

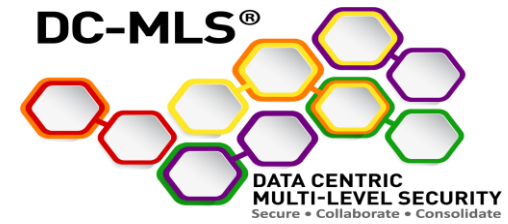
# Data Centric Multi-Level Security (DC-MLS®) Enterprise Overview

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**Joseph Swartz, Program Chief Architect**

# Topics



Why DC-MLS® Enterprise?

DC-MLS® Overview

MLS and DC-MLS® Value Added

DC-MLS® Enterprise Standards

DC-MLS® Enterprise Workflow

DC-MLS® Enterprise Recap

# Why DC-MLS® Enterprise?

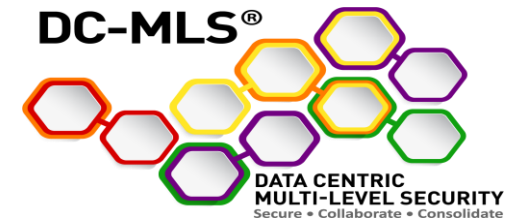
Most projects requiring MLS configurations do not have the SELinux or security expertise on staff to build the deployment from scratch

- SELinux policy expertise
- Multi-Level Security (MLS) label development expertise
- Role Based Access Control (RBAC) expertise
- Risk Management Framework (RMF) Cross Domain Systems (CDS) controls expertise

*DC-MLS® Enterprise provides the automation and training expertise required for a successful deployment that is ready for ATO submittal, user login, and use in a short time frame*

Enterprise provides full site specific, standardized, automated, CM approach to MLS deployments

# DC-MLS® Overview



LM's DC-MLS® Efforts cover two areas:

- DC-MLS® Core comprising the inner workings of the DC-MLS® Enterprise solution
  - LM Owned
- DC-MLS® Enterprise comprising the deployment and site support of the DC-MLS® Enterprise solution
  - Government Owned

## LM Current Focus

- Continue developing DC-MLS® Core capabilities and RHEL 8 and RHEL 9 support
- Develop DC-MLS® Enterprise capabilities to deploy enterprise instances based on DC-MLS® Core parts and site-specific input files using a baseline RMF controls application

Enterprise provides full site specific, standardized, automated, CM approach to MLS deployments

# DC-MLS® Enterprise and MLS Value Added

## MLS enables

- Merging of systems
- Reduction of security risks

## DC-MLS® Enterprise enables

- Automation and ease of deployment
- Configuration management
- Risk reduction in updates, new features, new software, new deployments
- Reproducibility
- Factory system enables in-depth debugging
- New admin/Secadmin user training/education on factory system

MLS & DC-MLS® Enterprise enable automated, easy to deploy site specific ATO-able deployments that can consolidate many systems while reducing security risks

# DC-MLS® Core Overview

## Tier 1 – Vehicle Equivalent Engine and Transmission

- RHEL Baseline
- SELinux Baseline Functionality
- ISO Image
- MLS Desktop Functionality
- Enhanced Strict Role Based Access Controls (esRBAC)

## Tier 2 – Vehicle Equivalent Axles, Tires, Steering Wheels, etc.

- ULVM (MLS Cloud)
- Diskless Boot Capability
- Centralized Logging Capability

## Dependencies

- Red Hat Enterprise Linux (RHEL)
- RHEL MLS Policy
- RHEL sRBAC Policy

**DC-MLS® Core provides invaluable parts required for an enterprise deployment**

# DC-MLS® Core Products

## DC-MLS® Core Tier 1

- Developed solely in isolated environment and packaged into a single, securely encrypted ISO package, released quarterly
- Base Configuration
  - ISO Image based on RHEL
  - MLS configuration
- DC-MLS® MLS Desktop
  - MLS Desktop configuration
  - Lays on top of Base Configuration
- Security Tools
  - esRBAC

## DC-MLS® Core Tier 2

- Tools development in DC-MLS® Core Sandbox environment, maintained, and updated for inclusion in DC-MLS® Enterprise deployments
- Sandbox includes
  - Base configuration
  - Login host
  - Compute host
  - MLS desktop with thin client network
  - DC-MLS® Core certified software (FlexLM, PBS Pro, Splunk)
- DC-MLS® Core Applications
  - ULVM/MLSVirt
  - Diskless deployment configuration

DC-MLS® Core strong focus on capabilities required for Enterprise deployment

# DC-MLS® Enterprise Overview

Objective: Automated delivery of site specific, tested, scanned, ATO ready implementation of a RHEL SELinux based MLS configuration

Comprehensive preparation and site survey

- Multiple meetings with government and site security teams
- Site survey and reviews with site team

Automated, configuration managed, repeatable deployment

- Satellite VM and repositories (standard)
- Ansible VM and playbooks (standard)
- Input files (site specific)
- RMF Controls application baseline (standard and customized to site specific)

Site Personnel Training and Familiarization

- Sit along with deployment team
- Work with support tools like account creation workflow

**DC-MLS® Enterprise brings an enterprise capability to MLS deployments**



# DC-MLS® Enterprise Overview

## Long term support

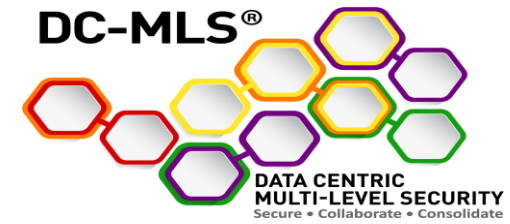
- As needed/requested on-site and/or reach back

## Dependencies

- DC-MLS® Core
- DC-MLS® Enterprise Certified Network Storage
  - Currently Only – Racktop Storage Solutions
  - Others in conversation or work
- DC-MLS® Enterprise Certified Resource Management
  - Currently Only – Altair PBS Pro
  - No others in conversation or work currently

DC-MLS® Enterprise provides MLS aware storage and resource management

# DC-MLS® Enterprise Overview



DC-MLS® Enterprise products including site surveys, input file formats, playbooks for installation, expect scripts for maintenance, etc. used to begin CM of site via controlled input files

- Site Survey
- Input file generation capability
- Playbooks
  - Logging requirements
  - File requirements
  - Stop on error requirements
- RMF Controls detailed
  - Worked with site for tweaks
- Networks
  - Admin network implementation
  - External networks implementation
- Expect Scripting for Maintenance
- Account creation/modification standard
- Ethernet interface creation/modification standard
- InfiniBand/Ethernet interconnect creation/modification standard
- Shared storage creation standard (Lustre and NFS)
- NTP, DNS, System Naming, etc. standards
- Out of Band VPN encrypted Admin and Thin Client Networks
- RMF controls implementation
- DNS, NTP, IdM VM and IdM standards
- Account creation standard
- IP, Ethernet, InfiniBand IPoIB Standards
- Site Survey
- Configuration management through input files

~95% of Enterprise products are reusable on any deployment due to standardizations

# DC-MLS® Enterprise Standard Components

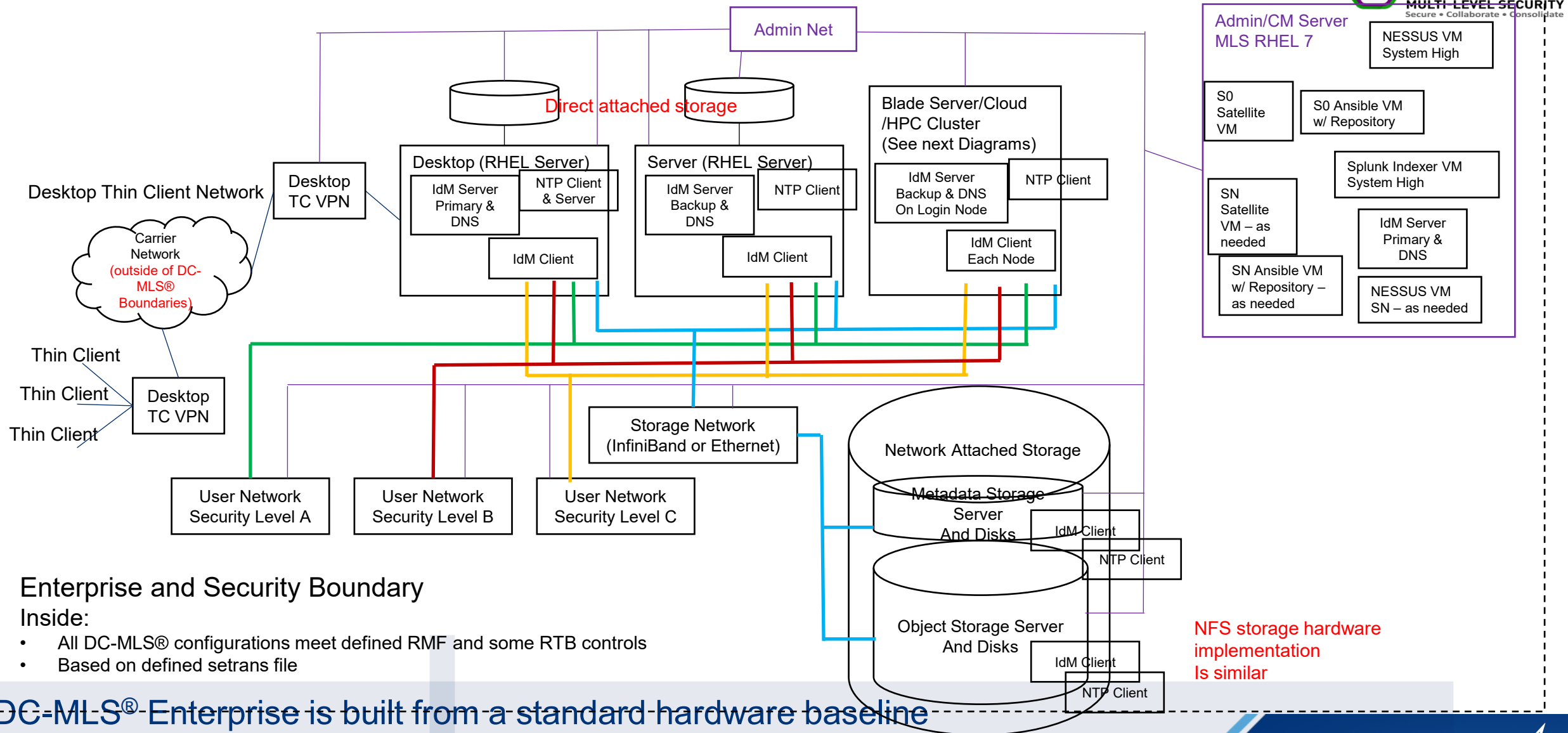
- RMF controls baseline of C-I-A of H-M-L
- Site survey including security label initial design
- Input files, automation, logging, initial accounts, etc.
- Shared storage deployments (Lustre or NFS)
- Resource management (Altair PBS Pro)
- Process standards:
  - Security label additions
  - Account creation
  - Ethernet configuration
  - Interconnect configuration
  - Etc.

After site review, updates can be designed and implemented for site specific modifications to the DC-MLS® Enterprise Standards

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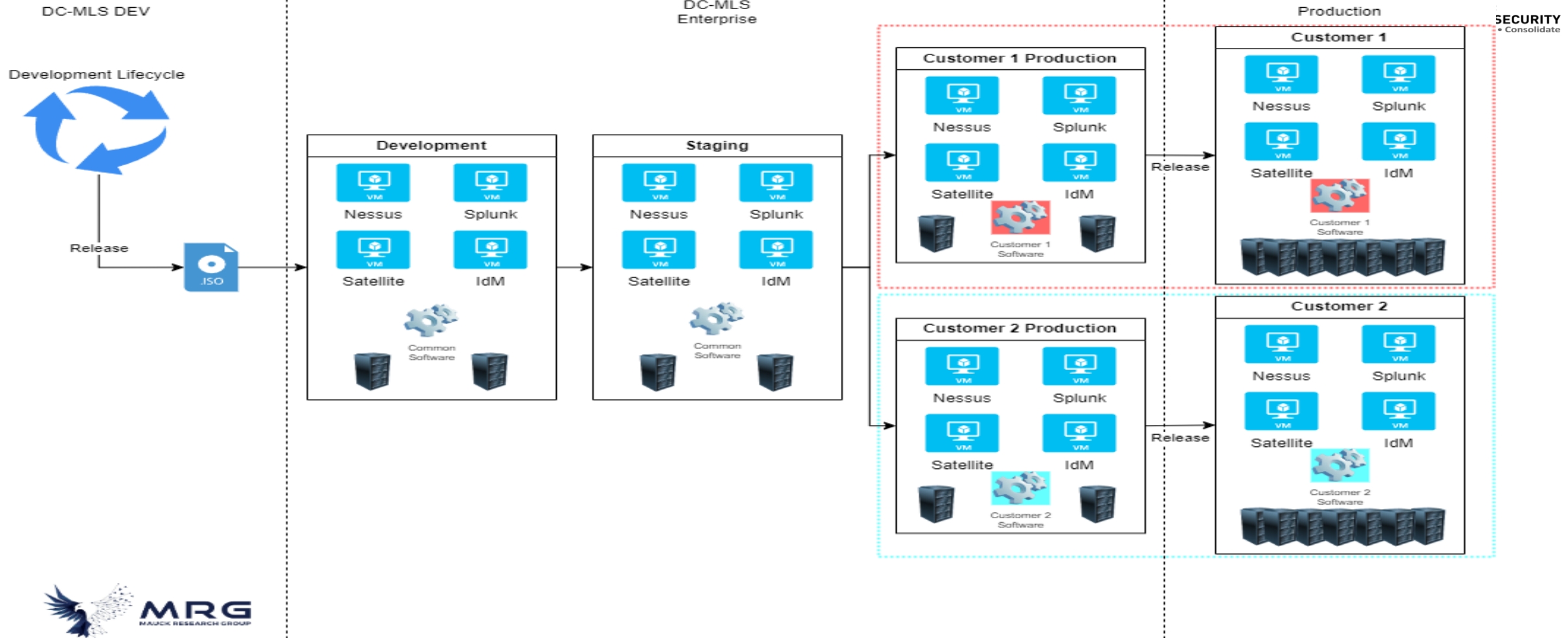
DC-MLS® provides controls and deployment standardization

# DC-MLS® Enterprise – HW Baseline



DC-MLS® Enterprise is built from a standard hardware baseline

# DC-MLS® Enterprise Ideal Architecture



DC-MLS® Enterprise provides standard DevOps environment for each site support

# DC-MLS® Enterprise Workflow

## Site Survey

- Systems, names, security labels, etc.

## Security Engagements

- Site and government security meetings to review security requirements

## Training Engagement

- Define site requirements for training

## Long Term Support Engagement

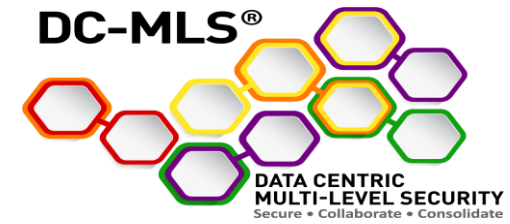
- Define the long-term support

## Deployment

- Working with site team, deploy, test, submit ATO for system

DC-MLS® Enterprise standard deployment workflow is fully repeatable

# DC-MLS® Enterprise Recap



DC-MLS® Enterprise provides automated, site specific, MLS deployments ready for ATO submittal

DC-MLS® Enterprise is built on robust, flexible RHEL baseline capable of meeting all computing needs

DC-MLS® Enterprise is your support team for ongoing operations of your systems



