



Red Hat 3scale API Management 2.5

Admin Portal Guide

Manage aspects related to Red Hat 3scale API Management.

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Abstract

This guide provides the information to manage Red Hat 3scale API Management.

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PREFACE

This guide will help you to use the available functions in the Admin Portal to manage your 3scale installation.

PART I. ACCOUNT SETTINGS

CHAPTER 1. ACCOUNT CONFIGURATION

After creating your account, update basic information about your company. Set your location and add your contact information.



NOTE

The account view is only visible to admins (and not to members).

1.1. ADD YOUR COMPANY INFORMATION

Once you have created your new account, click on the gear icon in the top navigation bar, and then on **Account** → **Overview** and click on *Edit* in the **Details** item. Fill in the information for your account.

The screenshot shows the Red Hat 3Scale API Management interface. The top navigation bar includes the 'Account Settings' dropdown menu. The left sidebar has the 'Overview' tab selected. The main content area displays the 'Provider API key' section, which includes a key icon and a masked key 'XXXXXXXX'. Below this is the 'Account Details' section, which has an 'Edit' button highlighted by a red box and a red arrow pointing to it. The 'Edit account' link is also visible. The 'Account Settings' dropdown menu is open in the top right corner.

The address you write here is what we use for billing purposes (if you are on a paid plan) and also what your user will see on your invoices if you're using the billing and payments modules.

1.2. SELECT YOUR PREFERRED TIME ZONE

On the same page you can also select the time zone you will use on all system displays. This setting affects analytics graphs. However, billing cycle calculations are made according to UTC time.

CHAPTER 2. RED HAT SINGLE SIGN ON FOR THE 3SCALE ADMIN PORTAL

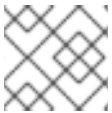
This guide provides information about how to configure and use Red Hat Single Sign On (RH SSO) with the 3scale Admin Portal.

2.1. ENABLE RH SSO OR AUTH0 MEMBER AUTHENTICATION

3scale supports single sign on (SSO) authentication for your members and admins.

The 3scale Admin Portal supports the following SSO providers, each which support a number of identity brokering and member federation options:

- [Red Hat SSO \(RH SSO\)](#)
- [Auth0](#)



NOTE

You can enable multiple SSO member authentication types

Only users that have been added to RH SSO or Auth0 will be able to access your 3scale Admin Portal through SSO. If you want to further restrict the access by either roles or user groups you should refer to the corresponding step by step tutorials on the [RH SSO](#) or [Auth0](#) support portals.

Once you have established SSO through your chosen provider, you must configure it and enable it on the 3scale Admin Portal.

2.1.1. RH SSO prerequisites

- An RH SSO instance and realm configured as described under the [Developer Portal authentication](#) section of the documentation.

2.1.2. Auth0 prerequisites

- An Auth0 Subscription and account

2.1.3. Enable RH SSO

As an administrator, perform the following steps in the 3scale admin panel to enable RH SSO or Auth0:

1. Ensure your preferred SSO provider, highlighted in the prerequisites, has been properly configured
2. Navigate to SSO Integrations in the Account Settings:
 - Click the gear icon in the upper right corner of the page
 - Navigate to **Account Settings (gear icon) > Users > SSO Integrations** and click **New SSO Integration**.
3. Select your SSO provider from the dropdown list
4. Enter the required information, provided when you configured your SSO:

- Client
- Client Secret
- Realm or Site

5. Click **Create Authentication Provider**



NOTE

If, during testing, you encounter a callback URL mismatch, add the callback URL shown in the error message to your Auth0 allowed callback URLs.

2.2. USING RH SSO WITH 3SCALE

Once you have configured SSO, members can sign on using the account credentials in connected IdPs.

Follow these steps to log in to the 3scale Admin Portal using SSO:

1. Navigate to your 3scale login page:

`https://<organization>-admin.3scale.net/p/login`

2. Authorize 3scale with your IdP
3. If necessary, complete sign up by entering any needed information

Once you successfully sign up, you will have a member account under the API provider organization, and you will be automatically logged in.

2.3. REDIRECTING A 3SCALE LOGIN TO A RH SSO OPTION

These steps will show the 3scale API Management administrator how to redirect to an Identity Provider (IdP) login screen (RH SSO). Complete these steps and your 3scale account will be accessible through an optional single sign-on (SSO) login page.

2.3.1. Prerequisites

- 3scale 2.5
- An RH SSO instance and realm configured as described under the [Configuring RH SSO](#) section of the *Developer Portal authentication* documentation.



NOTE

Before you can integrate RH SSO with 3scale, you must have a working RH SSO instance. Refer to the RH SSO documentation for installation instructions: [Installing RH-SSO 7.2](#).

2.3.2. Required steps

1. Access and follow the instructions for setting up RH SSO under the [Red Hat Single Sign On for the 3scale Admin Portal](#) section of the 3scale documentation.

2. Provide your RH SSO administrator with your 3scale URL. The URL will form the basis for a redirect within RH SSO for your secure logon.

```
https://<organization>-admin.3scale.net/auth/<system_name>/bounce
```

3. The *system_name* assumes RH SSO has been used as the SSO provider in your 3scale instance with an *id* of *rhssso*:

```
https://<organization>-admin.3scale.net/auth/rhssso/bounce
```

4. To get the *id* in your 3scale instance navigate to:

```
https://<organization>.3scale.net/p/admin/account/authentication_providers/<ID>
```

5. You will see:

- The Callback URL

```
https://<organization>.3scale.net/auth/keycloak_0123456aaaaa/callback
```

- Where *keycloak_0123456aaaaa* is the system name and is used in the bounce URL.

6. Navigate to the new RH SSO URL and securely log in to your 3scale account.

CHAPTER 3. INVITING USERS AND MANAGING RIGHTS

In order to share the workload of administering your APIs, you may wish to invite team members from your organization to access the 3scale Admin Portal. In this tutorial, you'll see how to that and what types of roles and rights are available. **Note:** The 'invite' feature is only available for Pro and Enterprise customers.

The instructions below describe how to give access rights to the 3scale Admin Portal. to one or more team members.

3.1. NAVIGATE TO USER ADMINISTRATION

On the Admin Portal top navigation bar, click on the gear icon. Then, navigate to **Users > Listing** from the left side menu.

The screenshot shows the 3scale Admin Portal interface. The top navigation bar includes 'RED HAT 3SCALE API MANAGEMENT', 'Account Settings', and a gear icon. The left sidebar menu has 'Users' and 'Listing' highlighted with red boxes and numbered 2 and 3. The main content area displays a table of users.

Name	Email	Role	Permission Groups	
admin	admin@3scale.poc-sd.staging.3sca.net	admin	Unlimited Access	Invite a New User Personal Details
daria@redhat.com	daria@redhat.com	member	Developer Portal, Billing, Selected APIs	Delete Edit

When we refer to users, we're talking about members of your team. The 3scale Admin Portal has two types of users:

- **Admins:** Which have full access to all areas and services, and can invite other members (if your plan allows it).
- **Members:** Which have limited access to areas of the product (e.g. Analytics, Developer Portal) and, if you're an enterprise customer, also to services.

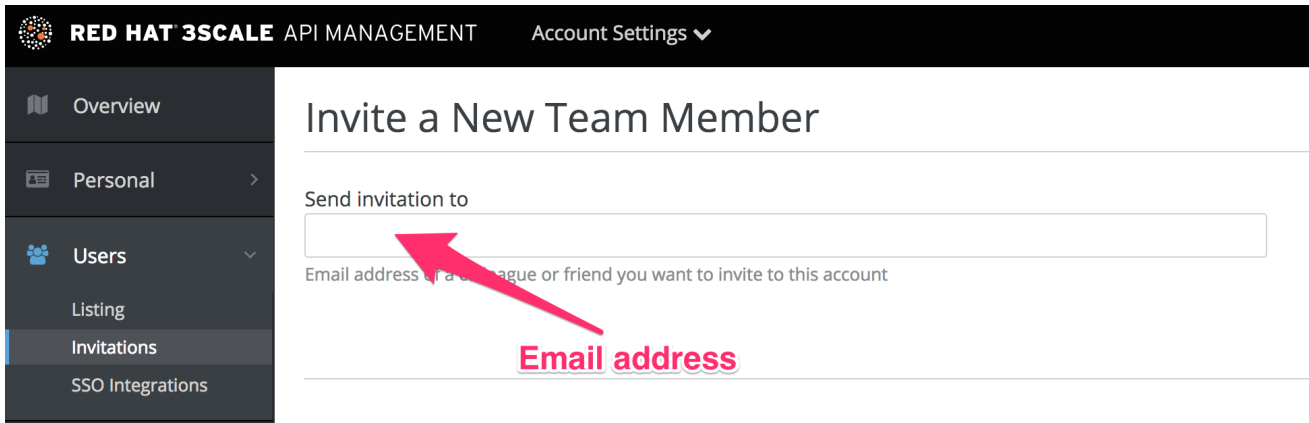
From the menu, click on the *Invite user* link.

The screenshot shows the 3scale Admin Portal interface. The left sidebar menu has 'Users' and 'Listing' highlighted. The main content area displays a table of users. Red arrows point to the 'admin' user row and the 'Invite a New User' link.

Name	Email	Role	Permission Groups	
admin	admin@3scale.poc-sd.staging.3sca.net	admin	Unlimited Access	Invite a New User Personal Details
daria@redhat.com	daria@redhat.com	member	Developer Portal, Billing, Selected APIs	Delete Edit

3.2. SEND AN INVITATION

You can find invitations in **Users > Invitations**



Enter the email address of the person you want to invite and click send. An invitation email will be sent to the address you entered. If the email doesn't arrive, make sure it didn't get marked as spam.

3.3. ACCEPT THE INVITATION

Your new administrator or member must click the link in the invitation email and complete the form to complete the process. Once the form is submitted, their account will be activated.

3.4. GIVE NEW USERS RIGHTS

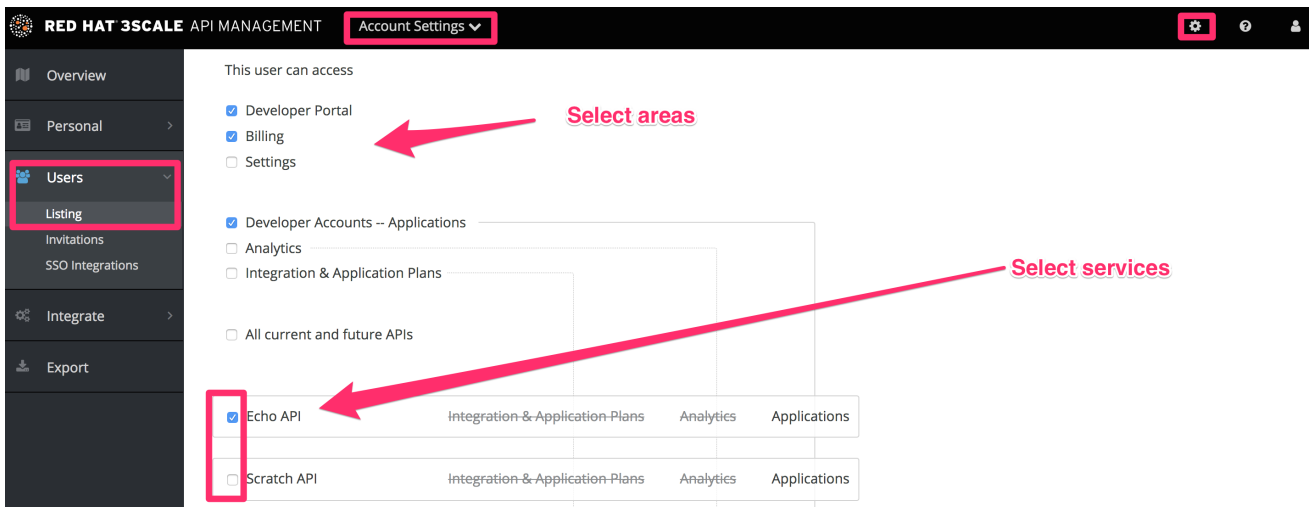
There are two main type of rights you can give to members of your team:

- **By area:** Such as analytics, billing, or developer administration.
- **By service:** Choose which services to give access to members amongst all of your services.
Note: This feature is only available for enterprise customers.

To give a new user rights, edit the new user by selecting them from the user menu and clicking on *Edit*.

Changing their rights to "admin" will give them full access to control the Admin Portal.

Changing their rights to "member" will give you the option of choosing which areas and services the team member has access to.



Giving access to certain areas of the Admin Portal will give members access only to the equivalent API:

- **Developer accounts – Applications:** Gives access to the Account management API

- Analytics: Gives access to the Analytics API
- Billing: Gives access to the Billing API

CHAPTER 4. NOTIFICATIONS

Notifications are sent to admins and members to make it easier to parse developer activity (new account

4.1. TYPES OF NOTIFICATIONS

There are different types of notifications:

- Accounts
- Billing
- Applications
- Service subscriptions
- Usage alerts

4.2. VISIBILITY

Admin users have access to all notifications.

Member users have access only to notifications of the areas they have been given access to. For example, a member will only have access to notifications related to billing if they have access to the billing section.

For **enterprise accounts**, member users will only have access to notifications regarding activity of the services they have been granted access to.

4.3. SUBSCRIBING TO NOTIFICATIONS BY EMAIL

Subscriptions are personal and can only be modified by the person receiving those notifications. To edit your subscriptions:

1. Navigate to **Account Settings (gear icon) > Personal > Notification Preferences**
2. Check the notifications you would like to receive.

The screenshot shows the 'Account Settings' page in the Red Hat 3scale Admin Portal. The left sidebar contains navigation options: Overview, Personal (selected), Users, Integrate, and Export. The main content area is titled 'Notification Preferences' and includes a description: 'Events originate from interactions with the 3scale interface & the 3scale API. They can be triggered by developers, you, your team & 3scale. You will only receive API-related notifications for those APIs that you have access to.' Below this, under the heading 'ACCOUNTS', there is a list of notification types with checkboxes: 'New account created', 'Account plan change request', 'Account deleted', and 'New messages'. All checkboxes are checked. Each notification type has a brief description of when it is sent.

Notification Type	Description
<input checked="" type="checkbox"/> New account created	Sent when a developer account is created.
<input checked="" type="checkbox"/> Account plan change request	Sent when a developer requests to change to a different account plan.
<input checked="" type="checkbox"/> Account deleted	Sent when an account is deleted.
<input checked="" type="checkbox"/> New messages	Sent when a developer sends you a new message.

4.4. WEB NOTIFICATIONS

In addition to email notifications, these can be found in your Dashboard:

The screenshot shows the Red Hat 3Scale API Management Dashboard. The top navigation bar includes the logo, 'RED HAT 3SCALE API MANAGEMENT', and a 'Dashboard' dropdown menu. The main content area is divided into several sections:

- AUDIENCE**: Shows '0 Signups last 30 days' and '-100% vs. previous 30 days'.
- Potential Upgrades**: A section with a title and a description: 'Accounts that hit their Usage Limits in the last 30 days'. Below the title, it says: 'In order to show Potential Upgrades, add 1 or more usage limits to your Application Plans.' Further down, it states: 'Furthermore, [Web Alerts for Admins of this Account of 100% \(and up\)](#) should be enabled for service(s) with usage limits.'
- Notifications**: A list of events under the heading 'TODAY', including:
 - metro from Metro signed up
 - Metro's App created on Echo API
 - tester from tester inc signed up
 - tester inc's App created on Echo API
 - barba papa's App created on Echo API
 - barbapapa from barba papa signed up
 - Feasible Inc. has subscribed to your service Echo API
 - feasible from Feasible Inc. signed up
 - Feasible Inc.'s App created on Echo API

At the bottom left, there is a filter dropdown menu labeled 'All APIs'.

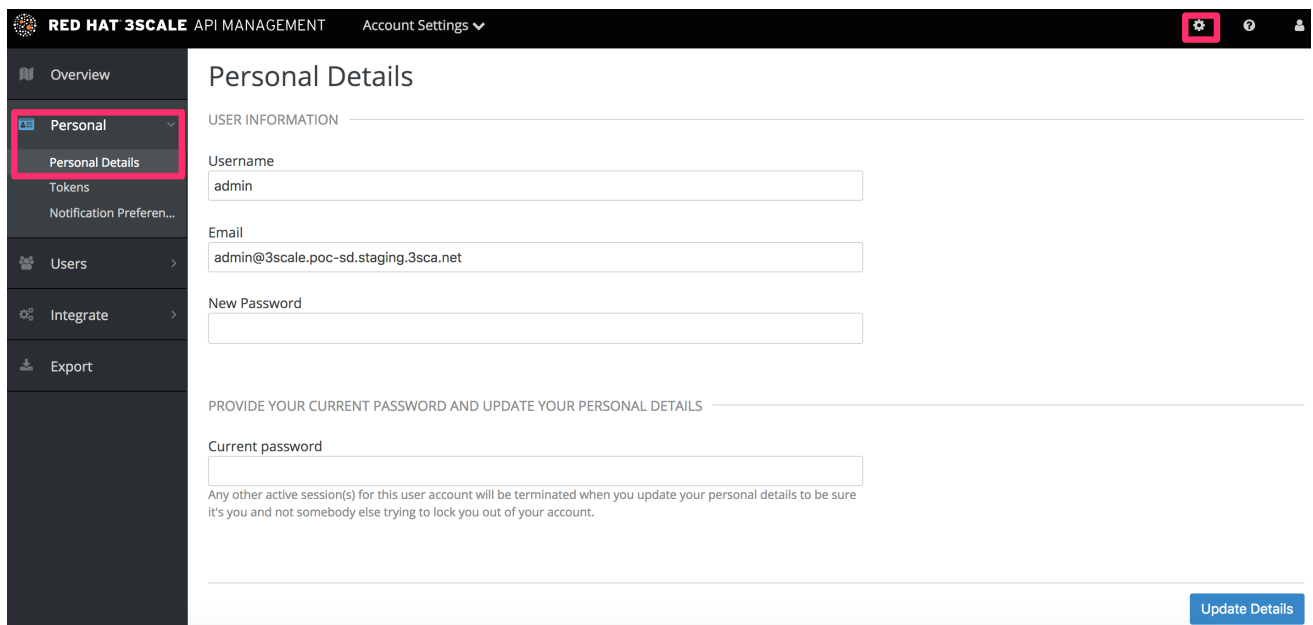
CHAPTER 5. PERSONAL SETTINGS

In Personal settings you can edit your preferences as a team member. If you're an admin, you will also be able to edit the account preferences. For that, check out the [account configuration](#) tutorial.

5.1. TYPES OF SETTINGS

There are 3 types of settings you can edit from here

- **Personal Details:** Name, email, password, etc.
- **Tokens:** Create access tokens to authenticate against the 3scale APIs – Billing, Account Management, and Analytics – and try them out using our ActiveDocs (interactive documentation). Learn more about [3scale tokens](#).
- **Notification Preferences:** Select which notifications you'd like to receive. Note: If you're an enterprise customer, and if you are a member, these are filtered by area and service. This means you'll only be able to subscribe to notifications re: areas and services you've been given access to. More on [notification preferences here](#).



The screenshot shows the 'Personal Details' page in the Red Hat 3scale API Management Admin Portal. The page is titled 'Personal Details' and is part of the 'Account Settings' section. The left sidebar contains a navigation menu with 'Personal' highlighted in red. The main content area is divided into two sections: 'USER INFORMATION' and 'PROVIDE YOUR CURRENT PASSWORD AND UPDATE YOUR PERSONAL DETAILS'. The 'USER INFORMATION' section contains three input fields: 'Username' (with the value 'admin'), 'Email' (with the value 'admin@3scale.poc-sd.staging.3sca.net'), and 'New Password'. The 'PROVIDE YOUR CURRENT PASSWORD AND UPDATE YOUR PERSONAL DETAILS' section contains a 'Current password' input field. Below the input fields, there is a warning message: 'Any other active session(s) for this user account will be terminated when you update your personal details to be sure it's you and not somebody else trying to lock you out of your account.' At the bottom right of the page, there is a blue 'Update Details' button.

CHAPTER 6. TOKENS

This tutorial contains information about 3scale tokens: what are they, how they work, and how to create them.

3scale has two types of tokens: **Access tokens** (created by the user) and **Service tokens** (automatically created when you create a new service in 3scale).

6.1. ACCESS TOKENS

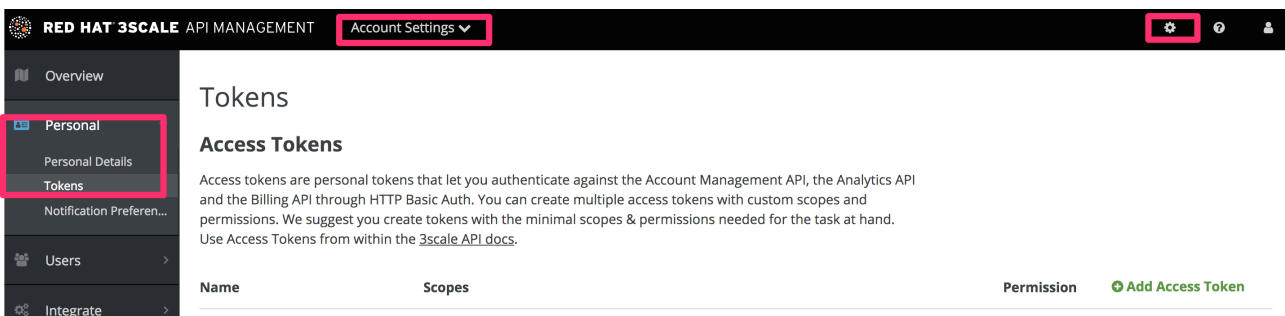
Access tokens allow API provider admins and members to authenticate against the 3scale APIs – Billing, Account management, and Analytics – and try them out using our ActiveDocs (interactive documentation).

An access token may provide either read and write access, or read only.

An important thing to take into account is how access tokens work, which is according to the member's rights. Admins can create tokens to authenticate against all three 3scale APIs. Members will be limited by their permissions to access the different parts of the Admin Portal. For example, if a member doesn't have access to the Billing area, they won't be able to create a token to authenticate against the Billing API.

6.2. CREATING ACCESS TOKENS

Access tokens can be created on the tokens page. To access the tokens page, click on the gear icon in the upper right corner of the page, and then navigate to **Personal > Tokens**



The screenshot shows the Red Hat 3scale API Management interface. The top navigation bar includes the logo, 'RED HAT 3SCALE API MANAGEMENT', an 'Account Settings' dropdown menu, and a gear icon for settings. The left sidebar contains a menu with 'Overview', 'Personal', 'Personal Details', 'Tokens', 'Notification Preferen...', 'Users', and 'Integrate'. The 'Personal' menu item is highlighted. The main content area is titled 'Tokens' and 'Access Tokens'. It contains a paragraph explaining that access tokens are personal tokens used for authentication against the Account Management API, Analytics API, and Billing API. Below the text is a table with columns for 'Name', 'Scopes', and 'Permission'. An 'Add Access Token' button is located in the top right corner of the table area.

Click on **Add Access Token** and choose a name, scope, and permissions.

RED HAT 3SCALE API MANAGEMENT Account Settings ▾

Overview

Personal ▾

Personal Details

Tokens

Notification Preferen...

Users >

Integrate >

Export

New Access Token

Name

Scopes

Billing API

Account Management API

Analytics API

Permission

Read Only ▾

Note that if you are a member, you might not see all the APIs – just the ones you’ve been given access to by the admin of your account.

You can create as many access tokens as you need, but take into account that for security reasons, they won’t be stored on 3scale. When you create a new token, you’ll be alerted to save the token so you can then use it to make requests to the 3scale API. If you lose a token, we recommend that you delete it – which will disable it and render it invalid – then create a new one.

6.3. USING ACCESS TOKENS

When using your access token to make calls to the 3scale APIs the results will be filtered by the services you have access to.

For example, when deploying APIcast self-managed, you’ll need an access token so your APIcast API gateway can pull the configuration of the service using the Account Management API.

The way it works is if your organization has set up three services on 3scale, and as a member, you have access to Service 1, but not 2 and 3, and you also have access to the Account Management API, when you create a token and make a request to the Account Management API you will only get the applications which are using Service 1.

Following the same example, if you have access to the Account Management API, but access to zero services, when making a call, you’ll get "access denied" error.

6.3.1. Service tokens

Service tokens are used to authenticate against 3scale Service Management API. Service tokens are generated automatically when a new service is created in 3scale, and are unique per service. They are shared among the users of the 3scale account. You can find the service tokens for the services that the user has access to in the Admin Portal’s Dashboard: **Account Settings (gear icon) > Personal > Tokens**

RED HAT 3SCALE API MANAGEMENT
Account Settings ▾
⚙️ ⓘ 👤

Overview

Personal ▾

Personal Details

Tokens

Notification Preferen...

Users >

Integrate >

Export

Full RW Billing API, Account Management API, and Analytics API Read & Write ✎ Edit

Service Tokens

Service tokens let you authenticate against the Service Management API. Service tokens are auto generated, unique per service and shared between the users of this account. Use Service Tokens from within the [3scale API docs](#).

Service name	Scope	Permission	Token
Echo API	Service management API	Read & Write	xxxxxxx
Scratch API	Service management API	Read & Write	xxxxxxx
camel-rest-sql	Service management API	Read & Write	xxxxxxx
well that's a nice name	Service management API	Read & Write	xxxxxxx
Test	Service management API	Read & Write	xxxxxxx

PART II. MULTITENANCY

CHAPTER 7. MULTITENANCY

Red Hat 3scale API Management allows multiple independent instances of 3scale accounts to exist on a single on-premises deployment. Accounts operate independently from one another, and cannot share information among themselves.

7.1. MASTER ADMIN PORTAL

A master administrator monitors and manages the 3scale accounts through the Master Admin Portal and API endpoints. Similar to the standard [Admin Portal](#), the Master Admin Portal contains information about all accounts in a deployment and allows for administration of accounts and users through a unique account page.

For details on account administrator operations, refer to the [Accounts](#) guide.

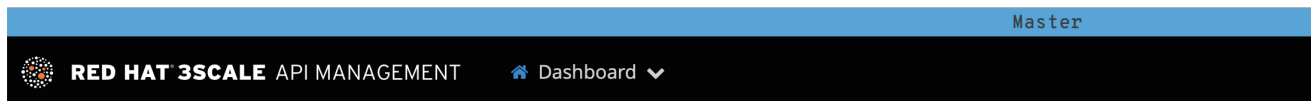
7.1.1. Accessing the Master Admin Portal

To access the Master Admin Portal, you need to use the credentials and URL specifically defined for the Master Admin Portal during the [on-premises installation](#) process.

The Master Admin Portal URL consists of the **MASTER_NAME** (*master* by default in the template) and the **WILDCARD_DOMAIN**:

```
<MASTER_NAME>.<WILDCARD_DOMAIN>
```

You can identify the Master Admin Portal by the **Master** flag.



7.1.2. Adding an account through the Master Admin Portal

To add an account through the Master Admin Portal, follow these steps:

1. Log in to the [Master Admin Portal](#).
2. Navigate to **Accounts**.
3. Click **Create**.
4. Indicate the required information for the user:
 - a. Username
 - b. Email
 - c. Password
 - d. Password confirmation
5. Indicate the required information for the organization:
 - a. Organization/Group Name

6. Click **Create**.

After these steps, Red Hat 3scale creates an account subdomain for your account based on the **Organization/Group Name** field. Additionally, you can see a page containing the details of the account you created.

7.2. MANAGING ACCOUNTS

You can manage accounts through the Master Admin Portal or through API calls.

7.2.1. Managing accounts through the Master Admin Portal

To manage the accounts through the Master Admin Portal, you need to do the following:

1. Log in to the [Master Admin Portal](#).
2. Navigate to the **Accounts** page.
3. Select the group or organization you want to manage.

From the **Accounts** page, you can perform administrative actions, such as impersonating an admin account or suspending an account. You can also manage the following account attributes:

- Applications
- Users
- Invitations
- Group Memberships
- Organization/Group Name

7.2.2. Managing accounts through API calls

You can manage accounts through the Master Admin API calls. For information on these calls, refer to the **Master API** section, by clicking the question mark (?) icon located in the upper-right corner of the Master Admin Portal, and then choosing **3scale API Docs**.

Master API

Trigger Billing by Account

`/master/api/providers/{provider_id}/accounts/{account_id}/billing_jobs.xml` **POST**

Trigger Billing

`/master/api/providers/{provider_id}/billing_jobs.xml` **POST**

Tenant Create

`/master/api/providers.xml` **POST**

Tenant Update

`/master/api/providers/{id}.xml` **PUT**

Tenant Delete

`/master/api/providers/{id}.xml` **DELETE**

7.3. UNDERSTANDING MULTITENANCY SUBDOMAINS

As a result of multiple accounts existing under the same OpenShift cluster domain, individual account names prepend the OpenShift cluster domain name as subdomains. For example, the route for an account named **user** on a cluster with a domain of **example.com** appears as:

```
user.example.com
```

A standard multitenant deployment will include:

- A master admin user
- A master admin portal route, defined by the **MASTER_NAME** parameter:

```
<MASTER_NAME>.<WILDCARD_DOMAIN>
```

- An account admin user
- An account admin portal route, defined by the **TENANT_NAME** parameter:

```
<TENANT_NAME>-admin.<WILDCARD_DOMAIN>
```

- A developer portal route for the account:

```
<TENANT_NAME>.<WILDCARD_DOMAIN>
```

- Routes for the production and staging built-in APIcast gateway:

```
<API_NAME>-<TENANT_NAME>-apicast-staging.<WILDCARD_DOMAIN>
<API_NAME>-<TENANT_NAME>-apicast-production.<WILDCARD_DOMAIN>
```

This example illustrates the output users and routes of a standard multitenant deployment of 3scale:

```
----
--> Deploying template "3scale-project/3scale-api-management" for "amp.yml" to project
project
```

```
3scale API Management
-----
3scale API Management main system
```

```

Login on https://user-admin.3scale-project.example.com as admin/xXxYyz123
...
* With parameters:
* ADMIN_PASSWORD=xXxYyz123 # generated
* ADMIN_USERNAME=admin
* TENANT_NAME=user
...
* MASTER_NAME=master
* MASTER_USER=master
* MASTER_PASSWORD=xXxYyz123 # generated
...
--> Success
Access your application via route 'user-admin.3scale-project.example.com'
```

```

Access your application via route 'master-admin.3scale-project.example.com'
Access your application via route 'backend-user.3scale-project.example.com'
Access your application via route 'user.3scale-project.example.com'
Access your application via route 'api-user-apicast-staging.3scale-project.example.com'
Access your application via route 'api-user-apicast-production.3scale-project.example.com'
Access your application via route 'apicast-wildcard.3scale-project.example.com'

```

```

...
----

```

Additional accounts [added by the master admin](#) will be assigned a subdomain based on their names.

7.4. DELETING TENANT ACCOUNTS

7.4.1. Deleting an account via the Admin Portal

With this procedure, accounts are scheduled for deletion and will be deleted after 15 days. During the time it is scheduled for deletion:

- Users cannot log in to the account.
- The account can not be edited; but the master can resume the account to the *approved* status.

Additionally, the domains of the tenant (admin domain and developer portal) are not available, similar to a real deletion.

Prerequisites:

- Log in to your [master admin account](#).

Procedure

1. To see the list of accounts, navigate to **Accounts**.
2. Click the account you want to delete.
3. Click **Edit**, next to the account's name.
4. In the accounts details page, click the **Delete** icon.
5. Confirm the deletion.

7.4.2. Deleting a tenant via the console

If you want to delete the account with an immediate effect, you can do so via the console:

1. Open the console with these commands:

```

oc rsh -c system-master "$(oc get pods --selector deploymentconfig=system-app -o name)"
bundle exec rails console

```

2. Delete immediately with these lines:

```
tenant = Account.find(PROVIDER_ID)
tenant.schedule_for_deletion!
DeleteAccountHierarchyWorker.perform_later(tenant)
```

This is how each line works:

- Line 1: finds the account and saves it in the variable **tenant**.
- Line 2: schedules the account for deletion. This is only necessary if you have not scheduled the deletion through the Admin Portal.
- Line 3: deletes the tenant in a background process only if you have scheduled the account for deletion or it is suspended. Deletion will not proceed if the account is in *approved* status.

7.5. RESUMING TENANT ACCOUNTS

Resuming a tenant account implies restoring an account scheduled for deletion. You can resume a tenant account up to 15 days after you have scheduled it for deletion.

After resuming an account:

- All previous apps exist.
- All historical stats remain.
- All tokens that should be valid are valid again.
- Apps start authorizing again.

Prerequisites:

- Log in to your master admin account.

Procedure

1. To see the list of accounts, navigate to **Accounts**.
2. Click the account you want to delete.
3. Under the account details, click **Resume**.
4. Click **Ok** to confirm you want to resume the account.

PART III. SERVICE DISCOVERY

This guide will help you to import services from OpenShift.

CHAPTER 8. ABOUT SERVICE DISCOVERY

Service Discovery allows adding APIs for management by recognizing the [discoverable](#) running services in the OpenShift cluster. It has the following features:

- It uses the cluster API to query for services properly annotated for discovery.
- It configures 3scale to hit the service using an internal endpoint inside the cluster.
- It imports Open API Specification (Swagger) up to version 2.0 as 3scale Active Docs.
- It allows you to update the API integration and the Open API Specification at any time (resynchronize with the cluster).
- It supports OpenShift and Red Hat SSO authorization flows.
- It works with Fuse from version 7.2.

Additional notes

- For on premise installations, the API provider may have its own namespace and services.
- With Fuse, services will be deployed to Fuse production namespace.

CHAPTER 9. USING SERVICE DISCOVERY

Here you see the instructions about how to create or discover new services, and to update or refresh existing ones.

Prerequisites

You have created `<3scale-project>`.

Discovering services

This section contains instructions to discover a new API service corresponding to an Open API Specification (OAS, also known as Swagger specification), if applicable; which is discovered from the cluster, for management with 3scale.

1. Log in to 3scale Admin Portal.
2. From the Admin Portal's Dashboard, click **New API**.
3. Choose **Import from OpenShift**.
4. In the **Namespace** field, specify the OpenShift project.
5. In the **Name** field, type the the name of an OpenShift service within that given namespace.
6. Click **Create Service**.
7. Wait for the new API service to be asynchronously imported into 3scale. You will see a message in the upper right section of the Admin Portal: **The service will be imported shortly. You will receive a notification when it is done.**

Updating the service

This section explains how to update (refresh) an existing API service in 3scale, which was previously imported/discovered from the cluster, with the current definitions for the service in the cluster.

1. Log in to 3scale Administration Portal.
2. Navigate to the Overview page of the API service.
3. Click the *Refresh* link, next to Source: OpenSource.
4. Wait for the new API service to be asynchronously imported into 3scale.

CHAPTER 10. CONFIGURING SERVICE DISCOVERY

This guide helps you to configure Service Discovery with the following alternatives:

- [Section 10.2, "Configuring with RH SSO"](#).
- [Section 10.3, "Configuring without RH SSO"](#).

Additionally, you can find instructions to [make an API discoverable](#).

10.1. PREREQUISITES

- You must deploy 3scale 2.5 on an OpenShift cluster, version 3.10 or later.
- You must use [3scale-amp-openshift-templates](#) to deploy 3scale on OpenShift.

10.2. CONFIGURING WITH RH SSO

When configuring with Red Hat Single Sign On (RH SSO), consider the following:

- Users will be redirected to the OAuth Server.
- If users are not logged into the OAuth Server, they will see a request to enter the credentials to log in.
- If it is the first time they use 3scale Service Discovery feature with SSO, the OAuth server will request them to authorize 3scale to perform the relevant actions.
- They will be redirected back to 3scale.

To configure Service Discovery feature with RH SSO, you have the following options:

1. [Section 10.2.1, "Using OpenShift OAuth server"](#).
2. [Section 10.2.2, "Using RH SSO server \(Keycloak\)"](#).

10.2.1. Using OpenShift OAuth server

As a system administrator, you want users to individually authenticate and authorize 3scale to discover APIs on their behalf using OpenShift builtin OAuth server. This means that 3scale tenant admin users who are willing to use Service Discovery are required to be also OpenShift users, possibly with different access levels over the cluster among them.

1. Create an OpenShift OAuth client for 3scale. For more details about OpenShift authentication, see [OAuth Clients](#).

```
$ oc project default
$ cat <<-EOF | oc create -f -
kind: OAuthClient
apiVersion: v1
metadata:
  name: 3scale
secret: "<choose-a-client-secret>"
redirectURIs:
```

```
- "<3scale-master-domain-route>"
grantMethod: prompt
EOF
```

2. Edit 3scale Service Discovery settings.

```
$ oc project <3scale-project>
$ oc edit configmap system
```

You need to configure the following settings:

```
service_discovery.yml:
production:
  enabled: true
  authentication_method: oauth
  oauth_server_type: builtin
  client_id: '3scale'
  client_secret: '<choose-a-client-secret>'
```

3. Ensure users have proper permissions to view cluster projects containing discoverable services.

Additional notes:

- After modifying **configmap**, you need to redeploy the **system-app** and **system-sidekiq** pods to apply the changes.
- Token lifespan: By default, OpenShift OAuth session tokens expire after 24 hours, as indicated in [OpenShift Token Options](#).

10.2.2. Using RH SSO server (Keycloak)

As a system administrator, you can allow users to individually authenticate and authorize 3scale to discover services using [Red Hat SSO for OpenShift](#).

1. Create an OAuth client for 3scale in Red Hat OAuth server (Keycloak).

IMPORTANT: In the client configuration, make sure that the user's username maps to ``preferred_username``, so OpenShift can link accounts.

2. Edit 3scale Service Discovery settings.

```
$ oc project <3scale-project>
$ oc edit configmap system
```

3. Make sure these settings are configured.

```
service_discovery.yml:
production:
  enabled: true
  authentication_method: oauth
  oauth_server_type: rh_sso
  client_id: '3scale'
  client_secret: '<choose-a-client-secret>'
```

4. Make sure users have proper permissions to view cluster projects containing discoverable services

Additional notes:

- After modifying **configmap**, you need to redeploy the **system-app** and **system-sidekiq** pods to apply the changes.
- Token lifespan: By default, session tokens expire after 1 minute, as indicated in [Keycloak - Session and Token Timeouts](#). However, it is a good recommendation to set the timeout to an acceptable value of 1 day.

10.3. CONFIGURING WITHOUT RH SSO

To configure Service Discovery feature without SSO, you can use 3scale Single Service Account to authenticate to OpenShift API service. In this case, there is a seamless authentication to the cluster for the service discovery feature without an authorization layer at the user level, meaning all 3scale tenant administration users will have the same access level to the cluster while discovering API services through 3scale.

Procedure

1. Edit 3scale Service Discovery settings.

```
$ oc project <3scale-project>
$ oc edit configmap system
```

2. Make sure these settings are configured.

```
service_discovery.yml:
production:
  enabled: <%= cluster_token_file_exists = File.exists?(cluster_token_file_path =
'/var/run/secrets/kubernetes.io/serviceaccount/token') %>
  bearer_token: "<%= File.read(cluster_token_file_path) if cluster_token_file_exists %>"
  authentication_method: service_account
```

3. Provide 3scale deployment **amp** service account with the relevant permissions to view projects containing discoverable services, by following one of these options:

- Grant 3scale deployment **amp** service account with **view** cluster level permission.

```
-----
oc adm policy add-cluster-role-to-user view system:serviceaccount:<3scale-
project>:amp
-----
```

- Apply a more restrictive policy. For more information, see [OpenShift - Service Accounts](#).

10.4. MAKING A SERVICE DISCOVERABLE

An API service, deployed or to be deployed to the OpenShift cluster, can be discoverable by 3scale. To achieve this, configure the OpenShift Service Object YAML definition to include the following metadata:

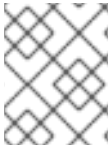
-

```
metadata:  
  labels:  
    discovery.3scale.net: "true"  
  annotations:  
    discovery.3scale.net/scheme: <http | https>  
    discovery.3scale.net/port: '<port number of the service within the cluster>'  
    discovery.3scale.net/path: <relative base path of the API backend from the root>  
    discovery.3scale.net/description-path: <relative or absolute path to the Open API Specification  
for the API>
```

From the described metadata, **port** and **scheme** are mandatory annotations.

Additionally, Service Discovery will only import the specification if the **Content-Type** header is one of the following values:

- **application/swagger+json**
- **application/vnd.oai.openapi+json**
- **application/json**



NOTE

Make sure the user or service account (depending on the configured authentication mode) has the right privileges to view the namespace and service.

PART IV. ACCESS CONTROL

CHAPTER 11. DEFINING YOUR API (METHODS AND METRICS)

To define your API on 3scale, navigate to **[Your_API_service] > Integration > Methods & Metrics** and add your methods and metrics.

Metrics lets you track the usage of your API in 3scale. *Hits* is the built-in metric, it exists in each API service and is used to track the hits made to your API. You can achieve finer granularity for the API usage tracking by defining **Methods** under the *Hits* metric. Reporting traffic to a method will increase counters for the method and for the *Hits* metric automatically. You can define separate methods for each endpoint of you API, or a combination of endpoint and HTTP method. See [Mapping rules](#) section to learn how to map the endpoints of your API to the methods defined here.

For measuring other, not hit-based usage of your API, you can define new **Metrics** and report the usage in different units. A unit can be anything meaningful: megabytes, CPU time, number of elements returned by the API etc.

Methods and metrics are also the scaffolding to package your API: each application plan lets you define different usage limits and pricing rules for each method and metric.

You will be able to see the the usage reported to metrics and methods in the Analytics section.

11.1. MANUALLY ADD METHODS AND METRICS

1. Navigate to **[Your_API_name] > Integration > Methods & Metrics**

The screenshot shows the 'Methods & Metrics' page in the Red Hat 3scale Admin Portal. The page is divided into two main sections: 'Methods' and 'Metrics'. The 'Methods' section has a table with columns 'Method', 'System Name', 'Unit', 'Description', and 'Mapped', and a 'New method' button. The 'Metrics' section has a table with columns 'Metric', 'System Name', 'Unit', 'Description', and 'Mapped', and a 'New metric' button. Red arrows point to these buttons with the text 'Create new method' and 'Create new metric' respectively. The left sidebar shows the navigation menu with 'Integration > Methods & Metrics' highlighted.

2. Click on New method.
3. Specify the parameters:
 - Friendly name is a short description of the method, it is shown in different sections of the 3scale Admin Portal. This name must be unique for the service.
 - System name is the name of the method which will be used to report the usage through 3scale Service Management API. It also must be unique, and it should only contain alphanumeric characters, underscore `_`, hyphen `-` and forward slash `/` without spaces. Other than that, you are free to decide how the system name will look like, it can be exactly the same as the endpoint (`"/status"`), or for example can include the method and the path (`"GET_/status"`).

- The Description field can be used for a more detailed description of the method, it is optional.

The screenshot shows the 'New Method' form in the Red Hat 3Scale API Management interface. The form is titled 'New Method' and is located under the 'Methods & Metrics' section of the left-hand navigation menu. The form contains three input fields: 'Friendly name' with the value 'Get Hello', 'System name' with the value 'get_hello', and 'Description' with the value 'This is the Hello method'. A 'Create Method' button is located at the bottom right of the form.

4. Finally, click on Create Method button.

You can later change the definition of the method. Just click on the method name (in the column **Method**), update the fields and click on Update Method.

Be very careful with changing the system name of the methods and metrics or deleting them! It may break your already deployed 3scale integration, if there are mapping rules pointing to the previous system name of the method.

For creating a new metric, click on New metric and provide the required parameters. When specifying the unit, use singular noun (e.g. "hit"), as it will be pluralized automatically in the Analytics charts.

These new methods and metrics will be available in all your current and future plans. You can now edit limits and pricing rules for them on each plan going to **[Your_API_service] > Applications > Application Plans > [plan_you_want_to_edit]**.

11.2. IMPORT YOUR METHODS AND METRICS AUTOMATICALLY

If your API has a lot of endpoints, we offer two additional ways of automatically creating your methods and metrics on 3scale:

- [Importing via Swagger spec](#)
- [Importing via RAML spec](#)

CHAPTER 12. APPLICATION PLANS

Application Plans define the different sets of access rights you might want to allow for consumers of your API. These can determine anything from rate limits, which methods or resources are accessible and which features are enabled.

12.1. HOW TO CREATE AN APPLICATION PLAN

By default, when your 3scale account is created, you are given two plans: Basic and Unlimited. You can keep and edit these or create your own. You can create as many plans as you need.

To create a new application plan, follow these steps:

1. Navigate to [Your_API_service] > Applications > Application Plans
2. Click 'Create Application Plan'.

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview

Analytics

Applications

Subscriptions

ActiveDocs

Integration

Published Application Plans

[+ Create Application Plan](#)

Basic - 2 applications

Unlimited - 3 applications

Plan A - 0 applications

You have 4 application plans (3 published) with a total of 5 live applications.

Published Service plans

[+ Create Service Plan](#)

Default - 5 contracts

You have 1 service plan (1 published) with a total of 5 contracts.

In the next screen, pick a name and a system name (system names must be unique) for your new plan. If the **Applications require approval?** checkbox is selected, no applications will be able to access your API without approval.

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview

Analytics

Applications

Listing

Application Plans

Subscriptions

ActiveDocs

Integration

Create Application Plan

Name

System name

Only ASCII letters, numbers, dashes and underscores are allowed.

Applications require approval?
Set whether or not applications can be created on demand.

Create Application Plan

Once you have created a plan, you can provision [rate limits](#) and set up [paid plans](#).

12.2. SETTING UP A DEFAULT APPLICATION PLAN

After you have created all your plans, you can select a default plan for when people sign up to register their applications. To do so, navigate to [Your_API_service] > **Applications** > **Application Plans** and select the default plan:

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview

Analytics

Applications

Listing

Application Plans

Subscriptions

ActiveDocs

Integration

Application Plans

Application Plans establish the rules (limits, pricing, features) for using your API; every developer's application accessing your API will be accessing it within the constraints of an Application Plan. From a business perspective, Application Plans allow you to target different audiences by using multiple plans (i.e. 'basic', 'pro', 'premium') with different sets of rules.

Select a default plan

Default Plan

Basic

Default application plan (if any) is selected automatically upon service subscription.

Name	Applications	State
Basic	2	published
Unlimited	3	published
Plan A	0	published
Plan B	0	hidden

If you don't indicate a default application plan, when a new user signs up to get access to your API, they won't be created an application by default (meaning they won't really get access to your API).

CHAPTER 13. MAPPING RULES

After defining your API creating [methods and metrics](#), you can map your API endpoints or paths to the methods you have defined in the Definition page. To do so:

1. Navigate to **[Your_API_service] > Integration > Configuration > Edit APIcast configuration** and find the **Mapping rules** section in the page.
2. Choose the HTTP method, available on the specific endpoint path
3. Select the equivalent method to map against. Different operations (GET, PUT, POST, DELETE, etc...) on the same endpoint can be tracked separately.

The workflow to define mapping rules is as follows:

- Add new rules by clicking on **Add Mapping Rule** link. Then select an HTTP method, a pattern, a metric (or method), and its increment. When you're done, click the **Update & Test Staging Configuration** button.

Verb	Pattern	+	Metric or Method (Define)	Last?	
GET	/hello	1	gethello	<input type="checkbox"/>	
GET	/goodbye	1	getgoodbye	<input type="checkbox"/>	

[Add Mapping Rule](#)

- Mapping rules will be grayed out on the next reload to prevent accidental modifications.
- To edit an existing mapping rule, you must first enable editing by clicking on the pencil icon on the right. To delete a rule, click on the red trash icon. Edits, modifications, and deletions will be saved when you hit the **Update & Test Staging Configuration** button.

Once the setup is done, you can test your integration with the **Staging APIcast Cloud Gateway** to ensure your setup will work in production.

If all the parameters and mapping rules are set correctly, you should see a green line showing a correct test integration between 3scale and your API Backend.

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview Analytics Applications Subscriptions ActiveDocs Integration Configuration Methods & Metrics Settings

Configure & test immediately in the staging environment [documentation](#)

API

Private Base URL

Private address of your API that will be called by the API gateway.

API GATEWAY

Staging Public Base URL

Public address of your API gateway in the staging environment.

Production Public Base URL

Public address of your API gateway in the production environment.

▶ **MAPPING RULES**

▶ **AUTHENTICATION SETTINGS**

▶ **POLICIES**

CLIENT

API test GET request

Optional GET request to a API gateway endpoint. We will use this call to validate your API gateway setup using credentials of the first live application. You can try it yourself by copying the following command into your shell:

```
curl "https://api-3scale-apicast-staging.poc-sd.staging.3sca.net:443/some-path?user_key=ae6addcf717637d23cd3555429cafbbd"
```

CHAPTER 14. PROVISIONING PAID PLANS

One of the most popular ways to monetize an API is by defining subscription fees based on usage. This section focuses on how to use application plans to provision pricing tiers. It's also possible to apply pricing rules at the account and the service level – these topics are covered in advanced guides.

Below you'll learn about the pricing options for application plans and how to set up a paid plan.

14.1. MAKE DECISIONS ABOUT YOUR PRICING MODEL

The first decision to make is how to differentiate between the tiers in your pricing model. Will the tiers be driven by volume/usage, API functionality, access to other resources, or a combination?

- **Volume / Usage.** The most common way to differentiate between tiers is based on volume because volume usually has a strong correlation to value to the customer as well as cost to serve. You can apply a global hit count for calls on the API or a more granular measurement at the method level.
- **Functionality.** You can enable or disable access to parts of your API depending on the tier. This is a good approach to distinguish between standard and premium levels.
- **Resources.** You can also create tiers based on access to any other resources that provide value to the customer or drive costs in your infrastructure – for example, GB's of bandwidth consumed, number of users, or transaction values.

Once you have decided on your pricing drivers, you must decide whether the tiers will be based on a flat rate subscription, a variable rate, or a one-off upfront charge. All three of the pricing drivers above are compatible with the one off, or monthly flat rate subscriptions. If you decide your pricing will be based on volume of hits or resource consumption, there will of course be a variable element to your pricing.

14.2. SET UP AN APPLICATION PLAN WITH YOUR PRICING RULES

You can either create a new application plan or edit an existing one. When creating a new application plan, you can enter any upfront charges or flat rate subscriptions.

The screenshot shows the 'Create Application Plan' interface in the Red Hat 3scale API Management Admin Portal. The top navigation bar includes 'RED HAT 3SCALE API MANAGEMENT' and 'API: Echo API'. The left sidebar shows the 'Applications' menu with 'Application Plans' selected. The main form contains the following fields and options:

- Name:** A text input field.
- System name:** A text input field with a note: 'Only ASCII letters, numbers, dashes and underscores are allowed.'
- Applications require approval?:** A checkbox with the text: 'Set whether or not applications can be created on demand or if approval is required from you before they are activated.'
- Trial Period (days):** A text input field.
- Setup fee:** A text input field containing '0.00' and a 'USD' label.
- Cost per month:** A text input field containing '0.00' and a 'USD' label.

A 'Create Application Plan' button is located at the bottom right of the form.

In the edit application view, you can enter or modify the upfront charges and subscriptions.

Next, set up the pricing drivers you decided on in step 1. If some of them already exist as metrics, you can simply edit the item.

- *Volume drivers*: are applied at the level of the global hits metric, or for individual methods under hits. Multiple pricing rules can be applied to any metric. Note that the hits calculation is cumulated over a one-month billing cycle.
- *Functionality drivers* are set by enabling or disabling the metric for this plan.
- *Resource drivers* are similar to volume drivers but are applied on custom metrics.

Metrics, Methods, Limits & Pricing Rules

Metric or Method (Define)	Enabled	Visible	Text only
Hits	Pricing (0)	Limits (0)	<input checked="" type="checkbox"/>
foo	Pricing (0)	Limits (0)	<input checked="" type="checkbox"/>

Metrics, Methods, Limits & Pricing Rules

Metric or Method (Define)	Enabled	Visible	Text only
Hits	Pricing (0)	Limits (0)	<input checked="" type="checkbox"/>
foo	Pricing (0)	Limits (0)	<input checked="" type="checkbox"/>

Pricing Rules

From	To	Price per unit
foo		Pricing (0)

[+ new pricing rule](#) [Close](#)

Features

Name	Description	Enabled?	
Unlimited Greetings		<input checked="" type="checkbox"/>	+ New feature Edit Delete
24/7 support		<input type="checkbox"/>	Edit Delete
Unlimited calls		<input type="checkbox"/>	Edit Delete

Once you're finished setting up your pricing rules, be sure to click "update application plan".

14.3. CREATE FURTHER PRICING TIERS

It's ok to define an API paid plan with a single application plan. Usually this would be the case if all your pricing rules are defined by volume or resource drivers. However if you want to offer separate plans for different segments of your developer community, you'll need to add more application plans.

The easiest way to do this is to copy the first application plan from the application plan overview page. This way, it will be pre-populated with all the existing metrics and pricing rules. The more care you take to create a full plan the first time, the more time you will save with the plan copy feature.

14.4. PROVISION THE PAID PLANS

In order to provision the plans, your developers must create new applications and select one of the new paid plans. You can also do this on their behalf from the admin console. For any existing applications, it's also possible to change from an existing plan to one of the new paid plans.

14.5. MORE INFORMATION

In conjunction with flat-rate pricing plans it's common to differentiate between tiers using rate limits. This is explained in [provision rate limits](#)

CHAPTER 15. PROVISIONING RATE LIMITS

Rate limits allow you to throttle access to your API resources. You can configure different limits for separate developer segments through the use of application plans.

Once you have rate limits in place, these limits will control the responses a developer receives when they make authorization request calls to the 3scale back end.

15.1. GO TO THE APPLICATION PLAN

If you do not have an application plan defined yet, create one first. Otherwise, select the plan you want to set rate limits for and click *edit*.

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview
Analytics
Applications
Listing
Application Plans

Metrics, Methods, Limits & Pricing Rules

Metric or Method (Define)	Enabled ?	Visible ?	Text only ?
Hits Pricing (0) Limits (0)	⊙	⊙	⊙
foo Pricing (0) Limits (0)	⊙	⊙	⊙

15.2. SET THE RATE LIMITS

RED HAT 3SCALE API MANAGEMENT API: Echo API

Overview
Analytics
Applications
Listing
Application Plans
Subscriptions
ActiveDocs
Integration

Metrics, Methods, Limits & Pricing Rules

Metric or Method (Define)	Enabled ?	Visible ?	Text only ?
Hits Pricing (0) Limits (0)	⊙	⊙	⊙
foo Pricing (0) Limits (0)	⊙	⊙	⊙

Usage Limits ?

Period	Value

New usage limit Close

15.3. UPDATE THE APPLICATION PLAN

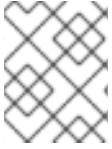
When you are finished setting the limits you require, save your changes by clicking *Update Application plan*.

15.4. PUT THE NEW RATE LIMITS INTO ACTION

Now that you have your rate limits defined, the following will happen:

- If you have alerts configured, the new limits will be used to decide when notifications are sent.
- When you make authorization calls to the 3scale back end, the limits will be taken into account and the response will be with status code **409**. In this case the APIcast API gateway sends a response to the client with the status code **429 Too Many Requests** and the message, **Limits exceeded**.

Once your rate limits are operational, you will see the users who are reaching the limits on your dashboard, making it quick and easy to check for potential plan upgrade candidates.

**NOTE**

For more information about soft and hard limits, you should read [1.1.3.2. Configure your API access policies with application plans, window="_blank"](#) in our Quickstart guide.



PORTAL (2 DRAFTS) 0 MESSAGES

;
s in the last 30 days
pgrades, add 1 or more usage limits to your

Admins of this Account of 100% (and up)
e(s) with usage limits.

TODAY

metro from Metro signed up
Metro's App created on Echo API
tester from tester inc signed up
tester inc's App created on Echo API
barba papa's App created on Echo API
barbapapa from barba papa signed up
Feasible Inc. has subscribed to your service
Echo API
feasible from Feasible Inc. signed up
Feasible Inc.'s App created on Echo API

15.5. MORE INFORMATION

Besides setting rate limits, you can also set variable pricing rules for the same metrics – see [provision paid plans](#)

PART V. BILLING

CHAPTER 16. CONFIGURING BILLING SETTINGS

This document describes how the Billing feature works in 3scale.

Billing settings are divided into **Charging & Gateway** and **Credit Card Policies**, both can be found in **Audience > Billing** in the Admin Portal.

16.1. BILLING MODES (CHARGING & GATEWAY)

Billing in 3scale is based on the calendar month, and can be **Prepaid** and ***Postpaid**.

- In the Prepaid mode, all fixed fees and setup fees are billed at the beginning of the month or at the beginning of any prorated billing period. Variable costs are always calculated and billed at the beginning of the following month.
- In Postpaid mode, all fixed fees as well as variable costs are billed at the beginning of the following month.

For more details see [Automated billing process](#).

16.2. CHARGING ENABLED (CHARGING & GATEWAY)

This setting enables credit card transactions. When this setting is on, all due invoices will be charged using the selected payment gateway. If you leave this setting off, billing will take place and invoices will be issued, but no real payment transaction will take place.

16.3. CURRENCY (CHARGING & GATEWAY)

Select the currency in which billing and the credit card transactions will be made. Please make sure that the selected currency is supported by your payment gateway. This setting is global and applies to all invoices and transactions; it is not possible to set different currencies for different developer accounts.

16.4. INVOICE FOOTNOTE (CHARGING & GATEWAY)

The text introduced in the Invoice footnote field will appear at the bottom of every PDF invoice. You can use this field to provide additional information about the charging and billing policy for your customers.

If the text of the footnote is changed, it doesn't automatically apply to the invoices, for which the PDF has already been generated. However, it is possible to apply the change by regenerating the PDF of the invoices.

16.5. TEXT TO SHOW IF VAT/SALES TAX IS 0% (CHARGING & GATEWAY)

This field is used to add a text message to the PDF invoice, in case VAT / Sales Tax is 0% for the billed account. This line will only appear if the VAT / Sales Tax is set to 0 explicitly, otherwise it will not be shown. This text will also appear on the Invoice page in the Admin Portal.

See more about this setting in [VAT / Sales Tax section](#)

16.6. BILLING PERIODS FOR INVOICE IDS (CHARGING & GATEWAY)

Invoices in 3scale have two types of IDs:

Actual ID

which uniquely identifies the invoice in the database. This is a numeric ID, which appears in the invoice URL (i.e. https://<dashboard_domain>/buyers/accounts/<account_id>/invoices/<invoice_id>) and is used as the invoice ID in the Billing API.

Friendly ID

which appears on the invoice, is a user-friendly identifier. It should be unique per 3scale account, although it's technically possible to have duplicated friendly ID. In case duplicate ID is identified by the system, it will show a warning: "This invoice id is already in use and should probably be changed". If the friendly ID displays as "fix" for more than 24 hours, please contact support.

This setting defines the format of the Friendly ID of the invoice:

monthly (default)

YYYY-MM-XXXXXXXX, i.e. the ID includes the year, the month and the number of the invoice.
Example: 2018-02-00000013

yearly

YYYY-XXXXXXXX, i.e. it only includes the year and the number. Example: 2018-00000001

The only effect of changing the Billing periods for invoice ids from "monthly" to "yearly" is changing the friendly ID format, this doesn't change the billing cycle period, only monthly billing is supported by 3scale API Management. Changing the format of the invoice IDs to yearly can be used, if there is such a requirement from your accounting department.

If you need to charge the customers yearly, billing should be handled manually – you can create a new invoice and add a line item with the yearly cost. If you prefer to use yearly charging, you may also want to set your application plans to be free, to make sure the invoices are not generated and/or charged automatically each month.

16.7. CREDIT CARD POLICIES

Here you can configure the path to the following pages:

- Legal Terms page
- Privacy page
- Refund page

16.8. CREDIT CARD GATEWAYS

3scale integrates with the following payment gateways for credit card transactions:

- Adyen
- Braintree
- Stripe

16.8.1. Adyen integration

After completing these steps, you will have configured Adyen as a payment gateway for your account. This will allow your developers to enter their credit card details, and you can automatically charge them through Adyen for access to your API, according to the calculated invoices.

Setting up your payment gateway is a key step enabling credit card charging for use of your paid API. There are a number of alternative payment gateways you can use with your 3scale account. Here we cover the steps for Adyen.

16.8.1.1. Prerequisites

- Before you start these steps, you will need to open an account with [Adyen](#).
- You need a *Company* account and a *Merchant* account within it (sub-account).
- There are a number of requirements that must be fulfilled before you can apply for a live account with Adyen. You can see what those requirements are [here](#).
- The account should be in production mode.

16.8.1.2. Configuring Adyen integration

Find the information in your Adyen account

1. To begin, log into your Adyen account. Then find your credentials in the **Settings > Users** area, and select *System* from the dropdown menu in the following view:

The screenshot shows the Adyen Admin Portal interface. At the top left is the Adyen logo. Below it is a navigation bar with a 'TEST' button and a 'User List' breadcrumb. A sidebar on the left contains menu items: Application, Home, Payments, Accounts, Reports, Skins, Settings (highlighted), RevenueAccelerate, and Support. The main content area has an 'Add New User' button and a search bar. Below the search bar is a table with the following data:

System	User type name	Name	Active	Associated Accounts
System	Web Service	ws@Company	Active	[Redacted]
System	Web Service	[Redacted]	Active	[Redacted]

2. Click on the *Company* account (the account at the top of the list). You will then be taken to the *Company* account settings view:

Application

Home

Payments

Accounts

Reports

Skins

Settings

RevenueAccelerate

Support

3scaleTester >

TEST

Edit Web Service User

User Account Details

User Name **Login**

Last Password Change 2016-05-05 15:39:51 CEST **Secret Password**

Password

Retype Password

Generate Password Generate POS Password

Client Certificate (DN)

Easy Encryption

Client Encryption Public Key **Public Key**

Preformatted for direct insertion in your code:
"10001|C9CEA1701A8BB203254B314A081C814E8..."

Hosted Client Side Encryption

Library Version Always latest version

Library location **Library location** (applied after you click save)

The V0_1_X CSE library is available, running library version 0_1_17.

Roles and Associated Accounts

Roles Accounts

Type to search associate accounts Search

3scaleTester Comp... **Merchant Id**

MerchantAccount

Save

Edit Allowed User IP Range

Add IP address 0 . 0 . 0 . 1

Allow 32 (this IP address only)

Allow

No allowed IP address ranges configured

3. Finally you have access to the **Login**, **Secret Password**, **Client Encryption Public Key**, **Merchant ID**, and **Library location** that you will need for the 3scale billing settings.
4. To view the **Public Key**, you must click on *Generate Password* and copy this password somewhere.



TEST

Edit Web Service User

- Application
- Home
- Payments
- Accounts
- Reports
- Skins
- Settings
- RevenueAccelerate
- Support

User Account Details

User Name

Last Password Change 2016-05-05 15:39:51 CEST

Password

Retype Password

Client Certificate (DN)

All these switches should be enabled by default but if, for some reason they are not you should enable at least these 3 for successful integration

Roles and Associated Accounts

API Clientside Encryption Payments role	<input checked="" type="checkbox"/>
iDeal Recurring	<input type="checkbox"/>
Merchant PAL Webservice role	<input checked="" type="checkbox"/>
Merchant Recurring role	<input checked="" type="checkbox"/>

Easy Encryption

Client Encryption Public Key

Preformatted for direct insertion in your code:

Hosted Client Side Encryption

Library Version

(changes will be applied after you click save)

Edit Allowed User IP Range

Add IP address

Allow

No allowed IP address ranges configured

Configure your payment gateway in your 3scale account

1. In **Audience > Billing > Charging & Gateway** enable charging by checking the box and click **Save**.
2. You will see all the fields you need to setup to create the link to your Adyen gateway.
3. You must select Adyen from the *Gateway* dropdown menu and save changes.

The screenshot shows the Red Hat 3Scale API Management interface. The top navigation bar includes the Red Hat logo, 'RED HAT 3SCALE API MANAGEMENT', and 'Audience' with a dropdown arrow. The left sidebar contains navigation items: Accounts, Applications, Billing (highlighted with a red box), Charging & Gateway (highlighted with a red box), Credit Card Policies, Developer Portal, and Messages. The main content area shows the 'Gateway' dropdown set to 'Adyen' (highlighted with a red box). Below it, the 'ADYEN OPTIONS' section is highlighted with a red box and contains the following fields:

- Login:
- Secret Password:
- Client Encryption Public Key:
- Merchant ID:
- Library location:

Enable the *alias* additional data in the Adyen API response

By default when credit card authorization requests are sent from 3scale to Adyen, the returned response does not include the unique identifier of the credit card.

To ensure that the correct credit card reference is saved in 3scale and the correct card is charged, this additional data needs to be enabled.

Contact Adyen support to enable the *alias* additional data in the response for the authorization request.

Test your billing workflow

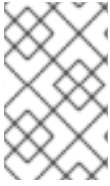
1. Make sure you accelerate the test cycle by enabling *Prepaid Mode* to generate the charge within a day or so.
2. Then choose an existing test account and create an invoice with a line item charge added.
 - a. Charge the account immediately.
 - b. This testing approach will incur some minor costs, but it is worth it for the peace of mind that everything works fine, before you have real paying developers using your API.

The payment gateway is now set up, but your users might not be able to use it yet since it is not configured in the CMS. Go to the developer portal tab, and find the template called **Payment Gateway / Show** on the left navigation pane.

If it is not there already, add the following snippet after the block of code beginning with **{% when "stripe" %}**

```
{% when "adyen12" %}
{% if current_account.has_billing_address? %}
  {% adyen12_form %}
{% else %}
```

```
<p><a href="{{ current_account.edit_adyen12_billing_address_url }}">First add a billing address</a>
</p>
{% endif %}
```



NOTE

- In order to map your data from Adyen with your data on 3scale, you can use the Adyen field called **shopperReference** which is composed of **3scale-[PROVIDER_ID]-[DEVELOPER_ACCOUNT_ID]**

16.8.2. Stripe integration (recommended)

After completing these steps you will have configured Stripe as a payment gateway for your account. This will allow your developers to enter their credit card details, and you can automatically charge them through Stripe for access to your API, according to the calculated invoices.

If you enable credit card charging for your paid API, then one key step is to setup your [payment gateway](#). There are a number of alternative payment gateways which you can use with your 3scale account. Here we cover the steps for Stripe.

16.8.2.1. Prerequisites

Before you start these steps, you will need to open an account with [Stripe](#).

16.8.2.2. Getting your API keys from Stripe

Log in to your Stripe account, and get your API keys at <https://dashboard.stripe.com/account/apikeys>. You will need two keys: a "secret" one, and a "publishable" one. Use the "test" set when you're doing tests and the "live" ones when you are ready to start charging.

The screenshot shows the 'API Keys' configuration page in the 3scale Admin Portal. At the top, there is a navigation bar with icons and labels for 'General', 'Team', 'API Keys', 'Subscriptions', 'Transfers', 'Webhooks', 'Connect', 'Relay', 'Data', and 'Emails'. Below the navigation bar, the text reads: 'API version: No version yet — it'll be set when you start using the API.' There are four input fields for API keys, each with a refresh icon to its right. The first two are labeled 'Test Secret Key:' and 'Test Publishable Key:'. The last two are labeled 'Live Secret Key:' and 'Live Publishable Key:'. At the bottom left, there is a link with an information icon: 'Learn more about API authentication'. At the bottom right, there is a blue button labeled 'Done'.

16.8.2.3. Configuring settings in 3scale

You need to tell 3scale to start using these API keys. To do this, log in to your 3scale Admin Portal, and go to **Audience > Billing > Charging & Gateway**

RED HAT 3SCALE API MANAGEMENT Audience

Charging & Gateway

Mode:
Postpaid
In postpaid mode, all fixed fees as well as variable fees are billed at the end of the month.

[Switch to PREPAID](#)

Charging enabled
Enables credit card transactions. When this setting is on, all due invoices will be charged using the selected payment gateway. If you leave this setting off, billing will take place and invoices will issued, but no real transaction will take place.

Currency
USD - American Dollar
Please make sure that the selected currency is supported by your payment gateway. If you are missing currency options, don't hesitate to contact us.

Invoice footnote

Text to show if VAT/Sales Tax is 0%

Billing periods for invoice ids
monthly

[Save](#)

If the Charging Enabled flag is not active, enable it and click Save.

RED HAT 3SCALE API MANAGEMENT Audience

Charging & Gateway

Mode:
Postpaid
In postpaid mode, all fixed fees as well as variable fees are billed at the end of the month.

[Switch to PREPAID](#)

Charging enabled
Enables credit card transactions. When this setting is on, all due invoices will be charged using the selected payment gateway. If you leave this setting off, billing will take place and invoices will issued, but no real transaction will take place.

Currency
USD - American Dollar
Please make sure that the selected currency is supported by your payment gateway. If you are missing currency options, don't hesitate to contact us.

Billing periods for invoice ids
monthly

[Save](#)

You should see a drop-down called Gateway near the bottom of the page. Change it to Stripe.

Credit card gateway

Select your credit card gateway and configure it with the details of your merchant account.

BASICS

Gateway

Stripe

The form below the drop-down should change to show two fields. Insert your Stripe API keys and click Save.

Credit card gateway

Select your credit card gateway and configure it with the details of your merchant account.

BASICS

Gateway

Stripe

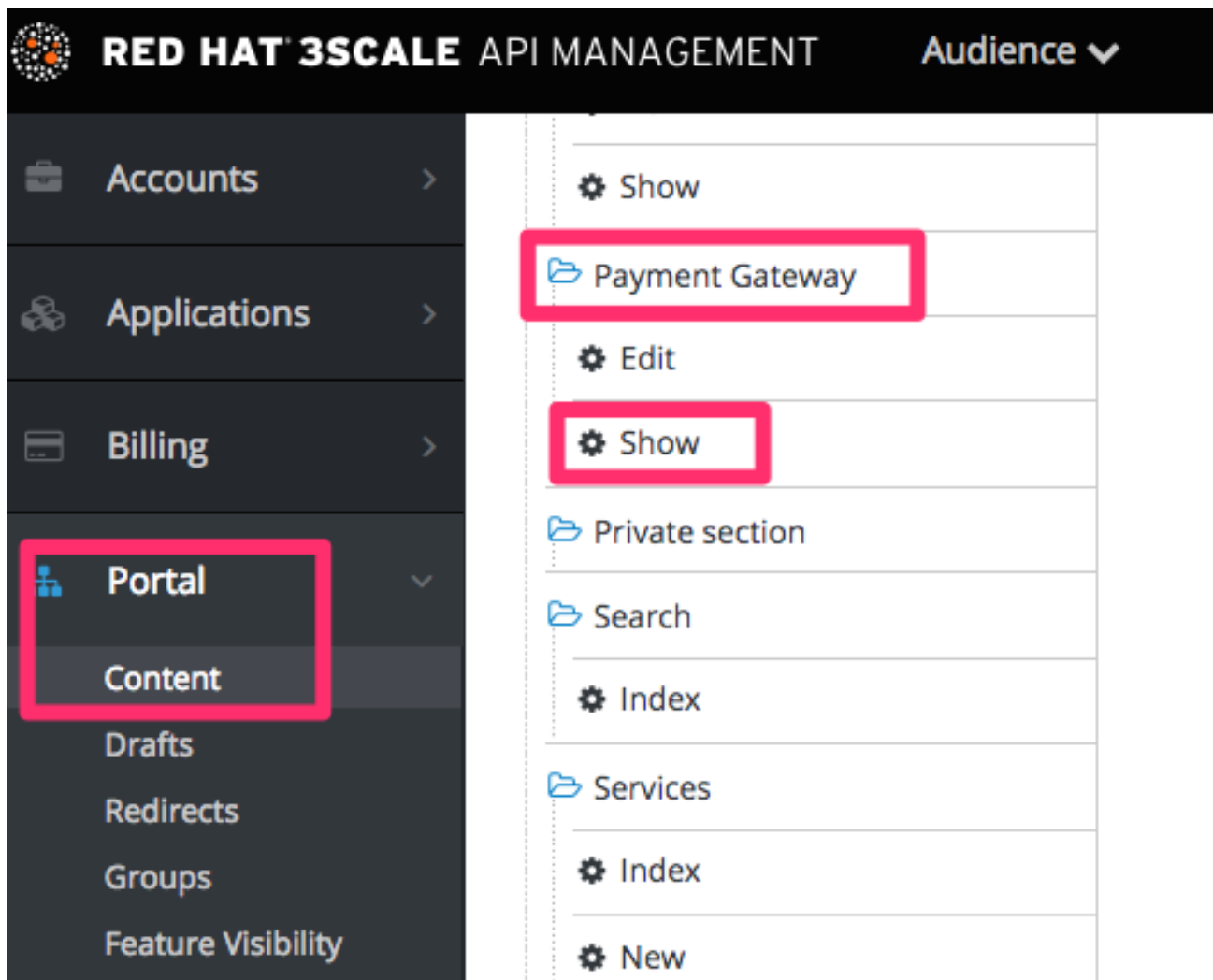
STRIPE OPTIONS

Secret Key

Publishable Key

You might see a couple of alerts when you change your payment gateway. This is expected. Read them and accept them if they appear.

The payment gateway is now set up, but your users might not be able to use it yet since the it's not configured in the CMS. Go to Developer portal, and click on the template called Payment Gateway / Show on the left navigation pane.



If it's not there already, add the following code before `{% when "braintree_blue" %}`:

```
{% when "stripe" %}
<p><a href="{{ current_account.edit_stripe_billing_address_url }}">Edit billing address</a></p>

{% if current_account.has_billing_address? %}
  {% stripe_form "Edit Credit Card Details" %}
{% else %}
  <p>After entering billing address, the option to enter credit card will be enabled.</p>
{% endif %}
```

Finally click Save and Publish. Your users should now be able to pay you using the Stripe gateway.



NOTE

In order to map your data from Stripe with your data on 3scale, you can use the Stripe field called **metadata.3scale_account_reference** which is composed of **3scale-[PROVIDER_ID]-[DEVELOPER_ACCOUNT_ID]**

16.8.3. Braintree integration

These are the steps to set up the Braintree gateway in order to to charge for use of your API.

16.8.3.1. Getting your API keys from Braintree

You'll need to open an account with [Braintree](#). You need a Gateway and Merchant account plus Vault. As an optional extra, you can choose to allow American Express cards as a payment method.

To begin, log in to your Braintree account. Then find your API keys in the **Account > MyUser** area:

The screenshot shows the Braintree control panel interface. At the top, there's a navigation bar with the Braintree logo, a welcome message, a search bar, and a dropdown menu for 'Account' which is highlighted with a blue box. Below the navigation bar is a sidebar with menu items: Search, Transactions, Vault, and Recurring Billing. The main content area is titled 'Edit User test_3scale' and contains several sections: 'User Details' with fields for Name and Email; 'Change Password (Optional)' with fields for Current Password, New Password, and Confirm New Password; 'Authorization' with a link for 'API Keys' highlighted by a blue box; and 'Notifications' with a checkbox for 'Email Daily Settlement Batch Summary'. At the bottom of the main content area are 'Save' and 'Cancel' buttons. A footer contains contact information and copyright notice.

The API keys page still hides the private key, so select the option to view it:

The screenshot shows the Braintree control panel interface for the 'API Keys' page. The navigation bar and sidebar are the same as in the previous screenshot. The main content area is titled 'API Keys' and contains a table with the following columns: Public Key, Private Key, Last Used On, and Actions. The Private Key column contains a redacted value and a 'View' button highlighted with a blue box. The Actions column contains a red 'X' icon. Below the table, there are fields for 'Merchant ID' and 'Environment' (set to 'sandbox'). At the bottom of the main content area is a 'Generate New' button. A footer contains contact information and copyright notice.

Finally you have the Public Key, Private Key, and Merchant ID that you'll need for the 3scale billing settings:

The screenshot shows the Braintree Control Panel interface. At the top, it says "Welcome back [redacted] to the [redacted] Control Panel". There are navigation links for "Basic Search", "Search", "Account", and "Logout". On the left sidebar, there are menu items: "Search", "Transactions", "Vault", and "Recurring Billing". The main content area is titled "Client Library Key". It displays four fields: "Public Key", "Private Key", "Environment" (set to "sandbox"), and "Merchant ID". Below this is a "Usage" table:

Client Library	Last Used On
Braintree Ruby Gem 2.10.3	[redacted]
Braintree Ruby Gem 2.10.2	[redacted]
Transparent Redirect	[redacted]

Below the table, there is a text block: "This will copy a snippet of code to your clipboard that will use these API keys to connect to Braintree in your language of choice. For more information about integrating your application with the Braintree gateway, view our [API documentation](#)." Below this text is a dropdown menu set to "Java" and a "Copy" button.

16.8.3.2. Configuring settings in 3scale

You need to tell 3scale to start using these API keys. To do this, log in to your 3scale Admin Portal and go to **Audience > Billing > Charging & Gateway**

Ensure that the currency type specified on the billing page matches the currency type used in your Braintree merchant account.

The screenshot shows the 3scale Admin Portal interface. The top navigation bar includes "RED HAT 3SCALE API MANAGEMENT" and "Audience". The left sidebar has menu items: "Accounts", "Applications", "Billing", "Settings", "Portal", and "Messages". The "Billing" menu is expanded, showing "Earnings by Month", "Invoices", "Settings", "Charging & Gateway", and "Credit Card Policies". The "Charging & Gateway" page is displayed, showing the following settings:

- Mode:** Postpaid (with a "Switch to PREPAID" button)
- Charging enabled**
Enables credit card transactions. When this setting is on, all due invoices will be charged using the selected payment gateway. If you leave this setting off, billing will take place and invoices will be issued, but no real transaction will take place.
- Currency:** USD - American Dollar (with a note: "Please make sure that the selected currency is supported by your payment gateway. If you are missing currency options, don't hesitate to contact us.")
- Invoice footnote:** [Text area]
- Text to show if VAT/Sales Tax is 0%:** [Text area]
- Billing periods for invoice ids:** monthly

A "Save" button is located at the bottom right of the page.

If the Charging Enabled flag is not active, enable it and click Save.

RED HAT 3SCALE API MANAGEMENT Audience ▾

Accounts >

Applications >

Billing ▾

Earnings by Month

Invoices

SETTINGS

Charging & Gateway

Credit Card Policies

Portal >

Messages >

Charging & Gateway

Mode:

Postpaid

In postpaid mode, all fixed fees as well as variable fees are billed at the end of the month.

Switch to PREPAID

Charging enabled
Enables credit card transactions. When this setting is on, all due invoices will be charged using the selected payment gateway. If you leave this setting off, billing will take place and invoices will issued, but no real transaction will take place.

Currency

USD - American Dollar ▾

Please make sure that the selected currency is supported by your payment gateway. If you are missing currency options, don't hesitate to contact us.

You should see a drop-down called Gateway near the bottom of the page. Change it to Braintree (Blue Platform).

Credit card gateway

Select your credit card gateway and configure it with the details of your merchant account.

BASICS

Gateway

Braintree (Blue Platform) ▾

The form below the drop-down should change to show two fields. Insert your Braintree keys and click Save.

BRAINTREE (BLUE PLATFORM) OPTIONS

Public Key

Merchant ID

Private Key

You might see a couple of alerts when you change your payment gateway. This is expected. Read and accept them if they appear.

Your users should now be able to pay you using the Braintree gateway.



NOTE

In order to map your data from Braintree with your data on 3scale, you can use the Braintree field called **customer.id** which is composed of **3scale-[PROVIDER_ID]-[DEVELOPER_ACCOUNT_ID]**

16.8.3.2.1. Troubleshooting

In case your account is in the sandbox mode and you encounter any problems, you will have to change it to production.

CHAPTER 17. PRICING

This section describes different ways you can charge your developers for using your API.

Setup fee

is a one-time charge applied upon subscription to the service, it is not charged when switching to another plan. It appear in the invoice/credit card only on the first month of a subscription. Can be configured on application plans, service plans, and account plans.

Cost per month

is a recurring cost charged monthly. It is prorated if the subscription occurred in the middle of the month. Sometimes it is referred to as "fixed fee". Can be configured on application plans, service plans, and account plans.

Variable costs

are the costs derived from the pricing rules applied to each method/metric configured in the application plan. They are based on the usage of your API and therefore cannot be known in advance, only when the billing period has concluded. Only available on application plans.

Example

If you have a plan with monthly cost of \$10, but want to charge your developer a \$5 setup fee. The initial charge would be for \$15, while all subsequent charges would be for \$10.

17.1. PRICING RULES

Pricing rules define the cost of each API request. Multiple pricing rules on the same metric divide up the ranges of when a pricing rule applies. Pricing rules are based on calendar month, and the counter is reset at 00:00 UTC of the 1st day of each month.

Example 1

Until 100 calls per month (from 1 to 100) each API call can be charged at \$0.04, and starting from the call 101 (from 101 to infinity) the calls are charged at \$0.10.

Example 2

The first 1000 calls are not charged (cost \$0), because they are included in the plan which has a monthly fixed cost. Starting from call 1001, each call is charged at \$0.50.

Example 3

Calls from 1 to 100 are charged at \$0.30, 100 to 500 – at \$0.40, and 500 and further – at \$0.50.



NOTE

Pricing rules are defined for metrics and methods. The actual API requests are mapped to these metrics and methods through the Mapping Rules.

17.2. SETTING PRICING RULES

1. Go to [Your_API_service] > Applications > Application Plans

2. Select an existing application plan or create a new one.
3. In the section **Metrics, Methods, Limits & Pricing Rules** click **Pricing (x)** to open the pricing section.
4. Click new pricing rule.
5. Set the values From, To and Cost per Unit and click **Create pricing rule**

Repeat the last two steps to create all the necessary pricing rules ranges.

Leave the To field empty to set the rule to "to infinity".

The maximum number of decimals is set to 4 for the cost of metric, if a number is added with more decimals, the value is rounded to a number with 4 decimal places.

17.3. UPDATE EXISTING PRICING RULES

1. Click on edit.
2. Make the necessary adjustments to the From, To and Cost per Unit fields.
3. Click Update pricing rule.

CHAPTER 18. BILLING

The billing process creates invoices under the developer account, if it is subscribed to any paid services. The invoices are charged using the configured payment gateway.

18.1. LISTING INVOICES

In the **Audience > Billing > Earning by month** section you can find an overview of your due and received payments, calculated as the sum of all invoices issued that month, depending on their state:

Total

all invoices excluding cancelled

In process

Open, Finalized and Pending invoices

Overdue

Failed and Unpaid invoices

Paid

Paid invoices

By clicking on a specific month you can list all invoices for that month.

You can also see the list of invoices by going to **Audience > Billing > Invoices** where you can find invoices by their ID (friendly ID), the account name, and also filter by month and state.

The invoices of a specific developer account can also be found under **X Invoices** in the breadcrumbs of the account details page at **Audience > Accounts > Listing > [selected account]** where X is the number of invoices the account has.

18.2. INVOICE VIEW

If you click on the invoice friendly ID from the invoices list, you will see the details of the invoice.

18.2.1. Invoice details

The title includes the month and year of the invoice, and also shows whether the invoice was created manually or by automated billing process, e.g. **Invoice for February 2018 (manually created)**

The **Details** block below shows the friendly ID of the invoice, invoice state, dates when the invoice was finalized and issued, and when it's due and paid on. If PDF has already been generated, the link to download the PDF will be also shown.

The **Issued by** and **Issued to** blocks shows the name and the address of the API provider and the developer account accordingly.

Below a block with **line items** will be shown, including calculations of the VAT/Sales Tax, total cost, and if the text in "Text to show if VAT/Sales Tax is 0%" was configured, it will also be shown here.

In the **Transactions** block of the invoice you can see the list of all credit card transactions attempts, including the status of the transaction, its timestamp, reference number, message provided by the payment gateway and the amount. You can find the transactions in your payment gateway administrator console using the reference number.

18.2.2. Editing invoices

If the invoice is in Open or Finalized state, you can edit some details of the invoice.

By clicking on the Edit link at the top right corner of the invoice view, you can change the friendly ID and the billing period.

You can also add and delete invoice line items (except calculated costs – total, VAT/sales tax, total with VAT/sales tax). To add a new line item, click on Add, and fill in Name, Quantity (doesn't affect the cost), Description and Cost.

The links at the bottom of the invoice view can trigger actions on the invoice – different actions are available depending on the current state of the invoice, e.g. Generate PDF, Issue invoice Cancel invoice, Regenerate PDF, Charge, Mark as paid etc. These actions (except PDF-related) will change the state of the invoice.

18.3. INVOICE STATES

The invoice can be in one of the following states:

Open

the invoice is created, but the automated calculations has not yet been finalized.

Finalized

the invoice has all the current billing period charges added to it.

Pending

the invoice has been issued to the developers and is awaiting payment.

Unpaid

the invoice has been charged unsuccessfully, but pending automatic retry.

Paid

the invoice has been charged successfully.

Failed

the invoice has been charged unsuccessfully, and automatic retry will not be attempted anymore.

Cancelled

has been cancelled by an admin.

18.4. AUTOMATED BILLING PROCESS

In 3scale, the billing process runs daily. It generates invoices, changing their states according to the billing flow, and performs charges using the configured payment gateway.

The billing flow is a bit different for Prepaid and Postpaid mode, and as billing in 3scale is based on calendar month, there are special events that happen on the 1st day of the month.

18.4.1. On the 1st day of each month

Postpaid

- Bill variable cost for the **previous** month (the cost is included as a line item to the open invoice)
- Finalize open invoices for the **previous** month

- Bill fixed cost for the **current** month (create a new invoice for current month in *Open* state)

Prepaid

- Bill fixed cost (**current** month)
- Bill variable cost (**previous** month)

Notifications are sent to the API admins about the invoices finalized in the beginning of the month, so they can review the invoices and make necessary adjustments.

All actions that are performed every day also happen on the 1st day of the month in addition to the ones described above.

18.4.2. Every day

- Bill expired trials and new contracts that haven't yet been billed (invoices in *Open* state for the current month are created).
- **Prepaid** only: Finalize all open invoices (state changes to *Finalized*).
- Issue invoices (state changes to *Pending*).
 - The invoices are normally issued 2-3 days after they were finalized. The "*Issued On*" date of the invoice is set to current date, and the "*Due On*" date (when the invoice will be charged) is set to the *Issued On* + 2 days.
 - When the invoice is issued to the developers, they receive an email notification, and can see the issued invoice in the developer portal.
- Charge invoices
 - The invoices in *Unpaid* and *Pending* states are charged, if the *Due On* date is today or earlier.
 - If the payment failed, the invoice state is changed to *Unpaid*. Charging will be retried again in 3 days. After 3 unsuccessful retries, the invoice state is changed to *Failed*, and charging is not retried anymore.
- Notify about expired credit cards
 - the developer accounts whose credit cards are going to expire soon are sent email notifications.

18.4.3. Automatic and manual invoices

The invoices that are generated by the automated billing process have "(automatically created)" label in the invoice header (e.g. "Invoice for January 2019 (automatically created)").

The invoices that are generated manually are marked with "(manually created)" on the invoice details page.

The automated billing process may use existing invoices in "open" state for the current month to create additional line items, but only for automatically created invoices. The invoices created manually will not be updated by the automated billing process.

18.4.4. Mid-month upgrades

If an application (or account/service subscription) is upgraded in the middle of the month, the monthly cost is prorated according to the number of days left in the month. The limits configured on the application plan are not prorated.

If the application is upgraded from a free to a paid plan, the next time billing runs a new invoice will be generated including the prorated monthly cost.

When the application is upgraded from a paid plan to a more expensive paid plan, the behavior depends on several factors:

- the mode of Billing: **Prepaid** or **Postpaid**
- when the plan change is made

18.4.4.1. Prepaid billing

1. If the application plan is changed **on the same billing day (a billing day starts at 8am UTC)** as it was created, and **so it has never been invoiced before** the fixed costs for the old plan are included to the invoice, and are discounted with a 'Refund' line item. The fixed costs for the old plan are also added to the invoice.

Example: A customer signed up for the Plan A (200\$) on the first day of the month, and upgraded to the Plan B (300\$) *on the same day*. One invoice will be generated in this case, and it will contain the following line items:

Description	Cost
Fixed fee ('Plan A')	200
Refund ('Plan A')	-200
Application upgrade ('Plan A' to 'Plan B')	300
Total	300

Note that if the customer signed up on another day of the month, the cost of and refund of 200 would be prorated.

2. If the application plan is changed **after the invoice was already issued** for this application:
 - In case of an **upgrade**, the developer will be issued two invoices: one for the initial charge, and another one for the upgrade.

Example: A customer signed up for the Plan A (200\$) on the first day of the month, and then upgraded to the Plan B (300\$) in the middle of the month. The following invoices will be generated:

Description	Cost
Fixed fee ('Plan A')	200

Description	Cost
Total	200

Description	Cost
Refund ('Plan A')	-100
Application upgrade ('Plan A' to 'Plan B')	150
Total	50

In the second invoice, the refunded cost (100\$) and the new cost (150\$) are prorated, as the upgrade is made in the middle of the billing period.

- Refunding on application **downgrade** (change to a plan with a lower cost) is not supported at the moment.

18.4.4.2. Postpaid billing

In Postpaid billing mode a single invoice will be issued, and it will include the *'Refund'* and *'Application upgrade'* line items.

IMPORTANT: This behavior was introduced on **April 20th, 2018** with the following changes:

- A bug was fixed where the initial charge (for the initial application plan) was not included in the invoice when the application was upgraded on the same day as created.
- Previously only one line item was added on application upgrade, including the difference between the cost of the new and the old plan. For example, in the scenario 2 described in **Prepaid billing** section above (application upgrades from Plan A – 200\$, to Plan B – 300\$), the second generated invoice would be:

Description	Cost
Application upgrade ('Plan A' to 'Plan B')	50
Total	50

where 50\$ is the difference between the prorated costs of the new and old plan for the rest of the month (150\$ - 100\$).

After **April 20th, 2018**, the calculations are reflected more clearly in the invoice (including refund and charge separately), while the total cost remains the same as before.

18.5. ENABLE/DISABLE BILLING/CHARGING PER ACCOUNT

Automated billing process generates invoices for all developer accounts subscribed to paid services.

Charging can be enabled or disabled globally (see [Billing and Charging settings](#)), however it is also possible to enable or disable both billing and charging per developer account. To do that, navigate to the account page and click the corresponding button (Enable / Disable) against:

- *Monthly billing is enabled/disabled*
- *Monthly charging is enabled/disabled*

If charging is disabled, and billing is enabled, the developer will be issued invoices, but will not be charged. This is useful in case you handle charging separately (e.g. with wire transfer).

If both are disabled, the developer will not be issued or charged.

If billing is disabled, and charging is enabled, the developer will not be issued any new invoices, but all the outstanding ones (*Pending* and *Failed*) will still be charged.

Here in the **Billing Status** block you can also see whether the credit card details are configured on the account. In case credit card details are configured, the month and the year of card expiration is shown. The presence of the credit card details may affect the developer portal flow on sign up and plan change (see more in [Section 18.9, "Credit card flow"](#)).

18.6. PLANS WITH TRIAL PERIOD

A trial period (in days) can be set for paid plans to delay the charging for the specified amount of days.

The trial period status will be shown for the application in the application listing (**[Your_API_service] > Applications > Listing**) in the *State* column as *"live - trial expires in N days"* , and in the application details page in the *Trial days left* field.

During the trial period the application can use all the features and usage limits defined by the plan without restrictions.

Once the trial period is set, it is not possible to cancel or extend it. Upgrading to another plan will not reset the trial days counter.

10 days before the trial period expires, an email notification is sent to the developer account notifying about the upcoming trial expiration. The template of this email can be configured in **Audience > Messages > Email Templates**: *"Application trial period expired for buyer"* for the application plans, and *"Service trial period expired for buyer"* for service plans with trial period. The developer should either remain on the current plan, or switch to another plan, or contact the API provider if they decide to cancel the subscription.

Once the trial period is over, the next time automated billing runs (see [Section 18.4, "Automated billing process"](#)) the developer will be charged according to the costs set for the plan that the application or service are currently on. Note that the application will **not** be blocked or suspended after the trial period expires, and will continue to work.

Note that while a trial period technically can be set for free plans, it is not recommended as the feature loses its usefulness.

18.7. VAT RATE/SALES TAX

Value-Added Tax (VAT) is a tax that is applied on goods and services sold within European Union. In other countries there is a similar tax, for example, Sales tax. API providers who charge their customers for using their API service often need to charge the tax as well and reflect it in the invoices to comply with the existing regulations.

3scale billing can automatically include VAT in the invoices, when configured.

18.7.1. Configure VAT rate field

VAT rate is the number (in percentage) that will be applied to the total cost in the invoice. To configure VAT rate, follow these steps in the Admin Portal, from the Dashboard:

1. Go to **Audience > Accounts > Fields Definitions**
2. Click **Create** in the *Account* section.
3. Select **vat_rate** in the [new field] drop-down list.
4. Set a value for **Label**.
5. Configure the checkboxes to indicate whether the field should be *Required*, *Read only* or *Hidden* for the developers.
NOTE: the "Choices" field only accepts strings, so this field cannot be used.
6. Click **Create**.

18.7.2. Configure VAT code field

VAT code is the VAT identification number. To configure the VAT code follow these steps in the Admin Portal, from the Dashboard:

1. Go to **Audience > Accounts > Fields Definitions**
2. Click **Create** in the *Account* section.
3. Select **vat_code** in the [new field] drop-down list.
4. Set a value for **Label**.
5. Configure the checkboxes to indicate whether the field should be *Required*, *Read only* or *Hidden* for the developers.
6. Click **Create**.

18.7.3. Set VAT values for an account

Once VAT code and VAT rate fields are added, you can set the corresponding values under the developer account Edit form. Depending on the selected checkboxes in the fields definitions the fields can also be visible and/or editable by the developers in the developer portal.

VAT code can be any string.

VAT rate must be a number. Either integer or decimal numbers are accepted (e.g.: 21, 23.5 etc.) and they represent the percentage of the cost that will be included as VAT.

18.7.4. Invoices with VAT

When an invoice is generated for a developer account that has a non-zero VAT rate configured, the invoices will include the following line items:

```

_ Total cost (without <VAT rate>)_ +
_<VAT rate> Amount_ +
_ Total cost (<VAT rate> <VAT rate value>% included)_

```

<VAT rate> will be replaced with the Label set for the VAT rate field, and <VAT rate value> is the value configured for the account the invoice is issued for.

The VAT code will be included in the PDF version of the invoice with the label, specified in as the Label in the VAT code field definition. The value will correspond to the value set in the developer account details.

The fields **vat_rate** and **vat_code** can also be read and written by the 3scale Account Management API.

18.8. DEVELOPER PORTAL VIEW

The developers can manage their Credit Card information and see their invoices in the developer portal.

The Finance switch in **Audience > Developer Portal > Feature Visibility** has to be in *Visible* state for the developers to see the billing-related elements in the developer portal.

A logged-in user can update the credit card details at **Settings > Credit Card Details**. Depending on the payment gateway configured the form may be different, and the user may need to enter the billing address first.

**Note:* Credit card details are not stored in the 3scale API Management database, it is managed by the payment gateway. Only the last 4 digits of the credit card number, the expiration date and the reference provided by the payment gateway are stored in the 3scale API Management database.*

A developer can only have one credit card card on the developer portal.

Credit card details cannot be deleted from the developer portal. The user of the developer account who wants to delete his credit card details would need to request the API provider to delete the credit card details from the system.

To see the invoices, the user can go to **Settings > Invoices**, and from there they can either show the details for each invoice, or download the invoice PDF.

18.9. CREDIT CARD FLOW

18.9.1. Sign up for a paid plan

When a developer signs up for a paid plan, they are requested to enter the credit card details before they are allowed to see the application credentials. Once the developer logs in to the developer portal for the first time, they will be redirected to the Credit Card Details page. Trying to access any other developer account page will result in a redirection to the Credit Card Details page again.

If you prefer, you can hide all the menu items except the Credit Card Details tab by customizing the corresponding developer portal templates with help of the Liquid tags.

The **current_account** Liquid drop exposes the method **requires_credit_card_now?** which returns **true** if the credit card details are missing, but are required (only if Billing is configured in the Admin Portal), and **false** otherwise.

You can hide any menu items and other UI elements in the **submenu** and **users_menu** partials by wrapping them with the following condition:

■

```
{% unless current_account.requires_credit_card_now? %}
...
{% endunless %}
```

18.9.2. Upgrade from a free to a paid plan

For plan changes of the existing applications there are multiple options that can be configured, including changing the plan directly by the developer or requesting a plan change. In case the application is upgraded from a free to a paid plan, it is important to ensure that the developer enters the credit card details before being able to upgrade. This can be configured in **[your_API_name] > Integration > Settings, Application Plan Changing** section by the following setting:

Change plan directly if developer has credit card, otherwise:

- Only request a plan change
- Request Credit Card entry for paid plans

Select the first option if you want to only allow the developer to request the change, and perform the upgrade manually after the credit card details are entered.

Select the second option if you want the developer to be notified that credit card details need to be entered before upgrading to a paid plan. In the plan selector widget the developer will see a message "You cannot change plan until you enter your Credit Card details" pointing to the credit card details form.

18.10. "BILLING ADDRESS" FIELD

When the developer enters the billing address on the Credit Card Details in the Developer Portal, this address is stored separately from the "legal" account address.

By default the legal address appears in the Invoices in the *Issued to* field. However, in case the developer does not have the legal address configured, but only the billing address, the latter will be used on the invoices (**Note:** the organization name is considered part of the address in this case).

By default the billing address is not visible in the Admin Portal or through the API, however you can add it as follows:

1. Go to **Audience > Accounts > Fields Definitions**
2. Under the *Account* block click **Create**.
3. Select 'billing_address' from the drop-down list, add the label, check the Read only checkbox and click **Create**.

Now the **<billing_address>** field appears in the XML model for Accounts in the Account Management API and Webhooks. The corresponding billing address will be visible as read-only in the Account and the Account edit pages of the Admin Portal.

Billing address can be changed by the developer in the Developer Portal (in the Credit Card Details section). The admin cannot change the billing address in the Admin Portal, but it is possible to do so with the *Account Edit* endpoint of the Account Management API using the following fields (as "additional fields"):

```
billing_address_name
billing_address_address1
billing_address_address2
```

billing_address_country
billing_address_city
billing_address_state
billing_address_zip
billing_address_phone

CHAPTER 19. EMAIL NOTIFICATIONS

Different events related to billing trigger email notifications for API providers and developers.

19.1. PROVIDER NOTIFICATIONS

The users of the 3scale account (admins and members with *Billing* permission) can subscribe to or unsubscribe from the notifications related to billing at **Account Settings (gear icon on the top-right) > Personal > Notification Preferences**, under Billing section:

Action required: review invoices

Sent a few days before end of billing cycle so you can review invoices before they are being sent to customers.

Customer downgraded

Sent when a customer changes to a plan with a lower monthly fixed price.

Expiring credit card

Sent when a customer's credit card is about to expire.

Payment error (retry)

Sent when payment fails, resulting in an unpaid invoice and a retry.

Payment error (final)

Sent when the final retry of a payment fails, resulting in a failed invoice.

Note: All admin users of the 3scale account will receive notifications regarding billing, if they are subscribed to them.

19.2. DEVELOPER EMAILS

The email notifications sent to the developer accounts can be configured at **Audience > Messages > Email Templates**. The following emails are available:

Credit card expired notification for buyer

Sent when the credit card is due to expire soon.

Invoice charged successfully for buyer

Sent when the invoice has been successfully charged.

Invoice charge failure for buyer with retry

Sent when the invoice charge has failed, and the invoice is in Failed state, which means that the charging will be retried again.

Invoice charge failure for buyer without retry

Invoice charge has failed for the 3rd time, the invoice has passed to Unpaid state and will not be retried again.

Upcoming invoice charge for buyer

Sent when the invoice is issued for the developer.

All admin users of the developer account will receive the above notifications.

19.2.1. Billing email address

You can configure an email address that your customers can contact for resolving any issues with billing (e.g. billing@example.com), in **Audience > Messages > Support Emails** in the *Finance support email* field.

The email templates reference the email address with the Liquid drop **{{ provider.finance_support_email }}**.

CHAPTER 20. BILLING API

The Billing API provides a way to automate common billing processes.

All the endpoints of the Billing API can be found in the Admin Portal under **Documentation (?) > 3scale API Docs > Billing API**.

The Billing API requires a valid access token which meets the following requirements:

- it should belong to either an admin user of the provider account, or a member user with "Billing" permissions
- it should include "Billing API" scope

Note that when an invoice ID is required as a parameter, it refers to the invoice ID, and **not** the Friendly invoice ID.

The XML response of the API endpoints is mostly self-explanatory, and the fields of the Invoice represent the same information as in the web and PDF representation.

Some notable fields of the response:

- **creation_type**: can have the following values: *'manual'* for invoices created manually or *'background'* for invoices created by the 3scale automated billing process
- **provider**: the details of the API provider (the admin account), corresponds to the *Issued by* section of the invoice.
- **buyer**: the details of the developer account, corresponds to the *Issued to* section of the invoice.

The XML representation of the invoice also includes the list of Line Items under the **line-items** field.

For some line items (typically the ones created automatically) apart from the expected name, description, quantity and cost (price), you can see the following:

- **type**: the type of the line item, can have the following values:
 - **LinItem::PlanCost** – for line items for fixed plan costs
 - **LinItem::VariableCost** – for line items for variable costs
- **metric_id**: for variable costs line items – the ID of the metric that the cost is associated with
- **contract_id**: the ID of the service or application that the cost is associated with

PART VI. MANAGING DEVELOPER ACCOUNTS

CHAPTER 21. ADDING DEVELOPERS

These are the steps to add a new developer account for access to your API.

If you have configured the workflow to invite developers manually, this covers how to add new developers.

21.1. CREATE A NEW DEVELOPER ACCOUNT

1. Follow *Accounts* link from the **Audience** section on the Admin Portal.
2. Click **Create**.

As an admin, you can skip even some of the required fields. If you want to invite users to the account securely, you can also skip the password fields. However the email on this main admin account must be unique among all users.

Group/Org.	Admin	Signup Date	Plan	Apps	State
Feasible Inc.	feasible	25 Oct, 2018	Default	1	Approved
Developer	John Doe	11 Sep, 2018	Default (custom)	2	Approved

21.2. SET UP APPLICATIONS

If you want to pre-configure app keys for the account, you can also add an application on behalf of the developer. Otherwise, leave this as one of the initial steps for the developer to take.

Name	State	Service	Plan	Paid?	Created At	Traffic On
Foobar App	live	Echo API	Unlimited	free	October 26, 2018	
Developer's App	live	Echo API	Basic	free	September 11, 2018	September 11, 2018

21.3. NOTIFY THE DEVELOPER

You can either send an email invitation to the developer manually or follow the steps to use the [invite developer](#) feature.

CHAPTER 22. APPROVING DEVELOPERS

This section shows how to make approvals for any step in the signup workflow.

Once you've implemented the signup workflow with manual approval steps, you have a few options. The approval process is slightly different depending on the trigger and what is being approved. If you receive an email notification, follow the instructions in the following section. Otherwise, it depends on whether you want to approve an account, a service, or an application.

22.1. APPROVE FROM EMAIL NOTIFICATION

If you (as admin) receive an email notification that one of your developers has an item pending approval, you can copy/paste the URL for the item into your browser, and it will take you directly to the page to make the approval.

22.2. ACCOUNT APPROVAL

To search for specific accounts or filter all accounts that are in a "pending" (for approval) state, navigate to **Audience > Accounts > Listing**. To show only the pending accounts, select "Pending" in the dropdown list *State* and click **Search**.

You can make individual approvals directly on each row, or select several rows at a time and perform a bulk approval.

RED HAT 3SCALE API MANAGEMENT Audience

Accounts

Bulk operations

You have selected 1 accounts and you can make following operations with them:

- Send email** (Send email to selected accounts)
- Change account plan** (Transfer these accounts to different account plan)
- Change state** (Approve, reject or make pending selected accounts)

Select multiple accounts for bulk approval

Filter for accounts "pending" approval

	Group/Org.	Admin	Signup Date	Plan	Apps	State	Create
<input checked="" type="checkbox"/>	tester inc	tester	25 Oct, 2018	Default	1	Created	Activate
<input type="checkbox"/>	barba papa	barbapapa	25 Oct, 2018	Default	1	Created	Activate
<input type="checkbox"/>	Feasible Inc.	feasible	25 Oct, 2018	Default	1	Approved	
<input type="checkbox"/>	Developer	John Doe	11 Sep, 2018	Default (custom)	2	Approved	

22.3. SERVICE APPROVAL

To search for specific subscriptions to a service or filter all subscriptions that are in a "pending" (for approval) state, navigate to **Audience > Accounts > Subscriptions**

To view Subscriptions, enable Service Plans in **Audience > Accounts > Usage Rules**

You can select one subscription or several at a time and perform a bulk approval.

RED HAT 3SCALE API MANAGEMENT Audience

Accounts

Bulk operations

You have selected 1 accounts and you can make following operations with them:

- Send email: Send email to selected accounts
- Change account plan: Transfer these accounts to different account plan
- Change state**: Approve, reject or make pending selected accounts

Search for Group/Org., User login, First name, L. Pending

<input type="checkbox"/>	Group/Org.	Admin	Signup Date	Plan	Apps	State	<input type="button" value="Create"/>
<input checked="" type="checkbox"/>	Developer	John Doe	11 Sep, 2018	Default (custom)	3	Pending	<input type="button" value="Approve"/>

[Export all Accounts](#)

22.4. APPLICATION APPROVAL

To search for applications or filter all applications that are in a “pending” (for approval) state:

1. Navigate to **Audience > Applications > Listing**
2. Select "pending" in the dropdown list *State* and click **Search**.

You can select one application or several at a time and perform a bulk approval.

RED HAT 3SCALE API MANAGEMENT Audience

Applications

Bulk operations

You have selected 1 applications and you can make following operations with them:

- Send email: Send email to owners of selected applications
- Change application plan: Transfer these applications to different application plan
- Change state**: Accept, suspend or resume selected applications

Perform bulk changes

Filter for the required state

Name State Account Service Plan Paid? Traffic On

<input type="checkbox"/>	Name	State	Account	Service	Plan	Paid?	Created At	Traffic On
<input checked="" type="checkbox"/>	barba papa's App	live	barba papa	Echo API	Unlimited	free	October 25, 2018	
<input type="checkbox"/>	Feasible Inc.'s App	live	Feasible Inc.	Echo API	Basic	free	October 25, 2018	
<input type="checkbox"/>	Developer's camel-rest-sql App	live	Developer	camel-rest-sql	Default	free	October 11, 2018	
<input type="checkbox"/>	Developer's App	live	Developer	Echo API	Basic	free	September 11, 2018	September 11, 2018

You can also start from the details page for a developer account, select which application you wish to approve from there, and make the approval on the application details page.

RED HAT 3SCALE API MANAGEMENT Audience ▾

Accounts ▾

- Listing
- Account Plans
- Subscriptions

SETTINGS

- Usage Rules
- Fields Definitions

Applications ▸

Billing ▸

Account 'Developer' 3 Applications | 1 User | 0 Invitations | 1 Group Membership | 1 Invoice

Account: Developer [Edit](#)

Organization/Group Name	Developer	Send message
Administrator	John Doe (admin+test@3scale.poc-sd.staging.3sca.net)	
Signed up on	September 11, 2018 13:22	
Status	Pending	Approve Reject

RED HAT 3SCALE API MANAGEMENT API: Echo API ▾

Overview

Analytics ▸

Applications ▾

- Listing
- Application Plans

Subscriptions ▸

ActiveDocs

Integration ▸

Application 'My app' [Analytics](#)

My app [Edit](#)

Account	Developer	
Description	my app	
Service	Echo API	
State	Pending	Accept or Reject

API Credentials

CHAPTER 23. CHANGING PLANS FOR AN APP

After this section you will be able to change plans for accounts, services or applications.

As admin you may change plans for a developer at any time, or in response to a plan change request that the developer initiates.



NOTE

The change plans step is slightly different depending on what type of plans are being changed.

23.1. CHANGE ACCOUNT PLANS

To search or filter specific accounts, navigate to **Audience > Accounts > Listing**

You can select one or more rows at a time, and change the plans.

RED HAT 3SCALE API MANAGEMENT **Audience** ▾

Accounts

Bulk operations

You have selected 2 accounts and you can make following operations with them:

Send email to selected accounts

Transfer these accounts to different account plan

Approve, reject or make pending selected accounts

<input type="checkbox"/>	Group/Org.	Admin	Signup Date	Plan	Apps
<input checked="" type="checkbox"/>	Feasible Inc.	feasible	25 Oct, 2018	Default	1
<input checked="" type="checkbox"/>	Developer	John Doe	11 Sep, 2018	Default (custom)	2

23.2. CHANGE SERVICE PLANS

To search or filter specific subscriptions to a service, navigate to **Audience > Accounts > Subscriptions**

You can only view subscriptions if you have enabled Service Plans in the Settings page.

You can select one or several subscriptions at a time, and change the plans.

RED HAT 3SCALE API MANAGEMENT Audience

Service Subscriptions

Bulk operations

You have selected 1 service subscriptions and you can make following operations with them:

Send email Send email to selected subscribers

Change service plan Transfer these subscriptions to different service plan

Change state Accept, suspend or resume selected subscriptions

<input type="checkbox"/>	Account	Service	Plan	State	Paid? [?]	Created On
<input type="checkbox"/>						
<input type="checkbox"/>	barba papa	Echo API	Default	live	free	October 25, 2018
<input checked="" type="checkbox"/>	Feasible Inc.	Echo API	Default	live	free	October 25, 2018
<input type="checkbox"/>	Developer	camel-rest-sql	Default	live	free	October 11, 2018
<input type="checkbox"/>	Developer	Echo API	Default	live	free	September 11, 2018

23.3. CHANGE APPLICATION PLANS

To search or filter specific applications, navigate to **Audience > Applications > Listing**

You can select one or several applications at a time, and change plans.

RED HAT 3SCALE API MANAGEMENT Audience

Applications

Bulk operations

You have selected 2 applications and you can make following operations with them:

Send email Send email to owners of selected applications

Change application plan Transfer these applications to different application plan

Change state Accept, suspend or resume selected applications

<input type="checkbox"/>	Name	State	Account	Service	Plan	Paid? [?]	Created At
<input type="checkbox"/>		All					
<input checked="" type="checkbox"/>	Feasible Inc.'s App	live	Feasible Inc.	Echo API	Basic	free	October 25, 2018
<input type="checkbox"/>	Developer's camel-rest-sql App	live	Developer	camel-rest-sql	Default	free	October 11, 2018
<input checked="" type="checkbox"/>	Developer's App	live	Developer	Echo API	Basic	free	September 11, 2018

Another scenario is to start from the details page for a developer Account. From there you select the application for which you wish to change plan. On the application details page, you can change the plan.

The screenshot displays the Red Hat 3Scale API Management interface. The top navigation bar includes the logo, 'RED HAT 3SCALE API MANAGEMENT', and a dropdown menu for 'API: Echo API'. The left sidebar contains navigation options: Overview, Analytics, Applications (highlighted), Listing, Application Plans, Subscriptions, ActiveDocs, and Integration. The main content area is titled 'Metro's App' and includes an 'Edit' link. It features a table with application details: Account (Metro), Description (Default application created on signup), Service (Echo API), and State (Live with a 'Suspend' button). Below this is the 'API Credentials' section, showing a 'User Key' (masked as xxxxxxxx) and a 'Regenerate' button. To the right, the 'Application Plan: Unlimited' is shown with a 'Convert to a Custom Plan' option and a list of features: Unlimited Greetings, 24/7 support, and Unlimited calls, all with status indicators. At the bottom right, a 'Change Plan' dropdown menu is open, showing options for Basic, Plan A (selected), and Plan B.

23.3.1. More information

If rather than change to another standard plan, you only want to make a change for one specific app, you can use the [customize plans](#) feature.

CHAPTER 24. CONTACTING DEVELOPERS

This guide explains how to find out which developer account manages a particular application and then communicate with them – both through 3scale and externally.

During API operations, you may urgently need to contact developers who are using your API.

24.1. LOCATE THE RELEVANT APPLICATION AND ACCOUNT IN THE SYSTEM

If you already know the account and developer who manages the application in question, navigate to their account from the Accounts page in **Audience > Accounts > Listing** as shown below.

<input type="checkbox"/>	Group/Org.	Admin	Signup Date	Plan	Apps	State	Create
<input type="checkbox"/>	<input type="text" value="Search for Group/Org., User login, First name, La"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Search"/>
<input type="checkbox"/>	Feasible Inc.	feasible	25 Oct, 2018	Default	1	Approved	
<input type="checkbox"/>	Developer	John Doe	11 Sep, 2018	Default (custom)	2	Approved	

If you only have the application ID or API key, you can use the search box on the Accounts page in **Audience > Accounts > Listing** to find the relevant account. More information on locating applications is available [here](#).

24.2. SEND INTERNAL MESSAGES TO DEVELOPERS

Once you are in the account profile page as shown below, click the message icon.

RED HAT 3SCALE API MANAGEMENT Audience ▾

Account 'Developer' > [2 Applications](#) | [1 User](#) | [0 Invitations](#) | [1 Group Membership](#) | [1 Invoic](#)

Account: Developer [Edit](#)

Organization/Group Name	Developer	Send message
Administrator	John Doe (admin+test@3scale.poc-sd.staging.3sca.net)	
Signed up on	September 11, 2018 13:22	
Status	Approved	

Billing Status

✔ Monthly billing is enabled. ⏹ Disable

The message created here will be sent both to the account system dashboard, where all developers on the account will see it, and by email to the people on the developer account who have admin status within the account.

24.3. CONTACT BY OTHER MEANS

If it's an emergency and email is unlikely to be fast enough for your purposes, you can also use the contact information submitted by the developer at time of signup, which is available:

- On the company account page (general contact information but may include a phone number)
- Developer/user specific information on the users' own file

Note that you can make contact phone numbers a required field upon signup.

CHAPTER 25. CUSTOMIZE PLANS

When you have completed this section you will have customized an application plan for a specific developer.

Application plans are a good way to apply standard policies for different segments of your developer community. However, you always have the flexibility to customize the standard plans for any individual developer with unique requirements.

Once a plan is customized, you lose the link to the original plan. If you make changes to the original plan, the custom plan does not inherit any of those changes. So you should use this customization feature sparingly, before you become overwhelmed with too many custom plans which you cannot manage effectively.

A developer wants to increase their current limits without upgrading to the next pricing tier as the current billing period is already under way. A customization could be a good way to handle this situation by enabling the increase in limits and charging only the variable costs incurred. This would also help encourage an upgrade for the following billing month.

25.1. CHOOSE THE ACCOUNT

To view the details page for the developer Account you are interested in:

1. Navigate to **Audience > Accounts > Listing**
2. Choose the Developer account

RED HAT 3SCALE API MANAGEMENT Audience

Accounts

<input type="checkbox"/>	Group/Org.	Admin	Signup Date	Plan	Apps	State	Create
<input type="checkbox"/>	Feasible Inc.	feasible	25 Oct, 2018	Default	1	Approved	
<input type="checkbox"/>	Developer	John Doe	11 Sep, 2018	Default (custom)	2	Approved	

25.2. SELECT THE APPLICATION

Select the application whose plan you wish to customize.

RED HAT 3SCALE API MANAGEMENT Audience

Account 'Developer' 2 Applications | 1 User | 0 Invitations | 1 Group Membership | 1 Invoice | 1 Service Subscription

Accounts

<input type="checkbox"/>	Name	State	Service	Plan	Paid? ?	Created At	Traffic On	Create Application
<input type="checkbox"/>	Foobar App	live	Echo API	Unlimited	free	October 26, 2018		
<input type="checkbox"/>	Developer's App	live	Echo API	Basic	free	September 11, 2018	September 11, 2018	

25.3. CUSTOMIZE THE APPLICATION PLAN

Select the option to “customize”. This provides the page where all the plan elements can be customized for the application owned by this account.

The screenshot displays the Red Hat 3Scale API Management interface for 'Metro's App'. The left sidebar contains navigation options: Overview, Analytics, Applications (highlighted), Listing, Application Plans, Subscriptions, ActiveDocs, and Integration. The main content area is titled 'Metro's App' and includes an 'Edit' link. A table lists application details: Account (Metro), Description (Default application created on signup), Service (Echo API), and State (Live with a 'Suspend' button). Below this is the 'API Credentials' section with a 'User Key' field and a 'Regenerate' button. The 'Usage in last 30 Days' section shows a bar chart with 'Hits' and '0 hits'. The 'Current Utilization' section states: 'This is an unmetered application, there are no limits defined'. On the right, the 'Application Plan: Unlimited' section features a 'Convert to a Custom Plan' button and a 'FEATURES' table:

FEATURES	
Unlimited Greetings	✔
24/7 support	✔
Unlimited calls	✔

Below the features table is a 'Change Plan' section with a dropdown menu and a 'Change Plan' button.

25.3.1. More information

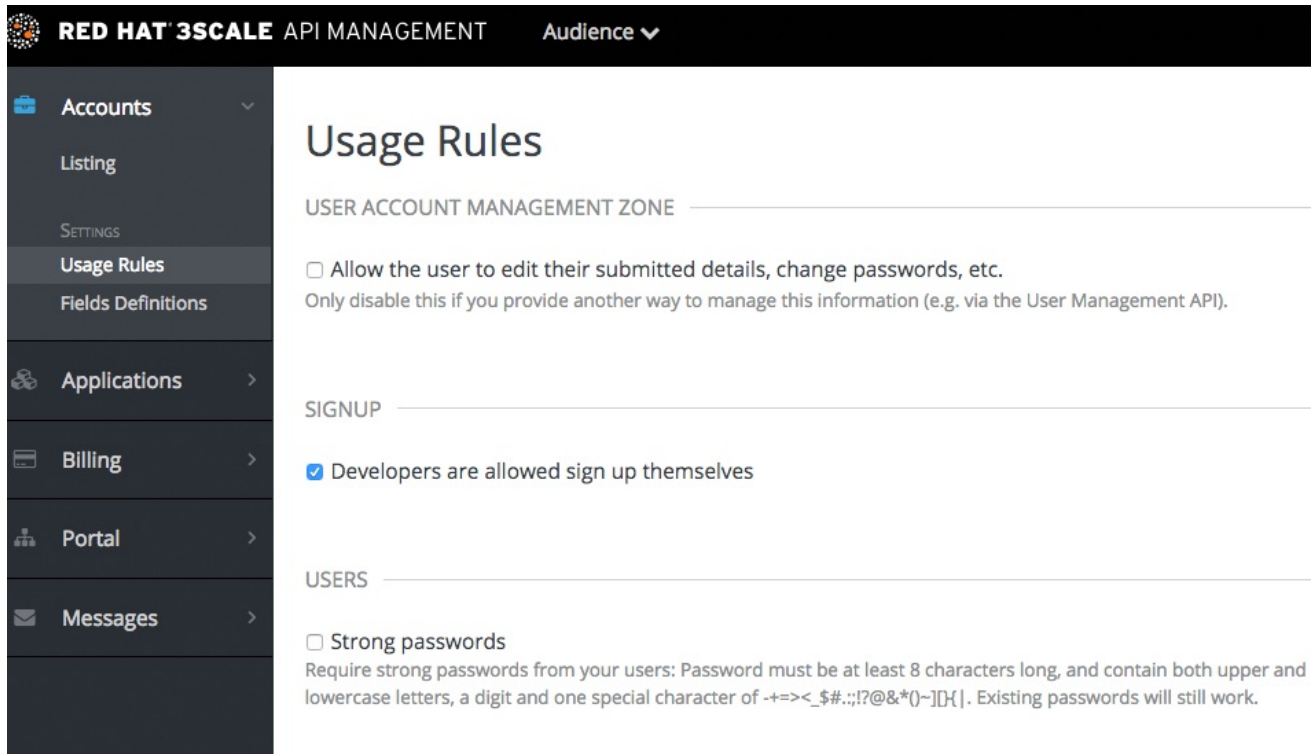
Before you take the step to customize plans, always consider first if you are not better off with a new standard plan (which can be hidden from display in the Developer Portal). Then you would just [change to the standard plan](#) and so gain the benefit of reuse if this applies to more than one of your developer partners.

CHAPTER 26. ENABLE SIGNUP

Configure developer signup by implementing self-service or manual mode.

You can configure the workflow for developers to be self-service or by manual invite only. Self-service signups are done by developers through the Developer Portal, while manual invites are handled by your admins through the Admin Portal.

By default, the checkbox toggle is set to enabled. To do so, navigate to **Audience > Accounts > Settings > Usage Rules**.



The screenshot displays the Red Hat 3scale Admin Portal interface. The top navigation bar includes the Red Hat logo, the text "RED HAT 3SCALE API MANAGEMENT", and a dropdown menu for "Audience". A left sidebar contains a navigation menu with items: "Accounts" (with a dropdown arrow), "Listing", "SETTINGS" (in all caps), "Usage Rules" (highlighted), "Fields Definitions", "Applications" (with a right arrow), "Billing" (with a right arrow), "Portal" (with a right arrow), and "Messages" (with a right arrow). The main content area is titled "Usage Rules" and is divided into three sections: "USER ACCOUNT MANAGEMENT ZONE", "SIGNUP", and "USERS".

- USER ACCOUNT MANAGEMENT ZONE**
 - Allow the user to edit their submitted details, change passwords, etc.
Only disable this if you provide another way to manage this information (e.g. via the User Management API).
- SIGNUP**
 - Developers are allowed sign up themselves
- USERS**
 - Strong passwords
Require strong passwords from your users: Password must be at least 8 characters long, and contain both upper and lowercase letters, a digit and one special character of `-+=<_$.:;!@&*()-]{}|`. Existing passwords will still work.

CHAPTER 27. FINDING APPLICATIONS

By the end of this guide, you'll be able to quickly locate an application in the Admin Portal based on either its name, an API key, or an application identifier.

During API operations, you may need to be able to find information on an application that is accessing your API quickly – either for support purposes, to change configuration, or potentially because the application is misbehaving and needs to be disabled.

27.1. GET THE INFORMATION YOU NEED

To find an application, you need the name of the account it belongs to or the application's name. If you do not have this information, you can verify the access logs. To perform the search, navigate to Applications (**Audience > Applications > Listing**).

If you search by identifier for an authentication type, you need the following information:

- For API key-only authentication patterns: the API key
- For app ID and app key authentication patterns: the app identifier (search by app key is not supported)
- For OpenID Connect authentication patterns: the client_id (search on the secret is not supported)

27.2. SEARCH FOR THE APPLICATION

To search a given application, navigate to Applications page (**Audience > Applications > Listing**), and use the search box as shown in the image below.

The screenshot shows the Red Hat 3Scale API Management interface. The top navigation bar includes the Red Hat logo, 'RED HAT 3SCALE API MANAGEMENT', and a dropdown menu for 'Audience'. A left sidebar contains navigation items: Accounts, Applications (highlighted with a red box), Listing, Alerts, Billing, Portal, and Messages. The main content area is titled 'Applications' and features a search bar and a table of applications.

<input type="checkbox"/> Name	State	Account	Service
<input type="text"/>	All	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> Feasible Inc.'s App	live	Feasible Inc.	Echo API
<input type="checkbox"/> Developer's camel-rest-sql App	live	Developer	camel-rest-sql
<input type="checkbox"/> Developer's App	live	Developer	Echo API

27.3. ACCESS APPLICATION INFORMATION

Once the results are returned, click on the application you'd like to access and you'll be taken to that application's homepage, which includes information such as that shown in the image below.

RED HAT 3SCALE API MANAGEMENT Audience ▾

Accounts >

Applications ▾

Listing

Alerts

Billing >

Portal >

Messages >

Applications

<input type="checkbox"/> Name	State	Account	Service
<input type="checkbox"/> Feasible Inc.'s App	live	Feasible Inc.	Echo API
<input type="checkbox"/> Developer's camel rest-sql App	live	Developer	camel-rest-sql
<input type="checkbox"/> Developer's App	live	Developer	Echo API

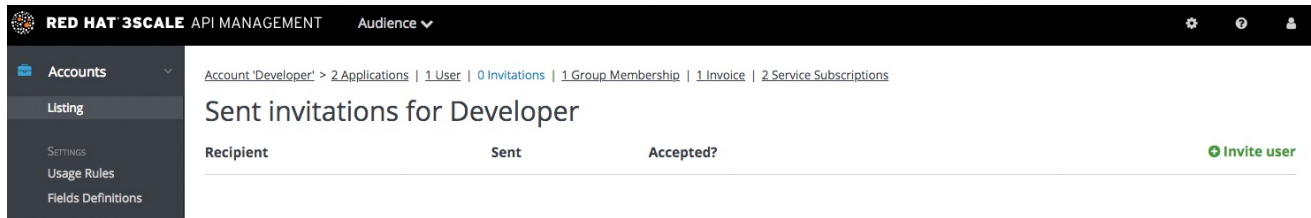
Select the App to check

CHAPTER 28. INVITING DEVELOPERS

After completing these steps, you will have added a new developer user to a developer account.

When you create a developer account manually, you can invite developer users to that account through the Admin Portal:

1. Navigate to **Audience > Accounts > Listing**
2. Choose the account in question.
3. Select "Invitations" and then click **Invite user**.



The screenshot shows the Red Hat 3Scale API Management Admin Portal. The top navigation bar includes the Red Hat 3Scale logo, 'API MANAGEMENT', and a dropdown menu for 'Audience'. The left sidebar contains a menu with 'Accounts' (selected), 'Listing', and 'SETTINGS' (Usage Rules, Fields Definitions). The main content area shows the breadcrumb 'Account 'Developer' > 2 Applications | 1 User | 0 Invitations | 1 Group Membership | 1 Invoice | 2 Service Subscriptions' and the title 'Sent invitations for Developer'. Below the title is a table with columns 'Recipient', 'Sent', and 'Accepted?'. A green 'Invite user' button is located in the top right corner of the table area.

CHAPTER 29. UNSUBSCRIBING DEVELOPERS FROM A SERVICE

As an admin, you can unsubscribe developers from a service. You may need to do this for one specific developer, or for multiple developers, in the event of a service deprecation.

29.1. UNSUBSCRIBING A SINGLE DEVELOPER FROM SERVICES

Unsubscribe a single developer from a service they are subscribed to through the Admin Portal:

1. In the Admin Portal's Dashboard, navigate to **Audience > Accounts > Listing > [select an account] > Service Subscriptions**.
2. Select **Unsubscribe** for the service that you want to remove the developer from.

29.2. UNSUBSCRIBING MULTIPLE DEVELOPERS FROM SERVICES

Perform a bulk action to unsubscribe multiple developers from a deprecated or deleted service:



NOTE

This method only applies to services that have been deleted or suspended. You cannot perform a bulk unsubscription action on active services.

1. In the Dashboard, navigate to: **Audience > Accounts > Subscriptions**
2. Do bulk state change.
3. Using the service dropdown menu, identify the service from which you want to unsubscribe developers.
4. Using the checkboxes on the left, select the developers you want to unsubscribe.
5. Select **Change State > Suspend** to suspend the selected developer subscriptions.

Remember that service plans need to be enabled.

CHAPTER 30. SUSPENDING APPLICATIONS

This guide explains how to disable all keys and access tokens for an application.

If an application is misusing your API and affecting other traffic, you may need to quickly suspend its operations before contacting the developer involved to ask them to amend their code or configuration.

30.1. FIND THE APPLICATION

You can find the application from the **Accounts** or **Applications** tabs or by searching as described [here](#).

30.2. DISABLE THE APPLICATION

Once you have located the application and see the application summary page, click on the suspend icon next to the 'State' value. This action will immediately disable the application from the API and suspend all keys from working. Calls with these application keys will be rejected by the control system.

The application can be unsuspended using the same button once the problematic behavior has been rectified.

The screenshot shows the Red Hat 3Scale API Management interface. The top navigation bar includes the Red Hat logo, 'RED HAT 3SCALE API MANAGEMENT', and 'API: Echo API'. The left sidebar contains navigation items: Overview, Analytics, Applications (selected), Listing, Application Plans, ActiveDocs, and Integration. The main content area shows the configuration for 'Developer's App'. It includes a table with the following details:

Account	Developer
Description	Default application created on signup.
Service	Echo API
State	Live ⏸ Suspend

Below the table is a section titled 'API Credentials'.




NOTE

If you use caching in your agents, suspension may not be immediate but require a short timeout.

30.3. CONTACT THE DEVELOPER

How you contact the developer of the application will depend on your workflow and policy. On the same page, you can click on the account name, which will take you to the account view where you can identify the key administrator of the account that owns the application. You can contact them either by email or by clicking on the send message button as shown, which will generate a dashboard message for the user.

 **RED HAT 3SCALE** API MANAGEMENT Audience ▾

- Accounts ▾
 - Listing
 - SETTINGS
 - Usage Rules
 - Fields Definitions
- Applications >
- Billing >
- Portal >
- Messages >

[Account 'Developer'](#) > [2 Applications](#) | [1 User](#) | [0 Invitations](#) | [1 Group Membership](#) | [1 Invoic](#)

Account: Developer [Edit](#)

Organization/Group Name	Developer	Send message
Administrator	John Doe (admin+test@3scale.poc-sd.staging.3sca.net)	
Signed up on	September 11, 2018 13:22	
Status	Approved	

Billing Status

✔ Monthly billing is enabled. ⏸ Disable

CHAPTER 31. DELETING APPLICATIONS

To delete an application via the Admin Portal, you need to follow these steps:

Option 1: Delete an application from the list of all applications for [Your_API_name].

1. In the Dashboard, click [Your_API_name].
2. Click the **Overview** tab.
3. From the left panel on the *Overview* page, click **Applications**.
4. Choose **Listing**.
5. Click on an application.
6. You will see a page containing details of the application. Click **Edit**.
7. To delete the application, click **Delete**.
8. You will see a confirmation message. Click **Ok** to confirm the deletion.

Option 2: Delete an application based on a specific application plan.

1. In the Admin Portal, click **Dashboard**.
2. Choose **API**.
3. Under *Published Application Plans*, choose an application.
4. Click on an application.
5. You will see a page containing details of the application. Click **Edit**.
6. To delete the application, click **Delete**.
7. You will see a confirmation message. Click **Ok** to confirm the deletion.

Alternatively, you can also delete an application via 3scale API Docs, with the operation called **Application Delete**.

PART VII. ANALYTICS

CHAPTER 32. API ANALYTICS

This guide is designed to help you tune your API analytics to track the items you need to know about and to see top applications and trends over time.

Knowing how your API is used is a crucial step for managing traffic, provisioning for peaks, and identifying top users so you can help them achieve greater success with your API.

32.1. PREREQUISITES

Complete the instructions of the **Getting Started** section before using this guide.

The guide assumes that you are using one of the existing 3scale code plugins to perform an integration. You can follow a similar flow with other integration methods. Check the [APIcast Overview](#) chapter of the documentation to learn more about the available integration options.

32.2. DETERMINING THE METRICS AND METHODS TO TRACK

3scale acts as an infinitely scalable data repository for your API statistics, and you can track almost any metric for your API. For example:

- *Hits/transactions*: calls to the API. Hits are included by default as metrics on all APIs. Hits can be overall calls to the API or broken out into individual methods on the API.
- *Data transfer*: quantity of MB/GB of data uploaded and downloaded via the API
- *CPU hours*: compute time (or some other internal resource) associated with calls to the API
- *Results returned*: count of the number of records or data objects being returned
- *Disk storage*: total disk storage in use by an account

You can track more metrics that are relevant to your API. 3scale can track an arbitrary number of metrics and methods, as long as it is a countable quantity that can be incremented over time.

32.3. CREATING YOUR METRICS AND METHODS

After you chose your metrics, register them in the 3scale Admin Portal. Navigate to **[your_API_name] > Integration > Methods & Metrics**.

Figure 32.1. Create new method

The screenshot shows the 'Methods & Metrics' page for the 'Echo API'. The left sidebar is dark with a red box around the 'Integration' menu item, which has a sub-menu containing 'Configuration', 'Methods & Metrics', and 'Settings'. The main content area is white and has a dark header with 'RED HAT 3SCALE API MANAGEMENT' and 'API: Echo API'. Below the header, there's a 'Methods & Metrics' section. Under 'Methods', there's a text block explaining that methods trigger the built-in Hits-metric and that usage limits and pricing rules are defined within each Application Plan. Below this is a table with columns: Method, System Name, Unit, Description, and Mapped. The table is empty, and there's a '+ New method' button in the top right corner. A red arrow points to this button with the text 'Create new method'. Under 'Metrics', there's a text block explaining that Hits is the built-in metric and that additional top-level metrics can be added. Below this is a table with columns: Metric, System Name, Unit, Description, and Mapped. The table has one row: Hits, hits, hit, Number of API hits, and a checkmark. There's a '+ New metric' button in the top right corner. A red arrow points to this button with the text 'Create new metric'.

Add metrics and methods to the service. Provide them with a friendly name and a system name, which is used later in your plugin configuration. For more details about creating methods and metrics, see [defining your API on 3scale](#).

32.4. SETTING UP REPORTS

Once you have configured the 3scale system with the names of the metrics to track, it is time to tweak your plugin setup to report the right metrics. The precise manner of doing this depends on the plugin or integration method in use. By default, the plugins report the **hits** (API transactions) metric only.

Generally speaking, you need to follow these steps.

1. The application should pass the appropriate metric/method names to the plugin as determined by the incoming API call. The metric/method value and the increment required is an argument of authorize and/or report methods the plugin exposes.
2. You can also report the traffic using the 3scale Service Management API. You can find information about different endpoints in the 3scale APIs ActiveDocs section. 3scale ActiveDocs are available in your Admin Portal under the **Documentation → 3scale API Docs** section.

When you report traffic for a specific API method, use the method **system name** in the metric argument. This automatically increments the counter both for the method reported and the hits metric.

32.5. CHECKING THAT TRAFFIC IS REPORTED CORRECTLY

Once the API and 3scale connection is established, you can send traffic to the API and watch it register on the API Analytics dashboard. You need an existing developer account and an application with API credentials to be able to perform the steps in this section. Follow these steps to create a developer account and get an application with API credentials.

1. Open the [Getting Started guide](#).
2. Navigate to **Audience > Applications > Listing** to see the list of existing applications.
3. Select an application by clicking on its name.

Figure 32.2. Applications

RED HAT 3SCALE API MANAGEMENT Audience ▾

Accounts ▾

Applications ▾

Listing

Alerts

Billing ▾

Developer Portal ▾

Messages ▾

Applications

Name	State	Account	Service	Plan	Paid? [?]	Created At	Traffic On
<input type="text"/>	All ▾	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Metro's App	live	Metro	Echo API	Unlimited	free	October 25, 2018	
Feasible Inc.'s App	live	Feasible Inc.	Echo API	Basic	free	October 25, 2018	
Developer's App	live	Developer	Echo API	Basic	free	September 11, 2018	September 11, 2018

[Export all Applications](#)

- Find the API credentials for the selected application. The credentials depend on the selected authentication type and can be a user key (API key), an application ID and application keys, or a client ID and client secret. For more information about the available authentication modes, see the [authentication patterns](#) article.

Figure 32.3. API credentials

RED HAT 3SCALE API MANAGEMENT API: Echo API ▾

Overview

Analytics ▾

Applications ▾

Listing

Application Plans

Subscriptions ▾

ActiveDocs

Integration ▾

Application 'Metro's App' | Analytics

Metro's App [Edit](#)

Account	Metro
Description	Default application created on signup.
Service	Echo API
State	Live Suspend

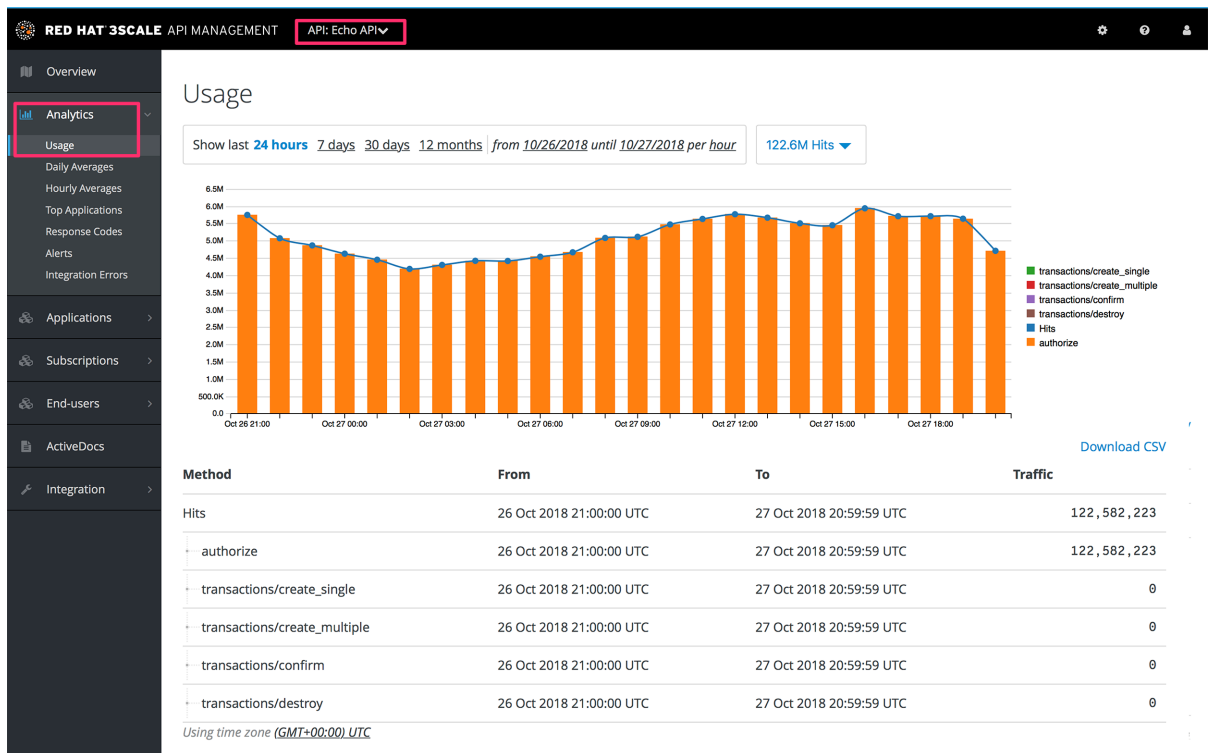
API Credentials

Application ID	xxxxxxx
----------------	---------

[+ Add Custom key](#) [+ Add Random key](#)

- Use these keys to make calls to your API in the normal way (for example, from the command line using cURL or from the browser for API endpoints using the GET method). The precise calls to make depend on the structure of the methods on your API. Traffic from these calls appear in the Analytics section for your API.

Figure 32.4. Analytics usage

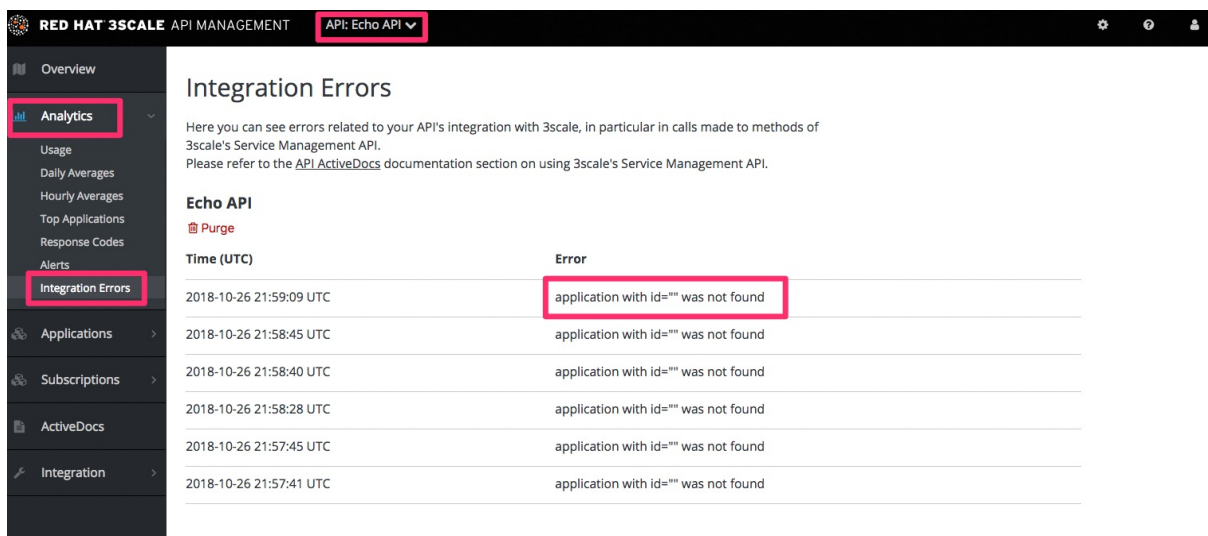


32.6. TROUBLESHOOTING

If traffic does not display on the usage charts in the Analytics section, perform the following checks.

- Are authorize/report calls responding correctly?**
 All plugins call the 3scale Service Management API, which has predetermined response codes. Authorize calls for valid keys should return responses with HTTP code **200**. Report calls should respond with code **202**.
- Are there errors in the integration error console?**
 The log of integration errors detected by 3scale can be found in `[your_API_name] > Analytics > Integration Errors`.

Figure 32.5. Integration errors



- Are the correct metric and method names being used?**

The most common reason for failure is that the method and metric names passed in report calls do not correspond to those created in the API settings of your Admin Portal. Check that you are using the correct **system names** for each metric/method.

32.7. CONTROLLING WHO SEES THE ANALYTICS

By default, the usage statistics are visible to the API provider through the Admin Portal and to the developers who created applications through the Developer Portal. (Each developer can see only the usage statistics for their own applications.) You have the ability to hide the analytics views from the Developer Portal. See the [Developer Portal](#) section to learn more about customizing the Developer Portal.

32.8. ACCESSING ANALYTICS DATA BY API AND EMAIL REPORTS

Besides the usage graphs in the Analytics section, there are other methods of getting your API's analytics data.

- **Analytics API**

You can use the 3scale Analytics API. It is a flexible way to extract all the analytics data for your API in either XML or JSON format.

- **Daily and weekly traffic reports (SaaS only)**

These reports provide the aggregated data about your traffic, including information about new subscribers to your API and top applications. To enable these reports in the **Account Settings (gear icon) > Personal > Notification Preferences** of your Admin Portal, find the **weekly aggregate reports** and **daily aggregate reports** check boxes. If enabled, these reports are emailed to the admin user of your 3scale account.

- **CSV export (SaaS only)**

There is a **download CSV** link on each analytics view page, and you can download the usage statistics in .csv format.

Download CSV image::guides-api-analytics-download-csv.png[width=100px]

CHAPTER 33. EXPORTING ANALYTICS

This article shows how to create scripts that extend the current capabilities of the built-in 3scale analytics.

By using the Account Management and Analytics API (Enterprise only), you can create scripts that get the custom information that you need in the format that you prefer. This article describes a particular use case, but the same approach can be used to get whatever data you need out of 3scale.

33.1. REASONS FOR CUSTOMIZED SCRIPTS

3scale continuously improves the features available on your API Dashboard. However, you may be ahead of our development plans and have a very specific need that's not yet supported.

To satisfy the needs for API management, 3scale always gives you the tools to access all your data. However, customized scripts have some costs – it takes some resources to write the scripts – but the cost is not too high, as we will show in this article. More importantly, DIY gives you total flexibility and control to implement any use case you can think of.

33.2. A REAL-WORLD EXAMPLE

Recently a customer came to us with a very specific need that could not be solved with 3scale in a streamlined way.

They were onboarding thousands of new developers per week. They were able to survive such success thanks to the 3scale API Management Platform. Onboarding so many developers would be a daunting task – luckily 3scale provides automates necessities such as key provisioning, sign-up workflows, and email communication. So far so good.

There was, however, something that was not possible to do with 3scale, which was quite important for them. Since they are onboarding so many people, they needed a straight-forward way to classify the new developers based on their engagement with their API so that their operations and marketing teams could interact with the new developers more effectively.

Such a feature, at least at the required level of detail, is not yet available in 3scale's built-in analytics tools. However since all the data is already available, it can be extracted using 3scale's Account and Analytics API.

33.3. EXAMPLE: CUSTOMER REQUIREMENTS

They would like to know how many new developers have signed up for the free evaluation plan in the last 10 days, split up different ways.

First, they wanted to know how many developers signed up but didn't ever use their API. What they wanted to do with this information is out of scope for this article, but it's clearly valuable information that would help adoption of your API.

Second, they wanted to split the developers that had used their API into two groups:

- Developers that used it for a period of time – say the first half of the 10 days – and then stopped using the API. These developers tried it out, but became inactive.
- Developers that have been using the API consistently. For those, they would like to know the percent growth (or decline).

This information is available on 3scale's built-in analytics. The problem is that there is no view to show it aggregated, which makes the whole experience quite cumbersome.

A typical answer to this problem would be *this classification will be part of the upcoming analytics revamp*. (Funny thing is that's actually the case.) But that does not solve the problem if you need it now. We at 3scale want to give you the tools to do everything you need to do without depending on our release schedule.

33.4. HANDS-ON IMPLEMENTATION

33.4.1. Winning recipe

This recipe usually gives better results in achieving custom work.

- Tinker a bit with ActiveDocs. 3scale ActiveDocs, available in your Admin Portal, under the **Account Settings (Gear icon in the top right corner) > Integrate > 3scale API Docs** 3scale has all of its APIs available as ActiveDocs so that you can try them out from your browser. This allows you to find the request that best serves your needs, get the request (curl-like) and get a grasp of the response. See an example...

The screenshot shows the ActiveDocs interface for the 'Application List (all services)' API. The interface includes a form with the following parameters and values:

PARAMETER	VALUE	DESCRIPTION
provider_key	4e8d8fc2ea7c03ff81423784952b119	Your api key with 3scale (also known as provider key).
page	1	Page in the paginated list. Defaults to 1.
per_page	500	Number of results per page. Default and max is 500.
active_since		filter date
inactive_since		filter date
service_id		filter by service

Below the form is a 'Send Request' button and a 'Request' section containing the following curl command:

```
curl -v -X GET "https://enterprisedemo-admin.3scale.net/admin/api/applications.xml?provider_key=4e8d8fc2ea7c03ff81423784952b119&page=1&per_page=500"
```

The 'Response Body' section shows the XML response for the API call:

```
<?xml version="1.0" encoding="UTF-8"?>
<applications per_page="500" total_entries="1700" total_pages="4" current_page="1">
  <application>
    <id>1409607484442</id>
    <created_at>2012-10-25T08:55:42Z</created_at>
    <updated_at>2015-12-07T13:54:39Z</updated_at>
    <state>live</state>
    <user_account_id>2445579995682</user_account_id>
    <end_user_required>false</end_user_required>
    <service_id>1806371742031</service_id>
    <user_key>930227b36f525ca2e06b1318f3153c1</user_key>
    <provider_verification_key>492853af7915a76a84c17bd4f350e64</provider_verification_key>
    <plan custom="false" default="false">
      <id>2357355464251</id>
    </plan>
  </application>
</applications>
```

This is the ActiveDocs for the API request to fetch all applications that will be used on the script to extend the analytics.

- Once you've done the research with the ActiveDocs, put down the request on your scripting language of choice (ours is pedestrian Ruby). Thanks to the request and responses provided by ActiveDocs, it has never been easier to explore what the API does.
- Repeat until you have a script that does exactly what you need. For the example of the extended analytics, the script is [available as a gist](#). You can try it out in your account.

As pedestrian as it sounds, this is the easiest way to proceed. The ActiveDocs let you quickly get a grasp of what the API is able to do. Then, it's just a matter of finding which 3 or 4 requests are needed for the task you want to do and putting a script together.

33.4.2. Step-by-step guide

These were the steps taken to achieve the custom analytics that this customer wanted:

- Retrieve the full list of applications. This operation requires pagination, but as you can see, it's dead simple.

```
def api_call_applications_list(domain, provider_key)
  done = false
  res = Array.new
  page = 1

  while !done
    url = "https://#{domain}/admin/api/applications.xml?provider_key=#{provider_key}&page=#{page}&per_page=100"
    page += 1
    response = RestClient.get url
    raise Exception.new("Wrong response code (#{response.code}) in request #{url}") if response.code != 200
    document = Nokogiri::XML(response.to_str)
    done = document.xpath("applications/@current_page").text == document.xpath("applications/@total_pages").text
    document.xpath("//application").each do |item|
      app = Hash.new
      app["created_at"] = DateTime.parse(item.xpath("created_at").text)
      app["plan_name"] = item.xpath("plan/name").text
      app["service_id"] = item.xpath("plan/service_id").text
      app["account_id"] = item.xpath("user_account_id").text
      app["id"] = item.xpath("id").text
      res << app
    end
  end
  return res
end
```

- Filter the applications that do not meet the criteria, i.e. the plan must be "evaluation" and they have to be newer than 10 days.

```
def filter_applications(domain, provider_key, plan_name, num_of_days)
  res = api_call_applications_list(domain, provider_key)
  res.each do |item|
    res.delete(item) if item["plan_name"] != plan_name
    res.delete(item) if item["created_at"] > (DateTime.now - num_of_days)
  end
  return res
end
```

- Then for each application that meets the criteria, get its usage, meaning how many hits the application has had in the last 10 days.

```
def api_call_application_usage(domain, provider_key, application_id, metric, from, to, granularity)
  url = "https://#{domain}/stats/applications/#{application_id}/usage.xml?provider_key=#{provider_key}&metric_name=#{metric}&since=#{from}&until=#{to}&granularity=#{granularity}"
  response = RestClient.get url
  raise Exception.new("Wrong response code (#{response.code}) in request #{url}") if response.code != 200
end
```

```

document = Nokogiri::XML(response.to_str)
return document.xpath("//usage/data/values").text.split(",")
end

```

- Finally, you must cross-reference the applications to the accounts because the information of the developers is stored in the account object.

```

def api_call_account_read(domain, provider_key, account_id)
  url = "https://#{domain}/admin/api/accounts/#{account_id}.xml?provider_key=#{provider_key}"
  response = RestClient.get url
  raise Exception.new("Wrong response code (#{response.code}) in request #{url}") if
response.code!=200
  document = Nokogiri::XML(response.to_str)
  account = Hash.new
  account["email"] = document.xpath("//users/user/email").text
  account["name"] = document.xpath("//users/user/first_name").text + " " +
document.xpath("//users/user/last_name").text
  return account
end

```

And that's pretty much it. Now you only need to put everything together (you can get the [full script as a gist](#)) and you're done. You have a script that gets the information that was not yet available on 3scale's built-in analytics.

33.5. CONCLUSIONS

3scale is very DIY-friendly. We believe that anyone should be able to extend the current capabilities of any service that they've contracted. As much as we would like to think that we can cover all the bases, we will always be a bit behind in certain aspects, whether because it's a super special need or simply because we are busy building other features. Whatever the case, we want to avoid blocking you when something is not possible right away. We give you full access to your data and a complete API toolset to work with it.

If you have scripts that you want to share with us and the rest of 3scale's users, please send them to us. We would be happy to collect them and publish them.

CHAPTER 34. OUT-OF-THE-BOX ANALYTICS

By the end of this tutorial, you will be able to find visual information on an application's traffic.

Each application using an API has a traffic trace in the 3scale system, which can be viewed from the Admin Portal as well as recovered by an API.

34.1. FIND THE APPLICATION

You can find the application from **Audience > Accounts > Listing** or **Audience > Applications > Listing** or by searching as described in the [finding applications tutorial](#).

34.2. UNDERSTAND THE APPLICATION DISPLAY

Once you've located the application, you'll see an overview screen with information about the application as shown in the following image.

The screenshot shows the Red Hat 3scale Admin Portal interface. The top navigation bar includes 'RED HAT 3SCALE API MANAGEMENT' and 'API: Echo API'. The left sidebar contains navigation items: Overview, Analytics, Applications (selected), Listing, Application Plans, Subscriptions, ActiveDocs, and Integration. The main content area is titled 'Application 'Metro's App' | Analytics' and 'Metro's App' with an 'Edit' button and a red '1' notification. The application details are as follows:

Account	Metro
Description	Default application created on signup.
Service	Echo API 2
State	Live ⊘ Suspend 3

Below the details are three sections:

- API Credentials** (4): Shows a User Key with a 'Regenerate' button.
- Usage in last 30 Days** (5): Shows a bar chart with 'Hits' and '0 hits'.
- Current Utilization** (6): States 'This is an unmetered application, there are no limits defined'.

On the right side, there is an 'Application Plan: Unlimited' (7) section with a 'Convert to a Custom Plan' button and a 'Change Plan' button at the bottom.

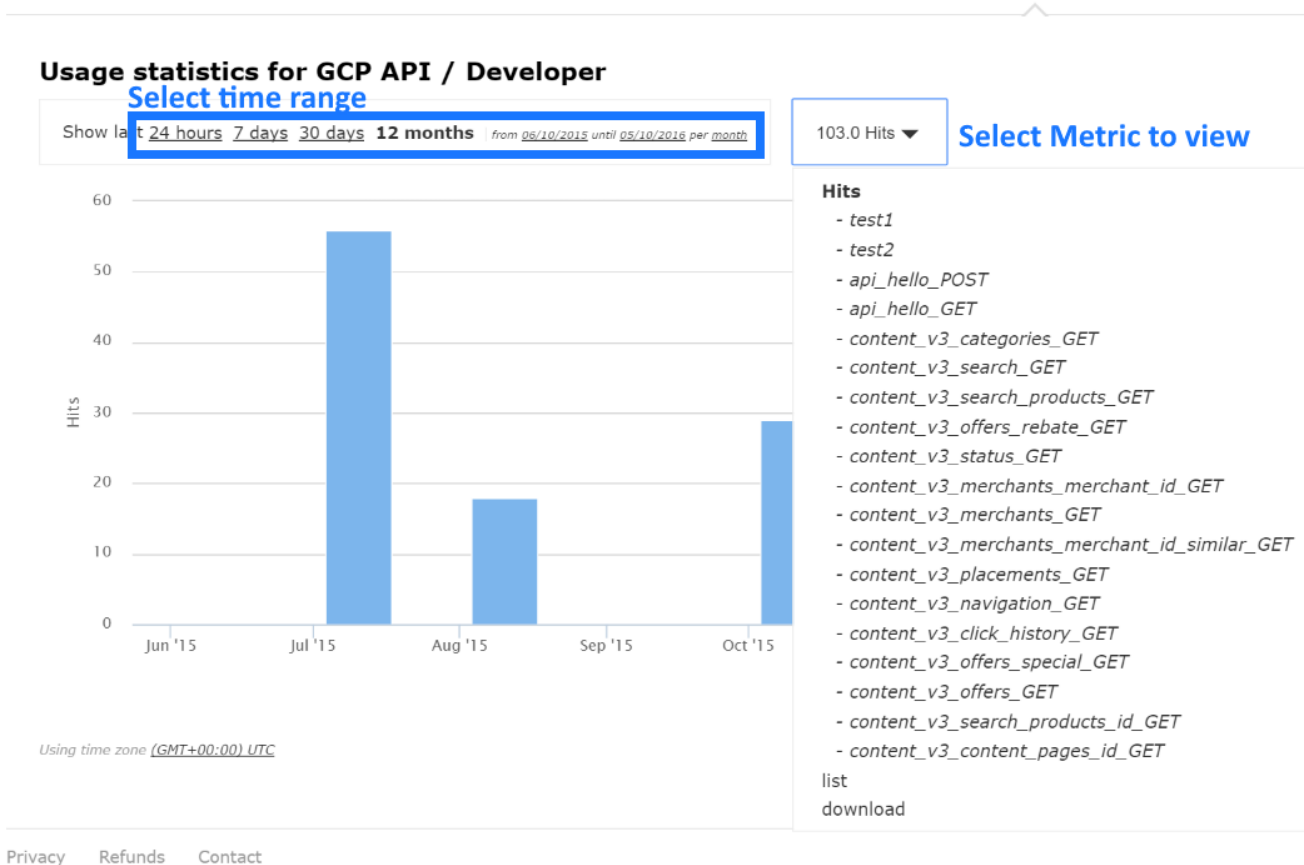
The items labeled in the diagram correspond to the following information:

1. The name of the application given by the developer.
2. Meta data captured for the application (learn how to set which data to capture in the advanced section).
3. The status of the application – is it live or suspended?
4. The current API identifiers, keys, and certificates that the application has. (This view varies depending on what authentication method was used to integrate the API into 3scale).
5. A summary of traffic statistics for the application.

6. Information on which application plan the application is on and which rate limits apply.

34.3. USE THE MENU TO ACCESS THE FULL SCREEN STATISTICS VIEW

To get to the Analytics page of an application, go to the application and click on **Analytics** in the links located above the application's name. This will take you to the usage charts view for the application as shown in the image below.



Controlling the metrics, methods, and time range allows you to check different types of data about the application.

CHAPTER 35. RESPONSE CODE TRACKING

This tutorial shows how to set up and use the response codes log in the 3scale system.

Tracking response codes from your API is a great way to see how your clients are using it and to see in real time whether everything is fine with your servers.

To enable response code tracking feature, set the **APICAST_RESPONSE_CODES** environment variable to **1** or **true** when starting APIcast gateway using [Docker](#) or [OpenShift](#) deployment.

When enabled, APIcast gateway captures the HTTP status code of API responses returned by the upstream service for authorized calls, and sends them to the Service Management API (in **authrep** call). Example:

```
https://su1.3scale.net/transactions/authrep.xml?service_token={SERVICE_TOKEN}&service_id={SERVICE_ID}&user_key={USER_KEY}&usage%5Bhits%5D=1&log%5Bcode%5D=200"
```

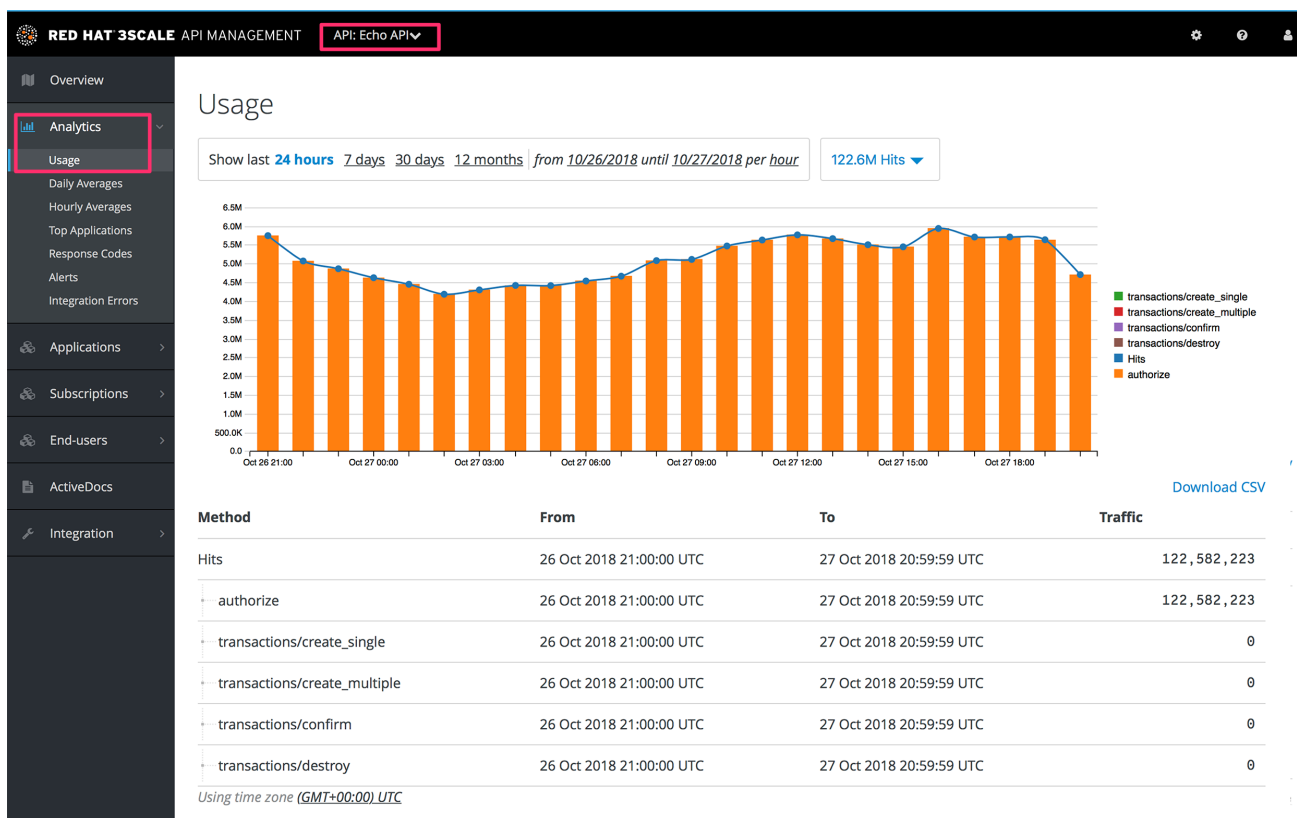
In this example, **log[code]=200** is sent, which means that the API responded with a **200** status code.

To verify the integration, you must call your API with valid 3scale credentials, and then verify that the call was correctly reported on the **Analytics > Usage** page.

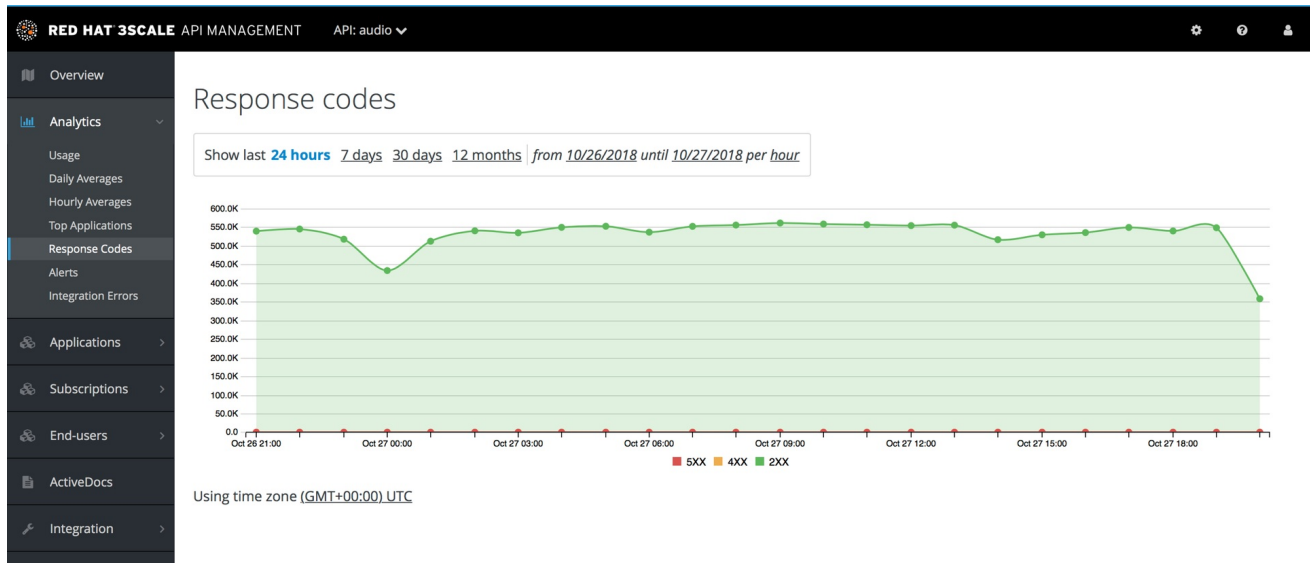


NOTE

- Response Code Tracking is not intended to be an accurate count of all responses.
- The value of this view is to provide a visual representation of the trend over a period of time.
- Response Code Tracking and 3scale Auth Caching mode: **None** is not a supported combination.



If everything is going well so far, go to the **Analytics >Response codes** page. You should be able to see a graph with your latest traffic divided by colors, depending if the response was 2xx, 4xx, or 5xx.



The graph tool gives you the ability to view the history of response codes. You can also check the response code statistics for different periods of time and different levels of granularity. Simply click on the time selection bar and define the time period and granularity that will fit your needs.