**Configuration Management System**

Configuration management is a system engineering process for establishing management, **organization** and **contro**l of changes in functional and physical attributes (documents, codes) as well as performance of a product during SDLC. It ensures consistency of change and quality throughout a products life cycle. Configuration Management system leads to an always up to date inventory for your tech assets.

**Importance of configuration management**

1. **Disaster Recovery**

Configuration management ensures that assets are easily recoverable if the worst happen or rollbacks. It so that when we’ve put out bad code, we can go back to the state of our software before the change.

1. **Uptime and Site Reliability**

Site reliability” is how often your service is up.

A frequent cause of downtime is bad deployments, which can be caused by differences in running production servers to test servers. With configuration managed properly, test environments can mimic production, so there’s less chance of downtime.

1. **Easier Scaling**

Provisioning is the act of adding more resources (usually servers) to our running application. Configuration management ensures that we know what a good state of our service is.

1. Faster onboarding of new team members, easier collaboration between teams.
2. Extended software lifecycle of products/assets.
3. It Ensure products meet specified performance criteria.
4. It caters for dynamic nature of software
5. When the development team needs to work concurrently, thus different versions, authors branches need to be configured.
6. Manage costs involved in making changes to a system.
7. To prevent the software from becoming obsolete as it changes with time.

Change management. To keep track of change requests from customers o

**Configuration Management activities.**

* r developers. Checks cost and impact of changes also decides if the changes are necessary.
* Version management. Keeps track of version number and defines naming technique.
* System building. Assembling and linking all the program components and libraries o make the executable system

Communicates with version control system to check the previous build and to decide what will be the next. Balances of time stamp.

* Release management. Keeps track of the software releases to the customer.
* There are two types of release management, major and minor.
* Example version 8.4.1

1 = minor release

4-major release

8-main software.

* Configuration audit and verification. Software Configuration audits verify that all the software product satisfies the baseline needs. It ensures that what is built is what is delivered

**People Involved in configuration management.**

1. **Configuration Manager**

A configuration manager is responsible for identifying config items and approving change requests.

1. **Developer**

Developer’s codes according to the standards of the SDLS he/she is responsible for maintaining of code and resolves code conflict.

1. **Auditor**

The auditor is accountable for SCM audits and reviews and guarantees the consistency and completeness of release.

1. **Project Manager:**

Ensures timely delivery of product as well as generates reports about software status.

1. **User**

The end user should understand the key SCM terms to ensure he has the latest version of the software

**Examples of configuration management tool**

* CFEngine
* Chef
* Puppet
* Juju
* Rudder
* Ansible
* Vagrant
* SALTSTACK

**Four modern configuration tools**

* 1. CFEngine

Developed by Mark Burgess, CFEngine , provides automation for large computer systems from unified management of servers, systems users embedded systems to mobile devices.

**Users**: Intel, AT&T, LinkedIn, Amazon, State Farm, SalesForce etc.

* 1. CHEF

Adam jacob developed chef to configure and manage infrastructure. Executing by coding in contrast to manal execution (Infrastructure as code).

**Users:** Bloom Berg, BONOBOS, Facebook, GE, Hewlett Packard, Microsoft

* 1. Puppet

puppet uses master-slave architecture to perform configuration management. Nodes pull configurations from the master. J Morgan Chase uses chase, CBSButler, Heart Land, AT&T

* 1. Ansible

Ansible is the best configuration management, deployment, orchestration open-source tool and also automation engine.It is a push-based configuration tool. It helps to automate the entire IT infrastructure by providing large productivity gains. Ansible generally connects through SSH, remote PowerShell or via other remote APIs.

**Users:** Atlassian, allegiant, Cisco, Gartner, NASA, twitter, Verizon, NEC, porter