CONFIGURATION GUIDE

Cloudpath Enrollment System
Deploying Cloudpath as Virtual Appliance using Microsoft Hyper-V

Supporting Cloudpath 5.2

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Contents

Introduction

About this document

This is a configuration document that is intended for network administrators.

The document describes the specifications for deploying Cloudpath as a virtual appliance using Microsoft Hyper-V, how to download and deploy the package, and how to perform initial configuration and account setup. This guide also includes the Cloudpath command reference, which provides descriptions and examples for the commands that can be entered from the Hyper-V console or from an SSH login.

Specifications for On-Premise Hyper-V Server

Cloudpath supports virtual appliance deployments using a VMware ESXI server or a Microsoft Hyper-V Manager.

> NOTE
> For VMware deployments, see the *Deploying Cloudpath as a Virtual Appliance on a VMware™ Server* configuration guide.

Cloudpath Virtual Applicance Specifications

The Cloudpath virtual appliance can be distributed as a Hyper-V virtual hard disk (vhdx) disk image file, which can be deployed as a virtual machine using Microsoft Hyper-V Manager

Cloudpath offers a Non-Production POC, as well as several Production configurations for deployment. See the Deploying the Virtual Appliance Using Hyper-V Manager section for details.

Cloudpath can be deployed to a cloud environment (multi-tenant), or as a virtual appliance in an on-premise deployed VM server (single tenant).

Microsoft Hyper-V Specifications

Cloudpath supports Hyper-V versions 2012, and later. This includes Hyper-V Server, Windows Server, and the Client Hyper-V client for Windows 10.

What You Need

You will need to obtain or have access to the following:

For Deployment

- Cloudpath image (vhdx file for Hyper-V)

- Hyper-V Manager

For Hyper-V Server Initial Configuration

- FQDN Hostname of the virtual appliance
- A list of IP addresses that are allowed Administrative access (optional)
- Service account security credentials
- IP address, subnet mask, and gateway for the virtual appliance (not required if using DHCP)
- IP address of DNS server (not required if using DHCP)

For Cloudpath Account Setup

- URL for the VMware server where Cloudpath is deployed
- URL for the Cloudpath Licensing Server
- Login credentials for the Cloudpath Licensing Server
- Web certificate for the Cloudpath virtual appliance (public-signed)

Deploying the Virtual Appliance to a Hyper-V Server

Deployment Overview

The deployment process includes the following procedures:

- Retrieving the VHDX Image File
- Deploying the Virtual Appliance Using Hyper-V Manager
- Configuring the VM Using the Hyper-V Manager Connection Console
- Activating the Account or Logging In

Retrieving VHDX Image File

If you are setting up a Cloudpath account for the first time, you will be sent an activation code in an email notification. For an on-premise deployment, the activation code link allows you to download the Cloudpath VHDX image file, binding your VHDX file with the activation code.

When the download is complete, deploy the OVA file using the Hyper-V Manager.

Replication with Hyper-V Systems

The vhdx files and their associated snapshots are stored in the same directory. If you plan to set up two systems in replication, be sure to keep the vhdx file for each server in a separate folder so that snapshots and other changes are kept together with the appropriate server.

Deploying the Virtual Appliance Using Hyper-V Manager

To deploy the Virtual Appliance using Hyper-V Manager, perform the following steps:

1. Open the Hyper-V Manager.
2. From the Action menu, select New > Virtual Machine.

   This opens the New Virtual Machine Wizard.
3. Read the Before You Begin screen.

4. In the **Name** field, enter a name for the new VM, and click **Next**.
5. Select **Generation 1**, and click **Next**.
6. Assign **Startup memory**.

   NOTE
   When using the **New Virtual Machine Wizard**, RAM is specified, but the system assigns only one virtual processor, by default. This value can be increased after the initial setup.

   - For software trials, feature testing, and other non-production systems, we recommend using 6 GB (6144 MB) RAM and two virtual processors.
   - For production systems with 4,000 or fewer users, we recommend using 8 GB (8192 MB) RAM and four virtual processors.
   - For production systems with 8,000 of fewer users, we recommend using 12 GB (12,288 MB) RAM and eight virtual processors.
   - For production systems with more than 8,000 users, we recommend using 16 GB (16,384 MB) RAM and eight virtual processors.
   - For production systems with more than 20,000 users, we recommend using 20 GB (20,480 MB) RAM and eight virtual processors.
7. Leave **Use Dynamic Memory** selected (the default), and click **Next**.
8. On the **Configure Networking** screen, select the appropriate virtual switch in the **Connections** field. Click **Next**.
9. On the **Connect Virtual Hard Disk** screen, select **Use an existing virtual hard disk**, and browse to the location where the vhdx file exists. Click **Next**.
10. Verify the setup summary, and click **Finish**.

    The system creates the new virtual machine.

Configuring Virtual Processors

By default, the new VM wizard assigns one virtual processor to a new VM. You can increase the number of virtual processors in the VM settings.

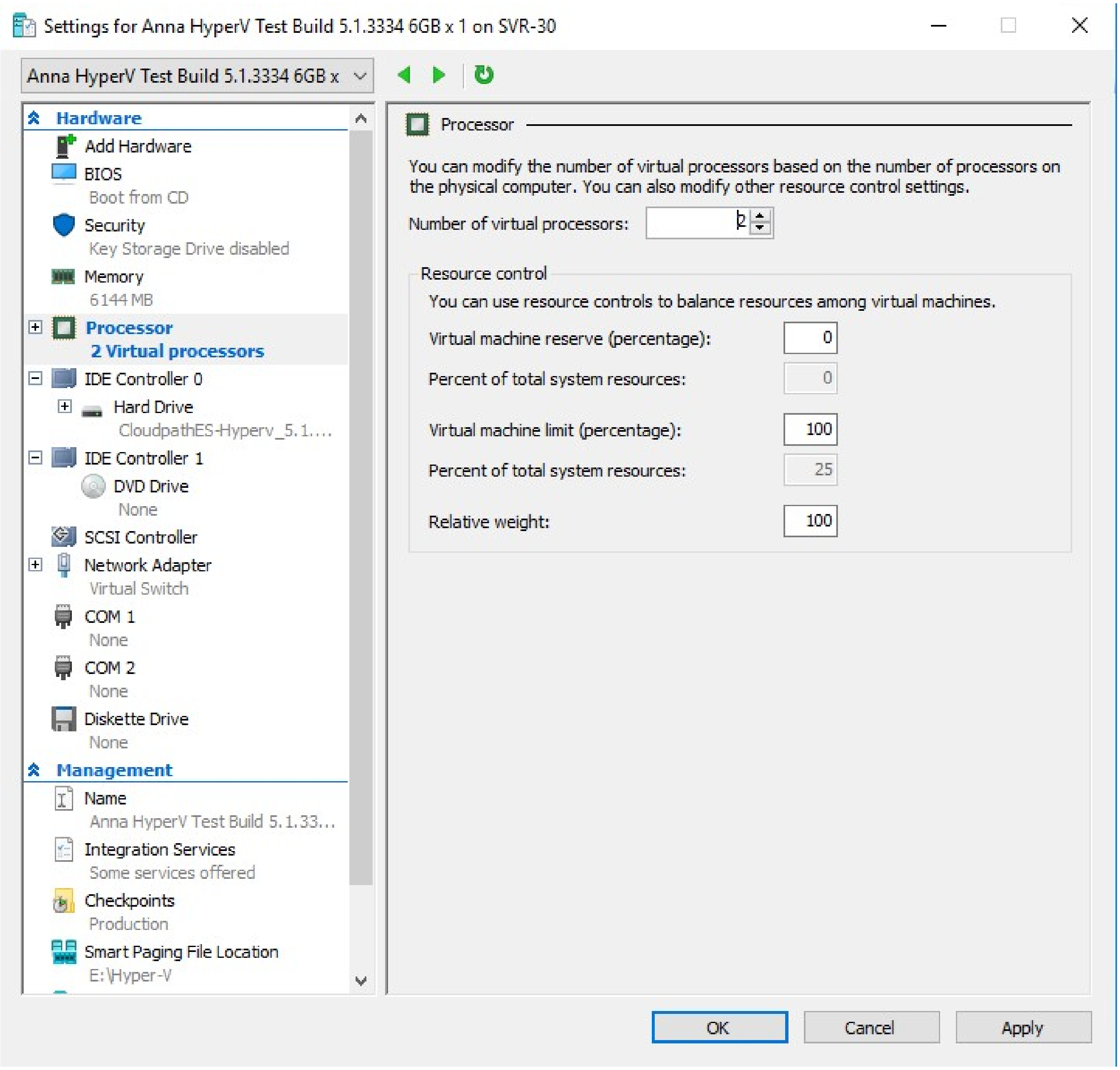
NOTE
The VM must be powered off to change **Settings**.

To configure virtual processors, perform the following steps:

1. With the VM selected, navigate to the **Action** menu, and select **Settings**. Alternately, you can right-click the selected VM.

2. Select Processor.

FIGURE 1 VM Settings



Settings for Anna HyperV Test Build 5.1.3334 6GB x 1 on SVR-30

Anna HyperV Test Build 5.1.3334 6GB x

Hardware
- Add Hardware
- BIOS
  Boot from CD
- Security
  Key Storage Drive disabled
- Memory
  6144 MB
- Processor
  2 Virtual processors
- IDE Controller 0
  - Hard Drive
    CloudpathES-Hyperv_5.1....
- IDE Controller 1
  - DVD Drive
    None
- SCSI Controller
- Network Adapter
  Virtual Switch
- COM 1
  None
- COM 2
  None
- Diskette Drive
  None

Management
- Name
  Anna HyperV Test Build 5.1.33...
- Integration Services
  Some services offered
- Checkpoints
  Production
- Smart Paging File Location
  E:\Hyper-V

Processor

You can modify the number of virtual processors based on the number of processors on the physical computer. You can also modify other resource control settings.

Number of virtual processors: 2

Resource control

You can use resource controls to balance resources among virtual machines.

Virtual machine reserve (percentage): 0

Percent of total system resources: 0

Virtual machine limit (percentage): 100

Percent of total system resources: 25

Relative weight: 100

3. In the left pan, select Processor.
4. In the right pane, increase the value for Number of virtual processors.
5. Click Apply, then click OK.
6. Power on the virtual machine to continue with the configuration.

Configuring the VM Using the Hyper-V Manager Connection Console

Before you begin, read the list of information required to setup the system.

To use the Hyper-V Manager Connection console to configure the VM, perform the following steps:

1. From the Hyper-V Manager, with your VM selected, right-click and select Connect.

   This opens the connection console.
2. Enter **yes** (or **y**) to accept all license agreements.
3. Enter the time zone. For example, enter **America/Denver**.

   The default is UTC.
4. Enter the **FQDN hostname** for the virtual appliance (for example, **onboard.company.com**).
5. If you want to enable HTTPS, press **Enter** for "yes" (default), or if not, enter **n** for "no."
6. If you want to use a STATIC IP (rather than DHCP), press **Enter** for "yes" (default), or if not, enter **n** for "no."
   - If you specify "yes" (recommended), assign the IP address of the virtual appliance, subnet mask, and gateway and DNS server IP addresses for your network.
   - If you specify "no," DHCP is used to assign the IP address of the virtual appliance eth0 interface, subnet mask, gateway, and DNS server IP addresses for your network. If you are not using DHCP, enter the IP address of the virtual appliance eth0 interface.
7. Enter the IP address of the virtual appliance.
8. Enter the subnet mask in the format **255.255.252.0**.
9. Enter the gateway IP address for your network.
10. Enter the DNS server IP address.
11. If you want to permit SSH access, then press **Enter** for "yes" (default), or if not, enter **n** for "no."
12. Enter and confirm a *service* password. The *service* password is used by your support team for access to this system using SSH. Refer to the *Cloudpath Command Reference* on the **Support** tab for details.

    NOTE
    The *service* account is not available if SSH access is not permitted.

13. If you want to use an NTP server other than pool.net.org, then press **Enter** for "no" (default), or if not, enter **y** for "yes" to specify an NTP server.

    The setup is complete.
14. Press **Enter** to reboot the system.

Hyper-V Checkpoints

Checkpoint settings should be changed to Standard, instead of the default, Production.

Replication with Hyper-V Images

Each server should be deployed with its own copy of the image file in separate folders, and a folder for the vhdx file. With each checkpoint, the Hyper-V manager adds bits to the original image file and saves it in the same folder location.

> NOTE
> With replication, if both servers are managed from the same folder, the checkpoints may not be applied to the correct server. This appears to be a Hyper-V Manager issue and not a Cloudpath issue.

As a best practice, manage each server separately in their own folder location.

Activating the Account or Logging In

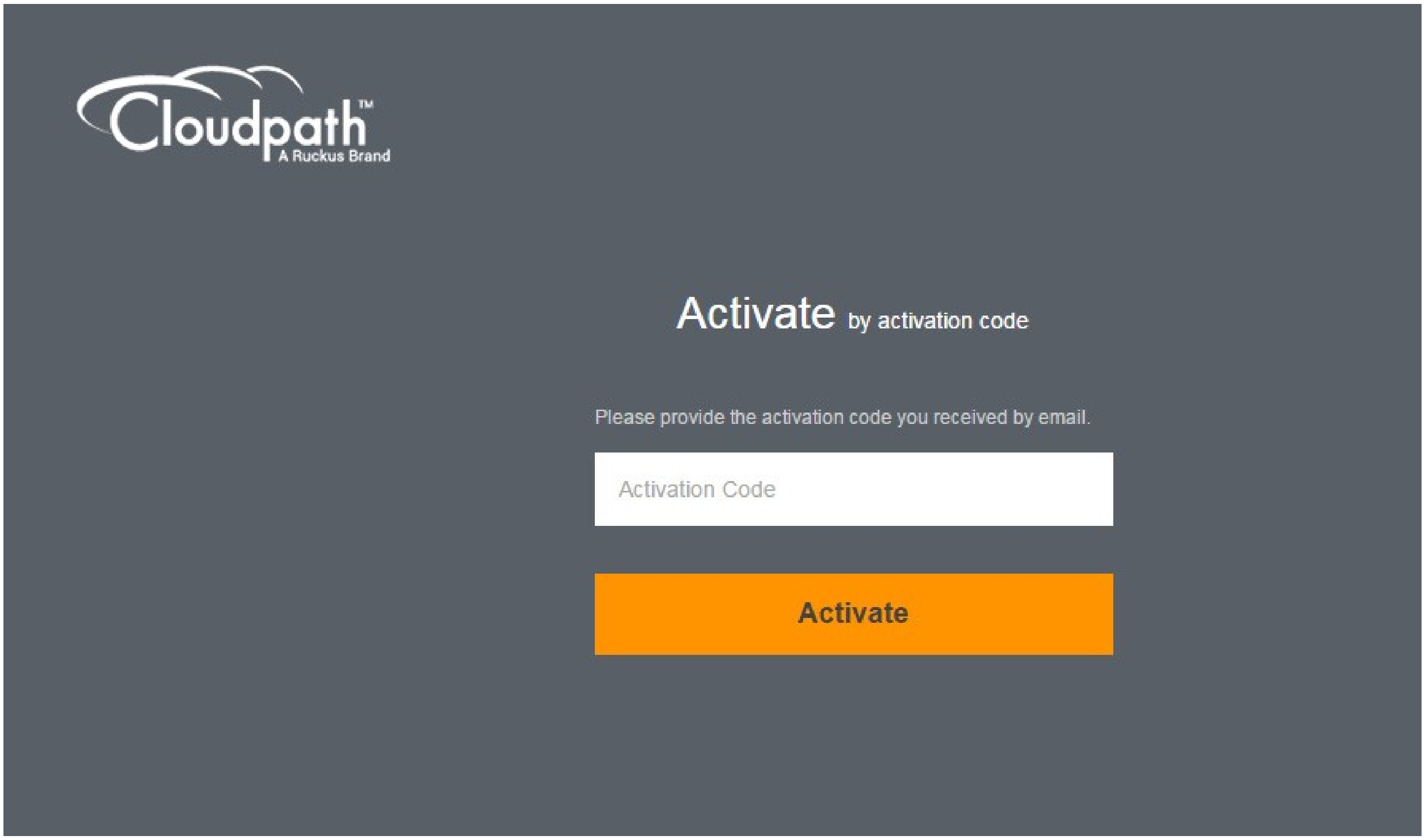
Activation Overview

If you are setting up a Cloudpath account for the first time, you will be sent an activation code. If you have existing Cloudpath License server credentials, you can activate an account using those credentials.

Whether you create a new account with an activation code or with legacy Cloudpath credentials, the system binds the Cloudpath instance to your License Server credentials.

Activate Account by Activation Code

If you have been sent an account activation code, enter it on this activation page.



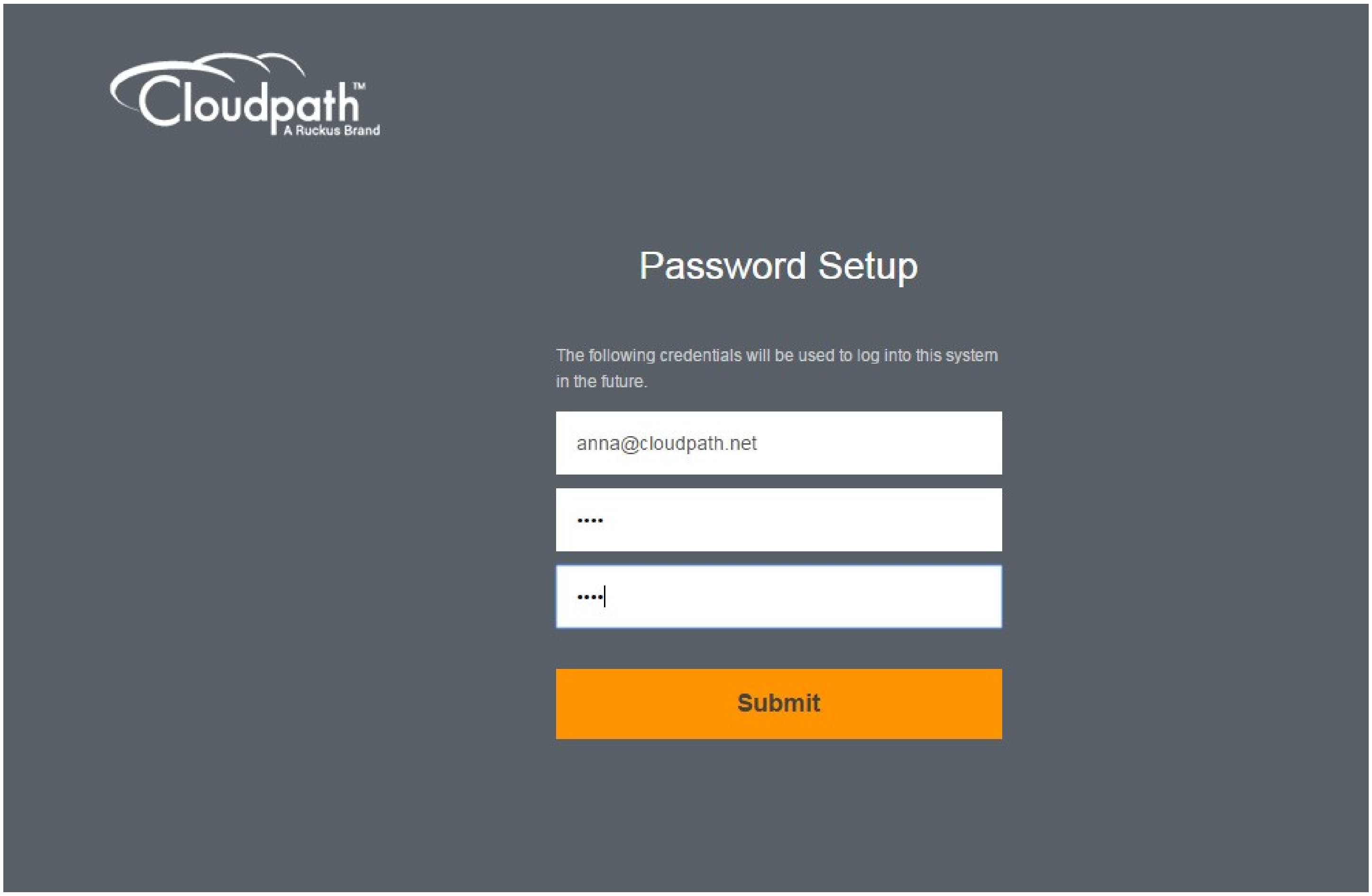
Activate by activation code

Please provide the activation code you received by email.

Set a Password for Account

If you have logged in with an activation code, you are prompted to set a password for this account.

The following page is displayed.



Password Setup

The following credentials will be used to log into this system in the future.

anna@cloudpath.net

••••

••••

1. Your email address should display. If it does not, enter it on this page.
2. Enter and confirm a password.

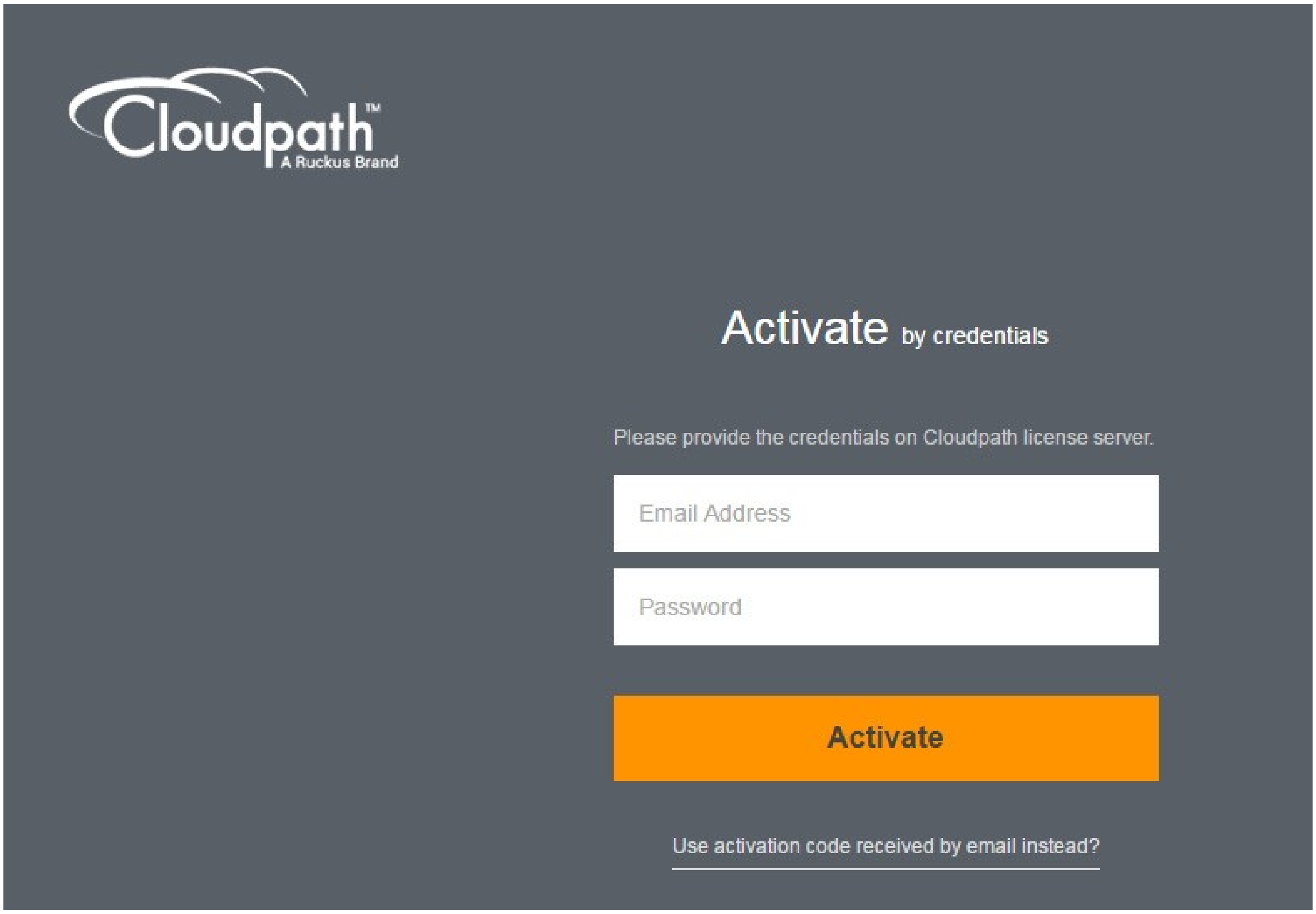
   These are the credentials to use for this Cloudpath account.

Activate with Credentials

If you already have a Cloudpath License Server account, you can activate a new Cloudpath account or log in to an existing account using those credentials.

On the following page, enter your credentials and click Activate.

1. On the Activate page, enter your credentials.


Cloudpath™
A Ruckus Brand
Activate by credentials
Please provide the credentials on Cloudpath license server.
Email Address
Password
Activate
Use activation code received by email instead?

2. Click Activate.

Initial System Setup

System Setup Overview

Cloudpath provides you with a single administrator login for the Cloudpath Admin user interface (UI). Additional administrators can be added from the left menu on the Administration tab, or you can enable Administrator logins from your authentication servers.

System Setup Wizard

After you successfully deploy and activate (or log in) to Cloudpath, the system setup wizard guides you through the setup tasks.

To use the setup wizard, perform the following steps:

1. Select Server Type.

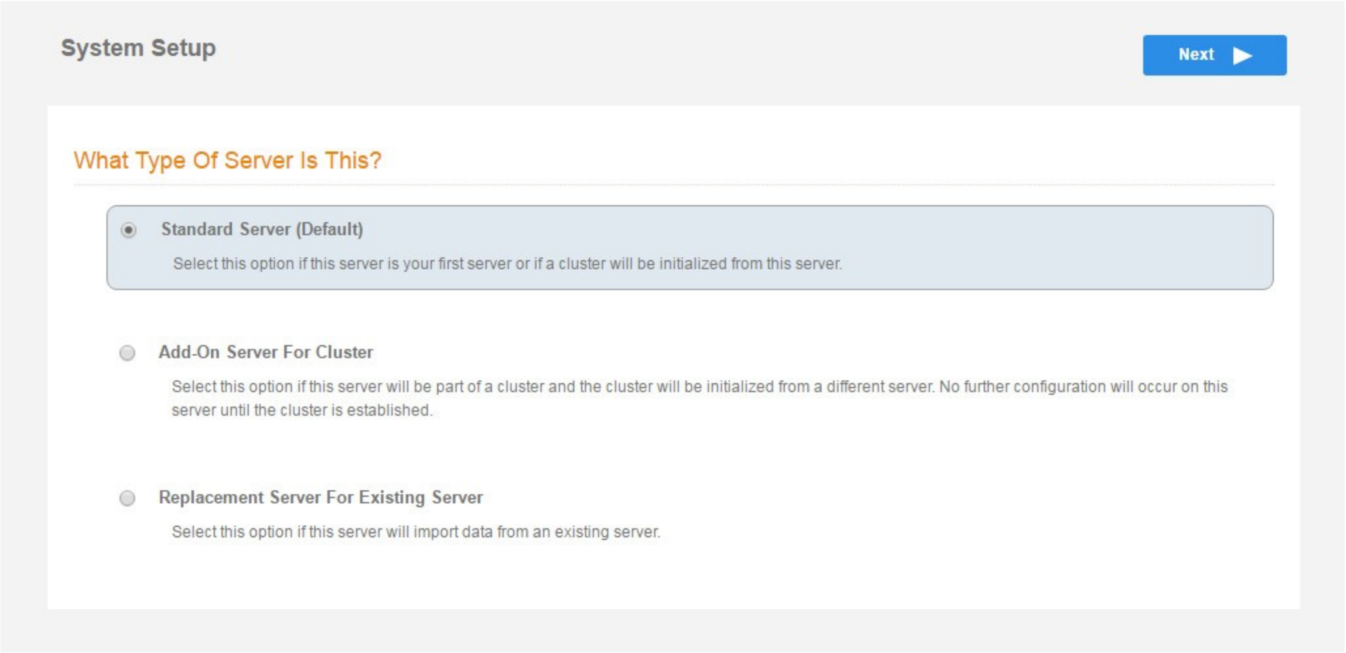
   In most cases, select Standard Server, the default. This selection takes you through a setup wizard, which prompts you for the basic information required for a Cloudpath server.

   - If you are setting up this server for replication, you can choose to set the server as an Add-On or Replacement server. Thee selections provide an alternate set up process, requiring less information for the initial setup. Add-On and Replacement servers receive most of their configuration from the master server in the cluster.

     NOTE
     For Add-On or Replacement servers, you will not be required to go through the full system setup.

   - If you are setting up this server to replace an existing server, and you are importing the database from the existing server, select Replacement Server for Existing Server.

   FIGURE 2 Select Server Type



System Setup

What Type Of Server Is This?

● Standard Server (Default)
Select this option if this server is your first server or if a cluster will be initialized from this server.

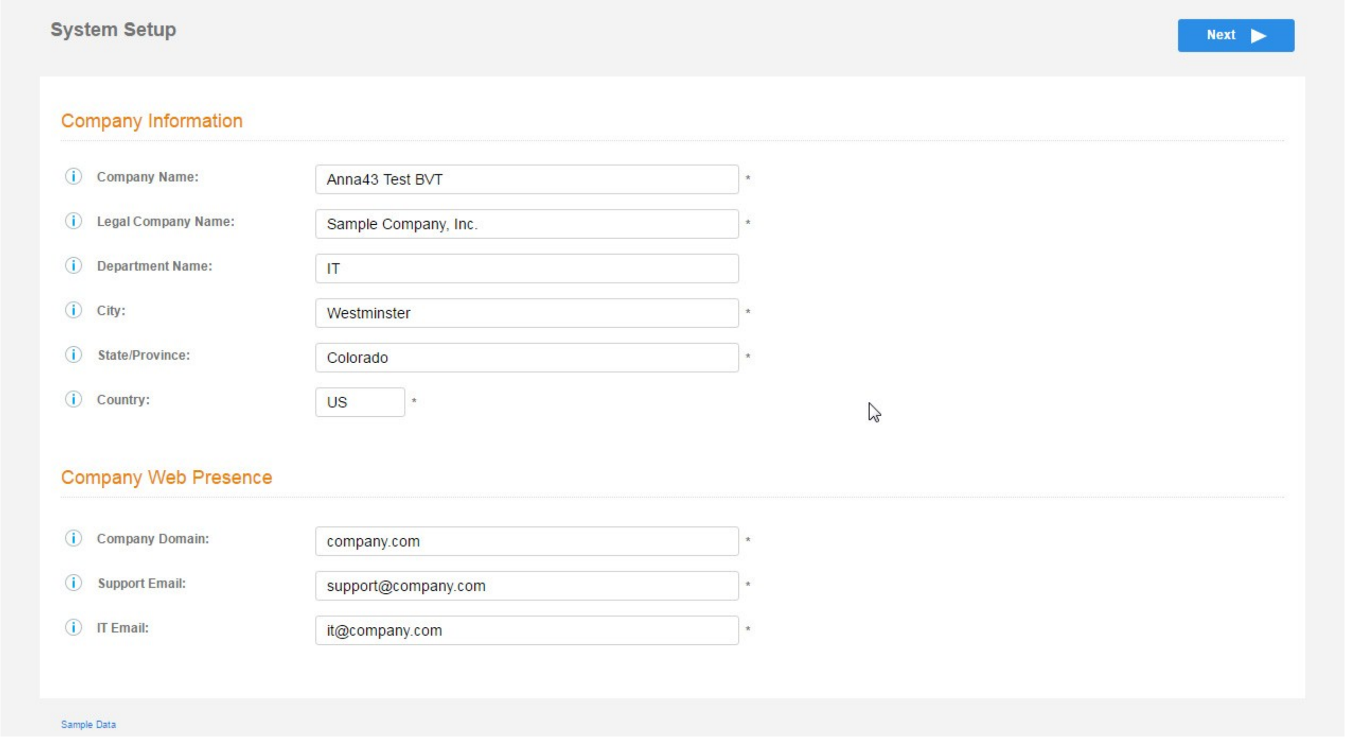
○ Add-On Server For Cluster
Select this option if this server will be part of a cluster and the cluster will be initialized from a different server. No further configuration will occur on this server until the cluster is established.

○ Replacement Server For Existing Server
Select this option if this server will import data from an existing server.

2. Enter Company Information.

   This information is embedded in the onboard root CA certificate.

FIGURE 3 Company Information



Company Information

Company Name:	Anna43 Test BVT *
Legal Company Name:	Sample Company, Inc. *
Department Name:	IT
City:	Westminster *
State/Province:	Colorado *
Country:	US *

Company Web Presence

Company Domain:	company.com *
Support Email:	support@company.com *
IT Email:	it@company.com *

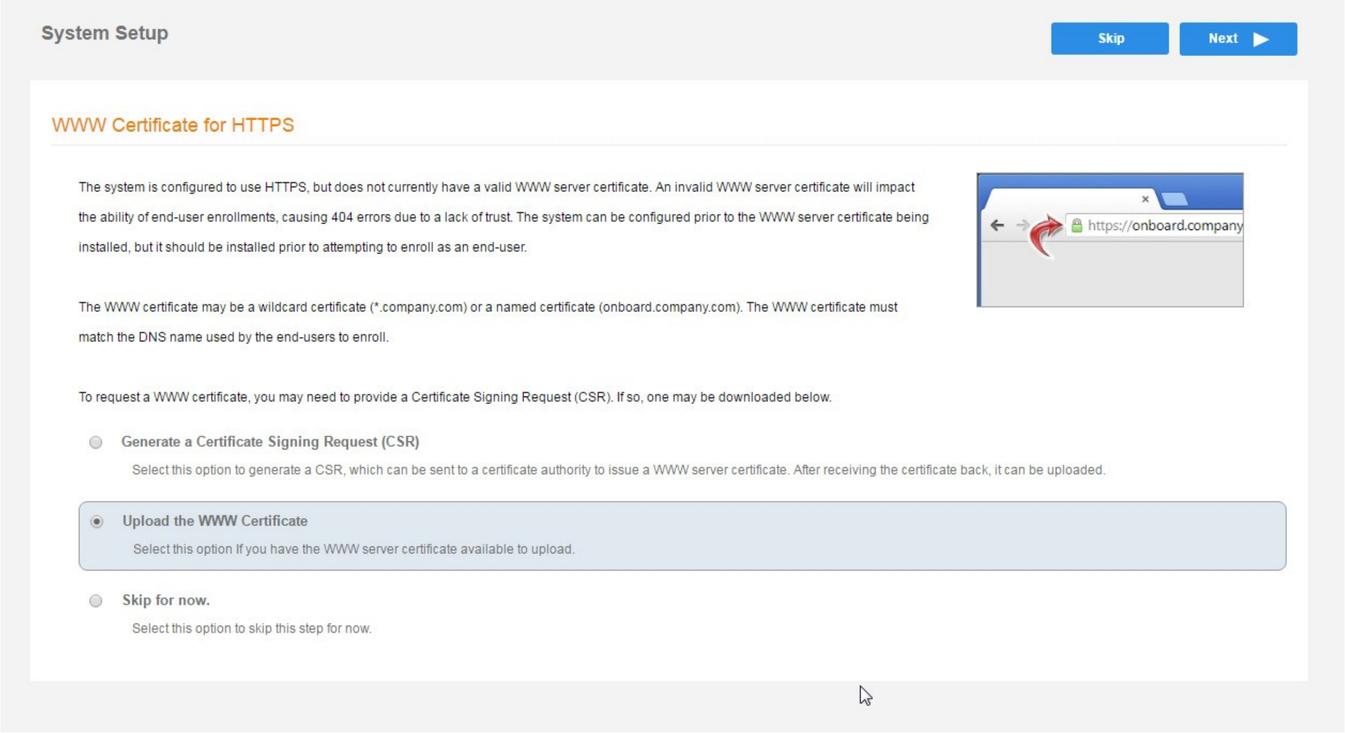
3. Configure the WWW Certificate.

   The system is configured to use HTTPS, but does not currently have a valid WWW server certificate. An invalid WWW server certificate can impact the ability of end-user enrollments, causing 404 errors due to a lack of trust.

   You can skip this step for the initial configuration. However, it should be installed prior to attempting to enroll as an end-user. You can configure the WWW server certificate from Administration > System > System Services > Web Server Component.

   Cloudpath supports web server certificates in P12 format and password protected P12, or you can upload the individual certificate components; the public key, chain, and private key or password protected private key.

FIGURE 4 WWW Certificate for HTTPS



WWW Certificate for HTTPS

The system is configured to use HTTPS, but does not currently have a valid WWW server certificate. An invalid WWW server certificate will impact the ability of end-user enrollments, causing 404 errors due to a lack of trust. The system can be configured prior to the WWW server certificate being installed, but it should be installed prior to attempting to enroll as an end-user.

The WWW certificate may be a wildcard certificate (*.company.com) or a named certificate (onboard.company.com). The WWW certificate must match the DNS name used by the end-users to enroll.

To request a WWW certificate, you may need to provide a Certificate Signing Request (CSR). If so, one may be downloaded below.

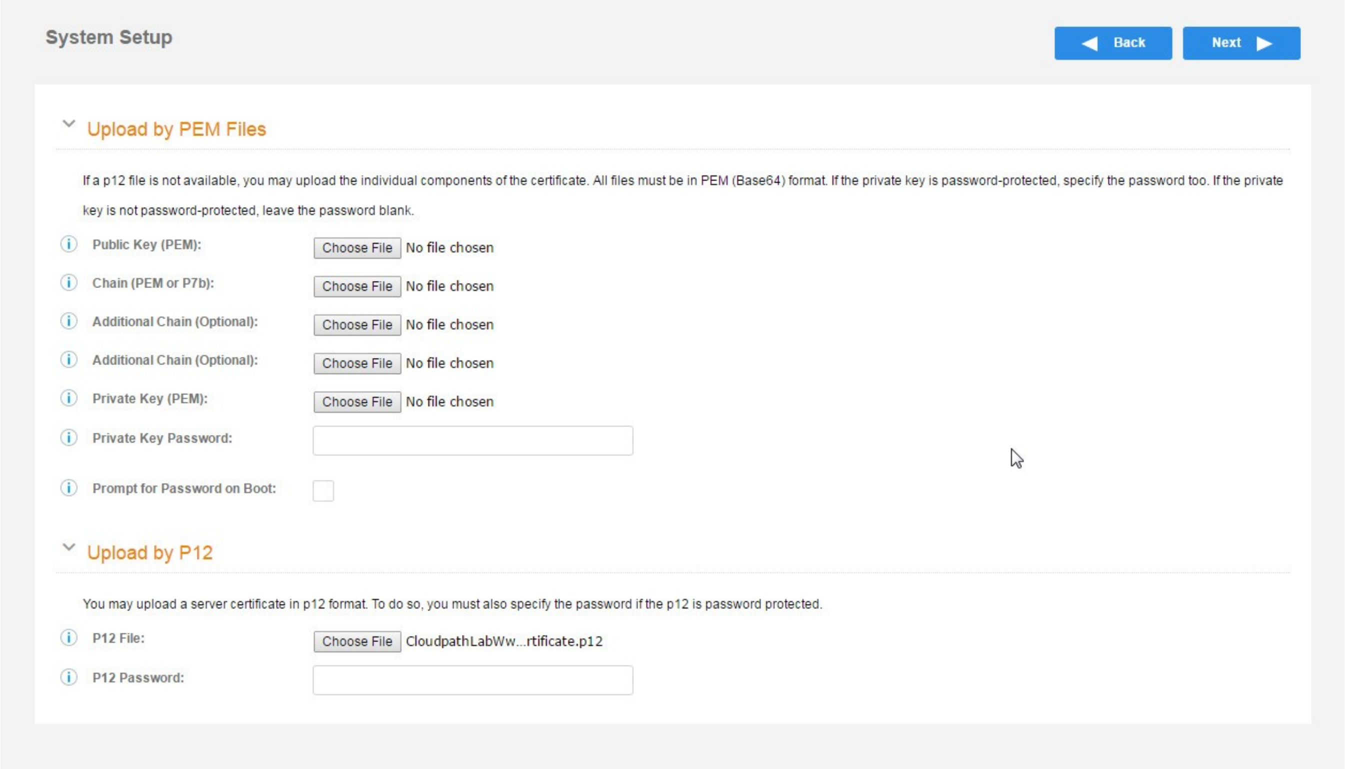
○ Generate a Certificate Signing Request (CSR)
Select this option to generate a CSR, which can be sent to a certificate authority to issue a WWW server certificate. After receiving the certificate back, it can be uploaded.

● Upload the WWW Certificate
Select this option If you have the WWW server certificate available to upload.

○ Skip for now.
Select this option to skip this step for now.

4. To upload the WWW certificate, browse to locate and upload the web server certificate, and click **Next** to continue with the system setup.

FIGURE 5 Upload WWW Certificate



Upload by PEM Files

If a p12 file is not available, you may upload the individual components of the certificate. All files must be in PEM (Base64) format. If the private key is password-protected, specify the password too. If the private key is not password-protected, leave the password blank.

Public Key (PEM):	Choose File No file chosen
Chain (PEM or P7b):	Choose File No file chosen
Additional Chain (Optional):	Choose File No file chosen
Additional Chain (Optional):	Choose File No file chosen
Private Key (PEM):	Choose File No file chosen
Private Key Password:	
Prompt for Password on Boot:	□

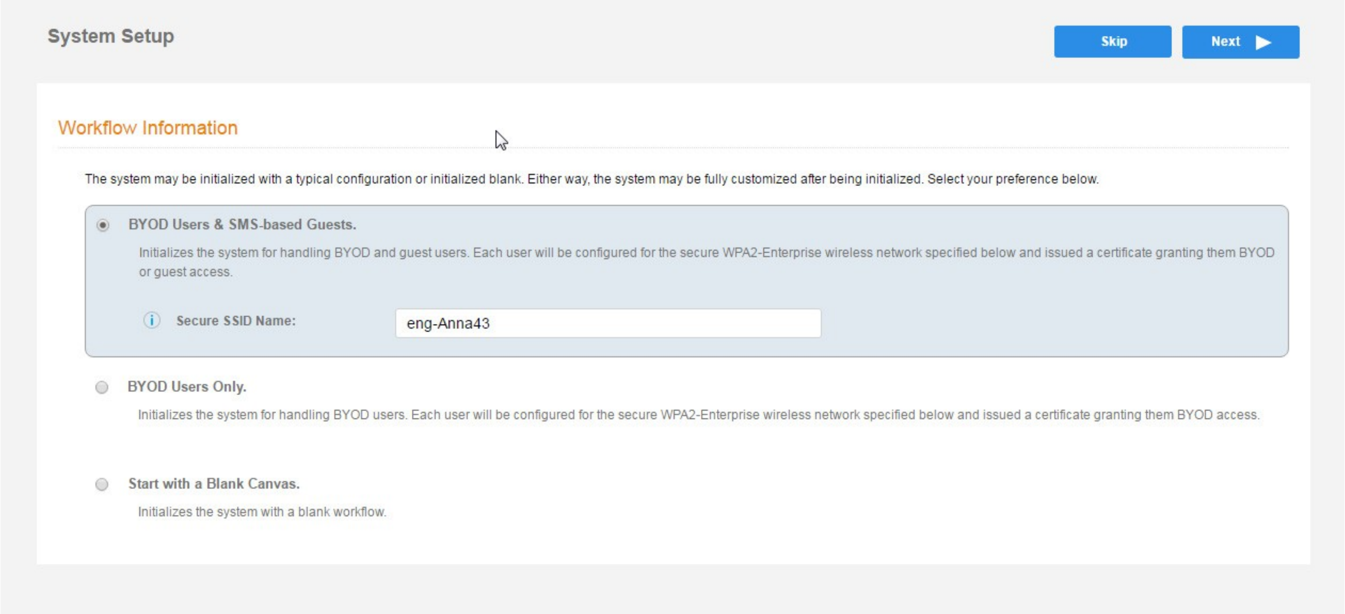
Upload by P12

You may upload a server certificate in p12 format. To do so, you must also specify the password if the p12 is password protected.

P12 File:	Choose File CloudpathLabWw...rtificate.p12
P12 Password:	

5. Select the Default Workflow.
   - To initialize the system with a sample configuration, select BYOD Users & SMS Guests or BYOD Users Only. This creates an initial workflow for BYOD users and sponsored guests (or BYOD users only) that you can use as a template. Otherwise, you can simply add a device configuration and use it immediately.
   - To create you own workflow, select Start with Blank Canvas.

FIGURE 6 Select Default Workflow



Workflow Information

The system may be initialized with a typical configuration or initialized blank. Either way, the system may be fully customized after being initialized. Select your preference below.

● BYOD Users & SMS-based Guests.
Initializes the system for handling BYOD and guest users. Each user will be configured for the secure WPA2-Enterprise wireless network specified below and issued a certificate granting them BYOD or guest access.

Secure SSID Name: eng-Anna43

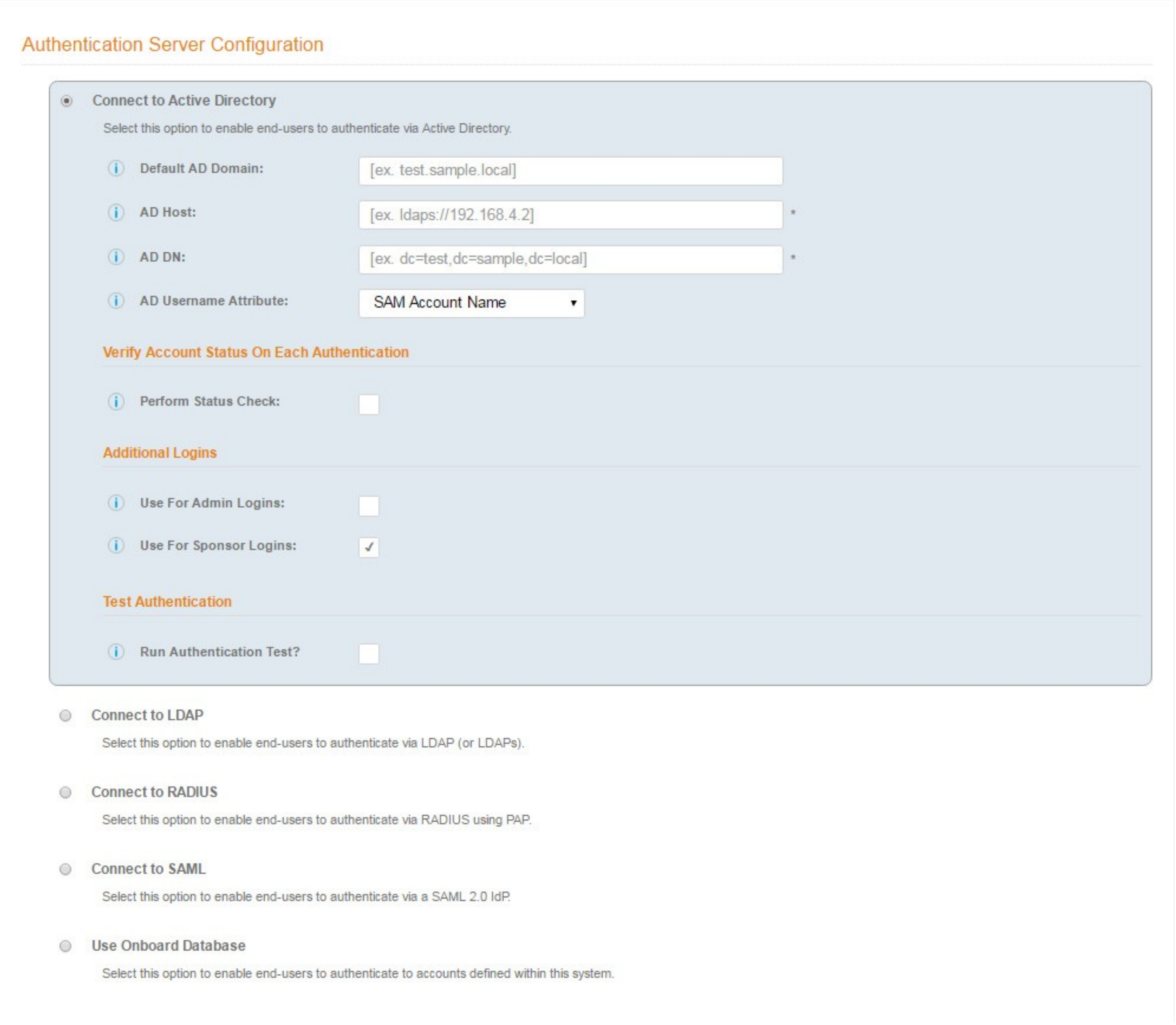
○ BYOD Users Only.
Initializes the system for handling BYOD users. Each user will be configured for the secure WPA2-Enterprise wireless network specified below and issued a certificate granting them BYOD access.

○ Start with a Blank Canvas.
Initializes the system with a blank workflow.

6. Configure the Authentication Server.

   NOTE
   If you selected a Blank Canvas for the default workflow, you are not prompted to set up an authentication server during the initial system setup.

- If you plan to use an authentication server to authenticate end-users or sponsors, we recommend populating the authentication server information page.
- If using multiple authentication servers, additional authentication servers can be added through the workflow or from the Configuration > Advanced > Authentication Servers page.



Authentication Server Configuration

● Connect to Active Directory
Select this option to enable end-users to authenticate via Active Directory.

Default AD Domain: [ex. test.sample.local]

AD Host: [ex. ldaps://192.168.4.2] *

AD DN: [ex. dc=test,dc=sample,dc=local] *

AD Username Attribute: SAM Account Name ▾

Verify Account Status On Each Authentication

Perform Status Check: □

Additional Logins

Use For Admin Logins: □

Use For Sponsor Logins: ☑

Test Authentication

Run Authentication Test? □

○ Connect to LDAP
Select this option to enable end-users to authenticate via LDAP (or LDAPs).

○ Connect to RADIUS
Select this option to enable end-users to authenticate via RADIUS using PAP.

○ Connect to SAML
Select this option to enable end-users to authenticate via a SAML 2.0 IdP.

○ Use Onboard Database
Select this option to enable end-users to authenticate to accounts defined within this system.

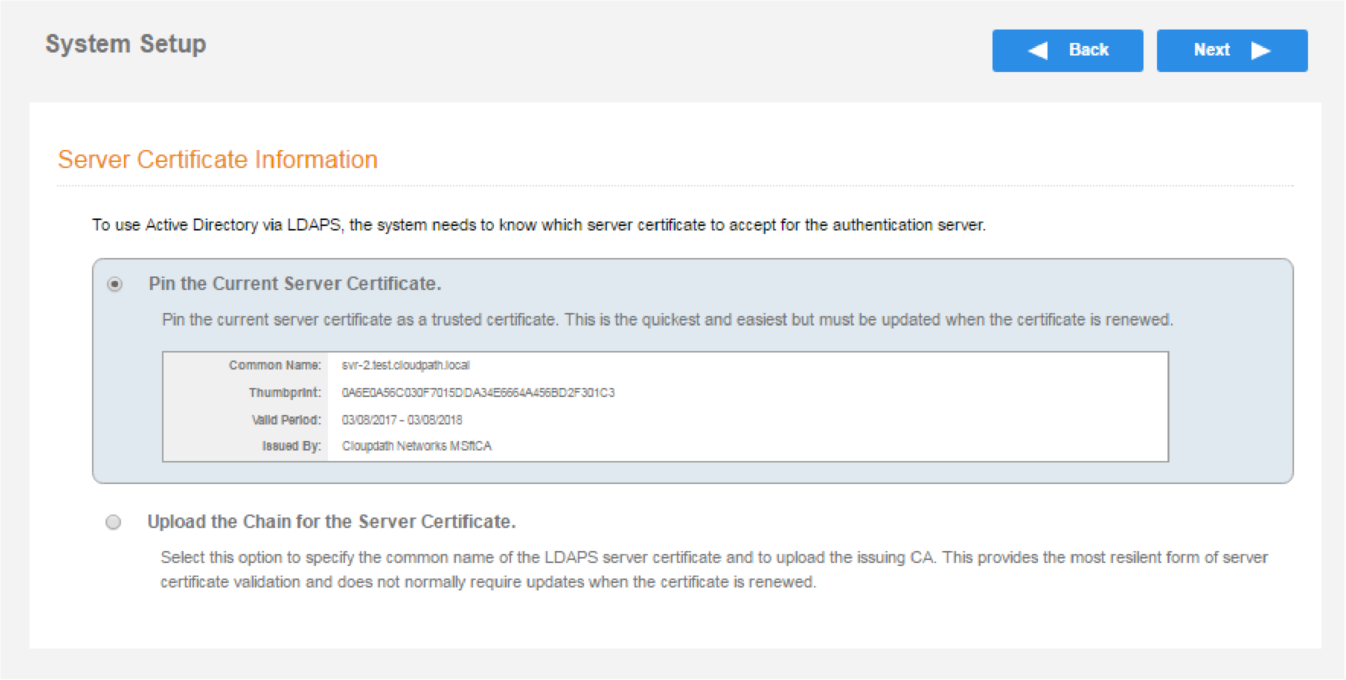
To setup the initial configuration of the Authentication Server, select Connect to Active Directory or Connect to LDAP and enter the required fields.

Consider these optional settings for the authentication server:

- Verify Account Status on Each Authentication: If selected, Active Directory is queried duringsubsequent uses of the certificate to verify the user account is still enabled. You must provide the bind username and password for an authentication server administrator account.
- Additional Logins: If Use for Admin Logins is selected, administrators can log into the Cloudpath Admin UI using credentials associated with this authentication server. If Use for Sponsor Logins is selected, sponsors can log into the Cloudpath Admin UI using credentials associated with this authentication server.
- Test Authentication: If selected, an authentication will be attempted using the username and password provided to test connectivity to the authentication server. This test can also be run from the workflow.

7. Set up the Authentication Server Certificate.

   To use LDAP over SSL (LDAPS), the system must know which server certificate to accept for the authentication server.



Server Certificate Information

To use Active Directory via LDAPS, the system needs to know which server certificate to accept for the authentication server.

● Pin the Current Server Certificate.

Pin the current server certificate as a trusted certificate. This is the quickest and easiest but must be updated when the certificate is renewed.

Common Name:	svr-2.test.cloudpath.local
Thumbprint:	0A6E0A56C030F7015DDA34E6664A456BD2F301C3
Valid Period:	03/08/2017 - 03/08/2018
Issued By:	Cloupdath Networks MSfICA

○ Upload the Chain for the Server Certificate.

Select this option to specify the common name of the LDAPS server certificate and to upload the issuing CA. This provides the most resilent form of server certificate validation and does not normally require updates when the certificate is renewed.

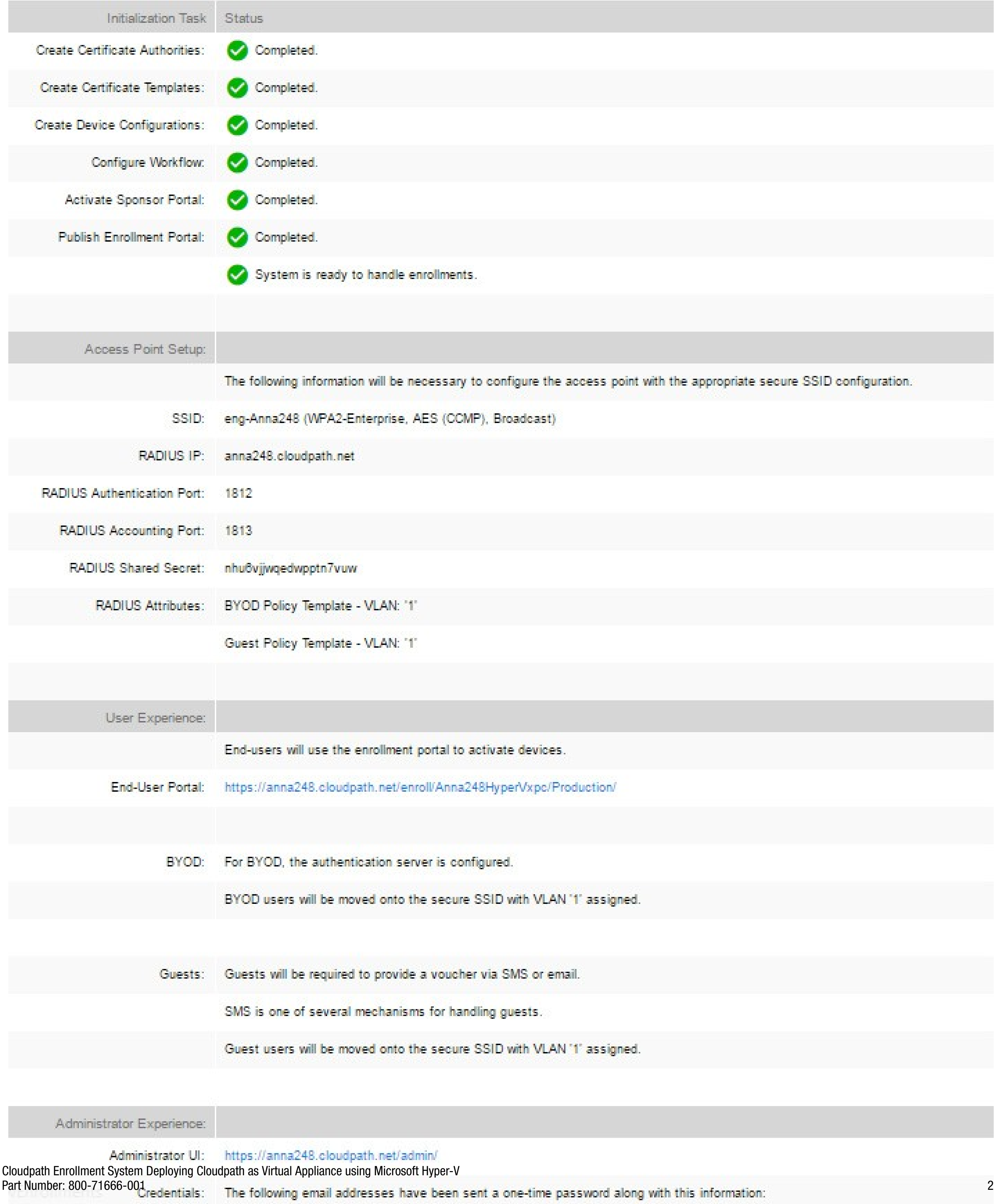
- Select Upload the Chain for the Server Certificate to upload a certificate chain from an issuing CA. You must specify the common name for the LDAPS server certificate. This certificate does not need to be updated when the certificate is renewed.
- Select Pin the Current Server Certificate to use the current server certificate as the trusted certificate. This setting must be updated if the certificate is renewed.

Publishing Tasks

After the initial setup tasks, the system finishes the initialization process. When the publishing tasks are complete, the system is ready to use.

The setup information is also emailed to the system administrator for this account.

FIGURE 7 System Initialization Status

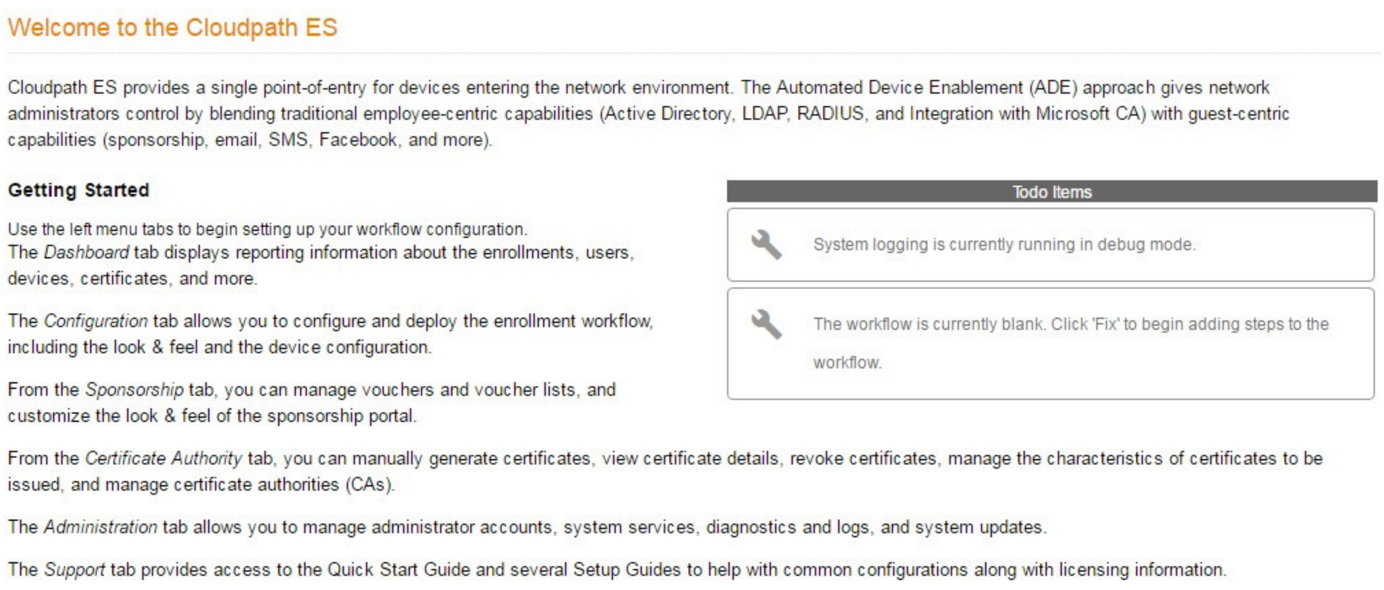


Initialization Task	Status
Create Certificate Authorities:	✓ Completed.
Create Certificate Templates:	✓ Completed.
Create Device Configurations:	✓ Completed.
Configure Workflow:	✓ Completed.
Activate Sponsor Portal:	✓ Completed.
Publish Enrollment Portal:	✓ Completed.
	✓ System is ready to handle enrollments.
Access Point Setup:	
	The following information will be necessary to configure the access point with the appropriate secure SSID configuration.
SSID:	eng-Anna248 (WPA2-Enterprise, AES (CCMP), Broadcast)
RADIUS IP:	anna248.cloudpath.net
RADIUS Authentication Port:	1812
RADIUS Accounting Port:	1813
RADIUS Shared Secret:	nhu6vjjwqedwpptn7vuw
RADIUS Attributes:	BYOD Policy Template - VLAN: '1'
	Guest Policy Template - VLAN: '1'
User Experience:	
	End-users will use the enrollment portal to activate devices.
End-User Portal:	https://anna248.cloudpath.net/enroll/Anna248HyperVxpc/Production/
BYOD:	For BYOD, the authentication server is configured.
	BYOD users will be moved onto the secure SSID with VLAN '1' assigned.
Guests:	Guests will be required to provide a voucher via SMS or email.
	SMS is one of several mechanisms for handling guests.
	Guest users will be moved onto the secure SSID with VLAN '1' assigned.
Administrator Experience:	
Administrator UI:	https://anna248.cloudpath.net/admin/
Credentials:	The following email addresses have been sent a one-time password along with this information:

ToDo Items

On subsequent logins, the Cloudpath Welcome page is displayed. The ToDo Items lists the configuration items needed to complete the account setup.

FIGURE 8 Cloudpath Welcome Page



Welcome to the Cloudpath ES

Cloudpath ES provides a single point-of-entry for devices entering the network environment. The Automated Device Enablement (ADE) approach gives network administrators control by blending traditional employee-centric capabilities (Active Directory, LDAP, RADIUS, and Integration with Microsoft CA) with guest-centric capabilities (sponsorship, email, SMS, Facebook, and more).

Getting Started

Use the left menu tabs to begin setting up your workflow configuration.
The *Dashboard* tab displays reporting information about the enrollments, users, devices, certificates, and more.

The *Configuration* tab allows you to configure and deploy the enrollment workflow, including the look & feel and the device configuration.

From the *Sponsorship* tab, you can manage vouchers and voucher lists, and customize the look & feel of the sponsorship portal.

From the *Certificate Authority* tab, you can manually generate certificates, view certificate details, revoke certificates, manage the characteristics of certificates to be issued, and manage certificate authorities (CAs).

The *Administration* tab allows you to manage administrator accounts, system services, diagnostics and logs, and system updates.

The *Support* tab provides access to the Quick Start Guide and several Setup Guides to help with common configurations along with licensing information.

Todo Items

System logging is currently running in debug mode.

The workflow is currently blank. Click 'Fix' to begin adding steps to the workflow.

To configure Cloudpath, refer to the *Cloudpath Quick Start Guide* and other Cloudpath configuration guides, which can be found on the Cloudpath Support tab.

Cloudpath Command Reference

Cloudpath Commands

You can access the Cloudpath command line interface using the *service* account, which is used by your support team to access the system

To use the service account, open a terminal and Log in to the service account (cpn_service) and enter the service password.

> NOTE
> Use SSH on port 8022 or 22. The default SSH port number is 8022, but can be changed to port 22 on the Cloudpath Administration > System > System Status page.

After a successful login to the service account, the command-line configuration utility prompt (#) displays. Enter **?** to view the list of available commands.

Tip: From the command-line configuration utility, enter the **console** command to access the Linux shell. From the Linux shell, enter the **config** command to access the command-line configuration utility.

Configuration Commands

The **config** commands allow you to change the configuration of the system

TABLE 1 config commands

Command	Description	Parameters and Examples
config	From the Linux shell, this command provides access to the command line configuration utility.	No parameters. `[ <serviceacctlogin@<hostname>] $ c config`
config admin-access allow-all	Clears restrictions to the administrative functionality so that an administrator can access the Cloudpath Admin UI from any IP address.	No parameters. `config admin-access allow-all`
config admin-access restrict	Restricts which IP addresses have administrative access to the Cloudpath Admin UI.	[Comma separated list of IP addresses/CIDR] `config admin-access restrict 1 72.16.4.20, 172.16.5.18`

TABLE 1 config commands (continued)

Command	Description	Parameters and Examples
		or `config admin-access restrict 172.16.4.20/24`
config fips-crypto	Enable or disable use of FIPS 140-2 cryptography.	[Enable or Disable] [Requires the service password] `# config fips-crypto enable [ sudo] password for cpn_service: enterservicepwd`
config fips-crypto state	Display whether FIPS 140-2 cryptography is enabled.	No parameters. `config fips-crypto state`
config hostname	Sets the hostname.	[This system's network name (FQDN)] `config hostname test22.company.net`
config hostname-restricted allow-all	Requests by IP address are not blocked.	No parameters `config hostname-restricted allow-all`
config hostname-restricted restrict	Requests that do not match the hostname are blocked.	No parameters `config hostname-restricted restrict`
config https enable	Sets whether the Apache server should be run as HTTP or HTTPS.	[The HTTPs port to use] `config https enable 55`
config https disable	Sets whether the Apache server should be run as HTTP or HTTPS.	No parameters `config https disable`
config https-servername default	Uses the system's hostname (FQDN).	No parameters `config https-servername default`
config https-servername override	Set the HTTPS server name. This is typically used when operating behind a load balancer.	[This system's network name] `config https-servername test22.company.net`
config network DHCP	Configures whether you want DHCP to assign network IP addresses.	[*true* to use DHCP, *false* to use STAT IC IP addresses] `config network DHCP true` This command causes the system to toggle the eth0 and loopback interfaces.
config network restart	Restarts the network after making configuration changes to DHCP settings.	No parameters `config network restart`
config network STATIC dns	Configures the STATIC IP addresses for the DNS server.	[IP address of the DNS server] `config network STATIC dns 1 72.16.4.202`

TABLE 1 config commands (continued)

Command	Description	Parameters and Examples
config network STATIC ip	Configures the STATIC IP addresses for the system's eth0 interface, subnet mask, and gateway.	[IP address, subnet mask, and gateway for the eth0 interface] `config network STATIC ip 172.16.6.35 255.255.252.0 172.16.4.1`
config ntp	Sets the NTP server	[IP address of the NTP server] `config ntp 172.16.2.106`
config ntp sync-now	Forces an ntpdate to the configured NTP server.	[hostname for shared db] `config ntp sync-now`
config proxy set	Sets the HTTP proxy. Requires a reboot. The HTTP port and HTTPS port must be the same. This is the port number for the HTTP proxy tunnel. The [proxy-bypass-hosts] parameter (optional) is a comma-separated list of hosts that should bypass the proxy. Use the **config clear-proxy** command to remove the configuration	[HTTP hostname] [HTTPport] [HTTPS hostname] [HTTPS port] [proxy- bypass-hosts] `config proxy hostA 80 hostB 80 hostC,hostD`
config proxy remove	Removes the HTTP proxy	No parameters `config proxy remove`

config ssh enable	Enables SSH access. The default port is 8022, or you can select port 22.	[SSH port]
		`config ssh enable`
		or
		`config ssh enable 22`

config ssh disable	Disables SSH access.	[SSH port] `config ssh disable`
config sslv3 allow	Permits SSLv3 protocol on HTTPS connections.	No parameters `config sslv3 allow`
config sslv3 block	Prevents SSLv3 protocol on HTTPS connections	No parameters `config sslv3 block`

config timezone	Sets the timezone to be used.	[Zone name]
		`config timezone`
		This command displays a list of acceptable timezones.
		When prompted, enter the desired timezone as shown.
		`America/Denver`

TABLE 1 config commands (continued)

Command	Description	Parameters and Examples
		Alternately, you can enter the correct timezone as part of the command. `config timezone America/Denver`

Console Command

TABLE 2 console command

Command	Description
console	Provides access to the Linux shell (command line).

Diagnostic Commands

The **diag** commands provide diagnostic tests for network connectivity.

TABLE 3 diag commands

Command	Description	Parameters and Examples
diag arp-table	Displays arp table.	No parameters. `diag arp-table`
diag dns-lookup	Performs a DNS lookup.	[IP address of the host to resolve] `diag dns-lookup 172.16.4.64`
diag interfaces	Displays network interfaces.	No parameters. `diag interfaces`
diag ping	Sends ICMP IPv4 messages to network hosts.	[IP address of the host] `diag ping 172.16.2.1`
diag routing-table	Displays routing table.	No parameters. `diag routing-table`
diag rpm-version	Displays the current version for the rpms.	No parameters. `diag rpm-version`
diag schema-version	Displays the status of database updates	No parameters. `diag schema-version`

Maintenance Commands

The **maintenance** commands manage Cloudpath database operations, including importing data, exporting data, and creating backups.

TABLE 4 maintenance commands

Command	Description	Parameters and Examples

maintenance backup create	Create a backup file (zipped tar.gz) of the Cloudpath database and SCP it to a remote server.	[IP address or hostname of the remote server] [Port number] [Remote username] [Pathto file location on the remote system]
		`maintenance backup create 1`
		`72.16.4.20 22 username/home/db/`
		`file`

maintenance backup restore mount	Restore a backup from a locally mounted drive.	No parameters. `maintenance backup restore mount`

maintenance backup restore scp	Restore a backup file from a remote server via SCP.	[IP address or hostname of the remote server] [Port number] [Remote username] [Pathto file location on the remote system]
		`maintenance backup restore scp`
		`172.16.4.20 22 username /`
		`home/db/file`

maintenance backup schedule mount	Creates a recurring backup via a locally mounted drive. Note the different syntax examples for cifs and nfs drive types
	.
		[Username for remote drive] [Path to mount] [Path within mount to backup directory] [Type of drive (cifs or nfs)] [true to merge changes into full backup, false to not merge]
		Syntax for cifs:
		`# maintenance backup schedule`
		`mount admin \\\\\\172.128.4.20\`
		`\backu p\\test servername-cifs`
		`cifs true`
		Syntax for nfs:
		`# maintenance backup schedule`
		`mount '' 172.128.4.20:/backup/`
		`servername-nfs nfs true`

maintenance backup schedule scp	Creates a recurring backup via SCP to a remote server	[IP address or hostname of the remote server] [Remote port number] [Remote username] [Path to the remote system to place the backup file] [Pattern for the cron schedule]
		`maintenance backup schedule scp`
		`172.16.4.20 22 username /`
		`path/to /file 0 0 * * 3`
		(Note the space between minute, hour, day, month schedule parameters.) For more information about cron schedule parameters, refer to Linux documentation.

maintenance backup unschedule mount	Removes the previously set up cron job for copying the system database to a remote server via mounted (CIFS) drive.	No parameters.
		`maintenance backup unschedule`
		`mount`

maintenance backup unschedule scp	Removes the previously set up cron job for copying the system database to a remote server via SCP.	No parameters.
		`maintenance backup unschedule`
		`scp`

TABLE 4 maintenance commands (continued)

Command	Description	Parameters and Examples
maintenance cannibalize	Extracts the configuration from a remote system and overwrites this system. The new system must have the same network settings as the old system, from which the database was exported. Cloudpath uses the SSH port configured in the new system to transfer the database files.	IP address or hostname of the remote server] `maintenance cannibalize 172.16.4.20`

Replication Commands

The replication commands are designed for members of the support team to use for troubleshooting. Customers would typically not be required to run these commands unless requested by the support team

NOTE
In most cases, gathering log data using the Collect Replication Logs button on the Cloudpath Admin UI is sufficient for troubleshooting purposes.

TABLE 5 replication commands

Command	Description	Parameters and Examples
replication force- cleanup	Forces the removal of the replication setup.	No parameters. `replication force-cleanup`

replication replicator	Perform an operation on the replication server.	[start][stop][restart][status][offline][online]
		`replication replicator restart`
		or
		`replication replicator status`

replication how-cluster	Displays the state of the cluster.	No parameters. `replication show-cluster`
replication show-log	Show log.	No parameters. `replication show-log`

replication trepctl	Performs an operation on a service (ex. alpha, bravo, charlie).	[FQDN of the server node][service name][status/ online/offline]
		`replication trepctl test23.company.net alpha status`
		or
		`replication trepctl test23.company.net bravo offline`

replication validate-cluster	Displays whether replication can be set up on this server. Note: This command should only be used before replication is set up.	No parameters. `replication validate-cluster`

Show Commands

The **show** commands display the current configuration.

TABLE 6 show commands

Command	Description
show config	Shows currently operating configuration.
show date	Shows current date.
show logs	Show s application and server logs.
show logs apache-access	Shows contents of Apache server access logs.
show logs apache-error	Shows contents of Apache server error logs.
show logs application	Shows contents of JBoss logs.
show logs config	Shows contents of config log.
show proxy	Shows HTTP proxy information.
show timezone	Shows currently configured timezone.

Support Commands

The **support** commands enable or disable the support tunnel.

TABLE 7 support commands

Command	Description
support activate-ui-recovery	Activates a temporary password, which allows you to log into the Cloudpath Admin UI with the *recovery* username. This command requires the *service* password. The recovery user credentials are only valid for 5 minutes.
support database login	Allows you to log into the database. The password for this command is only available to support staff.
support database reset-schema	Resets the status of the last database schema version.
support database schema-version	Lists the database schema version.
support database shrink	Depending on the size of the database, this operation may take some time to complete.
support database view-size	Displays the amount of data n the database.
support https restore certificate	Resets HTTPS to self-signed certificate.
support https restore ciphers-and-protocols	Resets https to default SSL ciphers and protocol.
support support-tunnel enable	Start support tunnel on port 8022.
support support-tunnel disable	Stop support tunnel.
support system apply-patches	Applies patches for the current version. The system will reboot.
support system benchmark	Perform CPU and disk IOtests.
support system clean-disk	The Cloudpath runs a clean-disk script on a schedule. This command allows an administrator to clean up the jboss.log manually.

System Commands

The **system** commands control system operations

NOTE
If the boot password requirement has been set, you must enter a password to complete these commands.

TABLE 8 system commands

Command	Description
system reboot	Reboots system.
system restart	Restarts the JBoss and Apache servers.
system shutdown	Shuts down the system. This command requires VMware access to boot the system.
system status	Lists the status of key services (web server,firewall,NTP,RADIUS,etc.)

Troubleshooting

Test Network Connectivity

To verify that the virtual appliance is correctly deployed, perform the following operations from the VMware server console:

1. Ping the gateway of your system.
2. Ping the URL where the Cloudpath Licensing Server is hosted.
3. Verify that the virtual appliance can resolve DNS.

How to Increase the Virtual Appliance Memory

To change the memory configuration of a virtual machine's hardware, perform the following steps:

1. From the vCenter client, power off the virtual appliance.
2. Select the VM, and right-click to Edit Settings.
3. Select the Hardware tab, then select Memory.
4. On the right window pane, increase the Memory Size.
5. Click OK.
6. Power on and reboot the VM.

How to Expand the MySQL Partition Size from the vCenter Client

To use the vCenter client to expand the size of the partition size that is used for MySQL database operations, perform the following steps:

1. With the VM running, select the VM and right-click to Edit Settings.
2. Select the Hardware tab, then select Hard disk 2.
3. On the right pane in the Disk Provisioning section, increase the Provisioned Size to the desired size and click OK.

   NOTE
   If Provisioned Size cannot be selected, try restarting the server using the **sudo halt** command.

How to Expand the MySQL Partition Size from the Console

To use the console to expand the size of the partition used for MySQL operations, enter the following commands as *root*:

1. (Optional) View the amount of free disk space available.

   ```
   [root@localhost cpn_service]# df -h
   ```

2. Signal to the OS that there has been a hardware change to the disk.

   ```
   [root@localhost cpn_service]# echo ‘1’ > /sys/class/scsi_disk/2\:0\:1\:0/device/
   rescan
   ```

3. Expand the physical volume.

   ```
   [root@localhost cpn_service]# pvresize /dev/sdb -v
   ```

4. Extend the size of the logical volume for MySQL operations. This example shows that we areextending the size of the logical volume by adding 25GB.

   ```
   [root@localhost cpn_service]# lvextend -L +25G /dev/mapper/application_vg-mysql
   ```

5. Resize the file system. This writes your changes to disk and completes the partition expansion process.

   ```
   [root@localhost cpn_service]# resize2fs /dev/mapper/application_vg-mysql
   ```

6. Verify the amount of free disk space available.

   ```
   [root@localhost cpn_service]# df -h
   ```

The output should indicate the increased partition size.

Password Recovery

How to Recover Admin UI Password

If you are locked out of the Cloudpath Admin UI, you can log in via SSH and use the **activate-uirecovery** command from the service account. This activates a temporary password for a short time period to allow you to log into the Cloudpath Admin UI and set up a new Administrator account or reset a password for an existing account.

How to Recover Service Password

If you are locked out of the service account, you can log in via SSH to a *Recovery* account.

> NOTE
> You must contact Cloudpath Networks to obtain a recovery password.

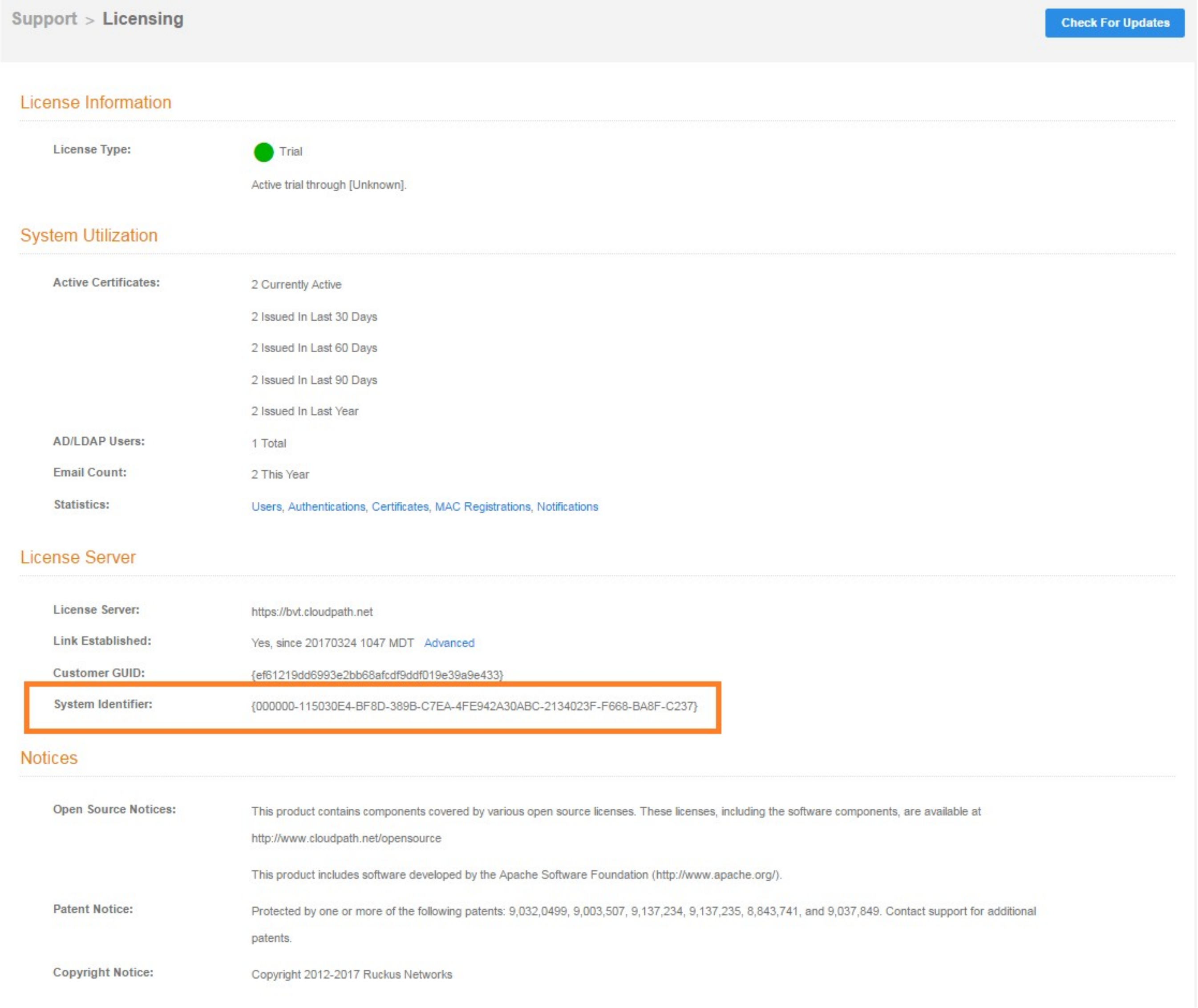
To receive a recovery password for the service account, you must provide the System Identifier and current Cloudpath version on your system.

How To Find Your System Identifier

To find your system identifier, perform the following steps:

1. Log into the Cloudpath Admin UI.
2. Go to **Support** > **Licensing**.

   The **System Identifier** is listed in the **License Server** section.



License Information

License Type: ● Trial

Active trial through [Unknown].

System Utilization

Active Certificates: 2 Currently Active

2 Issued In Last 30 Days

2 Issued In Last 60 Days

2 Issued In Last 90 Days

2 Issued In Last Year

AD/LDAP Users: 1 Total

Email Count: 2 This Year

Statistics: Users, Authentications, Certificates, MAC Registrations, Notifications

License Server

License Server: https://bvt.cloudpath.net

Link Established: Yes, since 20170324 1047 MDT Advanced

Customer GUID: {ef61219dd6993e2bb68afcdf9ddf019e39a9e433}

System Identifier: {000000-115030E4-BF8D-389B-C7EA-4FE942A30ABC-2134023F-F668-BA8F-C237}

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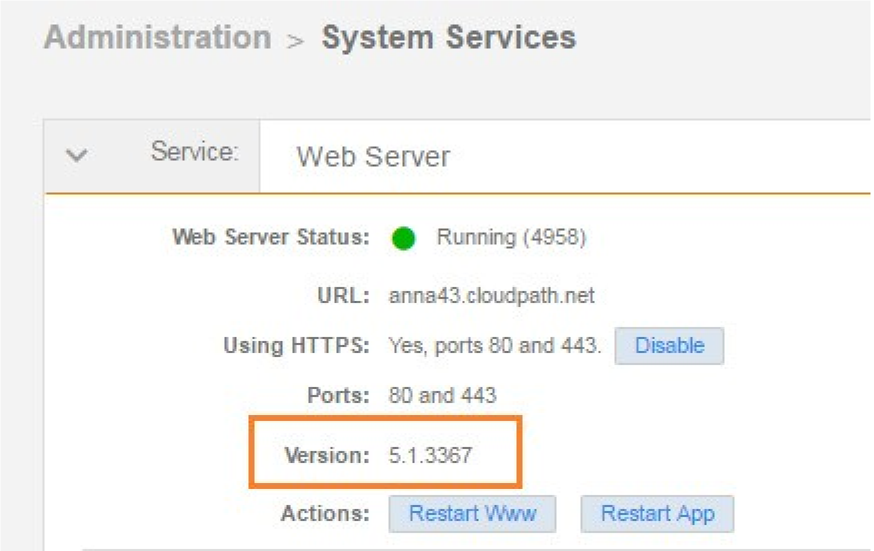
How To Find Your Current Cloudpath Version

The Cloudpath version is displayed in two locations.

1. Go to Administration > System Services > System Services > Application component.

   The current build is listed in the Version field.

   FIGURE 9 Current Cloudpath Version System Services

   Administration > System Services

   Service: Web Server

   Web Server Status: ● Running (4958)

   URL: anna43.cloudpath.net

   Using HTTPS: Yes, ports 80 and 443.

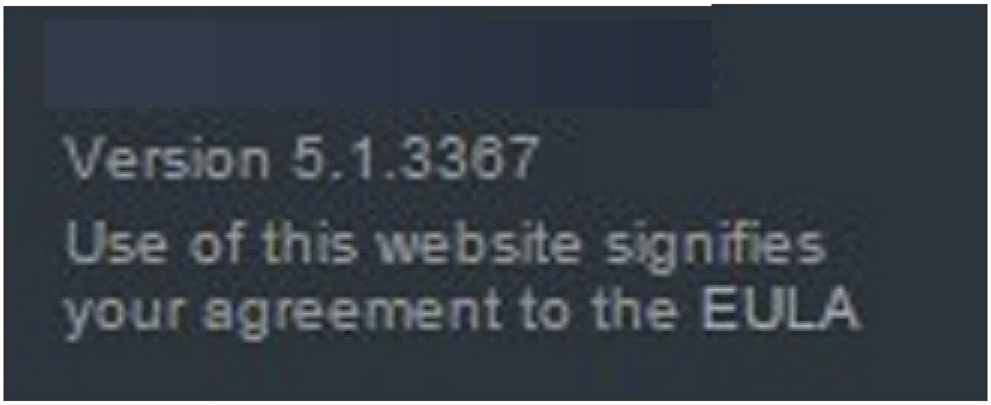
   Ports: 80 and 443

   Version: 5.1.3367

   Actions:

2. The Cloudpath version is displayed in the lower left corner of the Admin UI, and it is visible on all pages.

   FIGURE 10 Current Cloudpath Version Lower Left

   Version 5.1.3367

   Use of this website signifies your agreement to the EULA

Additional Documentation

You can find more information in the Cloudpath configuration guides, located on the left-menu Support tab of the Cloudpath Admin UI.

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