison Set can be used to compare any number of MPs to a standard MP. This is useful to show differences in MPs across different Management Groups and the results can be used to keep MPs in sync. A summary comparison report, invaluable for change management reporting requirements, is generated and can be easily exported to Excel.

Ongoing tuning of production MPs can be greatly simplified using MP Studio. Reporting on MP objects including all monitors is very simple and provides a great starting point for the alert tuning exercise. “What if” scenarios are accommodated by enabling changes to an MP to be tested against a baseline profile created with MP Studio, resulting in immediate feedback on the effectiveness of the changes. Making use of the MP Store provides even better tracking of the effectiveness of changes being made to an MP.

Summary

A successful Microsoft Operations Manager deployment requires effective Management Packs. Organizations who properly manage the lifecycle of Operations Manager Management Packs at the development, implementation and maintenance stages significantly enhance the service monitoring function in an efficient and effective way. MP Studio can further enhance the MP lifecycle by delivering a framework including tools, procedures with version handling to support managing the lifecycle at each of these stages, saving an organization time and money. Benefits of using MP Studio to manage the MP lifecycle include the following:

- Deploy new applications with new MPs quickly;
- Reduce the risks when upgrading MPs;
- Reduce the number of alert tuning projects;
- Reduce the time and effort when tuning an MP;
- Delegate MP tuning to application owners;
- Manage and track changes to production MPs;
- Ensure consistent service monitoring across the enterprise.
- Protect the investment made in customizing MP’s

For more information on MP Studio or to obtain a copy to evaluate within your environment, please visit http://www.silect.com