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CIS 225            Containers, Good or Bad?

Containers are a powerful tool that, when managed correctly, can efficiently allocate resources by running multiple isolated services on a single host. They allow for hosting services like DNS, web servers, databases, or DHCP in individualized environments, peeling away the usual requirements for running these services on separate systems. For instance, while you typically wouldn't mix a database and DNS service on the same host, because of the vulnerabilities that both of these services hold. If a malicious actor got into a mysql database, they would be able to jump onto the DNS service, poisoning DNS service and wreaking havoc on your network. With containers, that malicious actor would find that they are walled into the database container and would not be able to jump out of it into another application container.

Containers act like books on a shelf, each carrying its own necessary software, enabling portability and streamlined development. This flexibility allows system admins to deploy and manage services efficiently, quickly moving containers between hosts if needed. Rebuilding a container is a simple task with proper backups because there is no server that each container needs to run with, you can quickly spin up a container from a backup and get the service back online. However, improper management of containers can lead to significant issues. Resource exhaustion is a key concern and if a database container consumes excessive CPU, memory, or storage without proper limits, it can disrupt other containers, such as DNS or DHCP, causing network outages. Additionally, poor security practices can allow attackers to exploit vulnerabilities, gaining access to other containers or sensitive data. These risks highlight the importance of careful planning, resource management, and security when using containers.

Despite these challenges, I believe Acme Corp should invest in containerizing its infrastructure. Containers, when managed properly, offer substantial benefits, including reduced costs by eliminating the need to spin up a virtual machine for every new service. Containers are the next step in the evolutionary chain for Virtual Machines and containers are essentially designed for businesses. Their efficiency, scalability, and flexibility can help Acme streamline operations and adapt to new technologies more effectively, making them a valuable addition to the business. I would suggest that ACME take a slower approach to move their minor services towards containers. After this, monitor the impact the containers have made on the network and services, then decide if a full migration of core services would be valuable to the business.