Developer Guide

For Managed Print Services (MPS) Applications

Introduction

Introduction to PrintReleaf

PrintReleaf is a software platform that empowers businesses to reduce the environmental impact of printing by certifiably planting trees around the world. PrintReleaf can analyze paper consumption data from a variety of sources to determine the equivalent number of trees that were deforested to harvest that paper. PrintReleaf then reforests those trees back into the natural environment at planting sites across our global network of PrintReleaf Certified Reforestation Projects. In return, PrintReleaf customers receive a certificate of reforestation as a receipt of their transaction.

Purpose and Scope

This document is for designers and architects who need to integrate the PrintReleaf platform with their own software applications. The PrintReleaf platform is well-suited for integration into a wide variety of Managed Print Services (MPS) applications, including printer monitoring software and service providers, allowing for simple and automatic transmission of paper consumption data into PrintReleaf to calculate a customer's paper footprint.

This document serves as a guide for integrating your software with the PrintReleaf platform and a playbook of best practices.
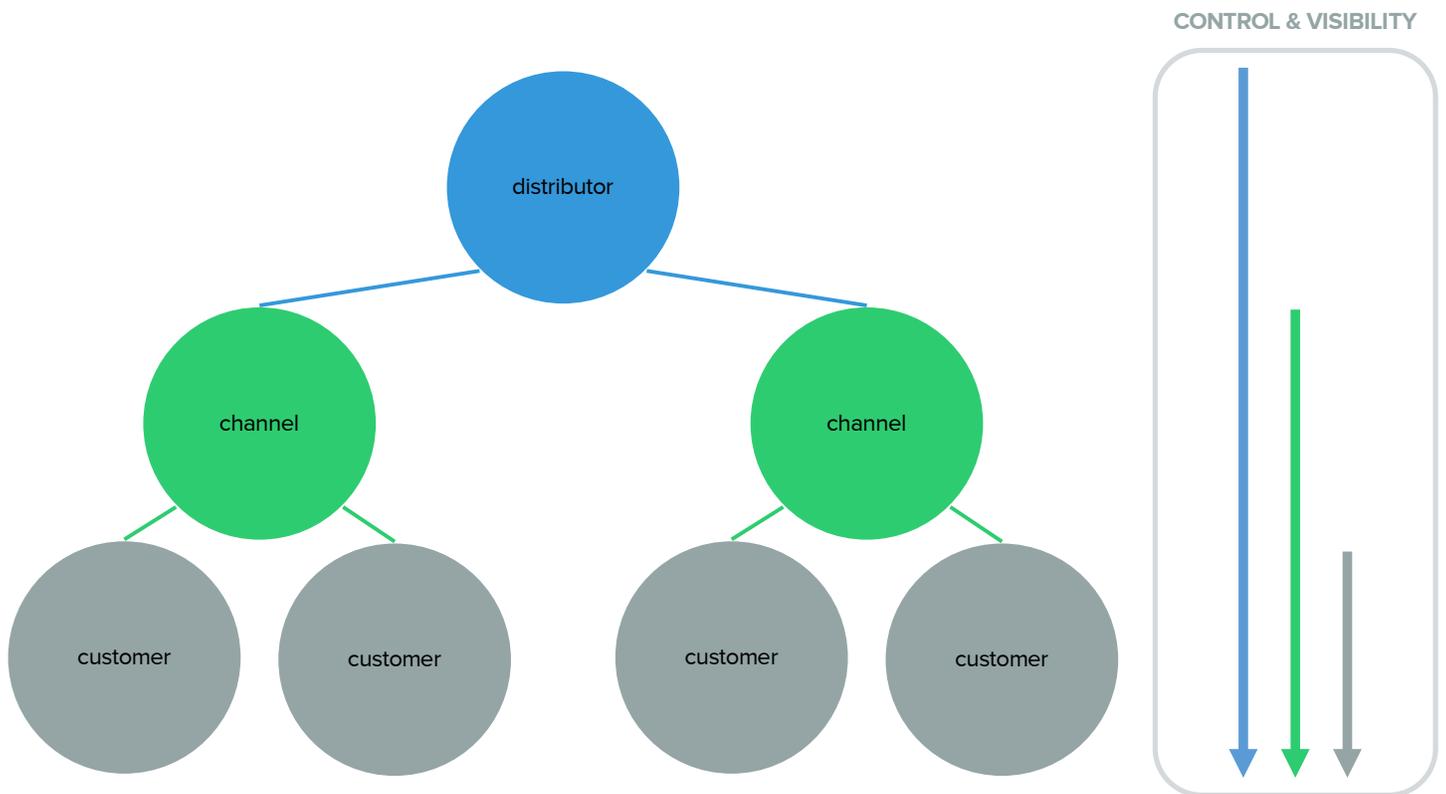
Core Concepts

Accounts

The Account is the central business object in PrintReleaf; everything relates to an account. An account can be a PrintReleaf reseller or end customer. Accounts in PrintReleaf are hierarchical, meaning a reseller account can have an arbitrary number of subordinate end customer accounts that it owns and controls.

Every account in PrintReleaf has a *role* that determines the behavior and abilities of their account. The three roles are *Customer, Channel,* and *Distributor.* The account hierarchy is strict in this regard: a subordinate account of a *Distributor* is always a channel. A subordinate account of a *Channel* is always a *Customer.* Control and visibility always flow down the hierarchy.

CONTROL & VISIBILITY

Core Concepts

Deposits

Deposits are periodic additions of paper consumption data to a customer's PrintReleaf account. This is how you feed your customers' print data into PrintReleaf to populate their accounts with page counts. Over the course of a month, you periodically add deposits to an account; for example, daily meter reads from a device, fleet, or entire business. At the end of the month, the deposits are batched and summed to determine the account's total consumption during that month. A Transaction is then automatically executed for the total consumption and the account receives a certificate of reforestation as a receipt of the transaction. This model is ideal for subscription applications where an account accrues paper consumption over time to be executed as a single big transaction rather than many small transactions.

PrintReleaf's integrations with third-party print monitoring software (FMAudit, PrintFleet, etc.) are powered by this deposits model. Every day our data collectors gather paper consumption data from the print monitoring software and create a deposit for the day's consumption.

Transaction

A Transaction is an exchange of paper consumption for reforested trees, representing the paper consumption in Standard Pages and the equivalent number of Standard Trees. A transaction is always linked to an end customer account.

While it is possible to create Transactions directly using the PrintReleaf API, in MPS applications it is recommended to create Deposits instead. At the end of each month, PrintReleaf automatically batches and sums all of the customer's deposits and creates a Transaction representing the customer's total consumption during that month.

Certificate

Each PrintReleaf Transaction is issued a Certificate of Reforestation as receipt of the transaction. The certificate is a PDF document that contains details about the transaction, including the customer info, date of transaction, number of pages and equivalent trees reforested, which reforestation project those trees are planted at, as well as a unique identifier representing the transaction.

When a Transaction is created, the Certificate is automatically posted to the customer's PrintReleaf dashboard and emailed to the customer.

Core Concepts

Standard Page
In PrintReleaf, all paper consumption data is normalized to a "Standard Page". This is PrintReleaf's standard unit of a single physical sheet of paper. A standard page is 0.2159m × 0.2794m (8.5" × 11") on conventional 20# Bond/Writing/Ledger (74 GSM). In normalizing paper consumption to standard pages, PrintReleaf takes into account the physical dimensions of the paper (width and height) as well as the surface density (commonly known as "paper weight", measured in g/m^2 or "GSM") of the type of paper consumed.

Standard Tree
In PrintReleaf, a "Standard Tree" is a standard unit for equating paper consumption to equivalent forest impact. A standard tree is 40 feet x 7 inches DBH and is equivalent to 8,333 Standard Pages. See the PrintReleaf Standard for more information.

Using the PrintReleaf API

The PrintReleaf API is organized around REST to have predictable, resource-oriented URLs, and uses HTTP response codes to indicate API errors. It uses built-in HTTP features, like HTTP authentication and HTTP verbs, which are understood by off-the-shelf HTTP clients. JSON is returned in all responses from the API, including errors, and is expected as the body for all requests.

Conventions

- All data is sent and received as JSON
- All resource IDs are UUID strings
- Blank fields are included as null instead of being omitted
- All timestamps are returned in ISO 8601 format: YYYY-MM-DDTHH:MM:SSZ
- All units are metric: m for units of length; m^2 for area; g for mass; g/m^2 for density

Access Patterns

Accounts in PrintReleaf are hierarchical, meaning a reseller account can have an arbitrary number of subordinate end customer accounts that it owns and controls.

By default, all resources of the Core API are scoped to the account that issued the API request. PrintReleaf Resellers may use the API to execute requests on behalf of their end customer by scoping the request to the customer account. Scoping takes place in the request URL.

Example: Retrieving a list of deposits

Default scope
GET https://api.printreleaf.com/v1/deposits

Scoped to Account ID=123
GET https://api.printreleaf.com/v1/accounts/123/deposits
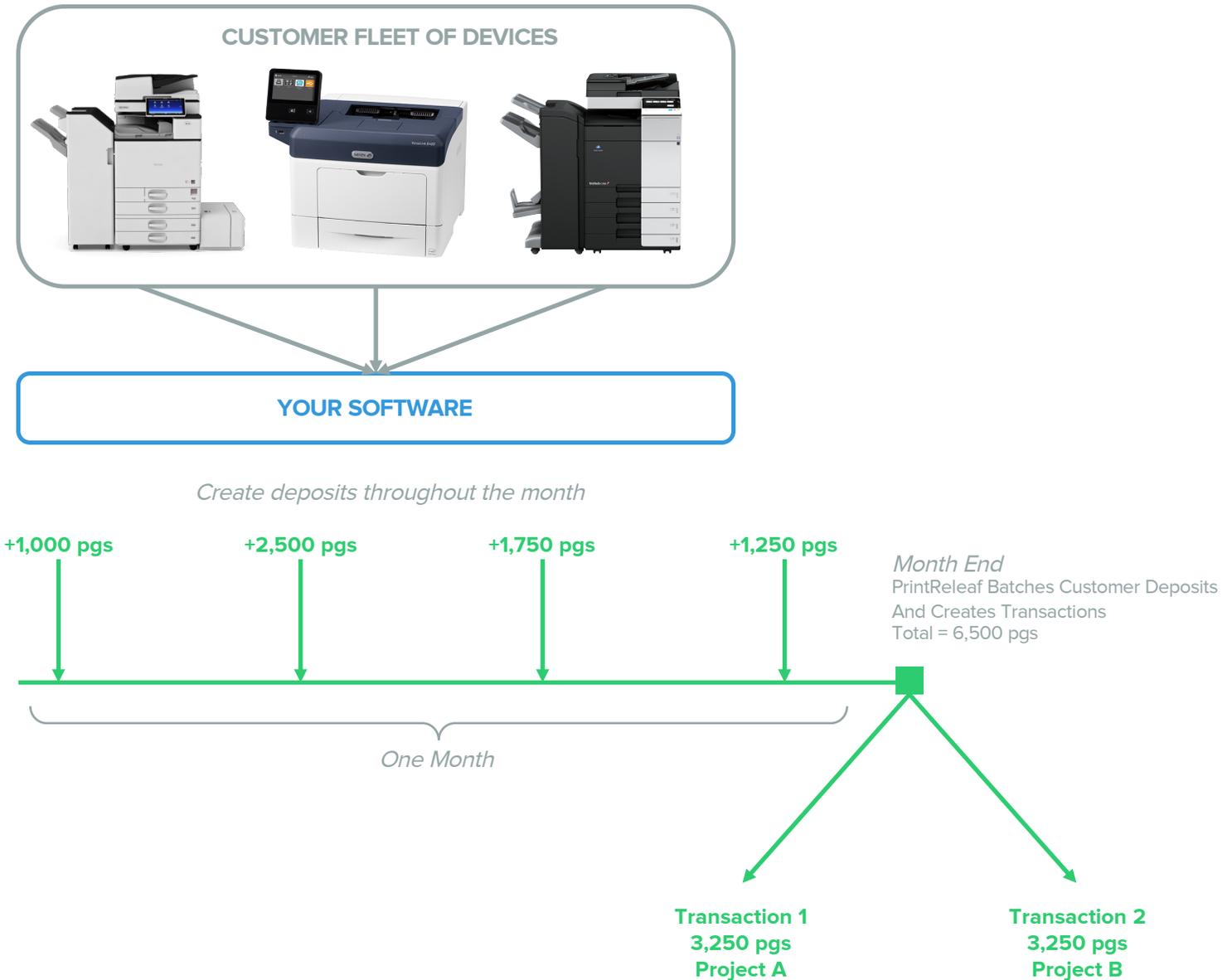
Using the PrintReleaf API

Authentication

You authenticate to the PrintReleaf API by including an API key in the request. As a PrintReleaf Integration Partner, it is likely your software will perform API requests on behalf of an existing PrintReleaf Reseller. To do so, the reseller will generate an API key in their PrintReleaf Dashboard specifically for use with your integration, and will supply this API key to you. Use this API key for performing all API requests on behalf of the reseller. It is your responsibility to safely store the reseller's API key.

Resellers can manage their API keys from their PrintReleaf Dashboard.

Authentication to the PrintReleaf API is performed via HTTP Basic Auth. Provide the API key as the basic auth username value. You do not need to provide a password.

All API requests must be made over HTTPS. Calls made over plain HTTP will fail. API requests without authentication will also fail.

Workflow: Creating Deposits

CUSTOMER FLEET OF DEVICES

YOUR SOFTWARE

Create deposits throughout the month

+1,000 pgs **+2,500 pgs** **+1,750 pgs** **+1,250 pgs**

Month End
PrintReleaf Batches Customer Deposits
And Creates Transactions
Total = 6,500 pgs

One Month

Transaction 1
3,250 pgs
Project A

Transaction 2
3,250 pgs
Project B

As a best practice, it is recommended that your software creates deposits in PrintReleaf on a regular schedule, as frequently as possible throughout the month. In most cases, depositing daily meter reads from the printer fleet is ideal. This ensures that the customer's page counts in PrintReleaf are accurate to within 24 hours.

Additionally, it is worth noting that PrintReleaf's "Month End" is on the 7th day of the following month. This leaves a 7-day grace period where you are still permitted to deposit pages for the previous month before those deposits are batched and finalized when the month is closed.

Creating a Deposit

To create a Deposit using the PrintReleaf API, you simply provide the paper consumption data: the number of pages, paper width and height, as well as paper type or density. PrintReleaf uses the supplied paper specs to calculate the number of normalized Standard Pages and the equivalent number of Standard Trees.

Forming the API request

```
POST /deposits
```

Request Body:

```
{
  "pages": 20000,
  "width": 0.2127,
  "height": 0.2762,
  "density": 216
}
```

Response Body:

```
{
  "id": "e9ad2b00-…",
  "account_id": "971d10ac-…",
  "date": "2015-10-22T00:37:11Z",
  "pages": 20000,
  "width": 0.2127,
  "height": 0.2762,
  "density": 216
}
```

Appendix

API Reference

Full API reference & documentation
https://printreleaf.com/docs/api

The PrintReleaf Standard

https://printreleaf.com/standard

Support & Questions

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