Power Users and Management 301

Arcus

makes users more successful, productive and secure in <u>any</u> cloud, using <u>any</u> technology.

It is the platform for where & how to get things done!

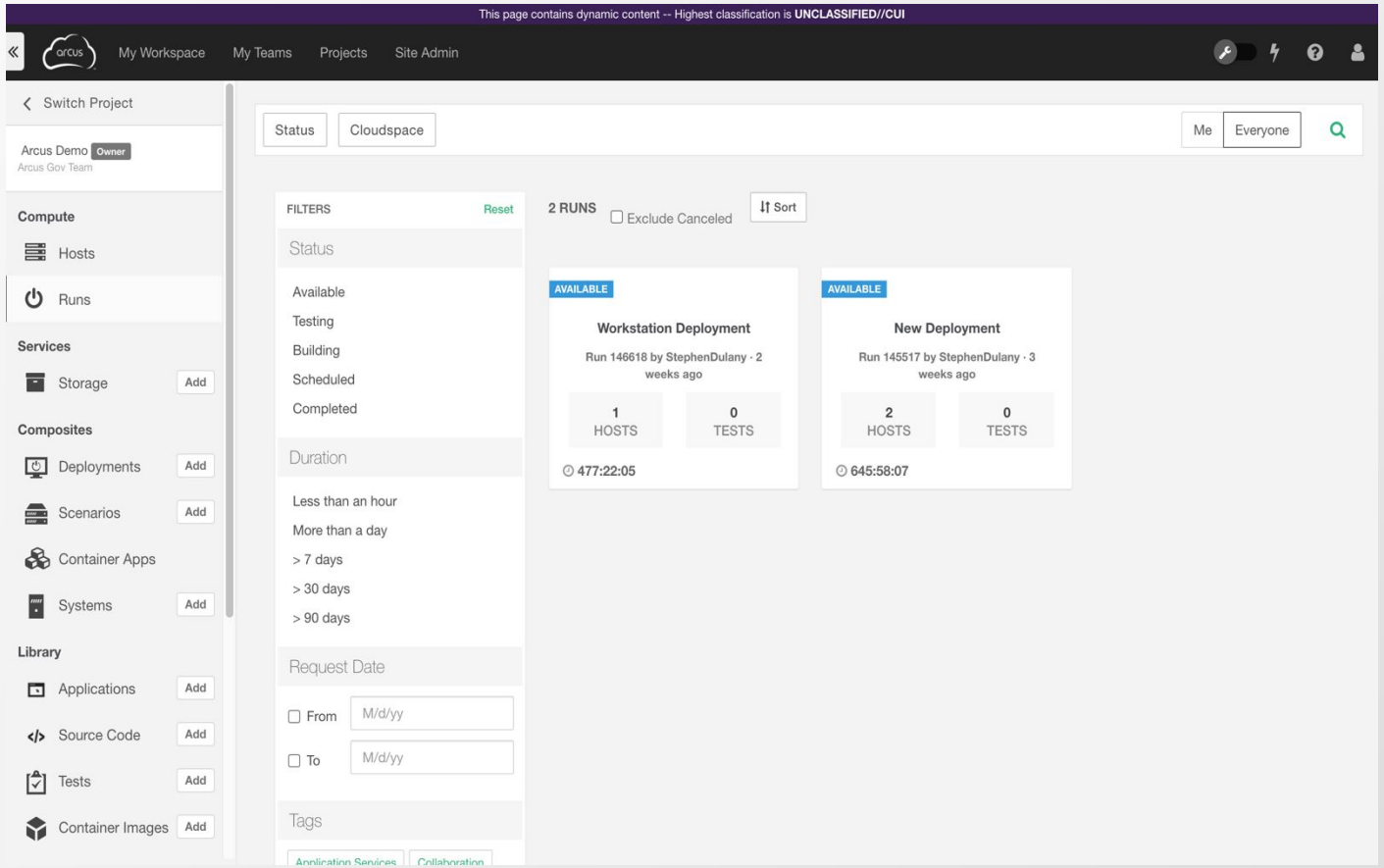
Topics

- Deployment Runs
- Assets
- Services
- ElasticTest™
- Managing Arcus
  - Managing Teams
  - Managing Projects
- Support & Troubleshooting

Deployment Runs

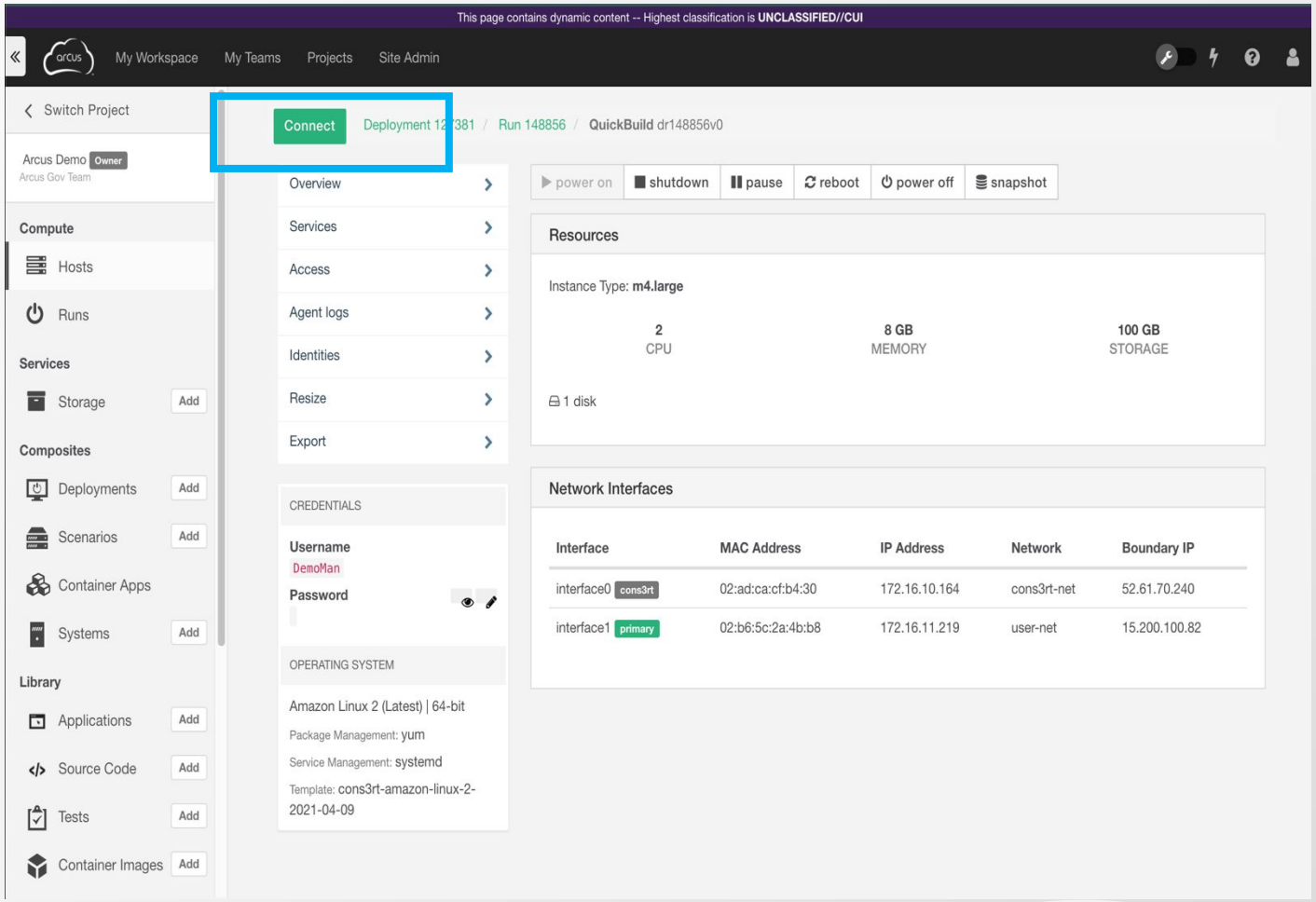
DRs: Where to find Runs

- Runs can be located under **Compute** on the main menu
- Clicking on an individual Deployment Run (DR) tile will bring you to the overview page
- Project Managers can view Runs under:
  - The Project Management interface in the Runs tab, which will show all Runs in the selected project
  - The Cloudspace management interface under the “Deployment Runs” tab, which will show all Runs in the selected Cloudspace



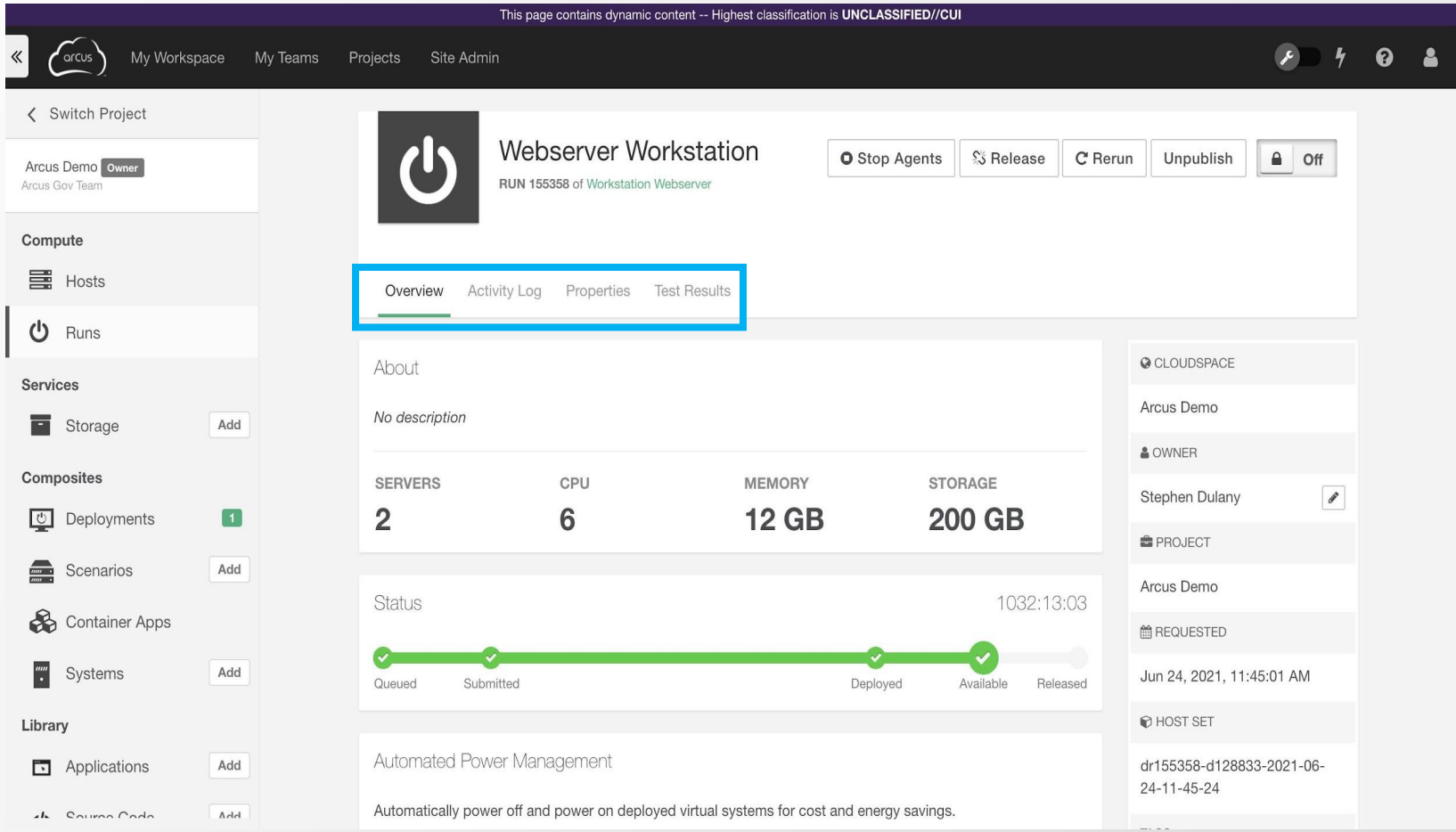
DRs: Connecting

- Runs can be accessed via RDP, VNC, and/or SSH depending on the Host OS/
- Click the **Connect** button on a Deployment Run or Host
  - A **standard** connection will use the credentials set on the System at launch time
  - A **custom** connection will allow the user to enter different credentials
  - A session can be shared to other members of the Project by filling in their username when the connection is opened
- The remote session opens in a new tab/window
- ***A browser pop-up blocker will prevent a connection tab from opening***



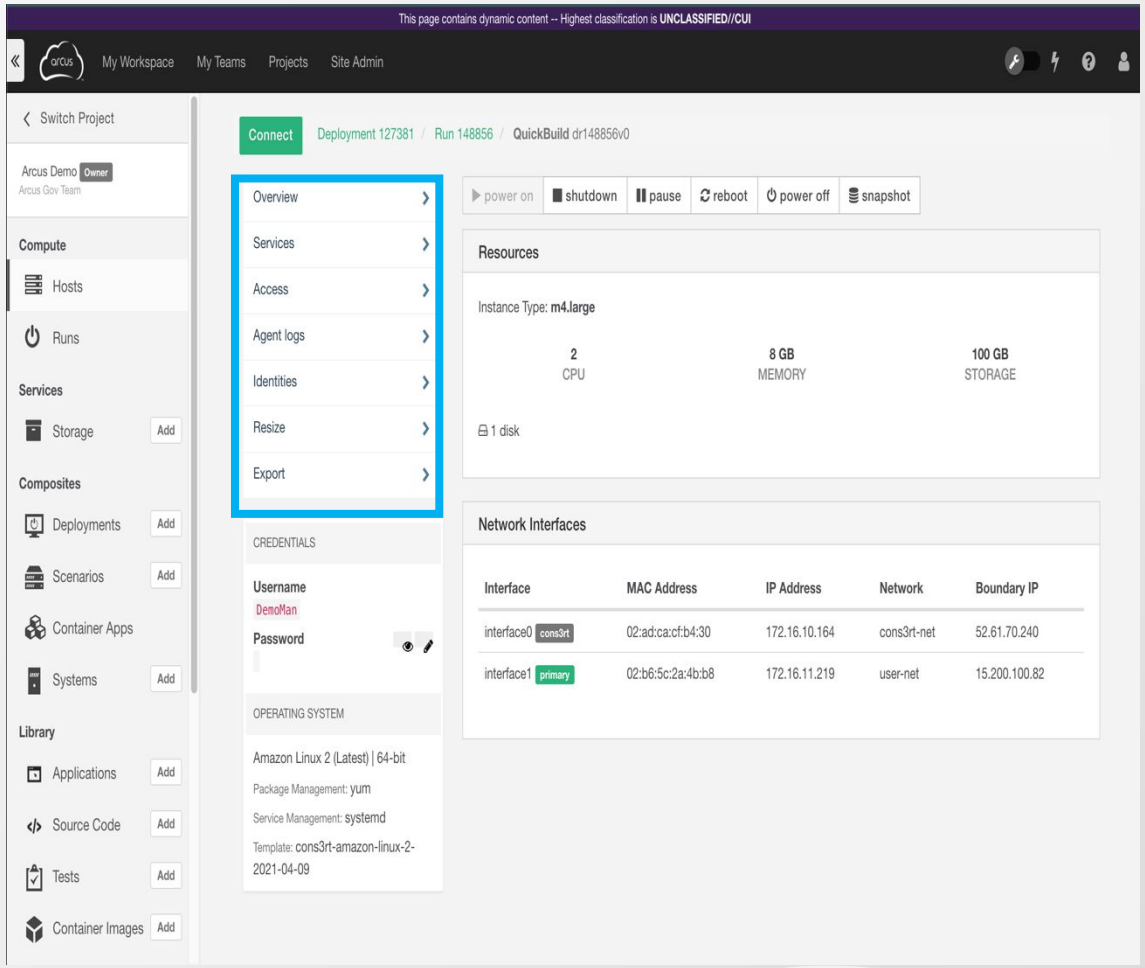
DRs: Run Level Info

- The **Activity Log** tab displays actions taken by the CONS3RT agent, which can be helpful in tracking down errors
- The **Properties** tab displays active deployment and runtime properties in use
- The **Test Results** tab will display any test results generated by an ETT



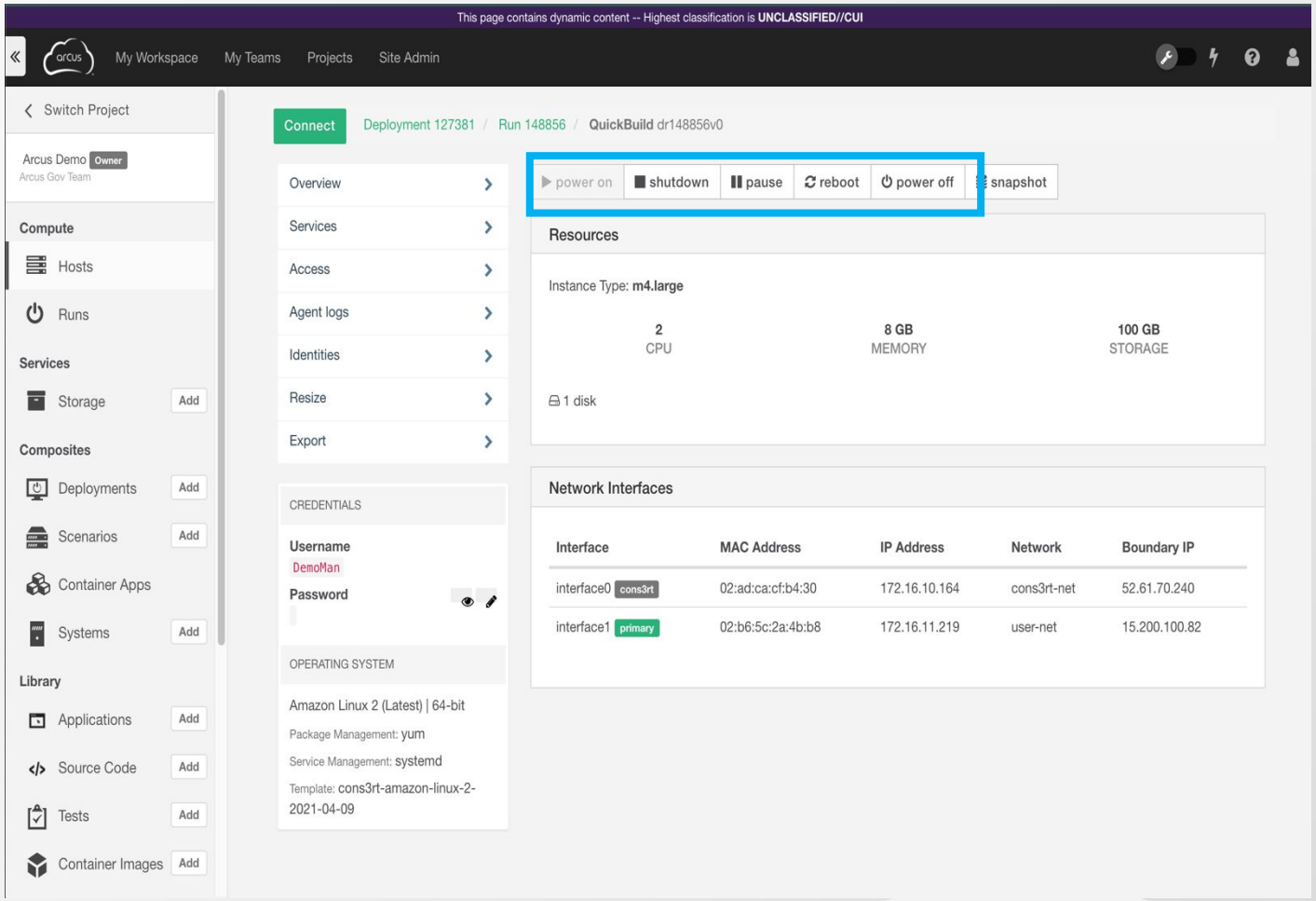
DRs: Host Level Info

- The **Overview** tab lists the host power buttons, instance size information, and network interfaces
- The **Services** tab allows adding and viewing of connected Arcus services
- The **Agent Logs** tab shows relevant CONS3RT agent logs
- The **Identities** tab allows creation of credentials to access services from your Run
- The **Resize** tab allows resizing of a host after deployment (requires reboot)
- The **Export** tab allows users with sufficient permissions to export an asset bundle that enables a stack of assets to be used elsewhere in Arcus



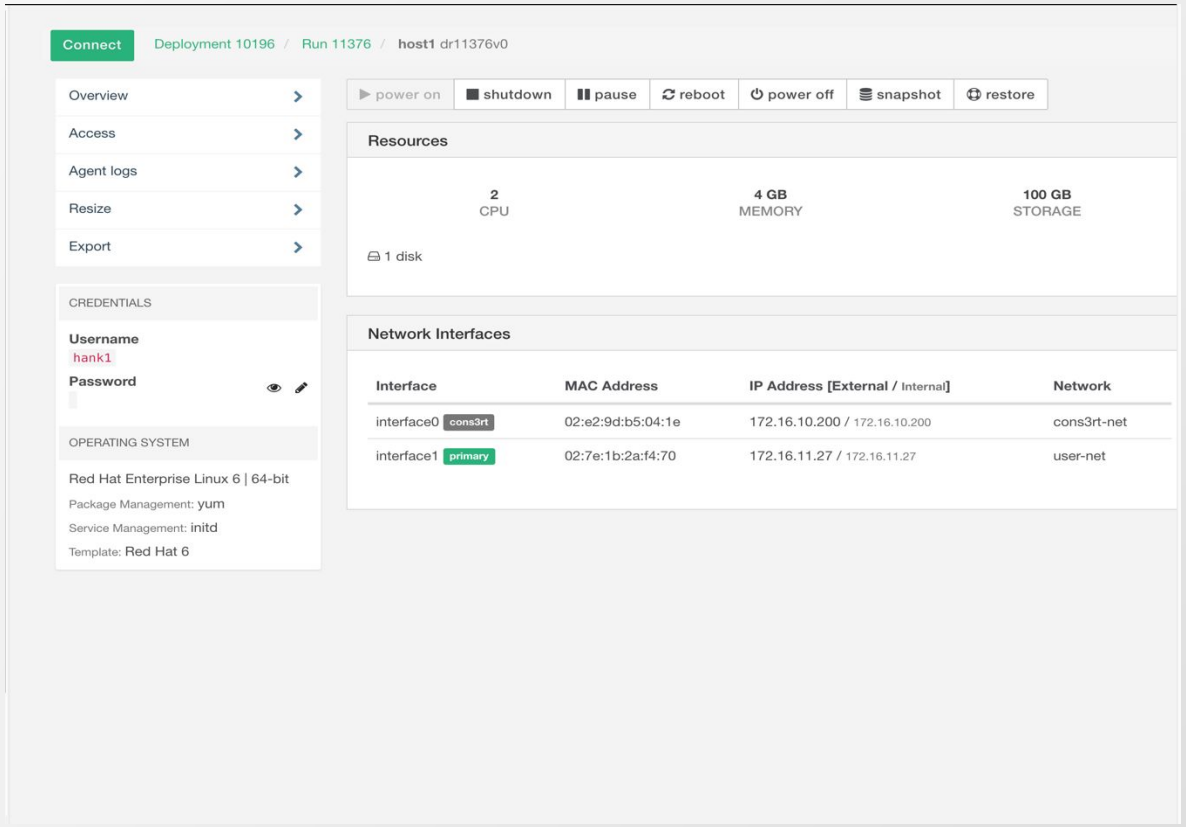
DRs: Power States

- To access the power buttons:
  - You will need to be the owner of the Run or a manager of that Project
  - From the main navigation menu click **Runs** and select the Run
  - Click on the card for the host you'd like to manage
- At the top of the page, there are power options as described below:
  - **ON**: Powers on the host
  - **SHUT DOWN**: Powers down host gracefully.
  - **PAUSE**: Stops host from running temporarily.
  - **REBOOT**: Restarts the host
  - **POWER OFF**: Hard shut down, like pulling the plug



DRs: Snapshots

- A Snapshot preserves the state and data of a VM at a specific point in time, allowing a user to restore that version
- A Team manager must enable Snapshots within a Cloudspace

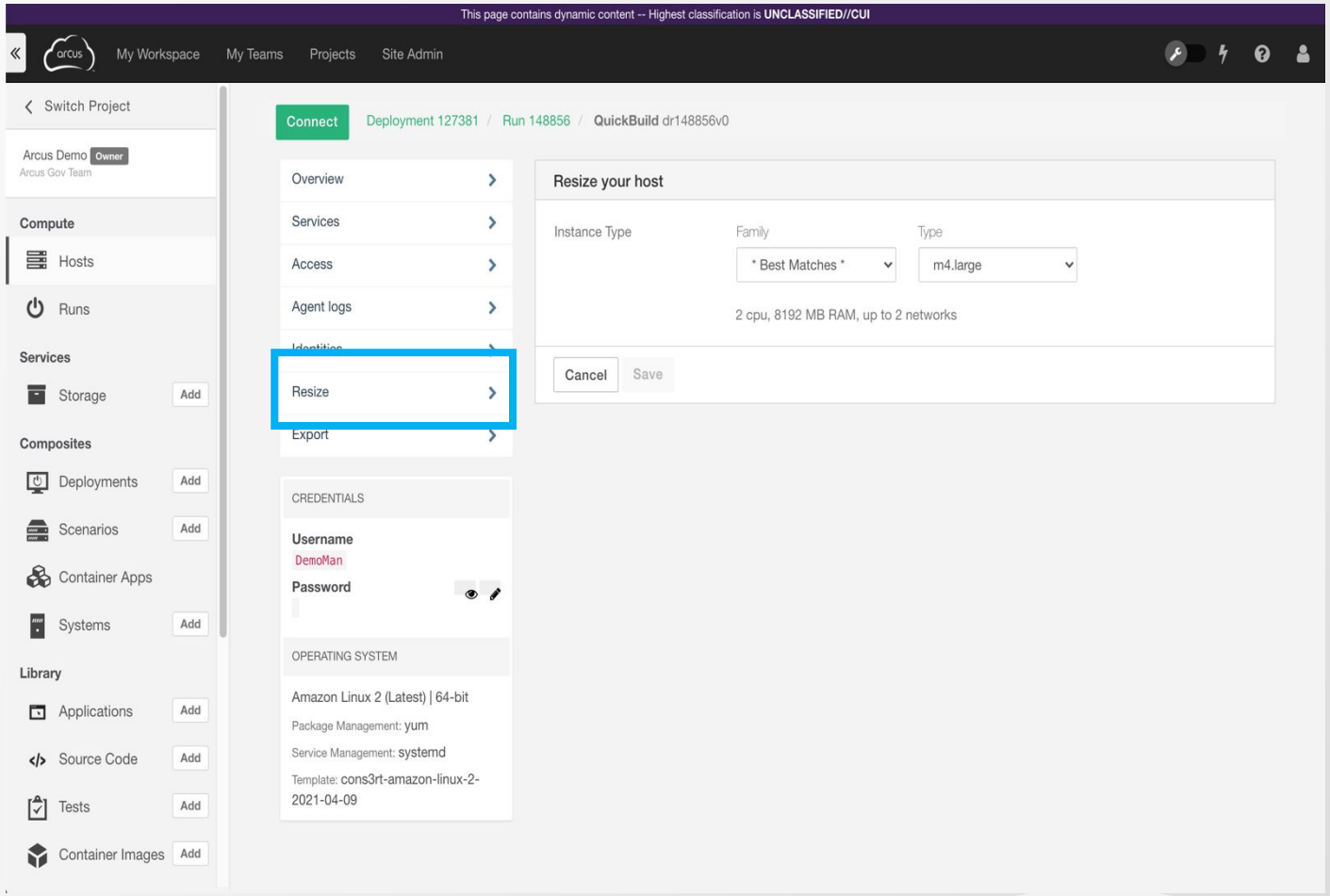


Limitations of Snapshots

- Can be difficult to manage and track in large number
- Consume large amounts of disk space
- Not protected in the case of hardware failure
- Can negatively affect performance

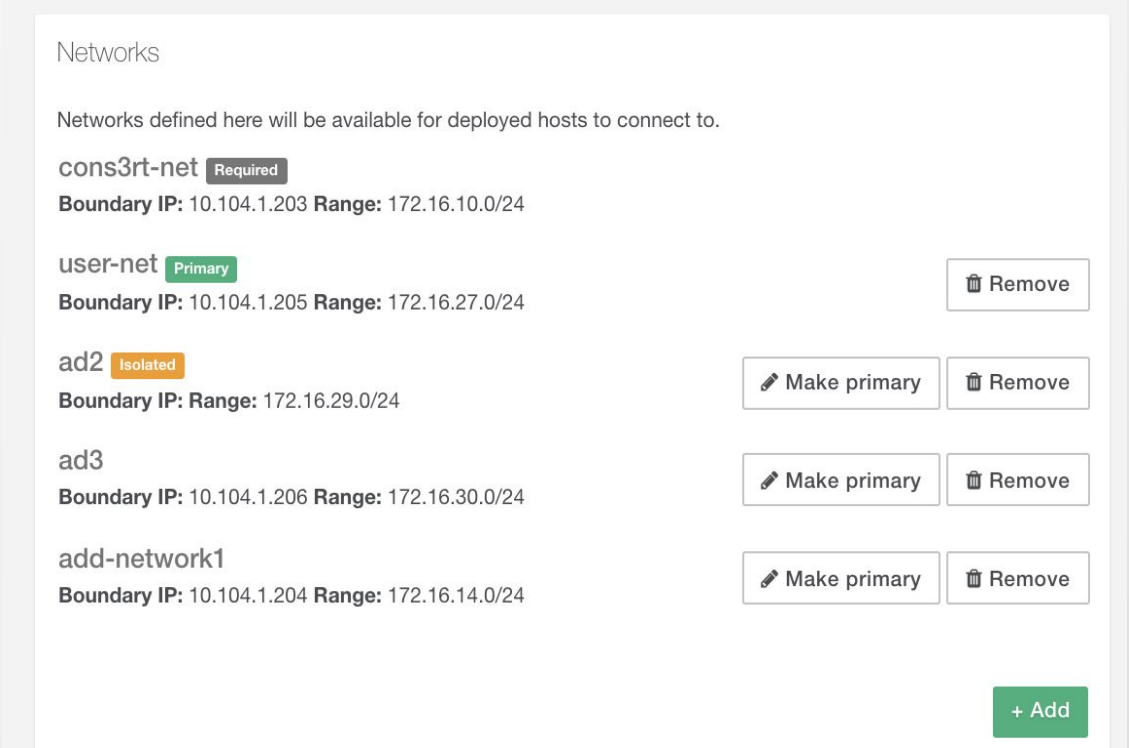
DRs: Resizing

- Runs can be resized after deployment
  - Note: This does require the host to be rebooted once the change has been confirmed
- Click on the host that needs to be resized
- Click on **Resize** in the host menu
- Edit the size of the host, and confirm your changes
  - Note: Use caution when reducing the size of a host to avoid potential errors
- You will be prompted that this change requires a reboot



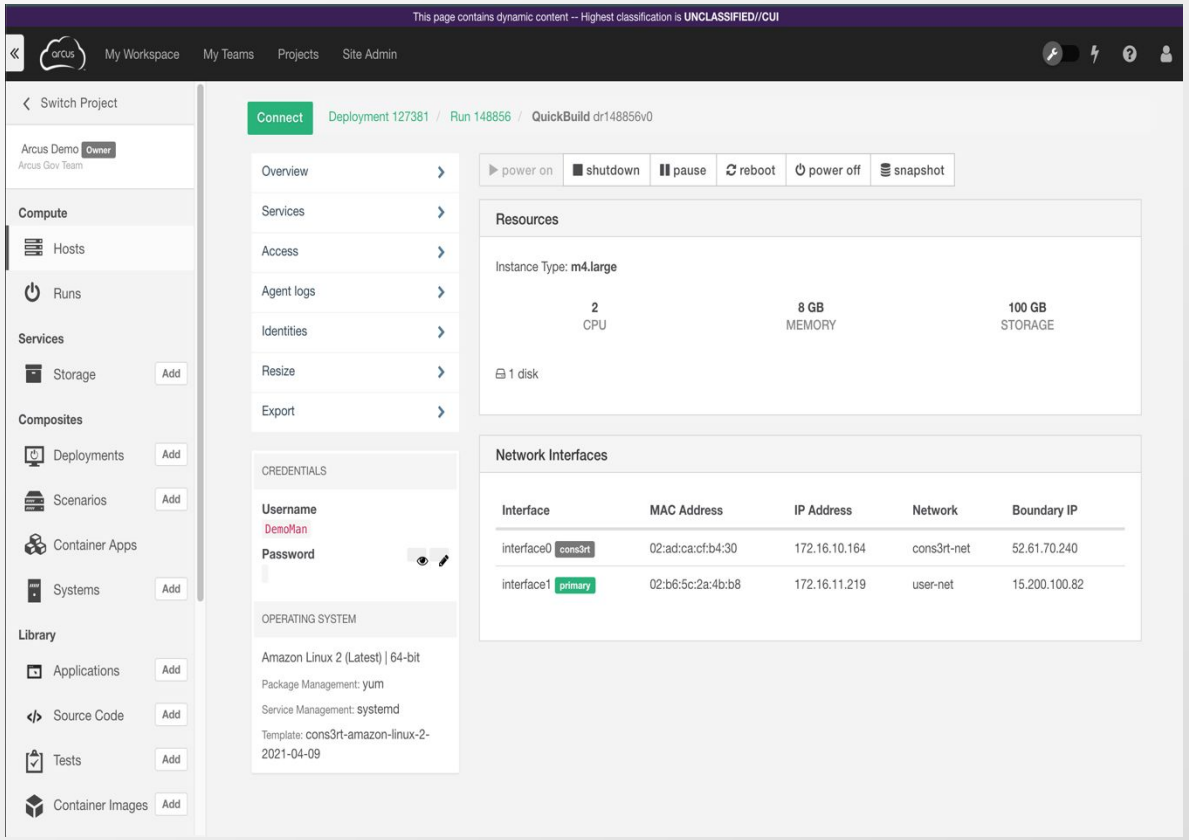
DRs: Cloudspace Networking

- Each Arcus cloudspace has two default networks
  - **cons3rt-net** – provisioning, asset installations, remote access, yum repo
  - **user-net –** systems-to-system communication, Internet access
  - Both each with a class C (/24) address space
- Team managers can customize networks:
  - Pick a Cloudspace, click **Manage**, then select **Networking**
  - Add, rename, and remove networks
  - Note: the **cons3rt-net** is required and cannot be modified
- Standardized across AWS, Azure, and VMware



DRs: Boundary IP Addresses

- Boundary IP addresses allow secure communication with resources outside a Cloudspace
- Automatically assigned
- Can be found…
  - on the host options page of a given Deployment Run…
  - in the deployment run properties…
  - and in the networking overview of the Cloudspace



DRs: Physical Systems

- Arcus can be used to connect to and access most physical systems
- Three types:
  - **Physical hardware** (Server, Laptop, Raspberry Pi, etc.)
  - **Virtual entities** (Specialized VM that isn't redeployable)
  - **Network-connected devices** (Tablets, Phones, UAVs, network appliances, 3D printers, CNC machines, Arduinos, FPGAs, etc.)
- Set up behind a firewall and connected to your virtual environment via a secure VPN
- Users can connect to these physical machines from other VMs within their cloudspace, as well as via VNC/RDP/SSH remote access
- Contact support to discuss physical setup and what may be needed to connect to your systems in Arcus

Assets

Assets: Asset Types

Resource Assets *Elements of a Cloud that are **registered** to be available for use by the CONS3RT agent. The Cloud Administrator controls which resources they want to allow access to. Users do not interface or manage.*	Clouds Cloudspaces Networks Operating System Templates
Component Assets *Component assets are the building blocks that can be mixed and matched as part of Composite Assets. Components can be **imported** by a user with appropriate permissions via the web application.*	Software Applications Container Images Test Cases (Nessus, Fortify, etc.)
Composite Assets *Users **assemble** Component Assets by combining available Resources and Components to define how systems and scenarios will be built, configured and deployed. Users often refer to these as "designs," "recipes," "blueprints," or "manifests."* *Assembly is done via the web application.*	App Bundles Systems Scenarios Deployments Compositions

Assets: Composite Assets

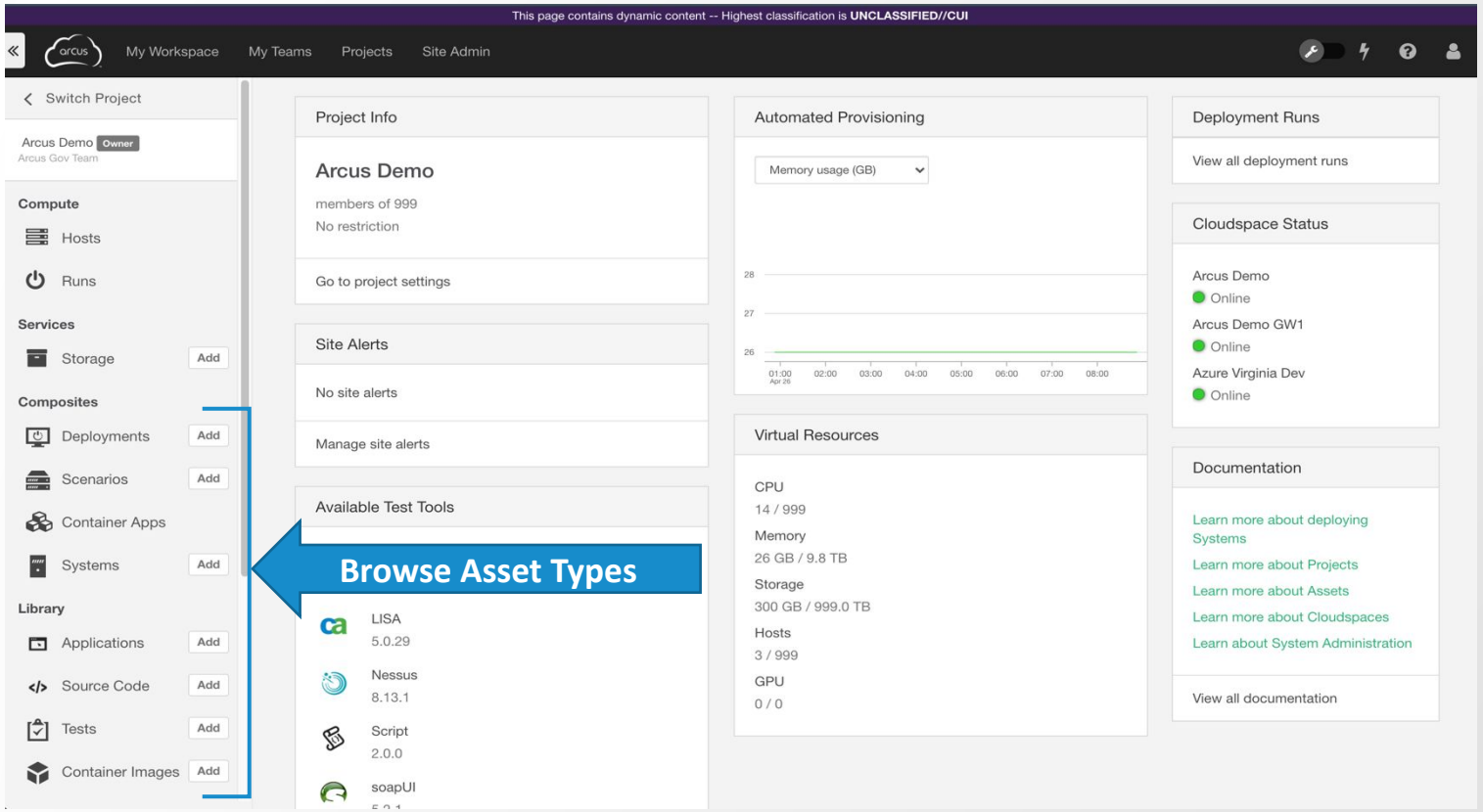
Composite Asset	Description	Contents
App Bundles	A collection of Software assets	• LAMP Stack • Developer Suite
Systems	The design of a single Virtual or Physical System. An Operating Systems with software Assets.	• OS Type • Ordered sequence of Software Assets • Reboots • CPU/RAM and Disk Requirements
Scenarios	Design consisting of multiple interconnected Systems with a build order. The core baseline/ managed/shared version of an environment.	• Role Names (□ IP addresses) • Ordered Sequence of Systems • Build Order: Parallel vs. Serial • Customization and Teardown Scripts
Deployments	Customized Scenario(s) with optional test or security scans.	• CPU/RAM Customization • Custom Properties • Test Cases
Compositions	Runs, Deployments, and Workstations published in a simplified tiled view for consumption by Express Users.	• CPU/RAM Customization • Custom Properties • Test Cases

Assets: Examples of Component Assets

Operating Systems	Platforms	GOTS Software	COTS Software	
Red Hat 6/7/8	Kubernetes	STIG	SCAP	Fidelis Cmd Post
Windows 10	OpenShift	Unicorn DB	ActiveDirectory	ArcSight
Windows 2016/2019	OKD	DCGS Backbone	SQL Server	Splunk
Windows Core	Docker	Ozone Widgets	Cameo	GitLab
CentOS & Fedora	Podman	AgileClient	Selenium	Java
Oracle Linux	CRI-O	World Wind	PiPlanning	RADIUS
Ubuntu & Debian		GCCS Desktop	Fortify	PostgreSQL
Amazon Linux		SCC (scanner)	Puppet	Data Generators
USAF SDC		GDES	Chef	JupyterHub
Kali		FLARE Client	Hadoop	ElasticStack
VyOS		SpiderSense	Sharepoint	Oracle
Fortinet		SIRIS	Jetty	SoapUI
F5		BigData (BDP)	IBM WebSphere	PuTTY

Assets: Where to find Assets

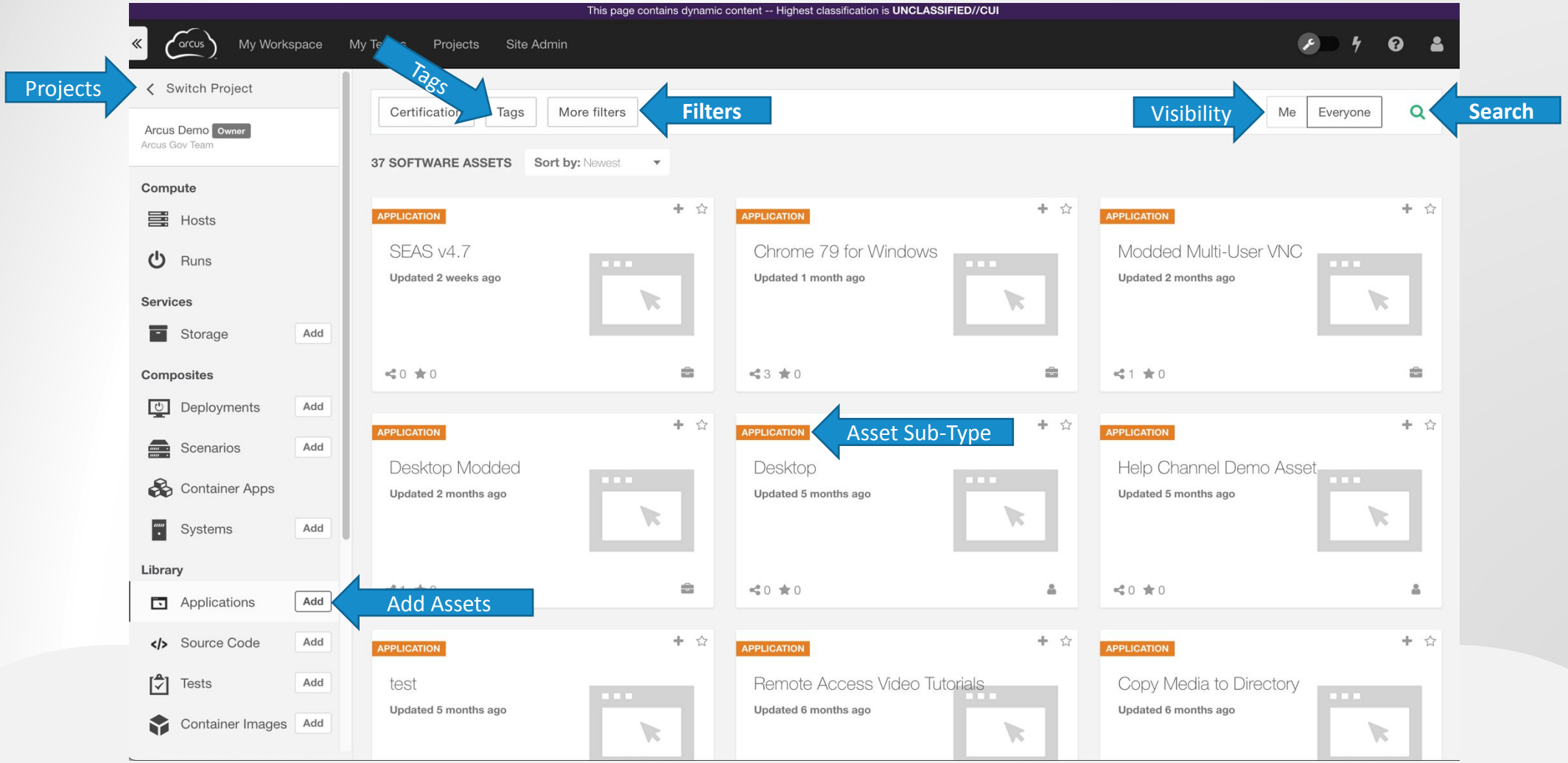
Everything is an Asset!



Browse to find existing Software, Tests, Systems, Scenarios, and Deployments

Assets: Asset Library

Viewable Assets = Selected Project + Asset Visibility



Assets: Asset States

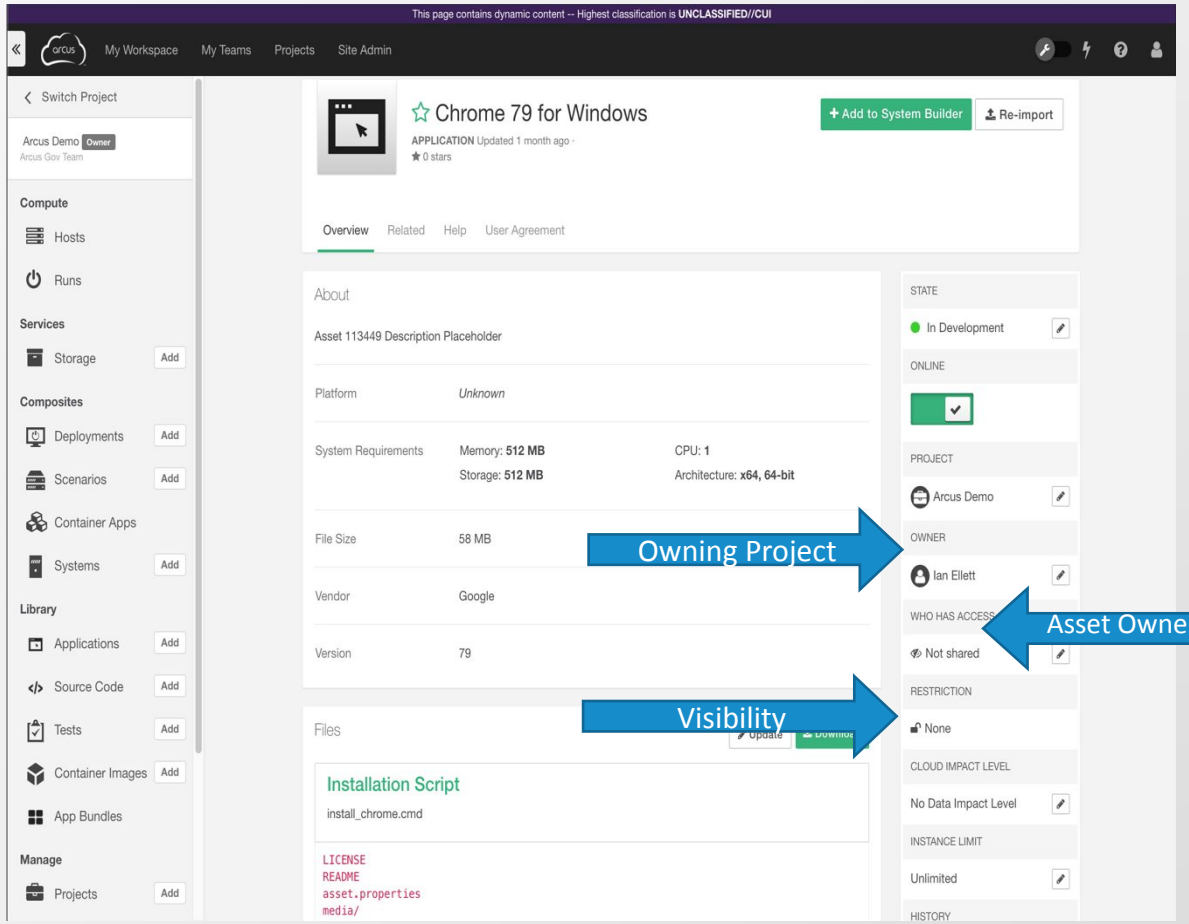
- Designed to fit your Team's processes
- Leverage for configuration management, workflow

State	Behavior
In Development (Initial State)	Owner can edit the Install script and update the Asset components. Other users can expect change.
Published	The Asset cannot be updated. Other users can rely on stability.
Certified	Same as *Published* plus support standing behind the Asset.
Deprecated	Greyed out in Asset Library (select "Include Inactive" to see) Cannot be used in new Systems; existing Runs will launch CANNOT change back to "Published"
Retired	Greyed out in Asset Library (select "Include Inactive" to see) Deployment Runs cannot launch with a *Retired* Asset CANNOT change back to "Published"

- Using a shared Asset that is "In Development" will generate a warning that it may change
- Set the Asset State by clicking the gear icon

Assets: Asset Ownership

- Assets belong to:
  - Owner – the person who created the Asset
  - Project – the owner's Project when the Asset was created
- Site Admins and Project Managers can change the Asset owner
- Only Site Admins can move Asset ownership to another Project



Assets: Visibility and Sharing

- Set the Visibility for all your Assets
- Leverage for privacy, publishing, configuration management, workflow, sharing

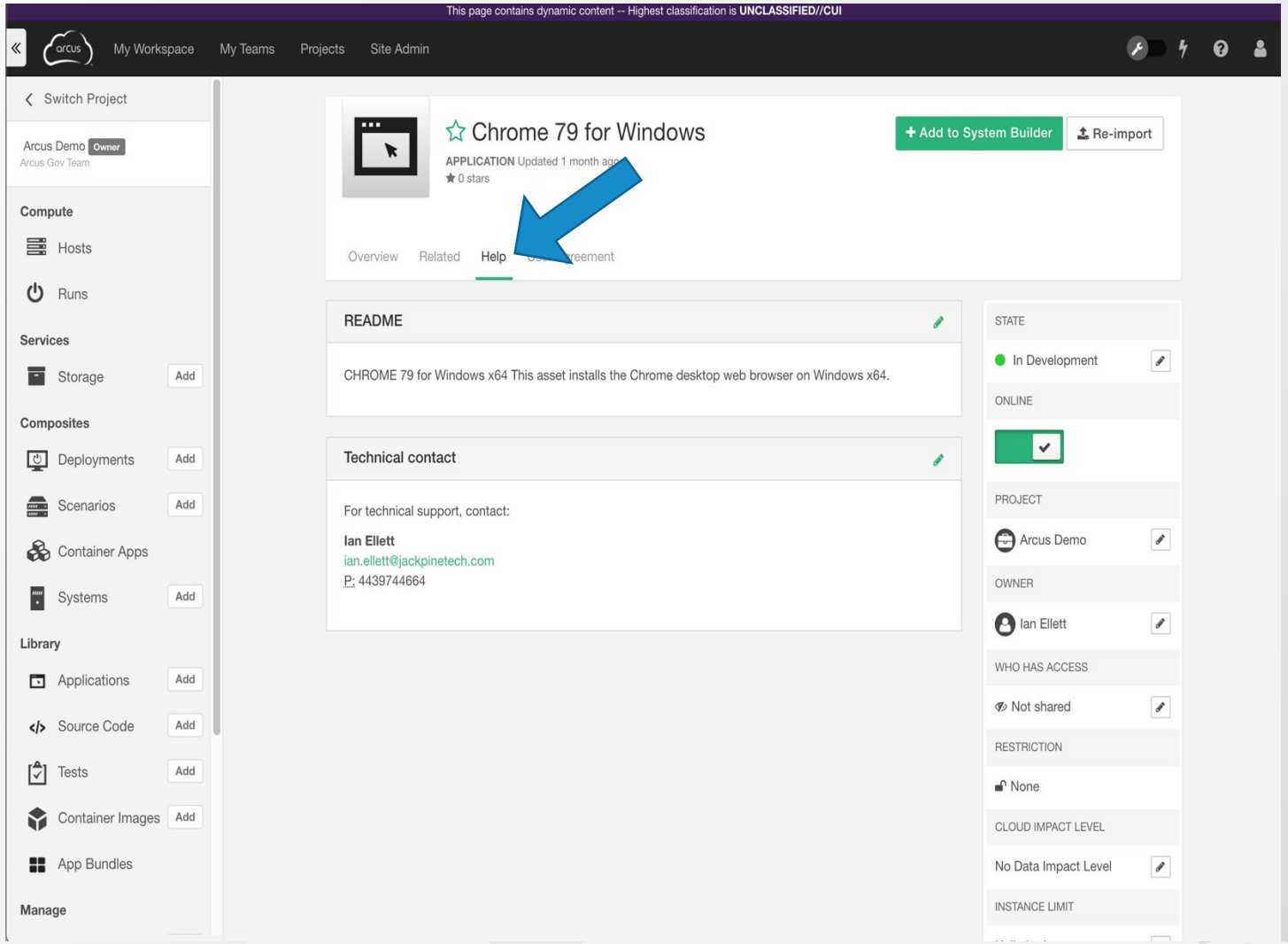
Level	Visibility
No one else (me)	Asset is not shared, only visible to you
Project	Members of the Asset owning Project
Partner Projects	Select from a list of “Trusted Projects”
Everyone	Anyone in the Community can view and use the Asset

- Default Visibility is “No one else”
- Change visibility via the edit (pencil) button

- Trusted Projects are set up by the Project Manager
- Maximize re-usability by using Community Assets in your Project!
- Deployments cannot be shared outside of a Project

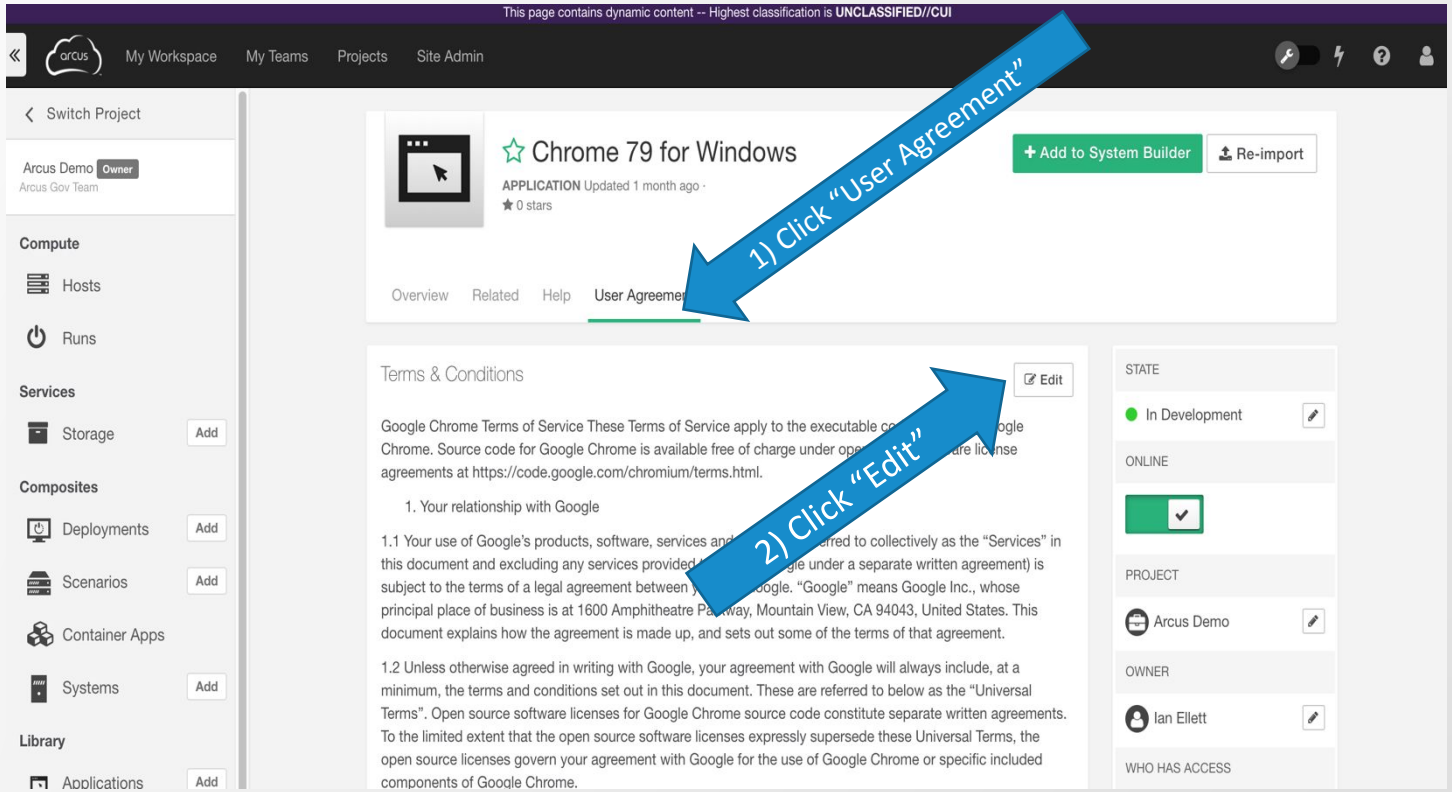
Assets: Help/Readme

- Includes…
  - How to use Asset
  - Properties used
  - List of any prerequisites (Operating System, Asset dependencies)
- Exit Codes
- Uses Markdown (.md) formatting or plain text



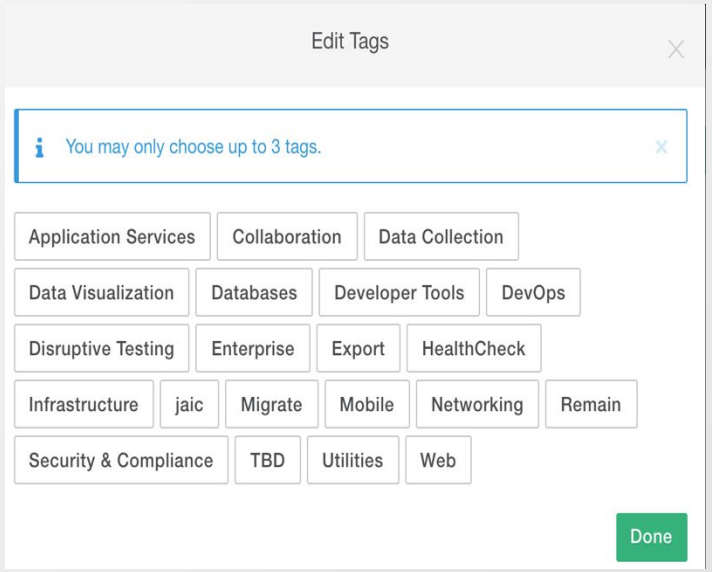
Assets: License/User Agreement

- Add applicable software license/user agreement or link to a public license
- This is **NOT** for license keys
- Uses Markdown (.md) formatting or plain text



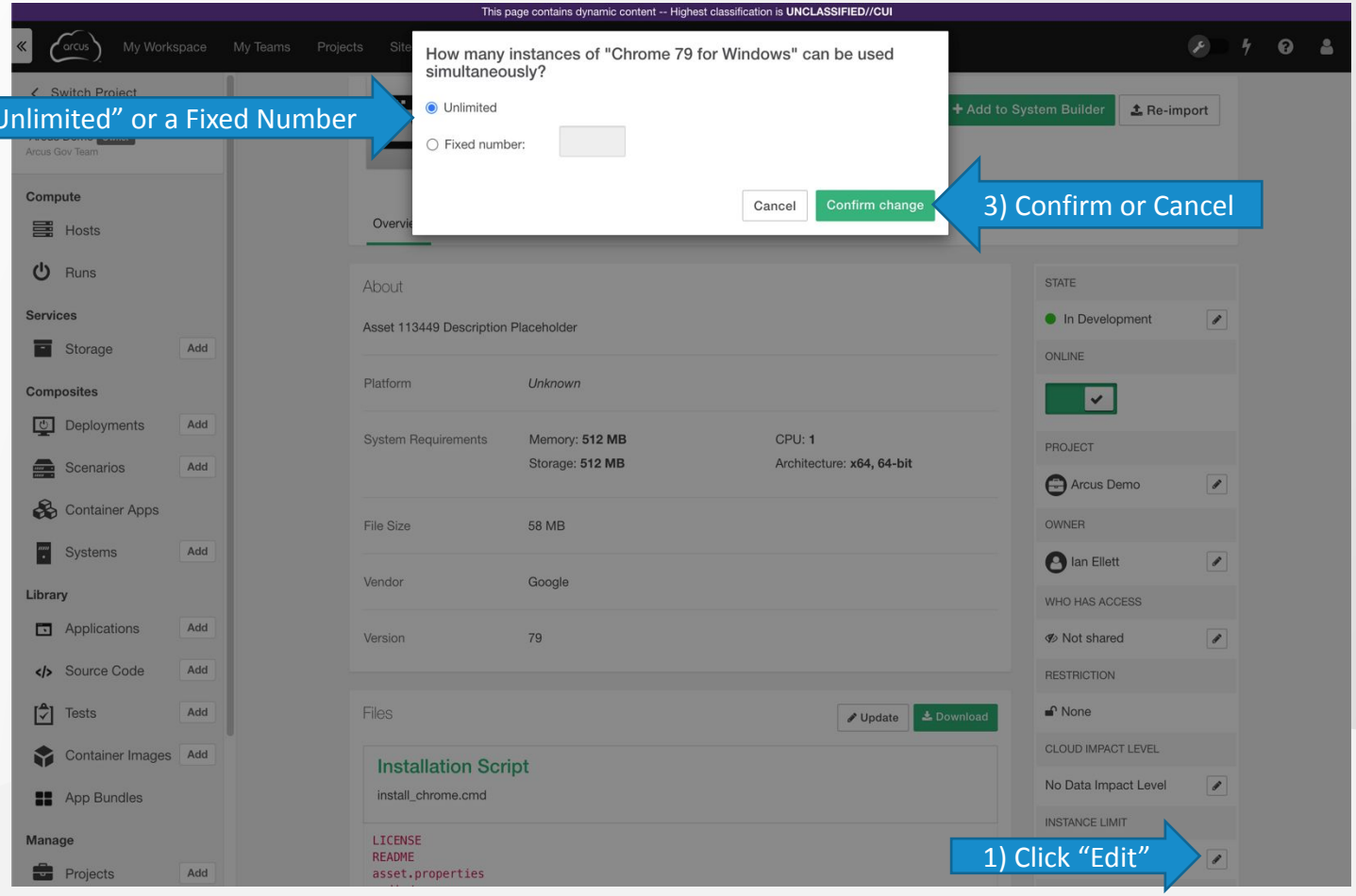
Assets: Tags

- Choose up to three Tags from list
- The Tags list is managed by the Site Admin
- Disruptive Tags generate notifications to Site Admins when Asset is used



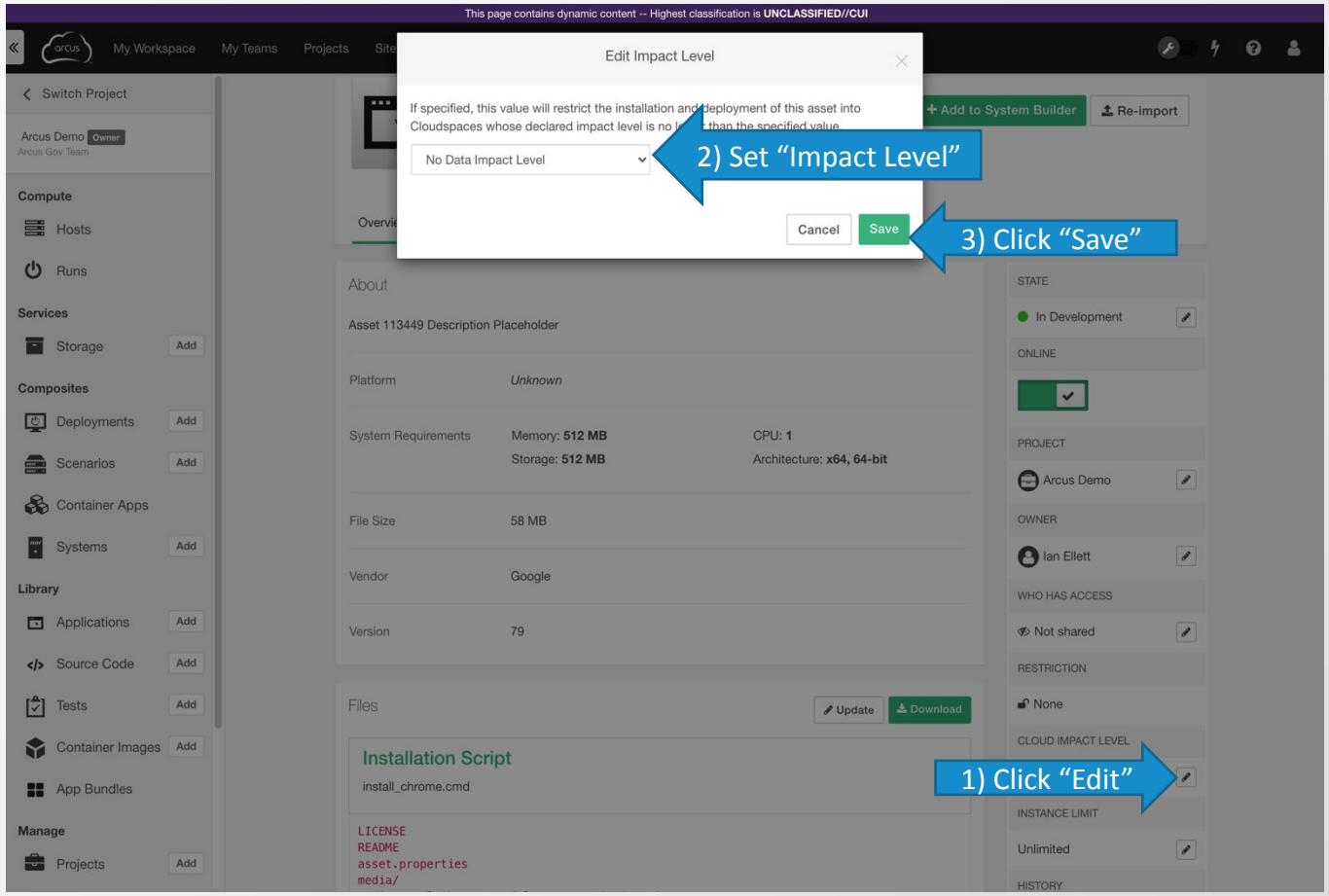
Assets: Instance Limits

- Manages number of simultaneous times an Asset is deployed
- Use to manage software license compliance
- To set the Instance Limit…



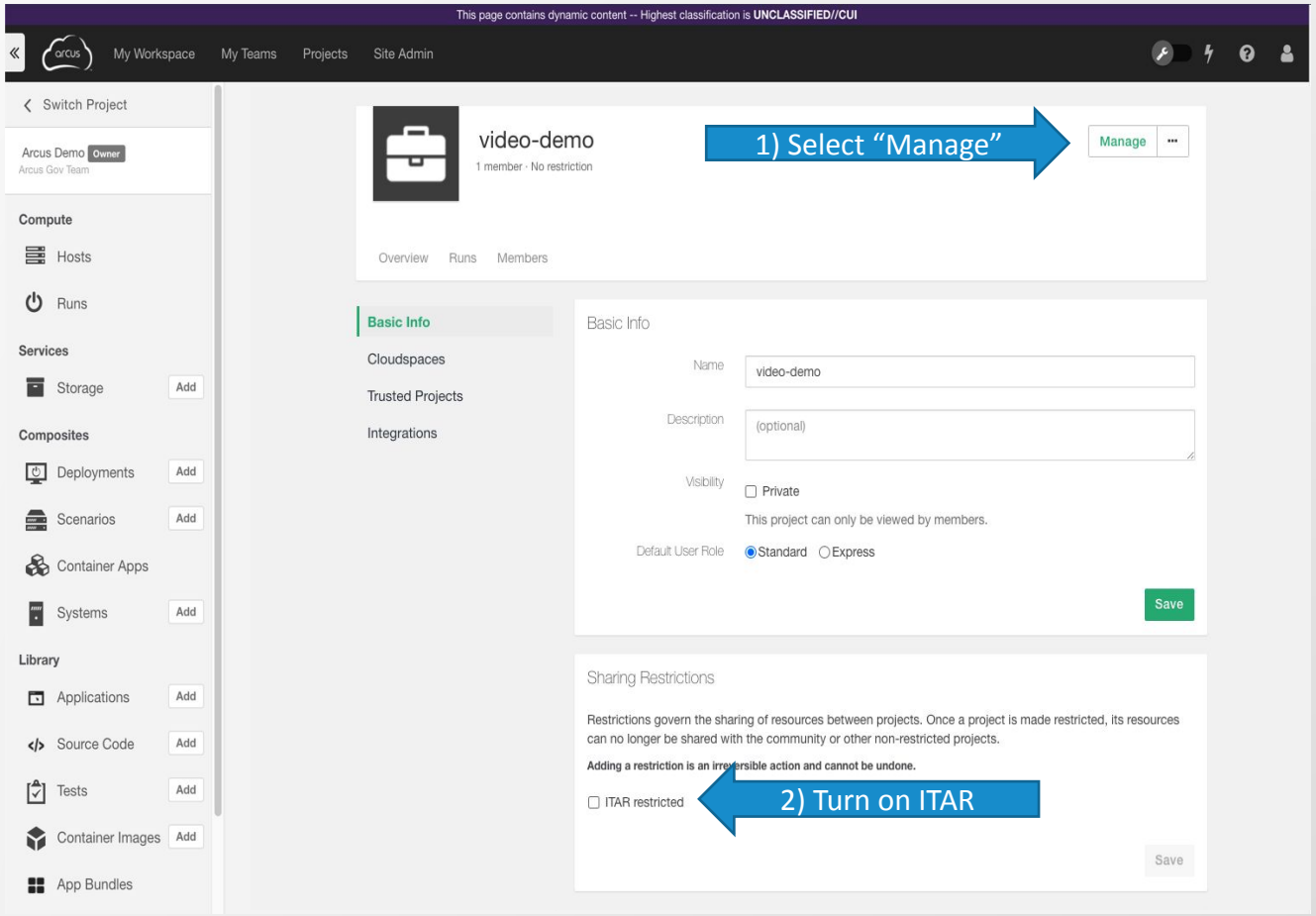
Assets: Cloud Impact Level

- Set the FedRamp Data Impact Level for an Asset
- Assets cannot be deployed into a Cloudspace that does not support that data Impact Level or higher
- Cloudspace Administrators set the data Impact Level
- To set the Impact Level…



Assets: ITAR Restriction

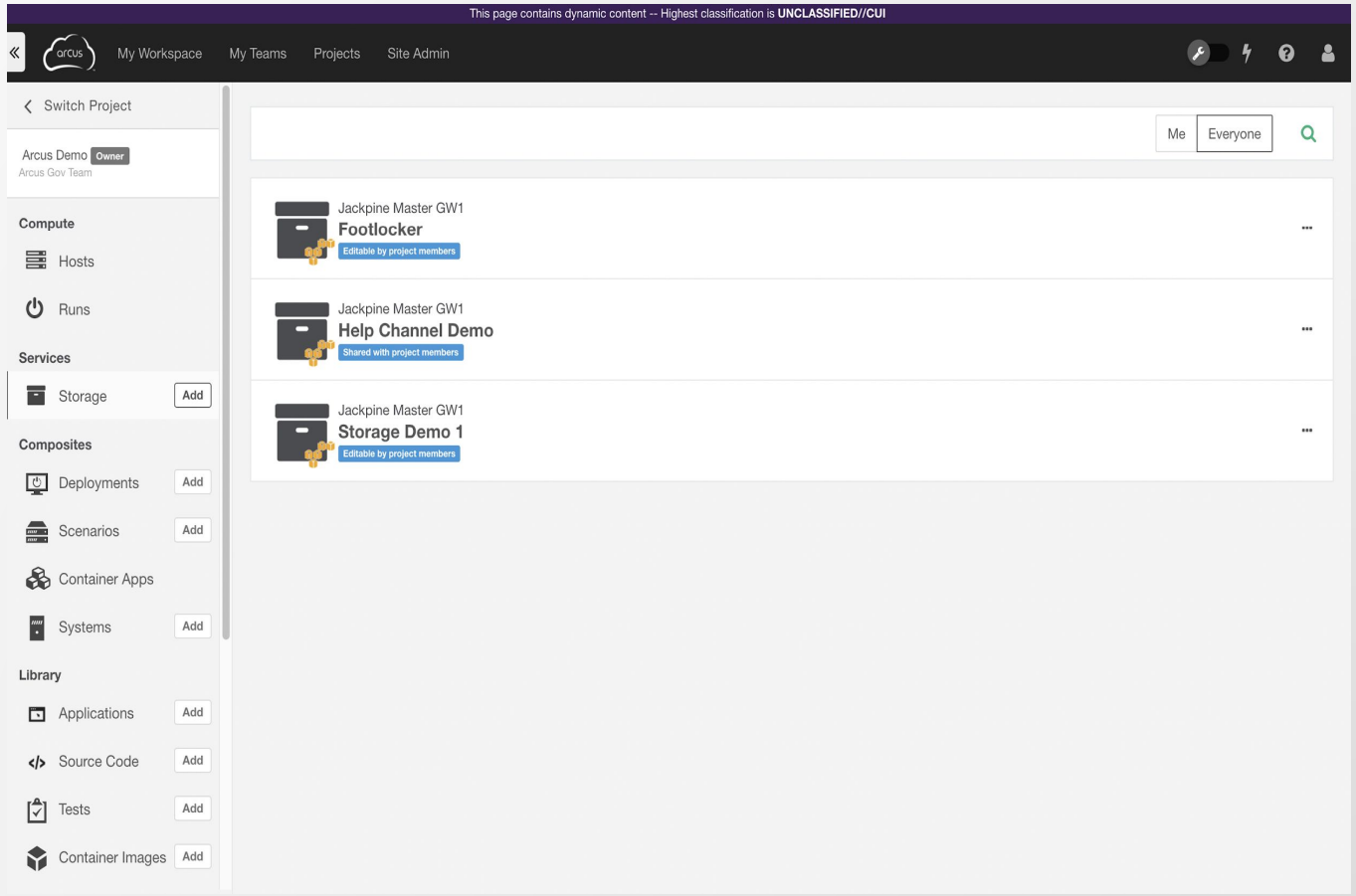
- Set at the Project level
- Cannot share ITAR Assets at the Community level
- ITAR Restrictions carry through to Composite Assets
- Once something is ITAR restricted, it cannot be undone
- To set the ITAR Restriction, see the image to the right…



Storage Service

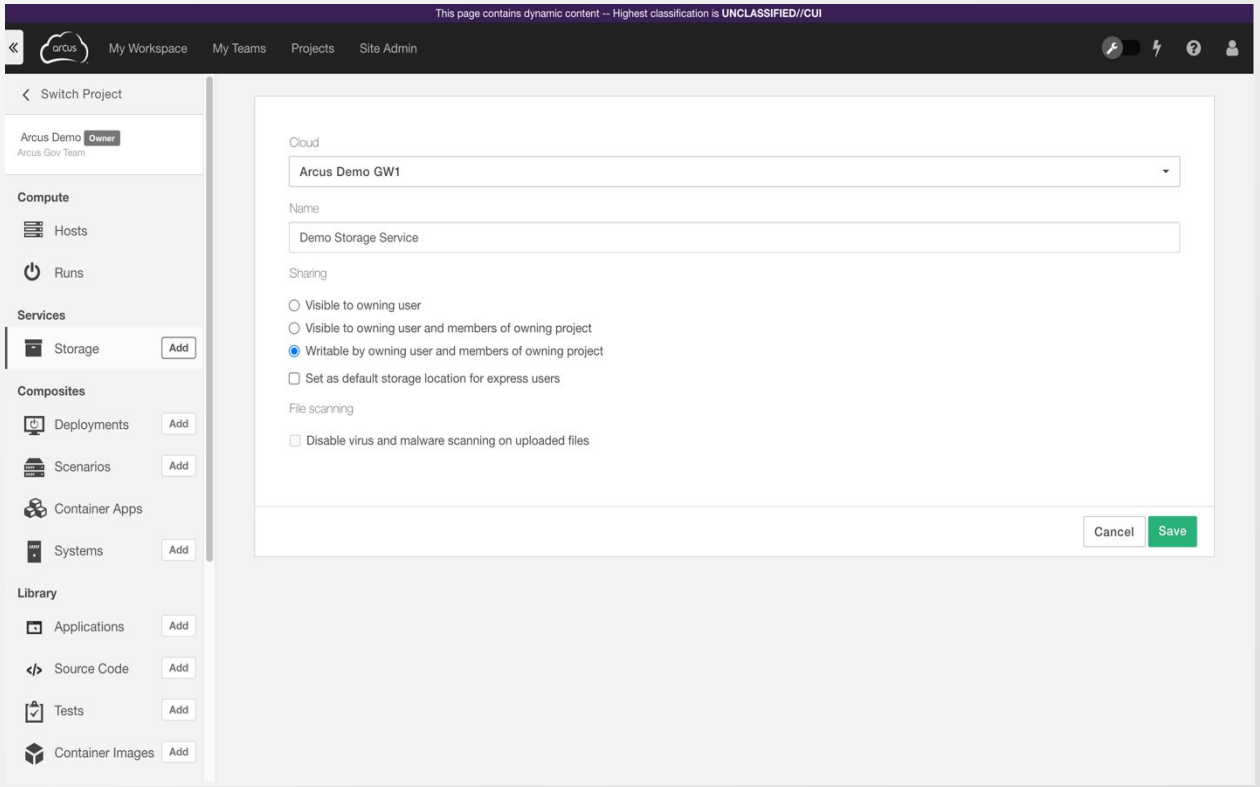
Storage: Storage Service

- Use the **Data Storage Service** to create storage resources in your chosen cloud provider (e.g. an Amazon S3 bucket)
- Create an manage these resources via the Arcus UI
- Upload and download files up to 4GB in size



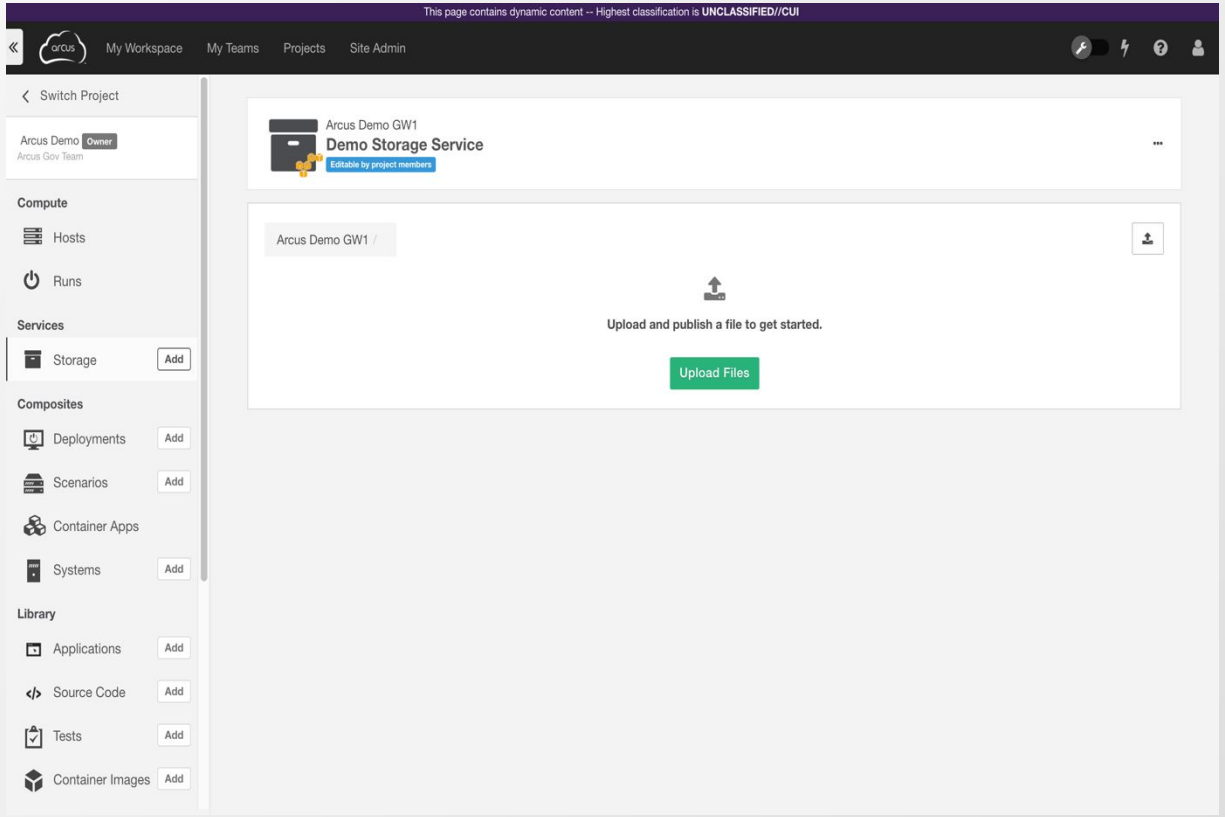
Storage: Creating

- Locate the **Storage** section under the services header in the main menu
- Click the **Add** button next to **Storage**
- Select a cloudspace
- Enter a name for your bucket
- Select the access controls for your bucket



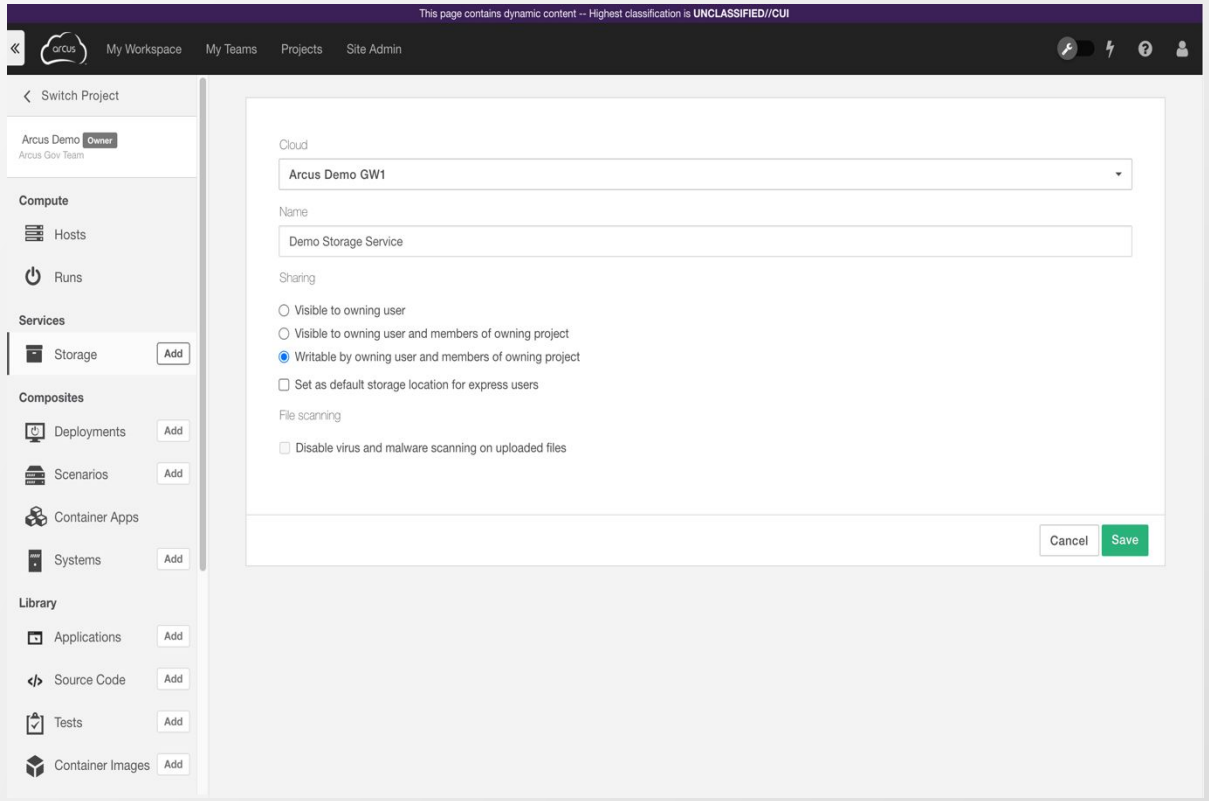
Storage: Upload & Download Files

- Uploading
  - Select your bucket
  - Click **Upload File** and choose a file from your local system, or simply drag and drop the file
- Downloading
  - Select your bucket
  - Select the file you wish to download
  - Click the **Download** icon in the upper right of the page
  - Click the link in the pop-up window to download your file.



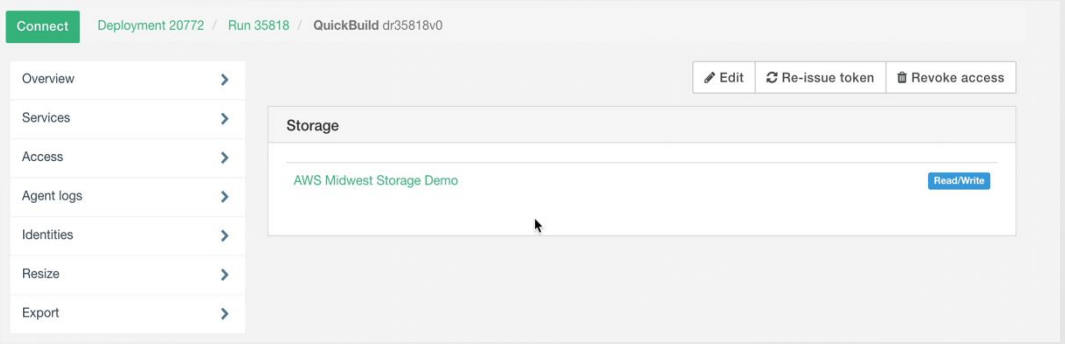
Storage: Other Features

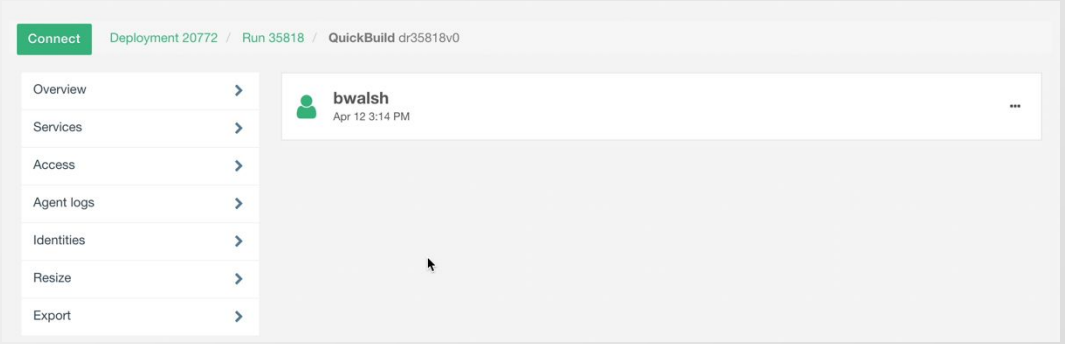
- Storage Service Buckets can be set up for Express Users
  - The bucket permissions will need to be set to **Writable**
  - The bucket permissions will need to be set as the **Default** for Express Users
- Data Storage Service Malware Scanning
  - By default, all uploaded files are scanned for malicious elements, viruses, and malware
  - Team Managers can disable this scanning as desired for testing or malware uploads



Storage: Credentials

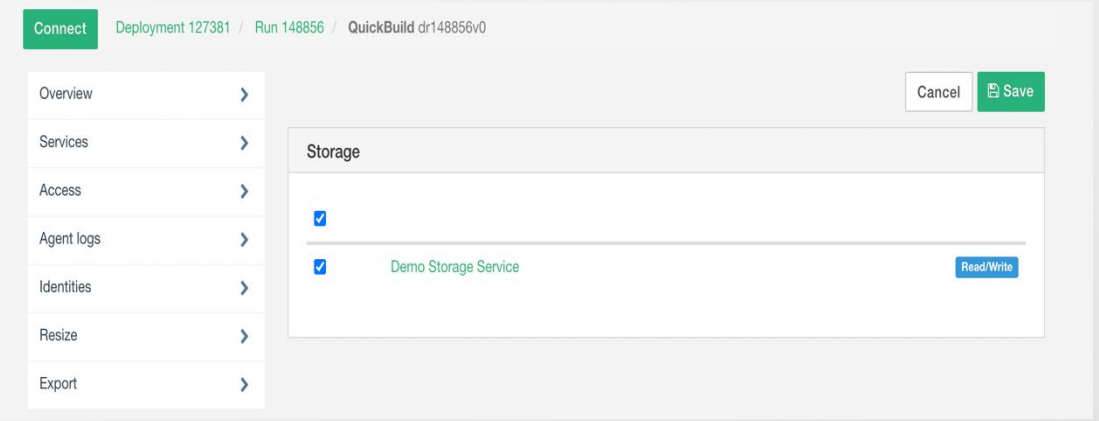
- Credentials (tokens) can be generated with Arcus to access storage services directly from a VM:
  - These credentials are unique to users and reflect their roles and permissions
  - How long these credentials last is determined by the cloud storage provider
- Adding a storage service to a virtual host and obtaining credentials creates an **Identity**.
- An Identity allows users to securely access the resources in a storage service from a specific virtual host
- If you are the owner of the Deployment Run or a manager, you can see and manage all of the identities associated with a given Deployment Run host.





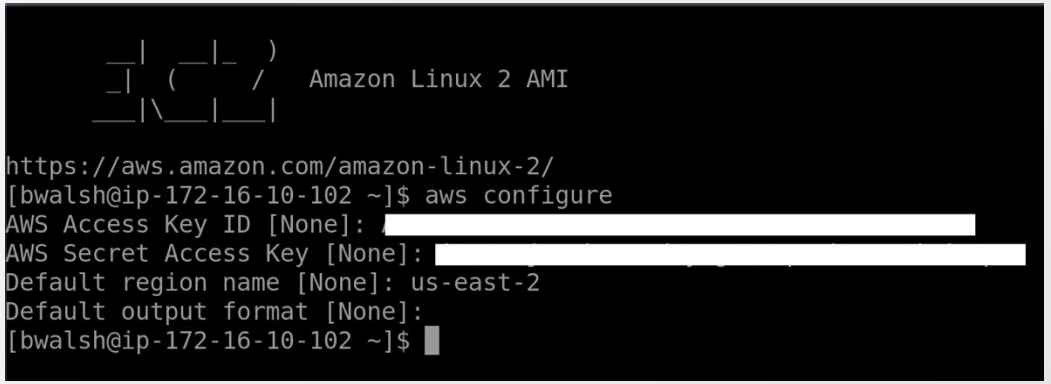
Storage: Generating Credentials

- Generating Credentials
  - Launch a Deployment Run into a cloudspace that has an available storage service. If your deployment run has no storage service available, you can create one
  - Select **Services** on the host options page and click the the desired service (or add a service if none exists)
  - Check the box next to the storage service you intend to access
  - Click **Save**, which will show the credentials
  - Note: Depending on the cloudspace where the host is deployed from, the credentials generated will differ.



Storage: Using Credentials

- With these credentials you can…
  - List files in storage services
  - Download existing files from a storage service
  - Upload new files to a storage service
- You will need to add these credentials into a third-party application or service service, such as:
  - AWS CLI
  - Azure CLI
  - Jupyter Notebooks



Backups

Backups in Arcus

- Arcus backs up its infrastructure, asset library, and local storage service on a regular hourly/daily/weekly rotation
- Arcus backups include additional offsite copies
- All backup data is encrypted in transit and at rest
- Arcus does not back up user VMs
- Teams can implement any number of approaches to backing up their data

- Recommended Approach:
  - Separate stateless (applications, installers, media) from state-ful (user generated content) data

What Needs to be Backed Up

- Stateless Data
  - Encompasses the tools, applications and configurations
  - Utilizes the principles of Infrastructure as Code
  - Any system can be rebuilt from scratch in any connected cloud provider, at any time.
  - Allows for rapid cold, warm, and/or hot replacement as necessary.
  - The infrastructure as code designs are stored in the Arcus library.
- Stateful Data
  - Includes the user generated data on the systems – models, data sets, code, etc.
  - The data lives in several locations – on user workstations , on the servers in the environment, and/or on storage servers accessible to users.
  - This data is smaller and far more manageable to backup

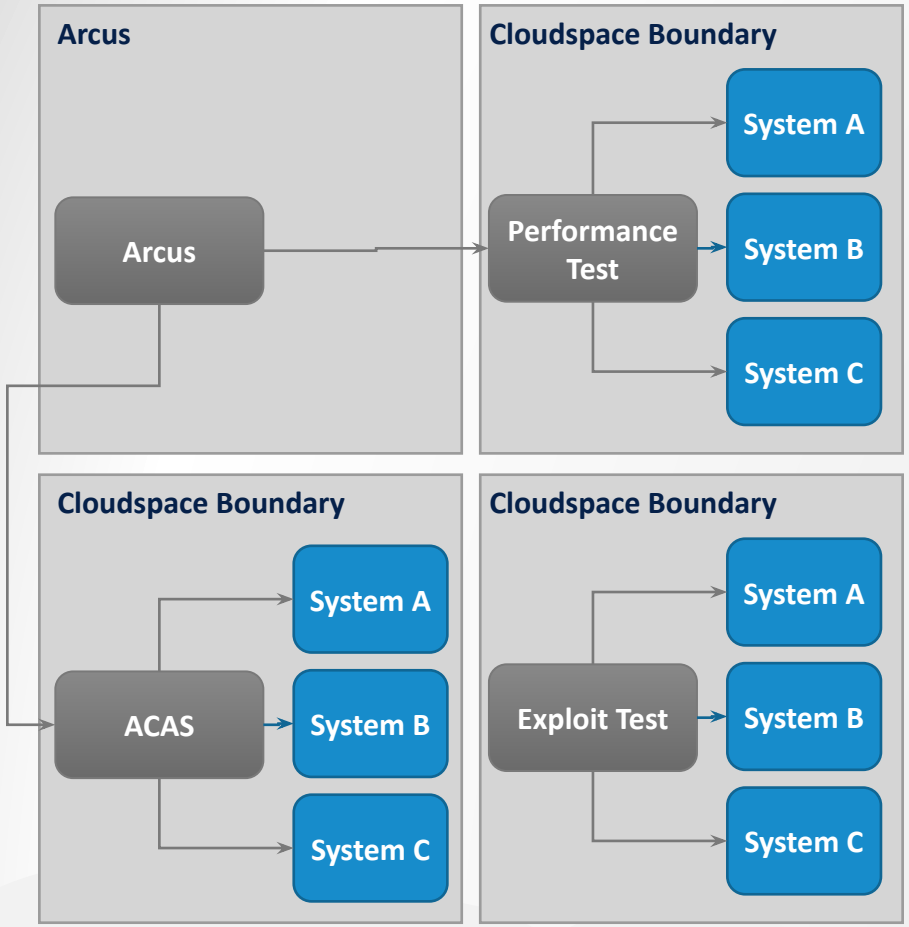
Recommended Approach

- Stateful Data:
  - Redeploy it!
  - Stateless Data is stored in Arcus library which is backed up as part of Arcus operations
- State-ful Data:
  - Classic back up using back up software, simple copies, database dumps, etc.
  - Utilize code repositories (e.g. GitLab) when appropriate
  - Implement back up infrastructure
  - Export from Arcus
- Where
  - Another VM within the cloudspace
  - Arcus Storage Service.
    - Users can mix & match compute cloud with storage cloud for offsite backups

ElasticTest™

ETT: ElasticTest™

ElasticTest™



Benefits

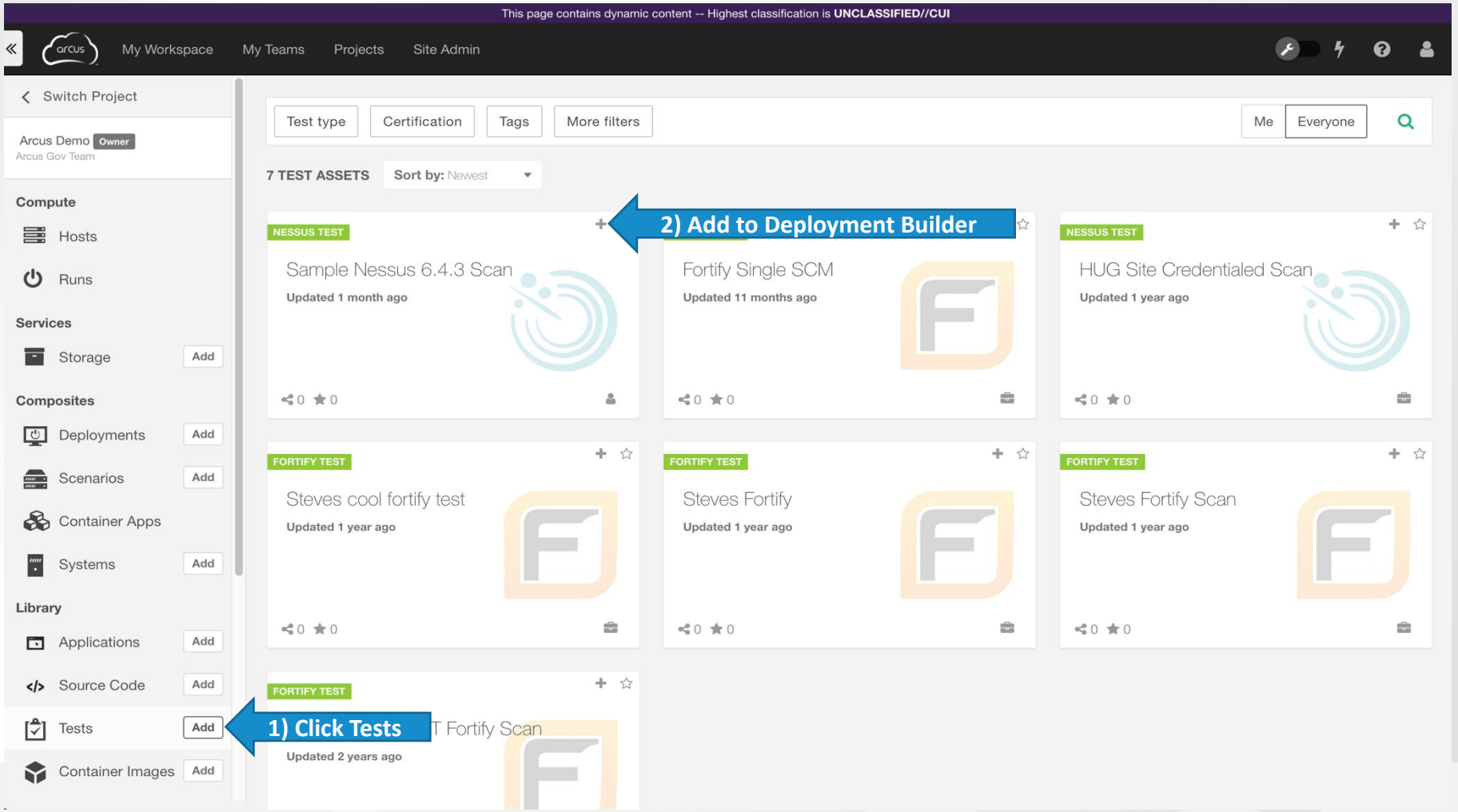
- Built on-demand
- Tool is local so it can reach its target…
- …but can also do WAN testing
- Less disruptive traffic
- Secure control over credentials used in evaluation
- Isolated activities
- Elastic resources
- Efficient use of license investment
- No management of system necessary
- No expertise required to execute but…
- Power users can still customize

ETT: ElasticTest™ Enabled Tools

- **Tenable Nessus** – vulnerability assessment
- **MicroFocus Fortify*** – source code analysis
- **Sonarlint** – source code analysis
- **SmartBear SoapUI** – web service & application
- **CA LISA*** – web service & application
- **Worksoft Certify*** – web service, full application
- **Web Exploit Suite** – suite of penetration tools
- **Script**
  - bash
  - Powershell
- ElasticTest SDK used for developing new tools

*licensed separately

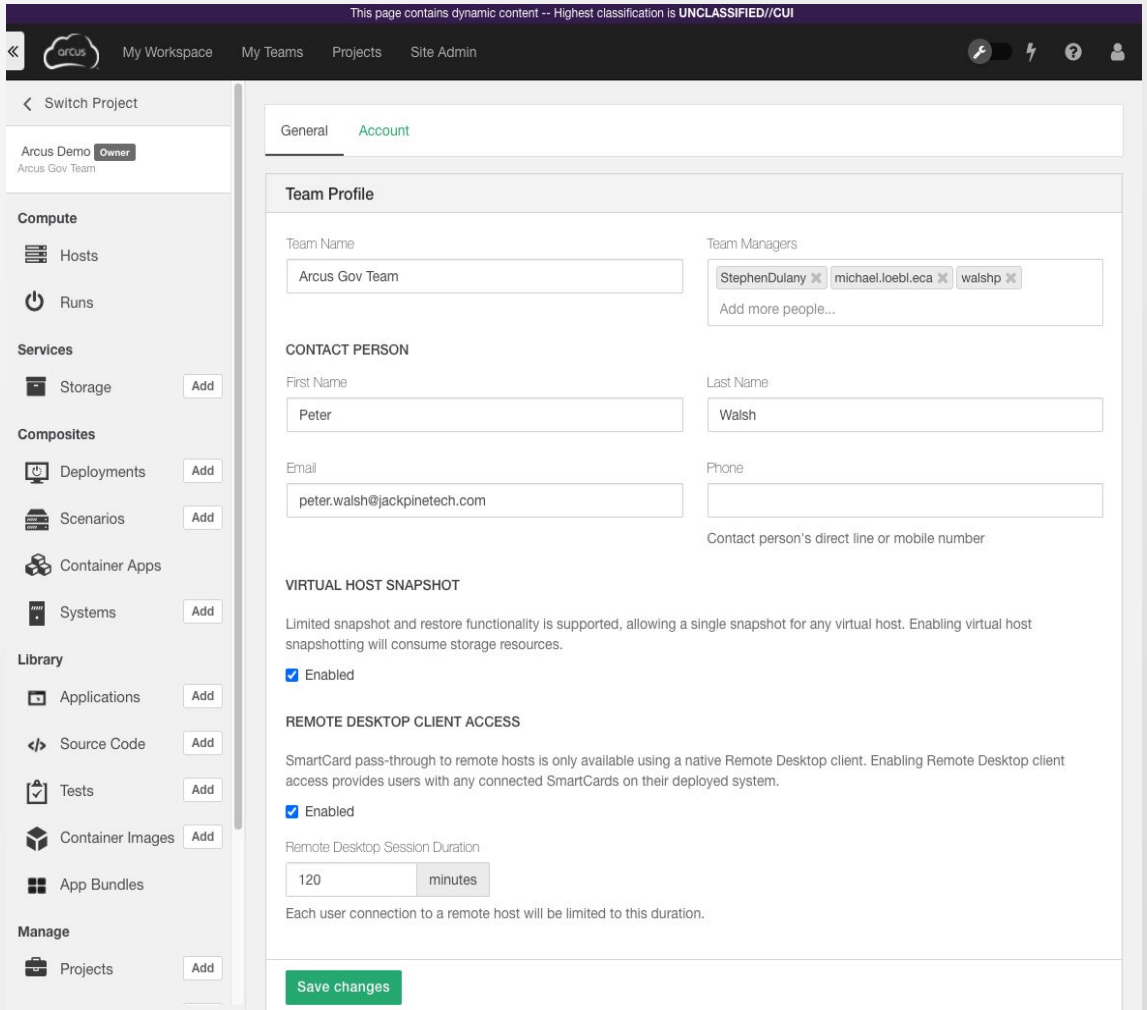
ETT: Using Test Assets



Managing Teams

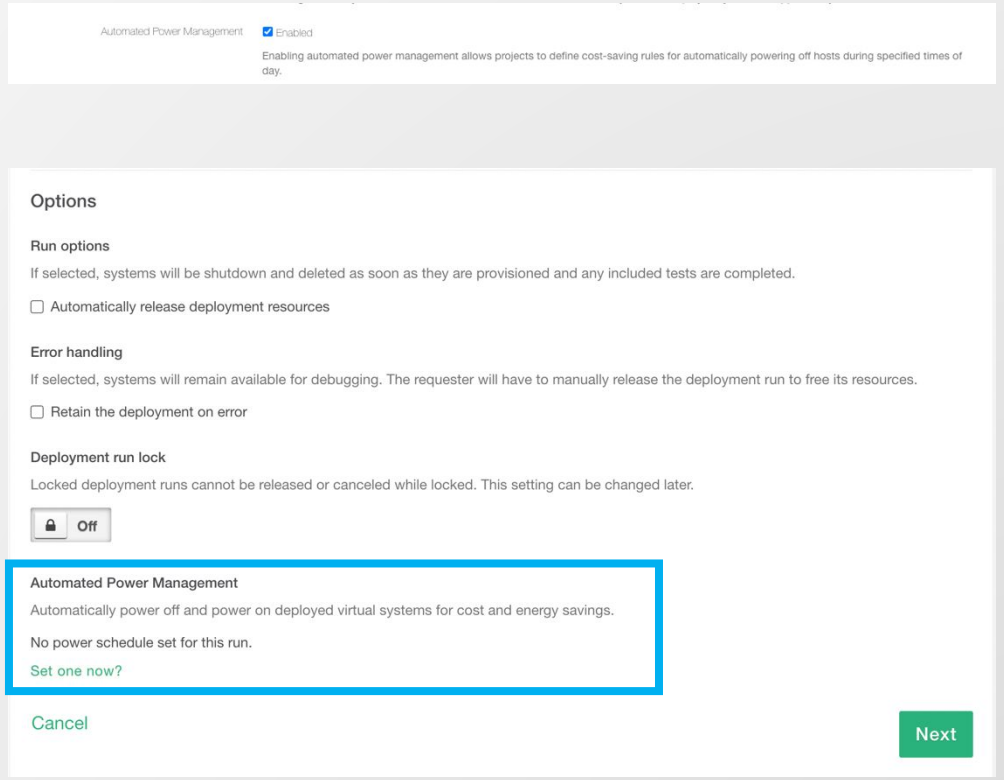
Teams: Team Management Interface

- Finding the Team Manager Interface
  - Navigate to your Team landing page using the site logo on the top left of the page
  - Use the main navigation bar on the left to click the settings cog at the very bottom of the bar (you may have to scroll down to see this)
- General
  - Add or Remove other Team Managers
  - Update Team POC info
  - Enable/disable Virtual Host Snapshot
  - Enable/disable Remote Desktop Client Access
- Account
  - View Team resources (maximum capacity, current package, etc.)
  - Enable/disable asset bundle downloads
  - Enable/disable power management
  - Enable/disable storage service scan bypass



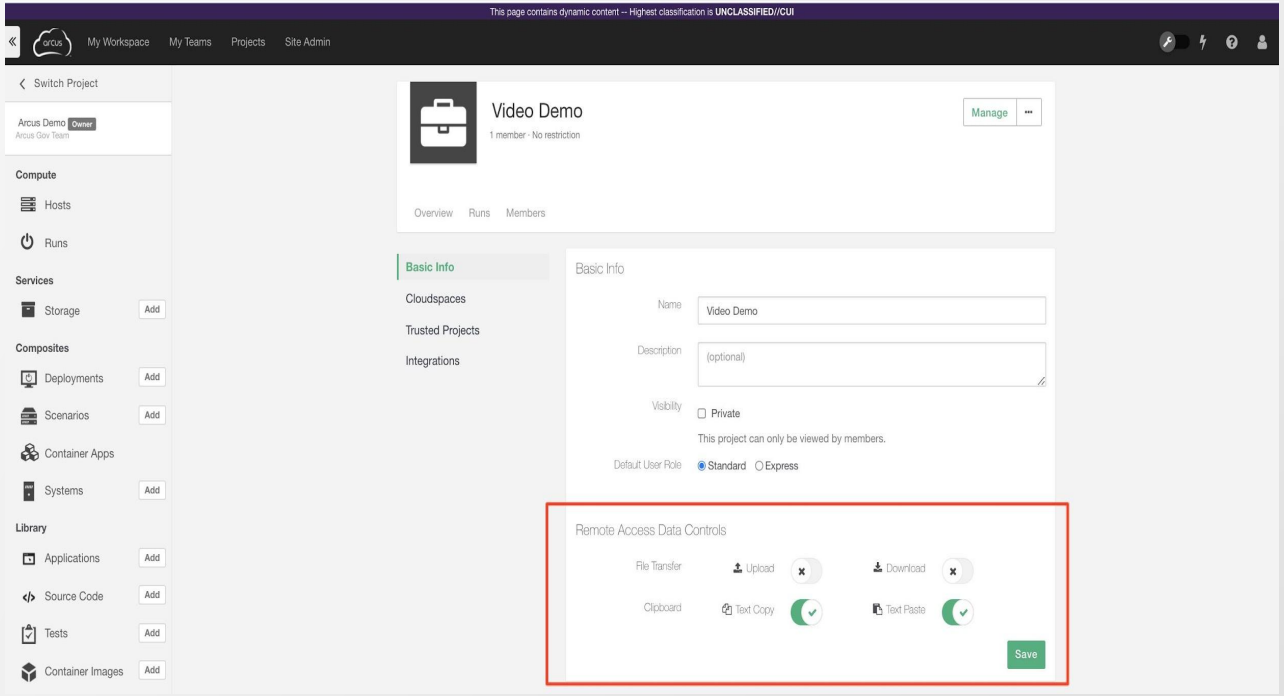
Teams: Power Management

- Power Management
  - Allows Team Managers to set a schedule used to automatically power off and power on deployed virtual systems for cost and energy savings
  - If enabled at the Team level, Project Owners can set up Power Scheduling at the Project level
- Power Scheduling Settings
  - **Economy mode**: Runs hosts only during business hours
  - **Cost saving**: Power off hosts overnight and on the weekend
  - **Weekend shutdown**: Power off hosts over the weekend
  - **Custom schedule**: Define custom rules for powering off hosts when they are not needed
- Power Scheduling Override
  - Power scheduling can be temporarily overridden on individual deployment runs by users with sufficient permissions



Teams: Remote Access Controls

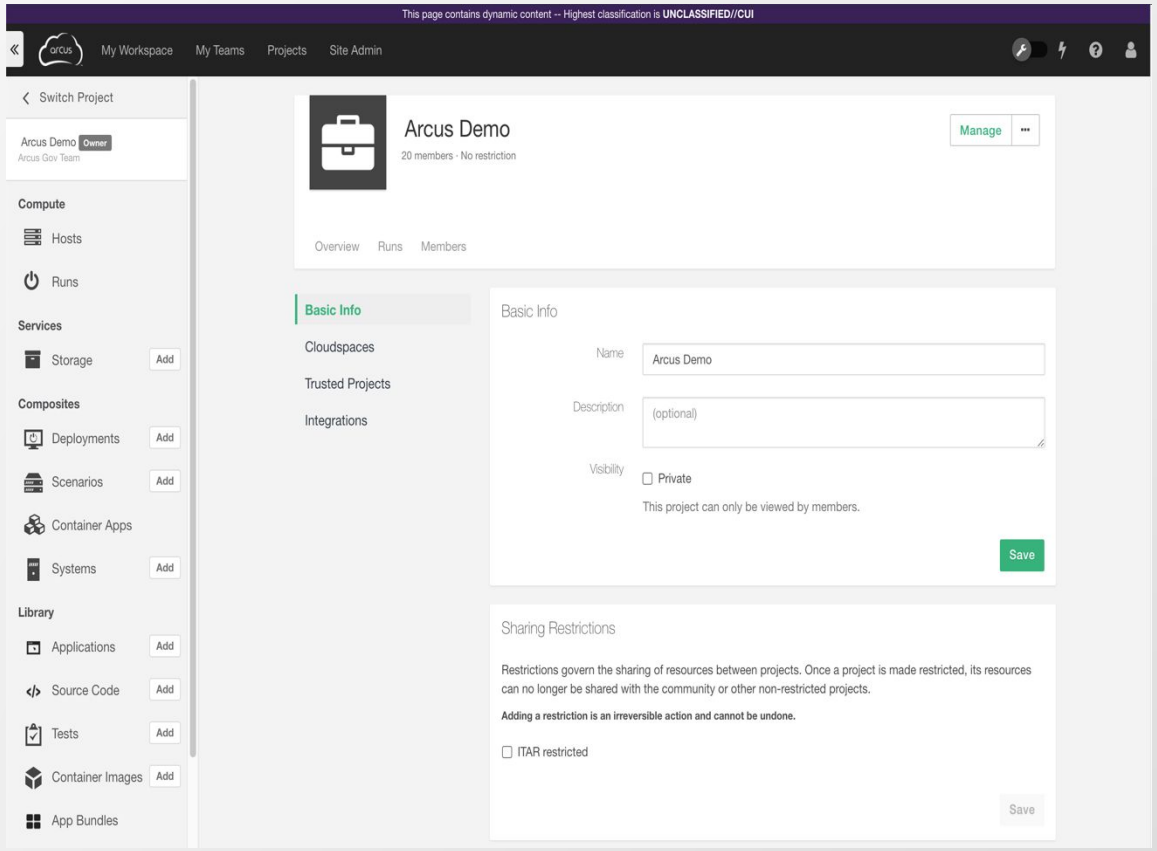
- Team Managers can restrict file transfer in RA sessions in projects they control.
- Controls exist for:
  - File upload
  - File download
  - Clipboard copy
  - Clipboard paste
- These controls protect proprietary files and allow for compliance with security policies
- Select the Project to be managed, click **Manage**, then toggle the desired control(s)
- Changes will take effect when the next remote access session is launched
  - (will not disrupt or change existing RA sessions)



Managing Projects

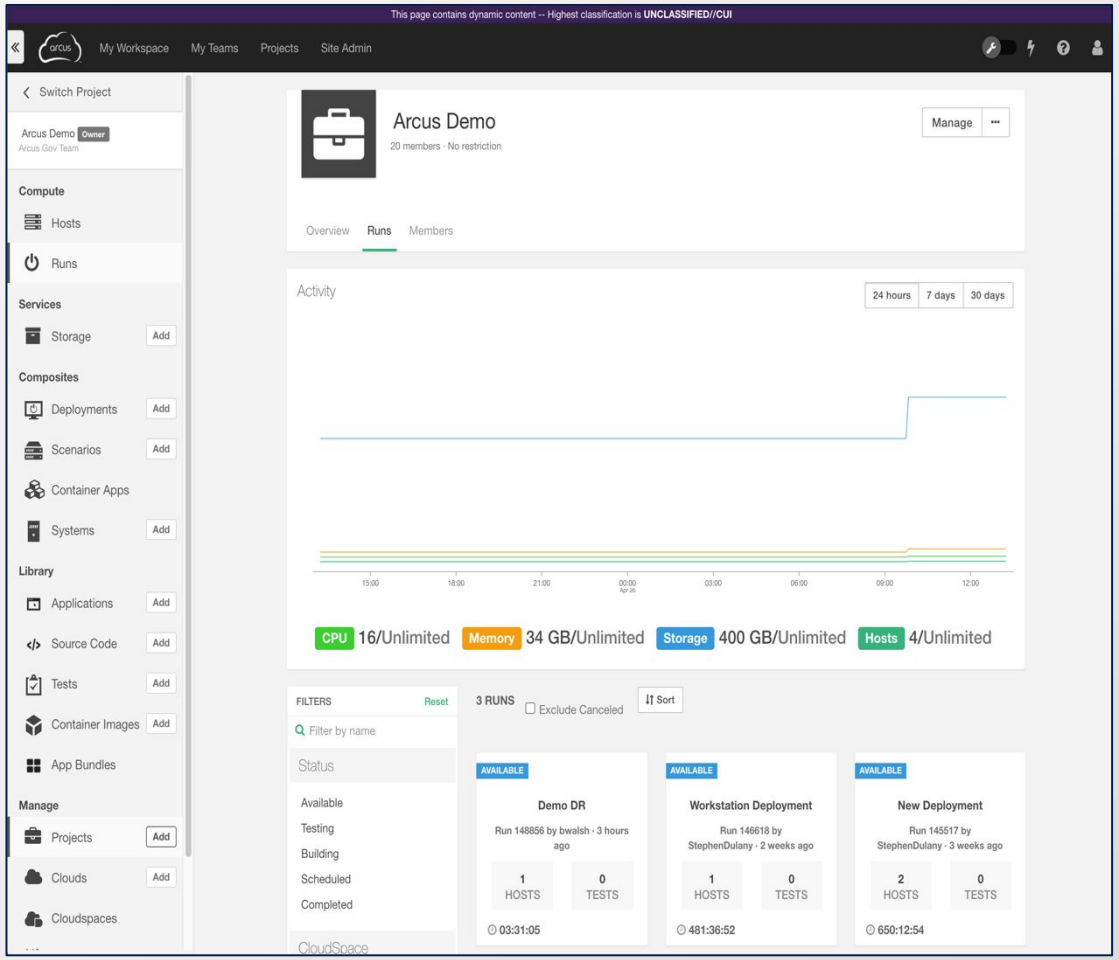
Projects: Management Interface

- Basic Info
  - Edit name, description
  - Set ITAR status
- Cloudspaces:
  - Connected resources
- Trusted Projects
  - Define which Projects users can shares Assets to
- Apps: Enable Slack integration



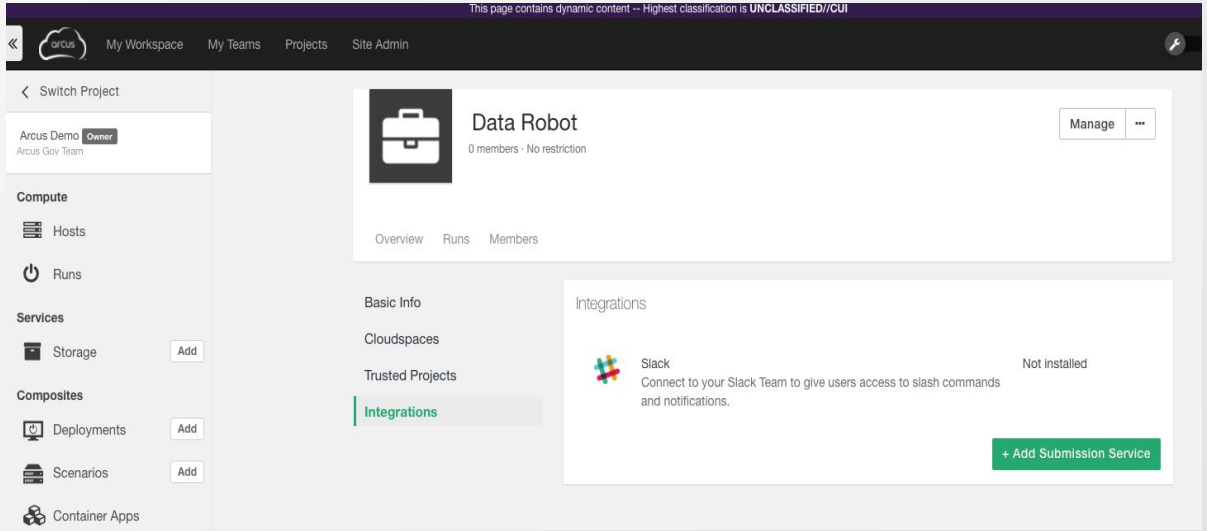
Projects: Overview & Runs

- Project Dashboard
  - Activity
  - Resources used
  - Listing of all Runs
- Filters and search by:
  - Name
  - Status
  - Cloudspace
  - Duration
  - Request Date
  - User



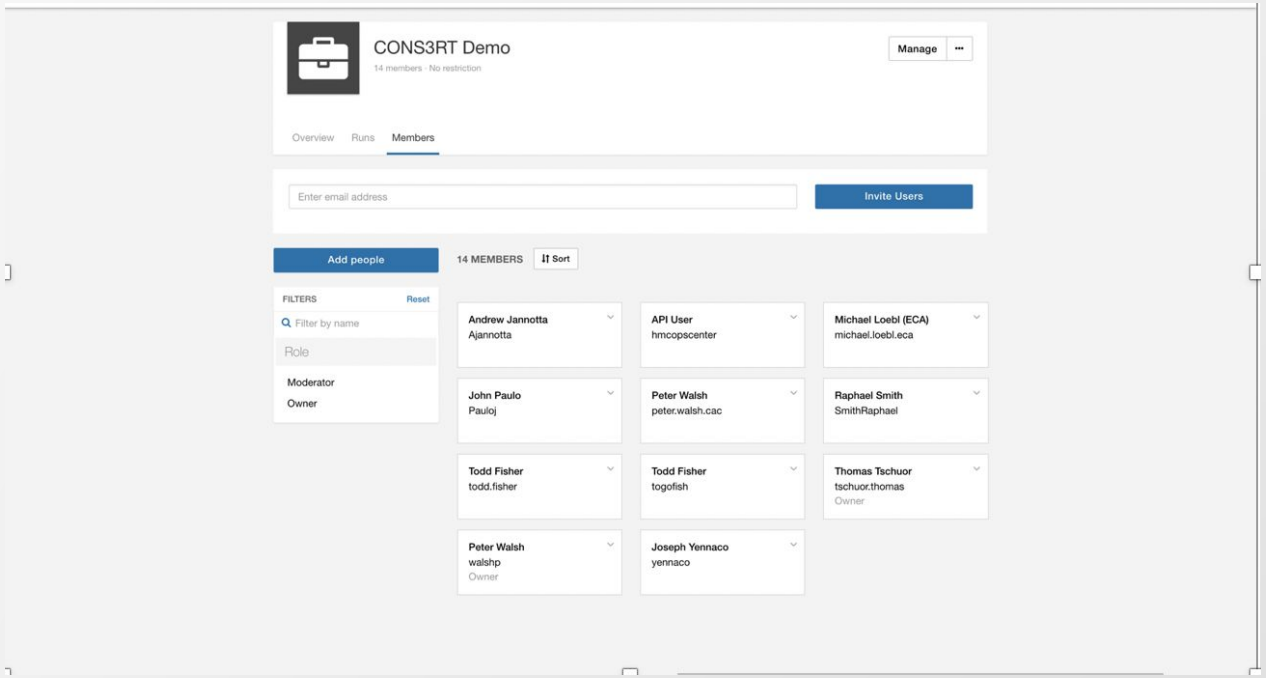
Projects: Slack Integration

- If enabled by their Team Manager, Project Managers can connect their project to the Arcus Slack App
- Select the Project to be managed and click **Manage**
- Open the **Integrations** tab and select Slack
- Click **Connect to Slack** which will:
  - Authenticate your Slack team
  - Allow you to choose what Slack Channel your team would like notifications sent to
- Slack App Configuration currently consists of…
  - Integration Status
  - Notification Settings
  - Team Members

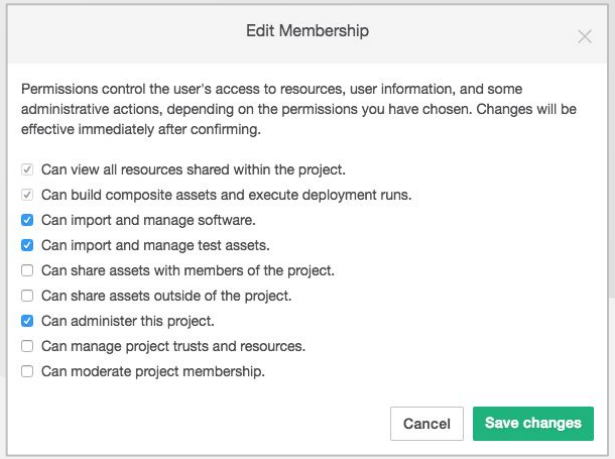


Projects: Manage Members

- Manage Membership:
  - *Add people* – add existing users
  - *Invite Users* – send email to enroll in site & join Project automatically

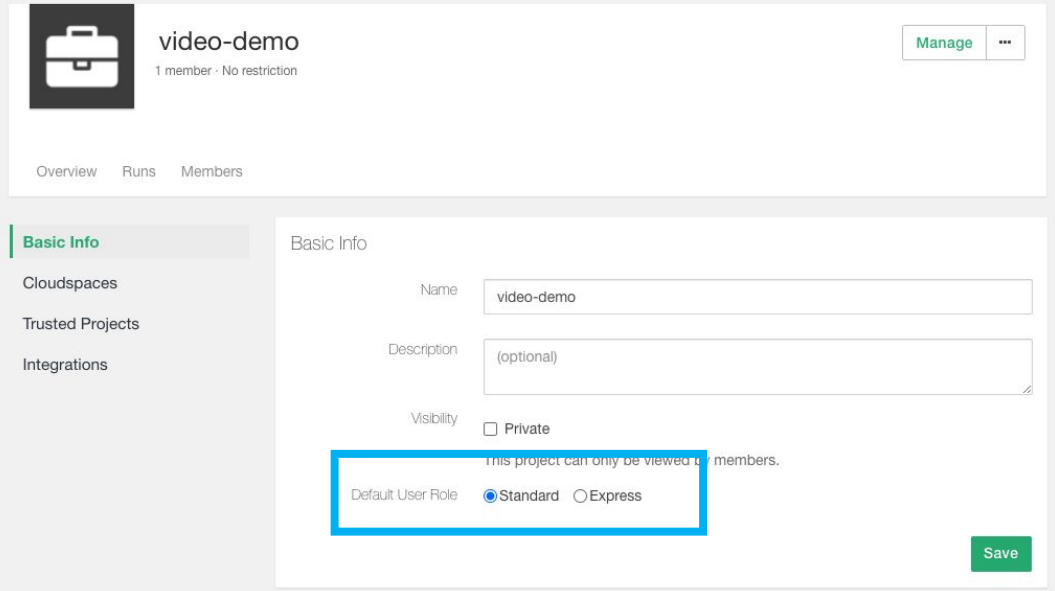


- Manage Access & Permissions:
  - Click caret on user card
  - Set the permissions for each member
  - Remove user from Project

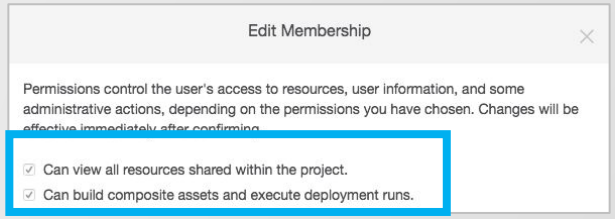


Projects: Manage Members (Express UI)

- Enabling the Express UI by default
  - As a Project Manager, use the toggle in Project Settings to set all new users as Express Users by default



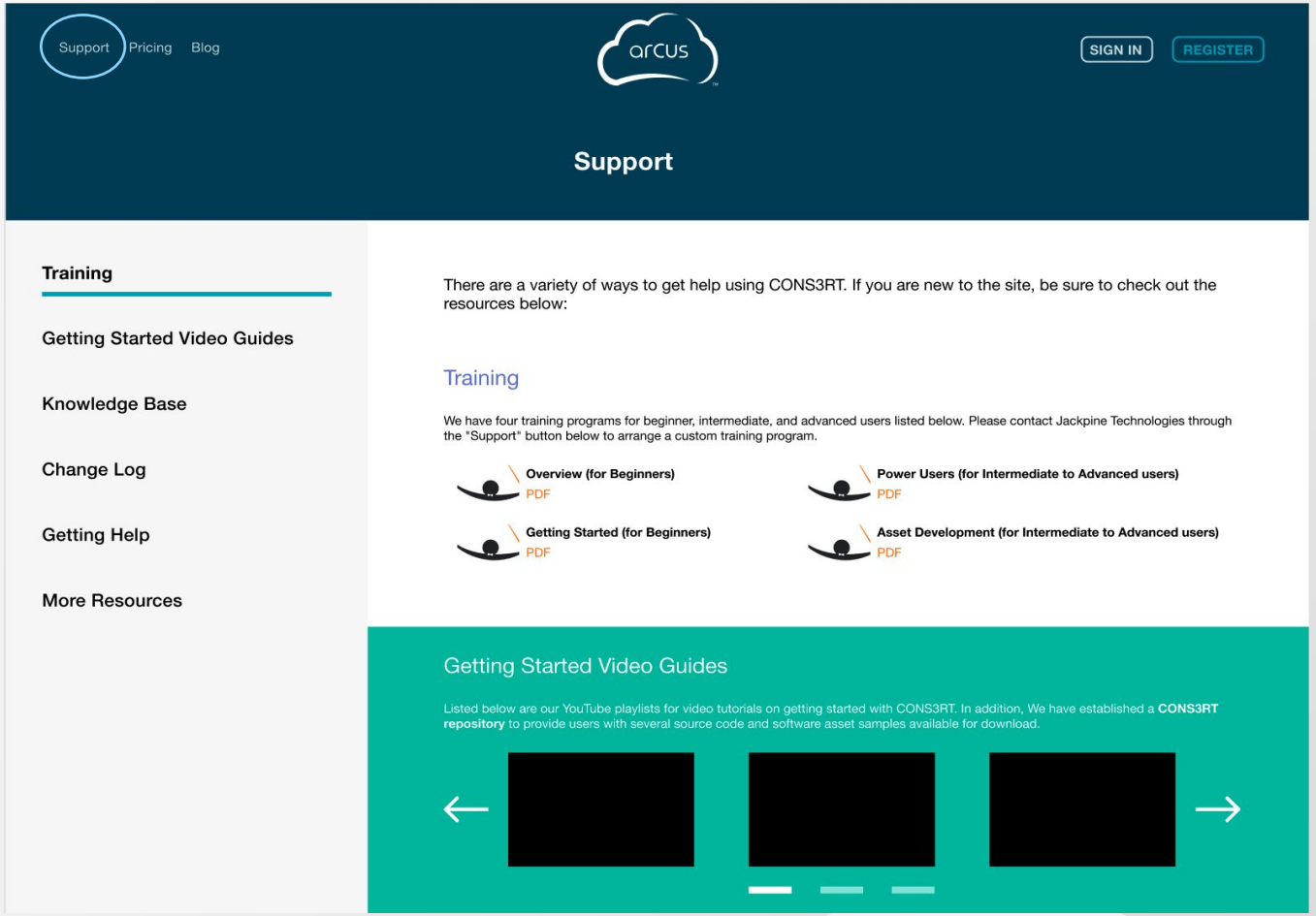
- Role Management for existing users
  - Click caret on a user card from the Project User Management screen
  - Uncheck all but the first two greyed-out roles to set a user as an Express User



Support & Troubleshooting

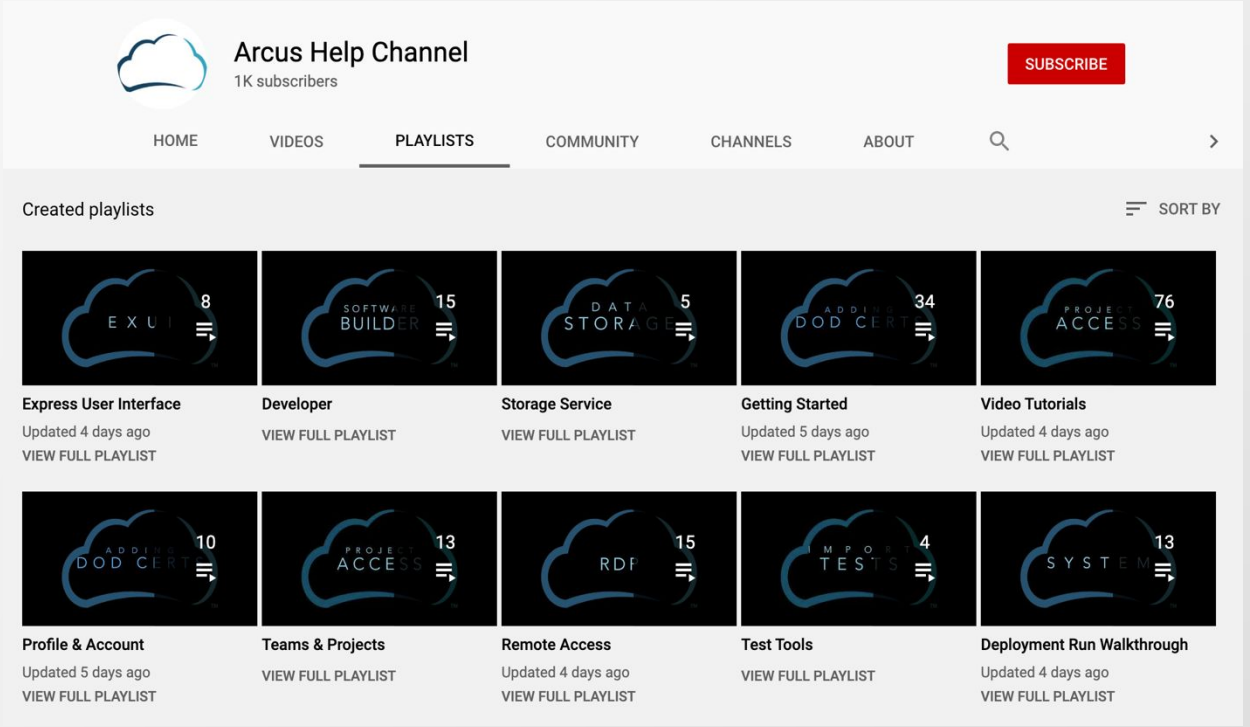
Support

- Support
  - https://arcus.mil/support
  - Submit a ticket through…
    - the *Support* link on the home page
    - the *Help* icon when signed in
  - Help icon tickets provide more data on what the user was working on
- Email
  - support@arcus-cloud.io
- Knowledge Base
  - https://arcus.mil/kb/
  - The Knowledge Base expands on all the topics covered in this training.
- Github Sample Assets
  - https://github.com/cons3rt



Video Tutorials

- If you would like to see **Arcus** in action, feel free to check out the video tutorials:
  - On the Arcus Help Channel at https://www.youtube.com/c/arcushelpchannel
  - Embedded in the articles on our Help Site
- If you have any suggestions for future videos, let us know by submitting a ticket



Thank you!

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