

# Maintainability

## Operability: A good operations team

- Monitoring the health of the system and quickly restoring service if it goes into a bad state
- Tracking down the cause of problems, such as system failures or degraded performance
- Keeping software and platforms up to date, including security patches
- Keeping tabs on how different systems affect each other, so that a problematic change can be avoided before it causes damage
- Anticipating future problems and solving them before they occur (e.g., capacity planning)
- Establishing good practices and tools for deployment, configuration management, and more
- Performing complex maintenance tasks, such as migrating applications across platforms
- Maintaining the security of the system as configuration changes are made
- Defining processes that make operations predictable and help keep the production environment stable
- Preserving the organization's knowledge about the system, even as individual people come and go

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## Operability: Good data systems can help as well

- Providing visibility into the runtime behavior and internals of the system, with good monitoring
- Providing good support for automation and integration with standard tools
- Avoiding dependency on individual machines (allowing rolling-upgrade)
- Providing good documentation and an easy-to-understand operational model
- Providing good default behavior, but also giving administrators the freedom to override defaults when needed
- Self-healing where appropriate, but also giving administrators manual control over the system state when needed
- Exhibiting predictable behavior, minimizing surprises