

Provali Data Center Operations Overview



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PROVALI Data Center Operations Overview

Scope

This document outlines a high-level overview of aspects within data center operations. The purpose of this document is to describe the activities and items that encompass data center operations. The information contained in this guide is meant to ensure that a data center practice is participating in necessary activities for proper data center operations. For more information on these practices, please contact PROVALI.

Data Center Operation Approach

Data center operations consist of three primary categories: documentation, processes, and steady-state activities.

Documentation

Several pieces of documentation are required to properly maintain a data center operation. The documentation accomplishes several tasks. By properly documenting activity and environments in a data center institutional knowledge, assets, and service levels may be maintained. Data center documentation includes:

- **Asset List:** A list of all data center assets that documents the specifications, age, functions provided, and location of all servers, network appliances, power infrastructure, back-up and contingency systems.
- **Network Diagrams:** Within the data center all networks and infrastructure contacts must be documented to ensure proper connections and to allow for faster remediation in the event of network outages.
- **Run Book:** The run book contains all processes and activities that are involved with the operation of the data center. The run book should contain all contacts, disaster plans, and access information to allow for proper operation of the data center.
- **Disaster Recovery Plan:** The disaster recovery plan includes the steps and contacts of actions to perform in the event of a problem or outage. The plan should also include any escalation procedures and personnel to contact. The plan should be tested quarterly to validate proper recovery.

Operational Processes

Operational processes consist of all the processes that must be performed and maintained within the data center. The processes include:

- **Configuration Management:** Configuration management is the process of documenting and tracking relevant information about the computing devices and appliances that are responsible for operations in the data center. To ensure the data center practice is operating correctly, configuration management should be used.
- **Reporting:** Reporting should be actively practiced within the data center. The type and frequency of reports generated varies from data center to data center, but should include at a minimum:
 - Basic uptime and downtime
 - Performance within SLA's
- **Security:** All security processes and access should be properly documented and tracked. Security access includes physical access to the data center, user and administrator access to appliances.
- **Environmental Aspects:** The data center environment should be located within a secure facility that has been properly designed for data centers. Environmental aspects include:
 - Secure Doors
 - Emergency Back-up Power
 - Redundant HVAC units
 - Hot and Cold Aisles
 - Cable Management
 - Active, Dry, Fire Suppression
 - Security Monitoring Devices
 - Geographical location of the facility
- **Change Management:** Change should only occur according to a documented process and change controls. Change control is the process of changing devices within a set of systematic and formalized procedures and policies for introducing change to the environment. The policies, procedures, and control points should be documented and followed carefully.
- **Standards:** IT standards and direction setting includes the creation, documentation, propagation, and adherence to a set of standards for all elements of the data center.
- **Lifecycle Management:** All of the assets in the data center should adhere to a lifecycle process according to the technology direction setting consideration within the IT organization. All of the equipment in the data center should be documented and replaced according to the lifecycle and change management policies.

Steady-State Activity

To function properly several activities and functions must be performed within the data center. These activities must be properly scheduled, performed, and recorded to ensure compliance to SLA's. The activities include:

- **Monitoring:** The amount and types of monitoring required varies from practice to practice, but should include a minimum of:
 - Basic "Up/Down" notifications
 - Status on specific processes running on devices
 - Alerts based on thresholds for process and statistical monitors (Such as CPU usage)
 - Trending and historical reporting information (The information by device that is used to establish appropriate operational thresholds as well as troubleshooting during outages)
 - Custom defaults by server types and operating systems (Production application servers, e-mail serves, network devices, telecomm, and database servers)

- **Back-ups:** Beck-ups of all servers should be performed according to established schedules and requirements. In addition to performing back-ups, historical back-ups should be kept in accordance with SLA's. On a weekly basis, recovery points and back-ups should be tested and verified.

- **Bandwidth:** Bandwidth from network providers should be actively monitored and held accordance to SLA's with service providers. In the event of a failure to meet SLA's the event should be documented and escalated to management for proper vendor management.

- **Service Level Agreements:** SLA's must be properly agreed upon and documented with the client. In addition to documenting the SLA's, they should be actively monitored and confirmed throughout the operation. If an SLA is not met the issue should be escalated. Immediately.

- **Escalation Processes:** The escalation process documented in the run book should be actively used in the event of a problem. If a primary point of escalation is unavailable, back-up resources and process should be identified, prior to using the escalation procedure.