

# Supporting Operations Personnel through Performance Engineering

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## ABSTRACT

Operations costs are around 50% of the worldwide costs of Information Technology. Yet operations problems are mainly viewed as the problem of IT and not of the problem of product developers or performance engineers. I will discuss some areas where performance engineers could be of great assistance to operations and where an understanding of operations process could inform the models created by performance engineers.

Some of these areas are:

- Upgrades from version N to version N+1 are a common occurrence. Some systems are updated as frequently as 10 times a day. Approximately 10% of these updates fail and one common source of this failure is incorrect configurations. Configuration settings that adversely affect performance are among the most difficult to find and correct. For example, a mistaken configuration setting caused a routing of messages unnecessarily through a different region in the cloud. Inconsistent specification of thread pools between two different libraries used by a product is another example.
- Operations personnel monitor system wide performance to determine appropriate resource assignments. This monitoring could be much more effective if applications exported relevant information about their particular performance characteristics and needs.
- Operations processes dictate particular steps when managing applications. Again, considering the upgrade problem, a rolling upgrade causes servers to be systematically taken out of service, upgraded, and restored to service. The workload assumptions of performance models are, typically, not automatically connected to process descriptions. Why could an embedded performance model not be aware of the operations process currently being executed and could adjust the behavior of an application in response.

In general, my argument is that operations personnel are important stakeholders for systems. Performance engineers could make a significant contribution to smoother operations activities and operations processes provide an important source of problems for performance engineers.

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## Categories and Subject Descriptors

D.2.1 [Requirements/Specifications]: Elicitation methods

K.6.2 [Installation Management] Performance and usage measurement

## Keywords

Systems administration, devops, environmental change

## 1. CONENTS

The motivation for this work is characterized by the following quote [1]:

“Through 2015, 80% of outages impacting mission-critical services will be caused by people and process issues, and more than 50% of those outages will be caused by change/configuration/release integration and hand-off issues.”

When designing a system, we must attend to the problems of all of the stakeholders including operations staff. The problem becomes – how can our systems be designed so that people and process issues do not cause so many outages?

In order to design systems to support the operations staff, we should know what the operations staffs’ duties are and the causes of their problems. In general, operators monitor and control the operations of computer systems, install new or upgraded applications/middleware/hardware, and support business continuity through back-ups and disaster recovery. Problems typically arise in association with a change in the environment – upgrading to a new version of a software system or library; changing configuration parameters to reflect changing loads, hardware, or network configurations; or during shift handoffs.

Performance problems that occur during environmental changes are not the most numerous but they are the most subtle and difficult to find.

I advocate a threefold attack on the detection of performance problems during environmental change:

1. Make systems operations aware. This includes version aware, shift hand off aware, and configuration change aware.
2. Develop performance models that enable detection of subtle changes in performance of individual applications.
3. Have systems expose application specific information important for the models developed in 2.

4. Use either external tools or internal monitors to detect and report and correct performance problems caused by environmental changes.

## **2. CONCLUSIONS**

Reducing the outage rate caused by operations problems will require modifications both to process and product. Product

modifications should involve making the product operations aware in a variety of dimensions and building models and tools that take advantage of information gathered from the applications.

## **3. REFERENCE**

[1] Colville, R. and Spafford, G.  
<http://www.rbiassets.com/getfile.ashx/42112626510>