Active Directory Integration Guide

RingCentral®

Contents

Overview 3

Active Directory integration 4

Identify your scenario for proper setup sequence 5

- Scenario 1: Existing RingCentral customer without Okta 5
- Scenario 2: Existing RingCentral customer with Okta 9
- Scenario 3: Brand new RingCentral customer without Okta 12
- Scenario 4: Brand new RingCentral customer with Okta 12
- Porting old numbers from older phone system 12
- Requirement for special phone (e.g., conference room setup) 12

Configure integration between Okta and RingCentral 13

- Enable "Directory Integration" in RingCentral 13
- Adding RingCentral app in Okta 13
- Configuring RingCentral app for provisioning 13

Set up Active Directory integration with Okta 15

Set up Attribute Mappings 16

- Understanding Okta User Schema 16
- Using Profile Editor 17
- Setting up bi-direction sync for phone number 17
  - Enable feature flags through Okta Support 18
  - Configure AD as a master and write-back 18
  - Configure RingCentral as a "profile master" to enable attribute-level mastering 19
  - Configure mapping for directNumber and extension coming in from RingCentral to Okta 20
  - Configure mapping for Okta to push phone number information back to AD 21
  - Testing Bi-Directional Sync 21

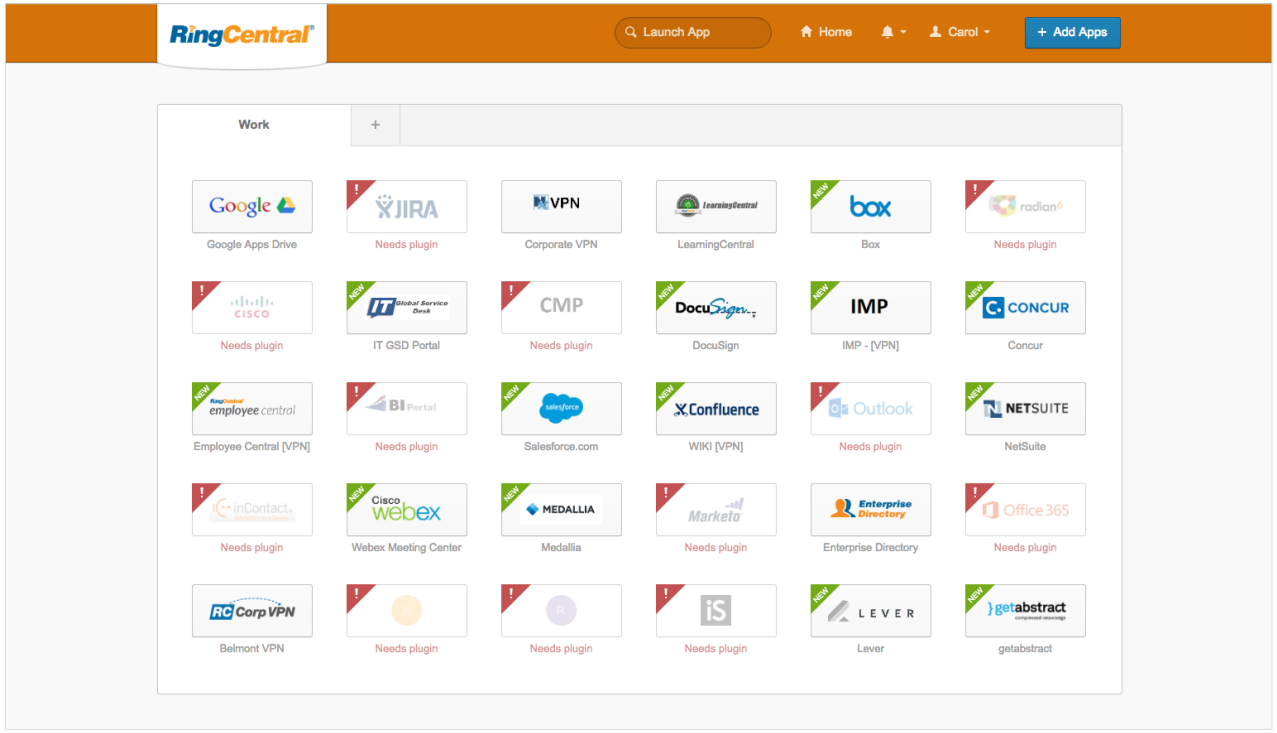
"Disable/Enable," "Delete" in Active Directory 24

Appendix 25

- RingCentral Okta org creation 25
- AD > Okta Attribute Mapping requirements for RingCentral 25
- Okta > RingCentral Attribute Mapping requirements 26
- Provisioning errors 26

Overview

RingCentral provides cloud communications solutions to more than 300,000 customers around the world. To effectively onboard new users into RingCentral, many customers leverage Active Directory (AD or LDAP), which acts as the corporate directory to drive the provisioning lifecycle. The RingCentral-Okta integration allows RingCentral to benefit from Okta's Active Directory integration to provide an AD-driven provisioning solution. With Okta, the integration with AD is simple, providing both Single Sign-on (SSO) and provisioning support for any RingCentral customers.



Active Directory integration

The key benefit in integrating Okta with your RingCentral org is to allow authentication and provisioning to be driven by your existing Active Directory infrastructure.

Specifically, the RingCentral-Okta integration allows the following:

- New user account provisioning based on Active Directory users and groups
- Single Sign-on support
- End users to log in to RingCentral using their Active Directory credentials

Okta also supports other non-AD LDAP products including Oracle, Sun, eDirectory, OpenLDAP, and OpenDJ/DS. In this document, we will focus on the AD integration. Other LDAPs follow a very similar deployment procedure.

The Active Directory integration involves the following core steps:

1. **Configure integration between Okta and RingCentral:** This allows Okta to handle authentication for your RingCentral instance and provide automated provisioning based on Active Directory that is integrated via Okta.
2. **Set up Active Directory integration with Okta:** Configure Okta Active Directory Agent with your Active Directory instance and set up provisioning rules to enable automated provisioning of your AD users into RingCentral.
3. **Set up the necessary attribute mappings:** There are custom attribute mappings between AD and Okta (phone number and extension attributes) and between Okta and RingCentral that need to be configured.

Identify your scenario for proper setup sequence

Depending on your current Okta and RingCentral setup, the initial setup sequence will vary slightly. Once configured and bootstrapped, subsequent user creation/deactivation will follow the exact same pattern. In all the scenarios, we assume the existence of AD/LDAP. In the flows below, we will use Active Directory as the example.

Scenario 1: Existing RingCentral customer without Okta

In this scenario, you have been using RingCentral for some time. Active users already exist in RingCentral and they correspond to users in your Active Directory. You are now deploying Okta for the very first time to set up provisioning (and SSO) between AD and RingCentral.

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
1			Create Okta org. This can be done from RingCentral web portal >Tools > Active Directory Integration. See Appendix for details. After submission, an Okta Org will be created along with the "RingCentral SAML" app instantiated. The rest of the app configuration will be done in step 7.
2	Now, log in to Okta org to set up Okta AD agent with Okta. Follow the instructions here on "Installing and Configuring the Active Directory Agent" followed by "Configuring Your Active Directory Settings."		

Scenario 1: Existing RingCentral customer without Okta

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
3		Once the agent is installed, complete the rest of AD setup in Okta UI. Under "Settings" of your newly created directory instance, configure import/scheduling/ confirmation as suggested. • Automate import by setting "Schedule import." • Auto-confirmation and Auto-activation should be enabled for all "match" types. By default, • "Activation email" option is turned off. Leave it as is.	
4		Complete field mapping between AD user profile and Okta user profile. This maps an AD attribute to an Okta attribute for the user. See Appendix for details.	
5	Set up AD group for automated provisioning. This refers to picking/creating the appropriate group(s) in AD to configure automated provisioning in Okta later on. It is recommended that you do this step. You could leverage the "Everyone" group in Okta for this. However, using dedicated AD group(s) will give you more fine-grained control.		

Scenario 1: Existing RingCentral customer without Okta

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
6		Manually perform a full Import of users (and groups) into Okta using the "Import Now" button under the "Import" tab. To validate, check "People" and "Groups" under "Directory" to make sure the right entries have been imported from AD.	
7		Now, to automate provisioning, we need to first complete the RingCentral app setup. Go to your RingCentral app under "Applications". Under the "Provisioning" tab, enable provisioning by authenticating with the right API user. Enable "Create Users," "Update User Attributes," and "Deactivate Users" options. Save the options.	
8		You must now configure the attribute mapping between Okta and RingCentral. See Appendix for details.	

Scenario 1: Existing RingCentral customer without Okta

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
9		To enable automated provisioning, you will now associate your RingCentral app with group(s). Automated Group membership can be mastered from an external source like AD or it can be set up through rules. See how to use groups for application assignments to assign app to group. At this point, Okta will attempt to provision all users associated with these groups into RingCentral. If user already exists, Okta will link the accounts. Otherwise, a new RingCentral account will be created.	
10		[Optionally] If SSO is needed, test login with AD credentials. Make sure Delegated Authentication is configured.	
11		Optionally] Set up SAML if SSO to access RingCentral Web App is desired.	

Scenario 2: Existing RingCentral customer with Okta

In this scenario, a RingCentral customer has already been using Okta. The assumption here is that Active Directory has already been integrated with Okta, and that the user population exists in Okta. Scheduled import is already in place and appropriate groups have been either imported from AD to drive automated provisioning. The focus here is to set up the RingCentral app and import/match all existing RingCentral users with Okta users. These should match if the RingCentral users already exist in AD, and therefore in Okta.

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
1		Review field mapping between AD user profile and Okta user profile. This maps an AD attribute to an Okta attribute for the user. While you may have already configured AD-to-Okta mapping, please look at the list in the Appendix to make sure the minimum attribute requirement for RingCentral is met. If mapping is changed, manually perform a full import of AD under the "Import" tab by clicking on "Import Now."	
2	Set up AD group for automated provisioning. This refers to picking/creating the appropriate group(s) in AD to configure automated provisioning in Okta later on. It is recommended that you do this step. You could leverage the "Everyone" group in Okta for this. However, using dedicated AD group(s) will give you more fine-grained control.		

Scenario 2: Existing RingCentral customer with Okta

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
3		Manually perform a full Import of users (and groups) into Okta using the "Import Now" button under the "Import" tab. To validate, check "People" and "Groups" under "Directory" to make sure the right entries have been imported from AD.	
4		Now, to automate provisioning, we need to first complete the RingCentral app setup. If you don't have a RingCentral app yet, create it under "Applications" tab. Now go to your RingCentral app "RingCentral SAML" under "Applications." Under the "Provisioning" tab, enable provisioning by authenticating with the right API user. Enable "Create Users," "Update User Attributes," and "Deactivate Users" options. Save the options.	

Scenario 2: Existing RingCentral customer with Okta

STEPS	ACTIVE DIRECTORY Phone/extension exists	OKTA Need newly created Okta org	RINGCENTRAL Existing RingCentral customer Users already exists
5		You must now configure the attribute mapping between Okta and RingCentral. See Appendix for details.	
6		To enable automated provisioning, you will now associate your RingCentral app with group(s). Automated Group membership can be mastered from an external source like AD or it can be set up through rules. See how to use groups for application assignments to assign app to group. At this point, Okta will attempt to provision all users associated with these groups into RingCentral. If user already exists, Okta will link the accounts. Otherwise, a new RingCentral account will be created.	
7		[Optionally] If SSO is needed, test login with AD credentials. Make sure Delegated Authentication is configured.	
8		[Optionally] Set up SAML if SSO to access RingCentral web app is desired.	

Scenario 3: Brand new RingCentral customer without Okta

This is similar to scenario 1. You will most likely have a few RingCentral users defined before rolling out to a larger population. The recommended approach is to follow the steps in scenario 1 to bootstrap those few users after you have set up Okta. Then leverage Okta to provision the rest of the users into RingCentral through automated provisioning.

Scenario 4: Brand new RingCentral customer with Okta

This is similar to scenario 2. You will most likely have a few RingCentral users defined before rolling out to a larger population. Follow the steps to set up RingCentral app and import the RingCentral users into Okta and match them. Then leverage Okta to provision the rest of the users into RingCentral through automated provisioning.

Porting old numbers from older phone system

In this scenario, a brand new RingCentral customer with Okta is porting numbers from an older phone system. This is a combination of business process and automated provisioning. Temporary numbers will be assigned during provisioning and the numbers will not get pushed to Active Directory. Numbers will be pushed to Active directory after the porting is done.

Requirement for special phone (e.g., conference room setup)

This will be a combination of business process and automated provisioning. The admin manually assigns the special phone in service web as the first step, then leverages Okta to provision the rest of the users into RingCentral through automated provisioning.

Configure integration between Okta and RingCentral

The following are details on some of the steps. Please refer to the scenarios above to establish the proper sequence.

Enable "Directory Integration" in RingCentral

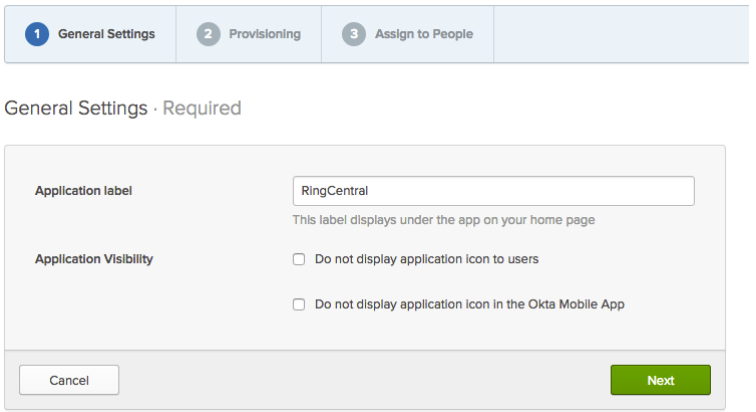
Please contact RingCentral support to enable "Directory Integration" option for the corresponding account.

Adding RingCentral app in Okta

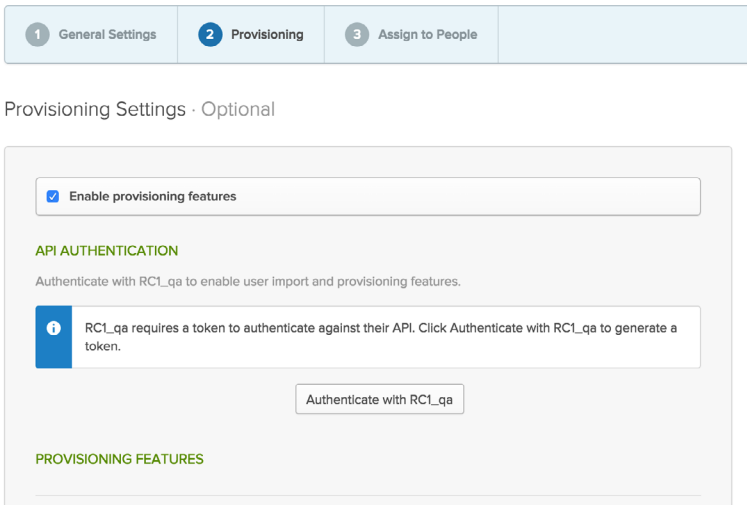
- Log in to Okta as an administrator.
- Go to Admin Console > Applications and hit "Add Application" button.
- Type in "RingCentral" in the search-for-an-application field and select "RingCentral SAML."
- You should see the following app setup wizard.

Configuring RingCentral app for provisioning

- Hit **Next** to continue after specifying the appropriate Application label. This is the label that end users will see.



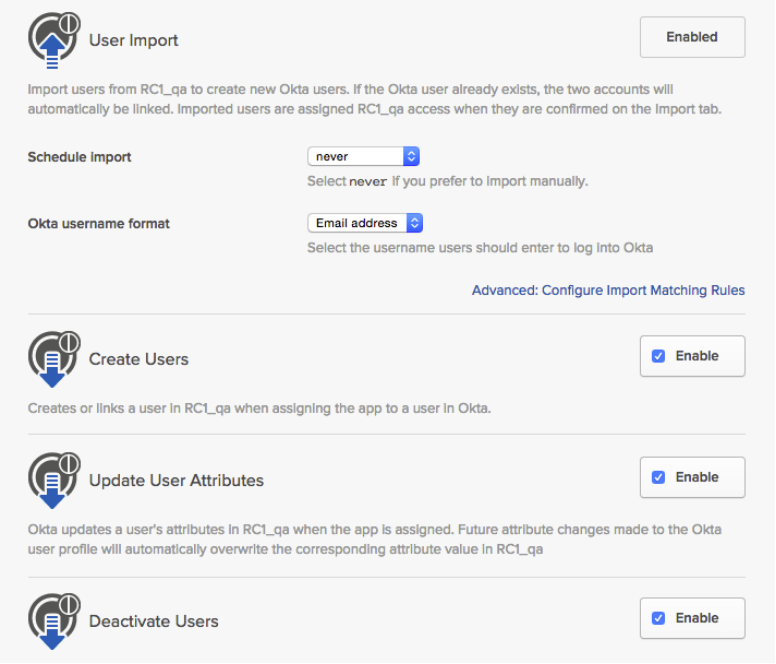
- Under "Provisioning," check the box to Enable Provisioning Features.
- Click the **Authenticate with RingCentral** button to complete API integration. The UI will take you back to RingCentral for authentication. If the valid credentials are provided, the UI will return to the Okta page with a green button indicating authentication is successful.



- Have "user import" enabled but leave scheduled import as "Never" since we are not doing periodic import from RingCentral. Import is only done for initial bootstrap.

> *Depending on which part of the setup sequence you are at, the steps below may happen at a later time after you have completed other bootstrap steps. Please refer to the scenarios above.*

- Check the boxes for "Create Users," "Update User Attributes," and "Deactivate Users."



- Hit "Next" and skip the "Assign to People" step for the time being. This will complete the app creation in Okta.

At this point, provisioning has been turned on. Now, we must complete the AD integration as well as attribute mappings before we try to provision a RingCentral account.

Set up Active Directory integration with Okta

You can skip this section if you have already set up your Active Directory.

To set up Active Directory, please follow the instructions here on "Installing and Configuring the Active Directory Agent" followed by "Configuring Your Active Directory Settings."

Once this is completed, periodic synchronization with AD will happen. You should be seeing AD users populating the Okta directory. To understand how Okta handles AD Security Groups imported from AD, go to "Importing and Using Groups in Okta."

At a high level, once groups are imported, you will associate the RingCentral app with the appropriate group to trigger auto-provisioning. Before we do that, we need to configure a few more things.

Set up Attribute Mappings

AD-driven provisioning involves several steps:

1. AD synchronizing into Okta: Okta does not directly pull attributes from AD and pushes them into RingCentral. The first step of the flow is synchronizing the user from AD into the Okta user profile. This involves the periodic sync that you have just set up. It also involves careful attribute mapping to make sure all the needed AD user attributes are synchronized into Okta correctly.

   For details on AD > Okta attribute mappings, please refer to the Appendix.

2. Okta pushing into RingCentral: This is typically caused by one of the following triggers:

   - Manual assignment
   - Group-based assignment
   - User Profile update
   - User deactivation (in which case the RingCentral user will be de-provisioned)

   Attribute Mappings between Okta and RingCentral must be configured beforehand.

   For details on Okta > RingCentral attribute mappings, please refer to the Appendix.

Understanding Okta User Schema

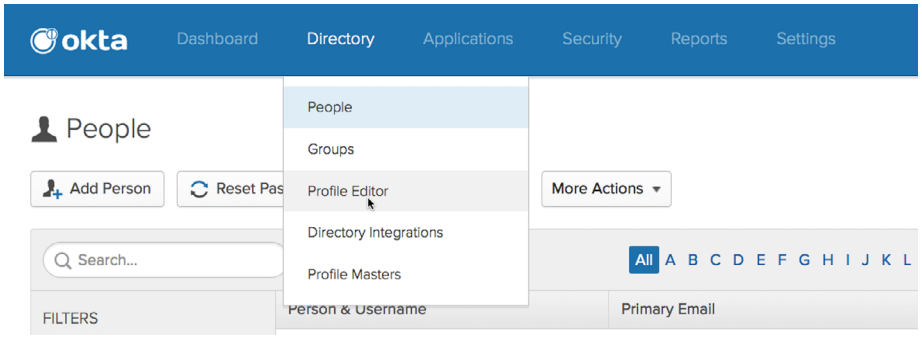
Okta core user schema contains most of the common user profile attributes. (See our Universal Directory documentation for more info: https://support.okta.com/help/articles/Knowledge_Article/About-Universal-Directory).

The phone "extension" attribute tends to be set up differently in different AD deployment. It is also an attribute that needs to be added to the Okta base schema. Follow the "Add Attribute" portion of the documentation above to add the "extension" attribute. Recommendation is to add it as a String attribute. If the extension value is nested within another attribute (e.g., telephone=+1-415-555-6789;ext.321), you can leverage the expression language to customize the mapping of the attribute.

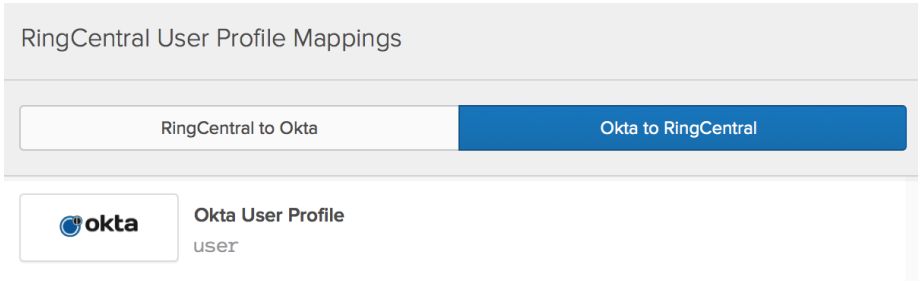
For more information on Okta's expression language, go to http://developer.okta.com/docs/api/getting_started/okta_expression_lang.html.

Using Profile Editor

To set up mappings, you need to go to "Profile Editor" in the Admin Console. Note that you need to have AD and RingCentral configured in order for them to show up under the Profile Editor.



To set up custom attributes for RingCentral select under "Apps" on the left pane the RingCentral app that you have just configured. Select "Okta to RingCentral" to configure the outbound mapping.



Setting up bi-direction sync for phone number

While Active Directory is the source of truth for most attributes in a user profile, in the case of a RingCentral deployment, the Direct Number and Extension info will be coming from RingCentral. To support this, you will need to set up bi-directional sync for these attributes so that those values can flow back to Active Directory.

Bi-directional sync is also known as "attribute-level mastering" within Okta. There are two levels of "masters" in Okta for any Okta user profile. "Profile-level master" is the broader of the two that deals with attributes as well as lifecycle of a user (when to create or deactivate). "Attribute-level master" can override profile-level master to aim at specific attribute(s) to be mastered from a different source.

In this RingCentral use case, Active Directory (or LDAP) will be the profile master while RingCentral will be configured to have attribute-level mastering for "directNumber" and "extension."

Here are the steps to set up bi-directional sync in Okta:

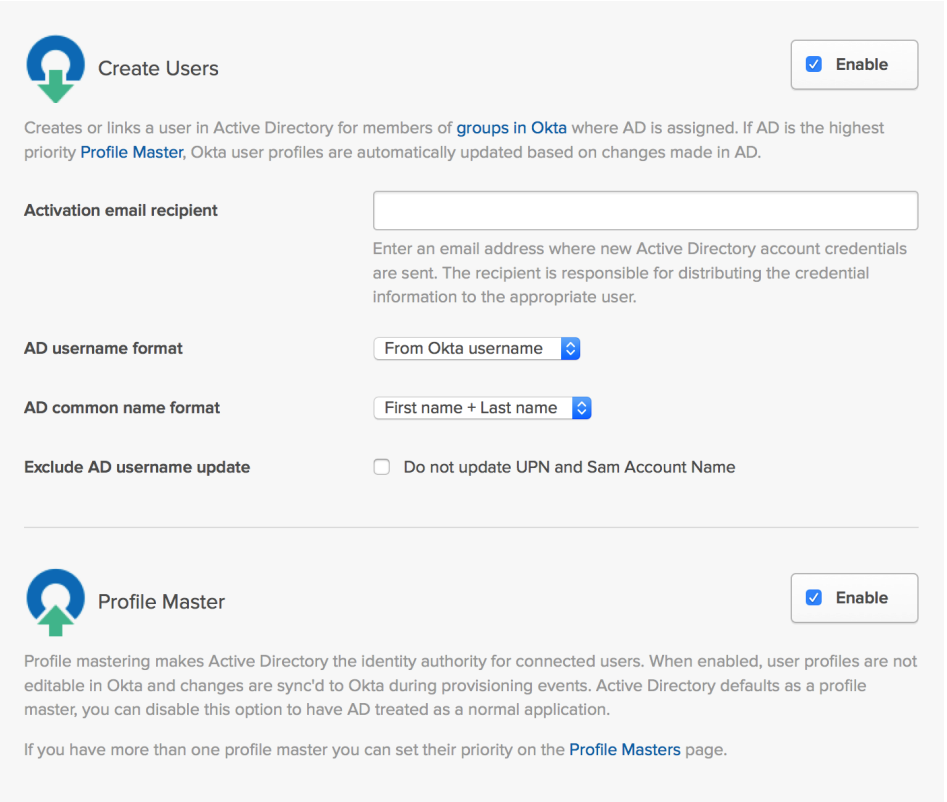
1. Enable feature flags through Okta Support.
2. Configure AD as a master and enable attribute write-back in AD settings.
3. Configure RingCentral as a "profile master" to enable attribute-level mastering.
4. Configure mapping for directNumber and extension coming in from RingCentral to Okta.
5. Configure mapping for Okta to push phone number information back to AD.
6. Testing.

Enable feature flags through Okta Support

Contact Okta Support to enable the "ALLOW_BOTH_PROFILE_MASTERING_AND_PUSH" feature flag.

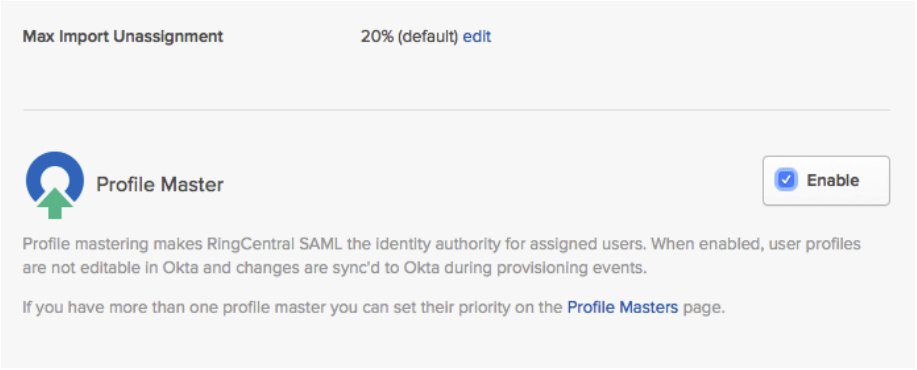
Configure AD as a master and write-back

Go to your Active Directory "Settings" tab. Enable "Create User" and "Profile Master" (which you should have done so already). The "Create User" might be misleading. We are NOT creating users in AD. However, this setting is needed to enable Okta to write back to AD. Because AD configured as a profile master, Okta will not create any users in AD.



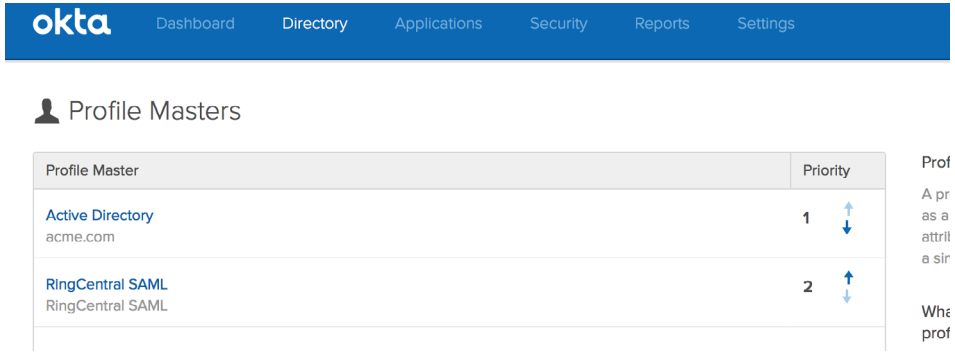
Configure RingCentral as a "profile master" to enable attribute-level mastering

Go to RingCentral application and click on the "Provisioning" tab and edit the setting for Profile Master by enabling it.



This will allow Okta to import attributes from RingCentral. Note that if the feature flag "ALLOW_BOTH_PROFILE_MASTERING_AND_PUSH" is not enabled, you will get an error when you try to do this. Make sure you have Okta Support enable the flag for you.

> *At this point, please make sure that the Profile Master Priority is set up correctly to have Active Directory as the highest priority. Go to "Directory" > "Profile Masters" from the top navigation.*

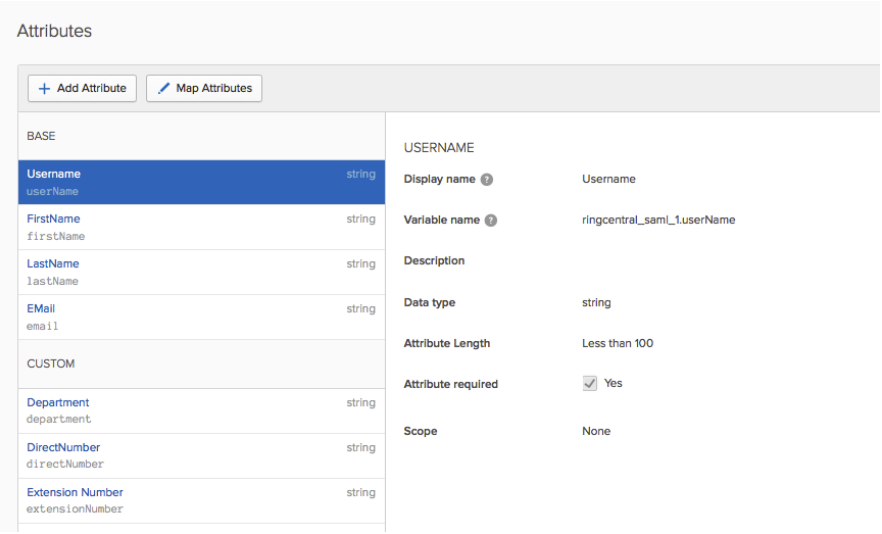


If the priority is incorrect, use the side arrows to swap the priorities so that Active Directory is the top.

Configure mapping for directNumber and extension coming in from RingCentral to Okta

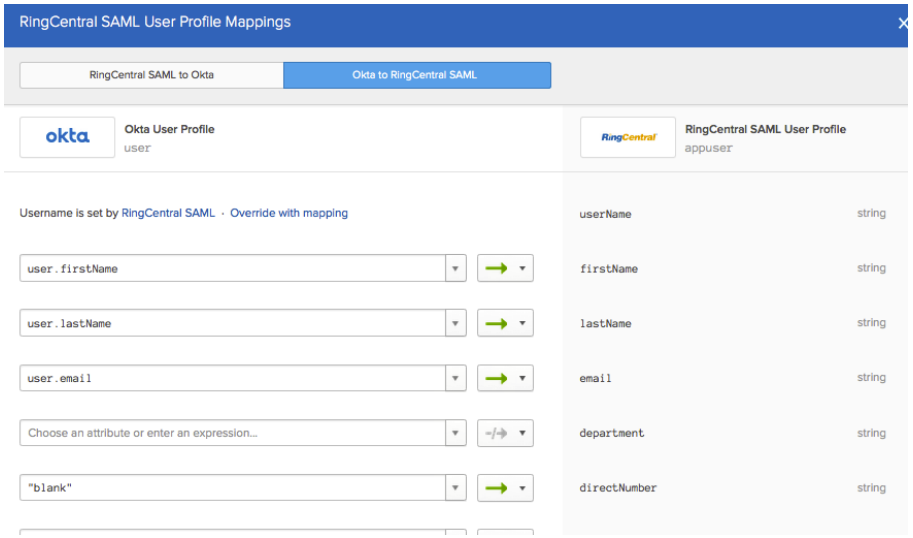
This step will set up the mapping of directNumber and extension from RingCentral to Okta.

1. Go to "Directory" > "Profile Editor" and select RingCentral app "Profile." You should see the following:



Hit "Add Attribute" if "DirectNumber" and "Extension Number" are not already on the list. Select them and hit "Save" on the pop-up. Your settings may vary if you choose to have additional attributes pushed into RingCentral from a user's Active Directory profile.

2. Now, hit "Map Attributes" to do the mapping. First, make sure "Okta to RingCentral SAML" mapping is correct by selecting "Okta to RingCentral" at the top of the pop-up. You would have used this pop-up before for the initial attribute mappings. For "directNumber" and "extensionNumber," set it to a dummy value (e.g., "blank" is shown here). The value will only be imported from RingCentral. Setting a dummy value here will avoid the need to set a value during group assignment or direct assignment. RingCentral to a user. Save Mappings and apply updates when prompted.



Configure mapping for Okta to push phone number information back to AD

Now that we have the "directNumber" and "extensionNumber" configured in the Okta profile from RingCentral, we will map it back to AD.

1. Go to "Directory">"Profile Editor" and select "Mappings" for your Active Directory instance.
2. Click on "Okta to <AD>" option at the top.
3. Unless there are other attributes that you would like to write-back to AD, everything here should be set to blank (having no mappings). Scroll down to the Active Directory attribute on the right pane where you wish to push the telephone information back to. If you have different attributes for extension number and direct number, then you will have to set them appropriately similar to the example here. We will be mapping the Okta "primaryPhone" attribute to the Active Directory "telephoneNumber" attribute in this example.

Testing Bi-Directional Sync

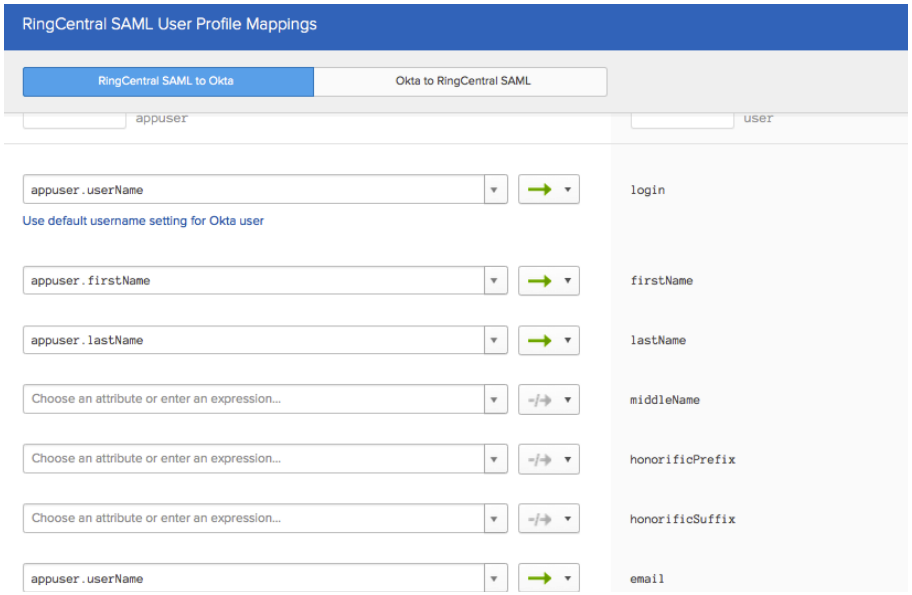
Here are the steps to "manually" test this. When in production, these should all be automated by setting up scheduled import from AD and from RingCentral. Scheduled import from AD will import user from Active Directory periodically, picking up new users. Scheduled import from RingCentral will pick up the directNumber and extensionNumber from any newly created RingCentral users whose creation is triggered by Active Directory.

To manually test this:

1. Create new user in AD.
2. Manually perform import from AD under the AD "Import" tab. Make sure the user is activated.
3. If you have configured group-based provisioning for this user and the user is a member of the group, then RingCentral provisioning (or push to RingCentral) should happen automatically at this point.
4. Verify that user has been created in RingCentral and check that a directNumber and extensionNumber has been assigned for this new user
5. Now, in Okta, go to the RingCentral application and under the "Import" tab, hit "Import Now" to trigger a manual import.
6. Now check the Okta profile of the newly created user. If the mappings are functioning properly, you should see the correct attribute values in the Okta profile that are derived from the imported RingCentral directNumber and extensionNumber.
7. At this point, the push to Active Directory should have also happened. Go to Active Directory and verify that the selected attribute(s) have been updated with the new telephone number information.

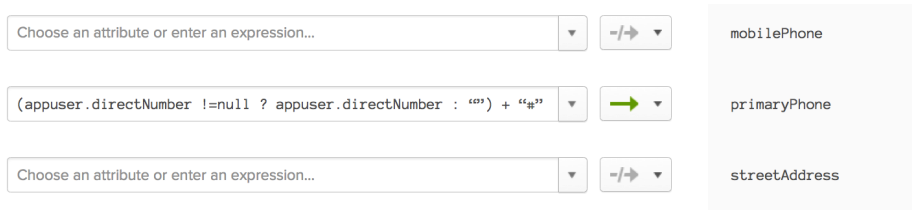
3. Now click on "Mappings" again for RingCentral app and select "RingCentral SAML to Okta" at the top to configure the import mapping from RingCentral into Okta. You should have the following configured:

   - appuser.userName > login
   - appuser.firstName > firstName
   - appuser.lastName > lastName
   - appuser.userName > email



Now, configure the mapping for "directNumber" and "extensionNumber." The incoming values from RingCentral are captured in the variables "appuser.directNumber" and "appuser.extensionNumber" respectively. You can choose to map them to individual attributes in the Okta profile. In this example, we are mapping a combined value to the "primaryPhone" attribute in the Okta profile. The format here is <directNumber>#<extensionNumber>. We use the following expression:

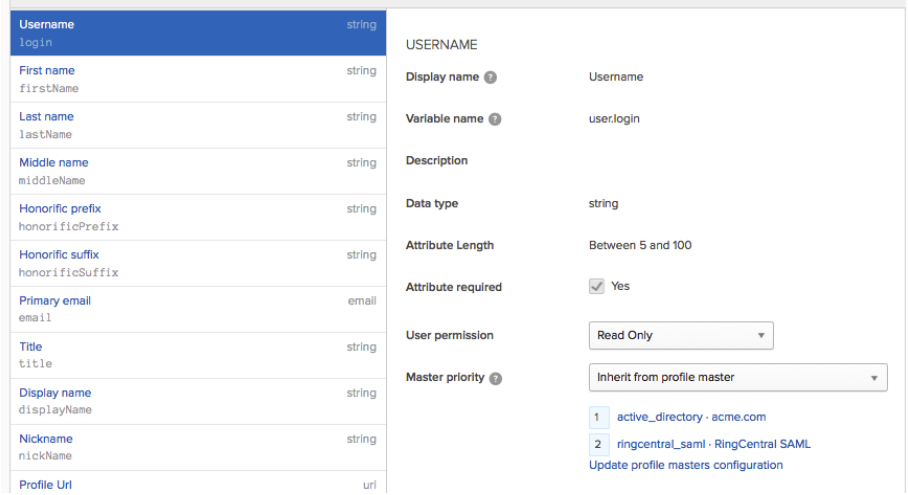
(appuser.directNumber !=null ? appuser.directNumber : "") + "#" + appuser.extensionNumber



Hit "Save Mappings" and "Apply Updates."

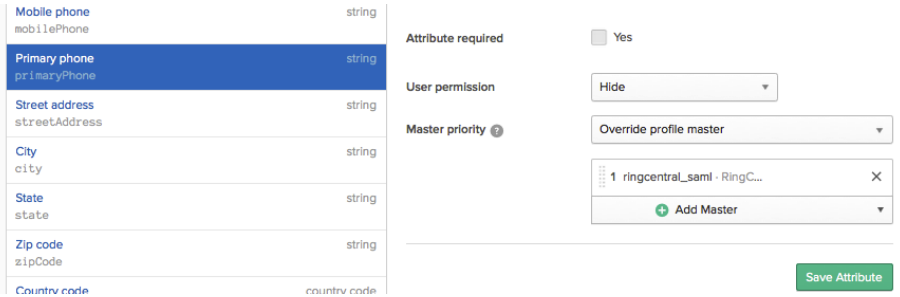
To complete the mapping, we now go to the Okta profile to make sure "primaryPhone" which is the example we had just configured is "mastered" by RingCentral. If you have mapped the attributes differently, you need to make sure the corresponding Okta profile attributes are mastered correctly by following the exact same steps below.

1. Under "Directory">"Profile Editor," click the Okta **Profile** button.
2. Most of attributes should have "Inherit from profile master" as the option under "Master Priority."



In the case of "primaryPhone," we will force RingCentral to be the master, which will trigger the bi-directional sync.

3. Scroll down to "primaryPhone" on the left pane and click on it to reveal the details on the right pane. Under the Master Priority dropdown, select "Override profile master."
4. Then click "Add Master" and select the RingCentral option.



5. Hit "Save Attribute" to complete.

"Disable/Enable," "Delete" in Active Directory

With automated provisioning enabled, if the "Deactivate Users" option is selected in Provisioning settings, Okta will deactivate the RingCentral account when a user is deactivated in AD. Since the AD synchronization relies on a scheduled import, there is potentially a small lag between the time a user is deactivated in AD and when Okta tells RingCentral to deactivate the user.

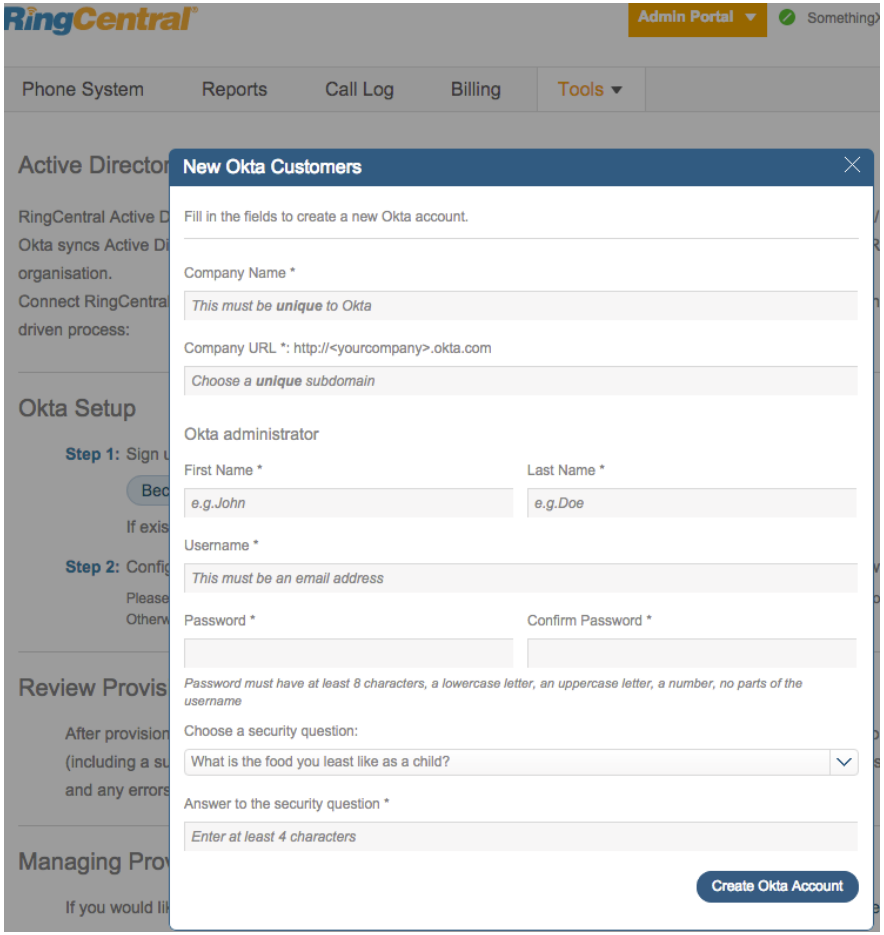
In the case where the RingCentral account needs to be deactivated immediately, you can do so in Okta directly, bypassing AD.

If you need to support Reactivation of a user where a RingCentral account is reactivated due to the same user being reactivated in AD, please first contact Okta support (888-722-7871)to have "AD Reactivation" enabled. If static group memberships were applied to the user prior to deactivation (i.e., manually assigned to local Okta groups), those group memberships will not be re-enabled upon reactivation. However, any AD security group membership will be there as the reactivated will have his/her AD group membership re-populated in Okta upon reactivation. Ideally, if you want reactivation to lead to RingCentral reactivation automatically, you will use an AD group to trigger RingCentral provisioning in your setup.

For a disabled AD user to be reactivated in Okta after being re-enabled in AD, an incremental AD import will suffice. If a deleted user in AD is recreated, Okta will require a Full AD import to capture the new user.

Appendix

RingCentral Okta org creation



AD > Okta Attribute Mapping requirements for RingCentral

The following list is the minimum set of attributes needed from AD into Okta:

ACTIVE DIRECTORY	TO > OKTA
appuser.firstName	firstName
appuser.lastName	lastName
appuser.email != null ? appuser.email : appuser.userName	email
appuser.mobilePhone	mobilePhone
appuser.streetAddress	streetAddress
appuser.city	city
appuser.state	state
appuser.postalCode	zipCode
appuser.countryCode	countryCode
appuser.department	department

Okta > RingCentral Attribute Mapping requirements

The following list is the minimum set of attributes needed from Okta into RingCentral:

OKTA	TO > RINGCENTRAL
user.firstName	firstName
user.lastName	lastName
user.email	email
user.mobilePhone	mobilePhone
user.streetAddress	street
user.city	city
user.state (Note: Make sure state in AD/Okta is in proper ISO format)	state
user.zipCode	zip
user.countryCode	country
user.department	department

Please make sure that the “state” name should be either a standard “state name” (such as California) or “state code” (such as CA).

Provisioning errors

ERROR MESSAGE	EXPLANATION
${parameterName}] is invalid. Please correct the parameter in Active Directory.	Values coming from Active Directory are not right. Please correct the values. Make sure all the values are right.
Resource for parameter [${parameterName}] is not found.	Value is missing in Active Directory. Please correct it.
JSON can not be parsed. Please check your data AD and correct it.	JSON can not be parsed. Please check your data AD and correct it.
Service Temporarily Unavailable. Please check back later.	Please check back again in sometime. Issues on Okta.
Extension already in use. Please go to RingCentral's web portal and see what extensions are available.	Extension already in use. Please check in service web if extension is available or not.
Extension number is duplicate. Please correct in Active Directory if you have an extension field. Otherwise edit it in the RingCentral Service web portal.	To bulk edit extensions in the RingCentral web portal. Please go to User Management > edit extensions and follow the instructions to edit.

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