



Technical Brief:

ORACLE DYN EMAIL DELIVERY

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Technical Brief: Oracle Dyn Email Delivery

Introduction

Oracle Dyn's Email Delivery platform allows reputable senders to send both bulk and transactional emails to their customers through a cloud-based solution that specializes in the best possible inbox placement – both securely and reliably.

This platform leverages the design practices developed as a core skillset from Oracle Dyn's experience running DNS for the largest and most widely used web presences in the world. A segmented architecture built and maintained within Oracle Dyn's data centers has provided the basis for the most reliable and secure messaging infrastructure available today.

This document provides a deeper overview of the technical considerations and benefits of using Oracle Dyn's Email Delivery system.



The Lifecycle Of An Email With Oracle Dyn Email Delivery

One way to better understand how Oracle Dyn Email Delivery works is to follow the lifecycle of an email:

Origin and Handoff – An email and the content within the email is created in your email template/management system, marketing automation solution, or other application, and handed off to Oracle Dyn for the remainder of the delivery process. You can choose to deliver over SMTP or integrate directly into your application using Oracle Dyn's API.

Message Reception – Once your email is received by Oracle Dyn Email Delivery, it is then logged and processed based on user account settings, allowing for reporting options such as opens, clicks, list-unsubscribes, and customized tagging features.

ISP Delivery and Queue Management – When the email is ready for delivery, Oracle Dyn routes the message to a specific outgoing IP address pool. These pools all have more than one IP address, and each IP address has separate, parallel queues for each mailbox provider. Queues for each mailbox provider are delivered to the destination mailbox based on custom configurations managed by Oracle Dyn's deliverability team. This is a real advantage over internally managed/on-premises options as, over time, Oracle Dyn has been able to optimize configurations for a vast number of receiving domains.

Deferrals and Retries – Sometimes, mailbox providers defer or block messages through special SMTP messages. Depending on the exact contents of these messages, Dyn's servers retry sending the messages at various intervals or roll over the messages to another IP within the same pool. This helps ensure that messages with valid recipients reach their end mailbox.



Bounces and Bounce Reclassification

Bounce tracking is an essential task in improving email performance. Dyn Email Delivery has a thorough bounce collection, review, and reclassification system. Bounces often occur during the delivery attempt within the SMTP protocol. Oracle Dyn's systems immediately record and report on these bounces.

Oracle Dyn continually refines the set of bounce rules that we use to reclassify and appropriately react to bounce codes. Continual refinement is needed as each mailbox provider returns different bounce codes for different reasons. Ensuring the bounces are reclassified helps senders keep all valid recipients on their list, while keeping invalid recipients off.

Upon receiving a bounce at the top level, the bounce reclassification system will categorize each bounce within one of the following categories:

- **Hard Bounces (permanent):** Email addresses that should not be emailed to again.
- **Soft Bounces (temporary):** Email addresses that are undeliverable at that point in time and could be tried again in the future. Multiple soft bounces to the same address over a period of time will eventually cause a deliverability impact. Therefore, Oracle Dyn Email Delivery will add these email addresses to your suppression list after a period of repeated soft bounces.
- **Soft Bounces that never suppress:** Bounces caused by situations that will never cause the recipient to be suppressed as they have to do more with sender reputation vs. the recipient address.

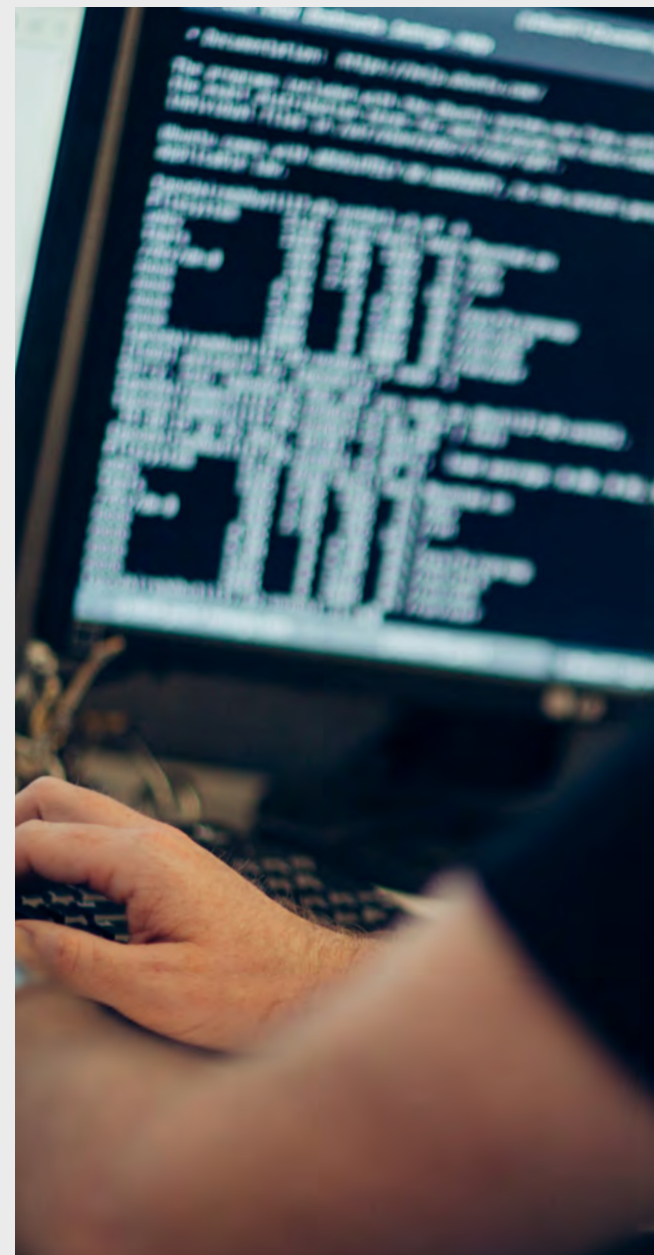
All bounces are reported back within the Oracle Dyn reporting portal, API, or postback service and contain the recipient's email address, timestamp, bounce type, bounce code, bounce rule, full first 5,000 bytes of the bounce message, and any X-Header tags designated to be tracked.



Tracking and Data Processing

Each message is then processed based on customer specific account settings and recorded within Oracle Dyn's system for tracking. Options include whether a customer would like a message to be tracked via Oracle Dyn's open, click, List-Unsubscribe, and X-Header tagging features.

- **Open Tracking** is accomplished by embedding an image pixel within the HTML part of the message. Through the use of redirects on the image pixel, Oracle Dyn has the ability to track whether a message has been seen (less than eight seconds), skimmed (eight to 20 seconds), or read (more than 20 seconds). Each open is recorded with the customer's IP address, date/timestamp, and any X-Header tags designated to be tracked.
- **Click Tracking** is accomplished by encoding all URLs within the HTML part of the message. These encoded URLs are directed toward Oracle Dyn's click tracking servers upon execution, and redirected to the desired URL after our service has recorded the user's click. Each click is recorded with the customer's IP address, date/timestamp, URL clicked, and any X-Header tags designated to be tracked. For security purposes, a verification hash is included to ensure these redirects are not tampered with or abused.
- **List-Unsubscribe** is an email header used to integrate with the "easy unsubscribe" button feature offered by many mailbox providers. This feature can be activated within any account to automatically add the list-unsubscribe header within the email. Each recipient unsubscribe is added to the suppression list sent back to the customer within reporting, tracking any X-Header tags designated to be tracked.
- **X-Header Tags** are a customization option offered in addition to other email statistics such as sent, delivered, bounced, opens, and clicks. These tags are added into the email upon origin within the sender's application, and can be used to track each message uniquely, or message groups as a whole such as campaigns. This additional data becomes very valuable in report segmentation and analytics after emails have been sent.
- **Custom Tracking Domains** are supported for open and click tracking. Use your own branded domain with the setup of a CNAME and a simple change in your account settings.



Integration And Reporting Methods

Oracle Dyn Email Delivery provides three main interfaces for senders to use:

Oracle Dyn Email Delivery Portal – Dyn Email Delivery is available to perform account administration and configuration, as well as reporting functions. For account configuration, the following functionality is available:

- **Accounts and sub-accounts** are able to be routed over different IP spaces, and have separate user logins, and separate reporting. This helps organize several different streams or brands of email under one reporting and delivery suite.
- **Approved Senders** can be added and removed as an extra level of authentication and reporting within the account. Each approved sender is an address from in which you are approving to send mail within the account (ex. info@company.com, sales@company.com, support@company.com). Wildcards can be utilized on local parts of the email address to approve all mail from a particular domain.
- **DKIM / SPF Authentication** wizards are available on each approved sender to help setup and maintain proper authentication on your domains.
- **X-Header Tagging** can be enabled by simply adding the name of the X-Headers that you would like Oracle Dyn Email Delivery to track. This will initiate tracking at every stage of an email and attach the sent, delivered, bounced, complaint, opens, or clicks reports to the appropriate record.
- **API Key Generation** is accomplished within the Oracle Dyn portal if you wish to use the API. This is a one-time setup, and we also provide the regeneration of a new API key if needed.

- **Postback URLs** can be set up and established via the Oracle Dyn portal or alternatively with the API. These allow Oracle Dyn Email Delivery to push data to an API within your application as soon as the data is processed. This is the highest-level integration method and is discussed further below.
- **Reports** are available at a dashboard overview level showing aggregate counts, and at a detailed level to view each individual record of sent, delivered, bounced, complained, opened, or clicked for an email. Each record has the X-Header tags available within the reports along with the other relating data points such as recipient address (where applicable).
- **Suppression List** is a list of email addresses which have been found to be undeliverable, complained, or unsubscribed from your mail in the past. It is possible to add or remove recipients from the suppression list via our Dyn portal or API.

REST API Interface – Dyn Email Delivery provides a RESTful API to allow for programmatic access to the system. You can configure your account via the API with all the same options as available through the Dyn portal, build specific customer services tools and workflows, send email, or download data (detailed or aggregate) on a regular basis.

As with any REST API, methods are called via standard HTTP or HTTPS requests, sometimes with parameters specified within the request. Methods are invoked via the standard set of REST verbs, and results are available in JSON and XML formats.

To facilitate security, each invocation of the API must be accompanied by a unique API key created within the Oracle Dyn portal. As a security measure, accounts created via the website do not have API keys assigned by default. Accounts created through the API have an optional setting to have them assigned programmatically for closer application integration.

Postback API Interface – Oracle Dyn Email Delivery offers a Postback API in which we will push information back to custom configured URLs upon processing. This enables real-time integration and is available for bounces, complaints, and list-unsubscribe records. These custom URLs can be configured within the Dyn portal or the API as URLs.

To use this feature, create a handler to receive requests and then specify a URL containing the parameters associated with each record type. For example:

```
http://yoursite.com/ProcessBounce.php?email=@
email&bouncerule=@bouncerule &bouncetype=@
bouncetype&x1=@[xheader1name]&x2=@[xheader2name]&x3=@
[xheader3name]&x4=@[xheader4name]
```

Each applicable item in bold must be specified exactly as listed in order for Oracle Dyn to build the URL with your values. The items not in bold — namely the querystring variable field names — can be whatever you like, since your code will be retrieving those fields by name. Oracle Dyn Email Delivery will replace each of the following @ placeholders with their respective values in each bounce/complaint postback URL.

The following variables are available:

```
@email = subscriber email
@bouncerule = bounce rule/reason (bounces only)
@bouncecode = bounce code, i.e. "5.0.0", "4.0.1", ... (bounces only)
@bouncetype = bounce type, i.e. "hard" or "soft" (bounces only)
@[xheadername] = user-defined X-Header name (optional)
```



Deliverability Features And Considerations

Inbox deliverability is the overall goal of an email delivery system. Without the right tools and best practices, an email will be less likely to reach a user's inbox and may either be sent to the spam folder or blocked altogether. The following items are key benefits when you use Oracle Dyn Email Delivery:

Spam Complaints and Feedback Loops –Most mailbox providers integrate email spam/junk buttons within their user interfaces where users can report a particular message as spam. This is commonly referred to as a complaint. This enables those providers to continuously improve their spam filtering and most have feedback loops where senders can receive each message that caused a complaint.

Oracle Dyn Email Delivery automatically subscribes you to these complaint feedback loops to ensure the capturing of as much insight into delivery statistics as possible. Each complaint received contains the recipient's email address, timestamp, and any X-Header tags designated to be tracked.

Customer Qualification Criteria and Compliance – Oracle Dyn takes regulatory compliance seriously, as evidenced by our commitment to be fully compliant with both Canadian Anti-Spam Laws (CASL) and the CAN-SPAM Act of 2003.

The reputation of email networks are consistently monitored for how much spam they send by independent third-party systems as well as by mailbox providers. To keep our network highly reputable, Oracle Dyn ensures all new customers meet our qualification criteria.

As fines for CASL violations have already been issued and can carry a potential penalty of up to \$10 million per offense, it's important to choose a provider who will help to ensure you have as much information as possible to be compliant. As a result of Oracle Dyn's dedication to compliance, we're proud to report that the reputation of our sending IPs are some of the highest in the industry, resulting in better inbox placement for our customers and increased revenue.

Reliability And Scalability

Oracle Dyn has a long history in providing extremely reliable and scalable DNS, leveraging this same approach for our email product. Additionally, our sending infrastructure is completely segmented and independent from our database servers, so should hardware fail, sending capability is left unaffected.

Scalability is essential to providing robust and tailored solutions. Whether you're sending 10,000 messages per month or 1 billion, Oracle Dyn has the right solution for you with the ability to customize and direct your mail at one or more of our data centers. This helps with message routing, reliability, and speed of delivery.

Security And Compliance

Oracle Dyn understands that security and compliance are of critical importance. This is why we are TRUSTe Trusted Cloud, PCI DSS merchant compliant, and US-EU Safe Harbor List compliant. If you are looking for a different specific standard not listed here, please let us know as we are always expanding our compliance efforts.

Additionally, our Privacy Policy can be found at [Dyn.com/legal/dyn-privacy-policy](https://dyn.com/legal/dyn-privacy-policy).

Onboarding Process

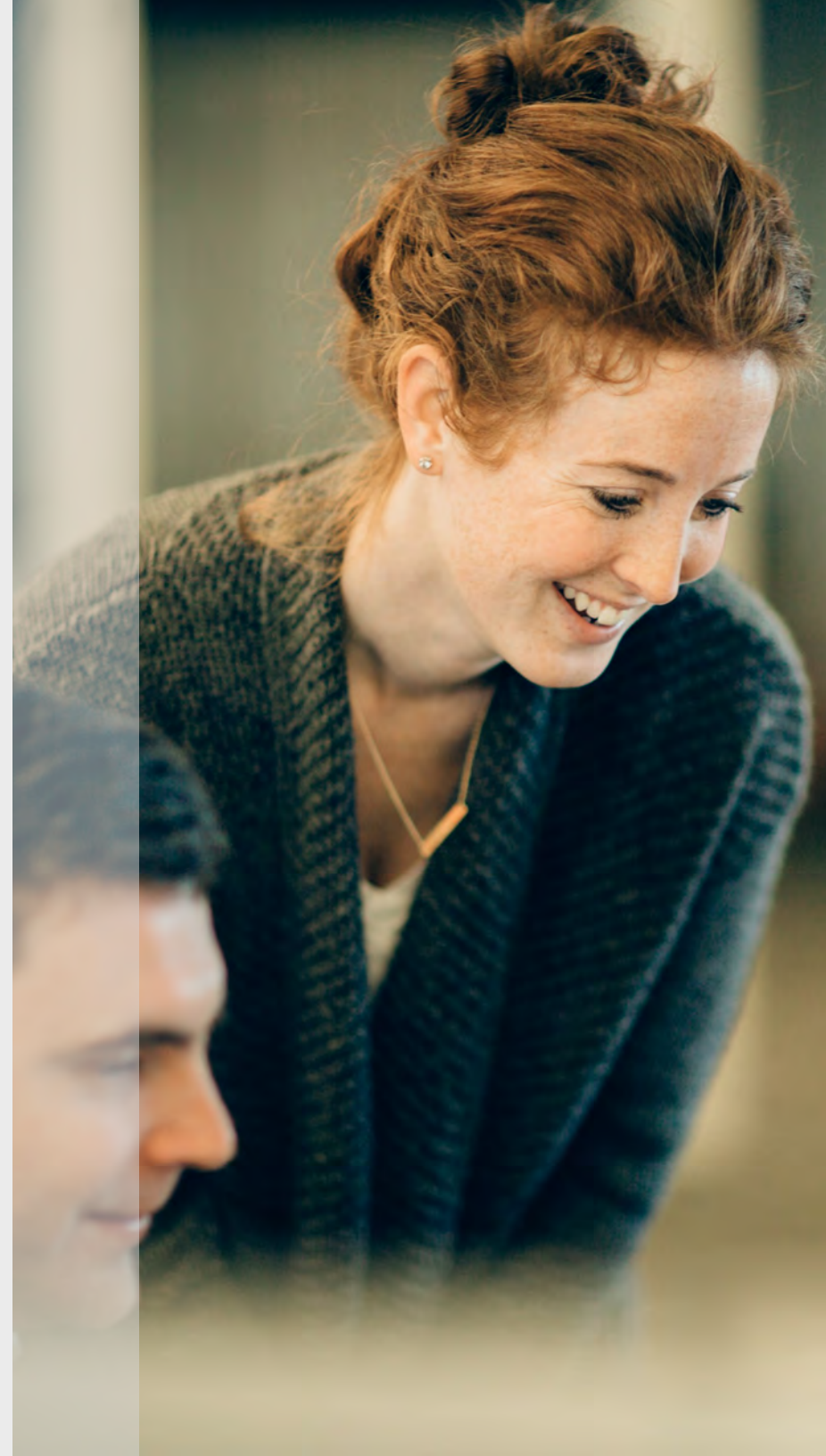
Getting up to speed with Oracle Dyn Email Delivery is easy and safe with our onboarding process, powered by our professional services and deliverability teams. This process includes:

Customized Ramp-Up Schedules – These are provided to slowly transition an existing mail stream to our platform. Even though we provide customers with warm IP addresses and have an excellent sending reputation, it is a best practice to transition to Oracle Dyn in a measured approach to ensure that mailbox providers receive and process email from the new sending IPs.

Customized IP Pool Strategies – These are considered and discussed with customers, so that email is routed through either dedicated IPs or a shared IP pool space with similar email senders.

Want to Talk More?

Does this sound like a lot of work? Unsure of how to hit all the right checkboxes and keep your email revenue flowing? Our experts are here to help! **[Schedule a consultative call at dyn.com/email](https://dyn.com/email)**.



Rethink Email.

Oracle Dyn is global business unit (GBU) focused on critical cloud infrastructure. Dyn is a pioneer in DNS and a leader in cloud-based infrastructure that connects users with digital content and experiences across a global internet. Dyn's solution is powered by a global network that drives 40 billion traffic optimization decisions daily for more than 3,500 enterprise customers, including preeminent digital brands such as Netflix, Twitter, LinkedIn and CNBC. Adding Dyn's best-in-class DNS and email services extends the Oracle cloud computing platform and provides enterprise customers with a one-stop shop for infrastructure as a service (IaaS) and platform as a service (PaaS).

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